AN INTEGRATED LEARNING PROGRAMME FOR THE KNYSNA MONTESSORI SCHOOL

by

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DECLARATION

In accordance with Rule G4.6.3, I Andri Nel, hereby declare that the above-mentioned thesis is my own work and that it has not previously been submitted for assessment to another University or for another qualification.

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DEDICATION

To my beloved father, Johan Nel, for his love and inspiration throughout my life.

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GLOSSARY

FET	Further Education and Training
GET	General Education and Training
IEB	Independent Examination Board
MARS	Montessori Adventure Racing Sport
NAMTA	North American Montessori Training Association
NQF	National Qualifications Framework
OBE	Outcomes-based Education
RNCS	Revised National Curriculum Statement
SAMA	South African Montessori Association
SAQA	South African Qualifications Authority

SUMMARY

In line with Montessori methodology, the Knysna Montessori School runs its programmes in an integrated and holistic manner. Learning programmes are based on a blend of various Montessori learning programmes and the Revised National Curriculum Statement (RNCS). Classes are divided into three year-age groupings; and integrated learning programmes are in place within the pre-school, (including grade R), the grade 1 to 3 class, and the grade 4 to 6 class. However, the grade 7 to 9 Montessori class has been running in a more traditional and less integrated manner since its inception in 2004. That has motivated the undertaking of this study.

The main aim of this qualitative study has been to determine how to best arrange the RNCS according to Montessori principles, that is to say, in a holistic and integrated manner, with the intention of presenting a learning programme for the grade 7 to 9 class. This aim was based on a constructivist philosophical foundation and addressed in conjunction with interpretivism and critical theory. The grounded theory research paradigm was followed. In this paradigm research findings are grounded in the data gathering and the analysis.

Three methods of data collection were applied, namely a literature review, interviews and document analysis. A literature review was conducted to gain a better overview and understanding of the RNCS and Outcomes-Based Education (OBE). Furthermore, through the literature review, an in-depth understanding of the Montessori method of education, adolescent development and integrated and holistic education have been achieved. Interviews were conducted with staff from the Knysna Montessori School, with the purpose of gathering information on the Knysna Montessori School and its current application to the RNCS, from pre-school to grade 6.

An availability and purposive sampling method was applied, in order to determine which staff members to interview. Finally, document analysis was done. The learning areas for the senior phase (grades 7 to 9) of the General Education and Training Band (GET) of the RNCS were coded and analysed in order to discover emergent

themes within the RNCS and how these link with the Montessori curriculum arrangement for this age group.

It became apparent that Montessori classrooms, both prior to and for the senior phase, are divided into three areas, namely language, mathematics and cultural studies. Based on this knowledge, as well as the documentary analysis, an integrated learning programme, grounded in the data analysis, was designed. It was found that the RNCS matches well with Montessori's curriculum arrangement. Thus, this learning programme is in line with Montessori's curriculum arrangement for the senior phase of the GET band.

Such a curriculum arrangement integrates the learning outcomes and assessment standards from arts and culture, economic and management sciences, life orientation, natural sciences, social sciences and technology into different studies. These are globally referred to as cultural studies. However, specific attention was also given to moral education, self-expression through music, art and drama, entrepreneurship, career education and sport. The conclusion was reached that an integrated learning programme, based on Montessori principles and in line with the RNCS requirement, is possible for the Knysna Montessori School

Keywords: Revised National Curriculum Statement; Montessori; cultural studies; adolescent education; integrated curriculum; holistic education.

CHAPTER ONE

ORIENTATION, PROBLEM STATEMENT AND PURPOSE OF THE STUDY, CONCEPT CLARIFICATION, OVERVIEW OF RESEARCH DESIGN AND METHODOLOGY, AND RESEARCH PLAN

1.1 INTRODUCTION

This chapter provides an orientation to the research, as well as the problem statement and the purpose of the research project. Furthermore, an overview of the research design will also be presented. The philosophical foundations and the theoretical perspectives is fundamental to the research design of the study. These underpin the research paradigm and the method decisions. These will be presented, referring to data collection and analysis, as well as to the issues of trustworthiness and the ethical considerations. Lastly, the research plan will, in addition, be outlined.

1.2 THE ORIENTATION TO MONTESSORI EDUCATION

Maria Montessori, born in 1870 in Italy, became the first woman to be awarded a degree of Doctor of Medicine at the Rome University in 1894 (Who2? Biography, 2008). After graduation, Dr Montessori accepted the post of assistant doctor at the Psychiatric Clinic in the University of Rome (Morrish, 1970: 212 – 213; Standing, 1957: 28) and in 1900 she was appointed Director of the Orthopaedic School attached to the University of Rome. The school had formerly been the Municipal Asylum (Answers Corporation, 2006).

In 1904 Dr Montessori became Professor at the University of Rome and occupied the Chair of Anthropology for four years (Standing, 1957: 33). Her first major research publication was *Pedagogical Anthropology*, the Italian edition published in 1903, was followed by an English edition in 1913 (Montessori, 1913). She wrote over 17 books, including therein many of her lectures that were recorded and published

(International Montessori Society, 2007; North American Montessori Teacher's Association, 2007a).

Montessori achieved the honour of being nominated for the Nobel Peace Prize three times, in 1949, 1950 and 1951, for advocating peace through education by means of her writings, lectures and training courses (Gisolo, 2005). She died in 1952 in the Netherlands (Britannica Concise Encyclopaedia, 2006; Morrish, 1970: 212), leaving behind her a very special legacy in education.

It was after 1900 that she became interested in the influence of the *environment* on the development of children (Standing, 1957: 28). She came to believe that through special education, in a positive environment, the mental condition of children could be significantly improved.

This view was greatly influenced by Itard and Séguin, two educational philosophers, who shared this view (A Child's Place: Montessori School, 2005; Standing, 1957: 28). Itard, well-known for his book, "The care and education of the wild boy of Aveyron", and his student Séguin, both worked with mentally "deficient" or disabled people and found, as Montessori later had done, that the *environment should be adapted to suit the carefully observed needs* of those individuals with whom they worked (Standing, 1957: 32 – 33). This is an important principle in Montessori education.

In 1907 Montessori established the *Casa dei Bambini,* or The Children's House, which was designed to help educate the street children of Rome (Answers Corporation, 2006; Mooney, 2000: 22; Morrish, 1970: 213). This environment was equipped with child-sized furnishings and tools. Montessori was the first educator to design the environment with all its furnishings (including the wash-basin, toilets, shelves, windows, tables and chairs) bearing in mind the size of the *children*.

This Montessori principle still applies in the Montessori classroom today, where everything is accessible to the children. The furniture and activity areas are arranged to avoid any congestion and frustration, and the environment should at all times be clean, beautiful and ordered (Answers Corporation, 2006; Mooney, 2000: 24 – 25; Lillard, 1972: 51).

At *Casa dei Bambini,* Montessori saw the value of *child-centred environments*, which she called the '*prepared environment*'. The North American Montessori Teachers' Association (2007b) defines the prepared environment as an environment designed to assist *independent* learning and the *discovery* of knowledge by children. The prepared environment serves as the stimulus and the medium of education (Ewert-Krocker, 2006a: 454). Through trial-and-error, Montessori was able to design an environment centred on the children's needs (Answers Corporation, 2006).

She noticed that children learn language and other skills through their interaction with their peers and spending time in the environment (Mooney, 2000: 24). It was on account of this realisation that children in their environment became the central focus of her method. The prepared environment considers not only the physical environment, but also the teacher and the child within that environment. The Montessori prepared environment encompasses *seven elements*:

- Mixed-age groups;
- The Montessori equipment;
- Liberty (freedom);
- Structure and order;
- Emphasis on reality and nature;
- Beauty and atmosphere; and
- The development of community life (Association Montessori Internationalé (AMI), 2007a; Lillard, 1972: 51). (Details will be discussed in Chapter Three)

Her enthusiasm, observations and scientific interest led her to the development of the *Montessori Method of Education*. This method primarily views *all aspects* of the human self, i.e. physical, cognitive, moral, social and emotional, as being equally important, interrelated and inseparable (Montessori Discovery School, 2007). Rather than teaching a specific body of knowledge, the development of all of these aspects is central to her methodology (International Montessori Index, 2002).

Her approach centres on a way for the child to encounter and engage with the surrounding world and with life itself, by using and empowering all these aspects of

the human self. Montessori's approach to the curriculum is often referred to as a *holistic approach*, considering the whole child, as well as following an *integrated* approach to curriculum arrangement (Montessori Discovery School, 2007; Taggart, 2001: 326).

Children are presented with the bigger picture of reality and the integration of different aspects of reality, leading them to explore and discover different topics and then referring these back to the bigger picture (Grazzini, 2006a: 231; Schaefer & Schaefer, 2006: 187).

A *teacher* in a Montessori environment is referred to as a 'directress' or 'director' (Lillard, 1972: 77). For the purpose of this study, the term teacher will be used when referring to a director/directress. The teacher, using the environment, strives continuously towards the independence of the children. The child's request: '*Help me do it myself*' should be the focus of his/her work (Koning & Kelpin, 2001: 254).

Montessori's philosophy of education is based on *meeting the needs of the children* at each level of development. She divided the development of children into four distinct planes of development, each spanning roughly six year. Each plane has an opening and closing phase, spanning three years. These different planes of development are:

- *0 to 6 years*: Infancy plane of development
- *6 to 12 years*: Childhood plane of development
- *12 to 18 years*: Adolescent plane of development
- *18 to 24 years*: Maturity plane of development

The different planes and their phases will be discussed in more detail in Chapter Three.

During early adolescence (grades 7 to 9; 12 to 15 year-olds), she envisaged education taking place within a controlled environment, where adolescents work on the land and contribute to the society in which they live. Therefore, their school and boarding house become their society (Montessori, 1948: 58).

During this phase, adolescents naturally ask: 'Who am I?' and 'What is my role in adult society?' Identity formation, in particular the establishment of a sense of personality, gender role, occupational identity, as well as cultural identity, are all part of adolescent development (Gouws, Kruger & Burger, 2000: 90). The role of teachers, as well as the education system during this time, is to enable early adolescents to answer these questions (Allen, 2006: 429; Hamachek, 1995: 122).

According to Allen (2006: 429), the *early adolescents (12 to 15 year-olds) need* the right balance of challenge and support, as well as variety and organisation. Individual freedom, where the focus is on the choices they make and the consequences of those choices, is a critical aspect of early adolescent education. Ewert-Krocker (2006b: 79), Ludick (2001: 47 – 49) and Gouws, Kruger and Burger (2000: 90) point out that early adolescent education should support the development of the individual in terms of identity formation; emotional independence; self-confidence; economic independence; physical health; intellectual ability; spiritual balance and the awareness of early adolescents' place and time in the history of their culture.

When devising her *method of education* for the different planes of development, Montessori kept the following principles in mind:

- Knowledge of *how* children naturally learn;
- The natural developmental *needs* of the children;
- The observation of the different *planes* of development;
- Observing the children within the *environment* and the need to challenge them to learn to their fullest ability (Seldin & Epstein, 2006: 38);
- The necessity for the *learning programme* to be designed to widen, rather than to restrict, their education (Montessori, 1948: 62).

As with all the Montessori planes of development, the arrangement of the curriculum during *grades 7 to 9 (12 to 15 year olds)* should be based on the specific interests of the age group, as required by their development, with enough freedom to discover and research their own fields of interest (Kahn, 2006a: 419). Montessori (1948: 62)

suggested an outline of how the learning programme should be arranged during this age. This was summarised by Kahn (2006a: 421) as follows:

- *Self-expression*, viz. music, language and arts;
- *Psychic development*, viz. moral education, mathematics and language;
- Preparation for *adult life* through the study of:
    - the earth and its living things;
    - human progress and the building up of civilisation; and
    - the history of humanity.

1.3 THE KNYSNA MONTESSORI SCHOOL AND RATIONALE FOR THE STUDY

The *Knysna Montessori School* was started in 1997, with a 3 to 6 year-old class (pre-school and Grade R) and a 6 to 9 year-old class (Grades 1 to 3), and added a 9 to 12 year-old class (Grades 4 to 6) in 2000. In 2004 the 12 to15 year-old class (grades 7 to 9) and the hostel were established, bearing the Montessori principles of education, and in particular early adolescent education, in mind. The 12 to 15 year-old class currently has 40 learners from Grade 7 to Grade 9. In 2006 the 15 to 18 year-old class (Grades 10 – 12) was established.

There are three permanent teachers in the class environment and four specialist teachers who are jointly responsible for various specialist subject fields. They move into the class environment, as required (Beyleveld, 2009).

During the early adolescent phase, and only during the Grade 7 to 9 years, learners are weekly boarders in the hostel, where the emphasis is on creating a safe, healthy environment, in which they can ultimately translate theory into practice (Kahn, 2006b: 4). The hostel and hostel life become their prepared environment, where the focus is on supporting their needs, such as physical wellbeing, mental expansion, moral and spiritual maturation and the development of their social and emotional skills, in preparation for their participation in society (Long, 2001: 68).

The adolescents at the Knysna Montessori School become responsible for what is referred to in Montessori education as various *businesses*. Businesses are simulated

working tasks, which prepare early adolescents for the adult work life (Beyleveld, 2009). The businesses at the Knysna Montessori School include activities such as: growing vegetables, running a tuck shop, the responsibility of providing breakfasts and dinners to the whole hostel community, wood chopping and maintenance of the school furniture (Beyleveld, 2009).

Through these businesses and living within a hostel community, early adolescents find unique ways to contribute to the good of the whole of the community (Cassie, 2003). Within this community living, the early adolescents' physical, cognitive, moral, social and emotional dimensions of development are fully *integrated* (Kahn, 2003: 107) and consequently the needs of this plane are met.

Academically, the Knysna Montessori School's Grade 7 to 9 class (12 to 15 year-old class) is currently divided into the *eight learning areas* of the Revised National Curriculum Statement (RNCS of South Africa[1]). In South Africa, the Department of Education has divided the *RNCS of South Africa* into three phases within the General Education and Training Band (GET). These are: the Foundation, Intermediate and Senior Phases.

The Senior Phase, Grade 7, Grade 8 and Grade 9, corresponds to the Middle School, or early adolescent phase in Montessori schools. The Senior Phase of the GET band is arranged into eight learning areas (DoE, 2002: 9), namely:

- Languages;
- Mathematics;
- History and Social Sciences;
- Natural Sciences;
- Economic and Management Sciences;
- Technology;
- Life Orientation; and

[1] The RNCS was currently implemented at the time of this study. National Senior Certificate (NCS) refers to the curriculum statement for Grades 10 – 12 (General). The RNCS and the NCS are currently under review (Report of the Task Team for the review of the Implementation of the National Curriculum Statement, September 2009).

- Arts and Culture.

Each of these eight learning areas has its own *Revised National Curriculum Statement* (RNCS), with its own learning outcomes, as well as assessment standards.

The *rationale* for this study is to link the RNCS of South Africa with the theory of Montessori education, and to design an appropriate learning programme for the senior phase of the GET band in the Middle School, in order to achieve a holistic and more integrated learning programme for the Knysna Montessori School. Presently, the age groups prior to the 12 to 15 year-old class follow an integrated curriculum arrangement (Beyleveld, 2009). Currently, the Knysna Montessori School is using the eight learning areas separately as their basis for the education of the 12 to 15 year group, rather than attempting any integration of learning areas, as stipulated by Montessori's holistic education principles (Beyleveld, 2009).

Integration of the learning areas is becoming increasingly necessary in South Africa, as more Montessori schools in South Africa indicate their interest in starting a 12 to 15 year-old age group. At present, no integrated learning programme exists for this group in Montessori schools in South Africa.

1.4 PROBLEM STATEMENT

1.4.1 Introduction

Ary, Jacobs, Razavieh and Sorensen (2006: 53) and Wiersma (1980: 31) all proposed criteria to evaluate the *significance of a problem statement* in qualitative research. The problem statement should conform to the following criteria:

- Be *clear*, using terms wherein meanings are generally agreed upon;
- *Contribute* to the organised body of educational knowledge;
- Lead to new problems and therefore to further *research*;
- Be *researchable*;
- Be *suitable* to the researcher; and

- Be *ethically* appropriate in terms of consent, protection from harm, and privacy to those involved directly, or indirectly, in the research project.

Wiersma (1980: 31) added that it is important to become familiar with related research and the practical and theoretical considerations of the research. A *research question* should be concise and should identify the key factors of the research study (Creswell, 1998: 99). It should also provide the researcher with a clear direction in pursuing the project (Wiersma, 1980: 33 – 34). Wiersma (1980: 33) further declared that using a question can be an especially effective technique when sub-problems are included within the larger research problem. This can assist in further scrutinizing the main problem.

1.4.2 Formulation of the problem

At the *Knysna Montessori School*, there is a continuum in teaching methodology, in that the curriculum is organised in a *holistic* and *integrated* manner, and is applied from pre-school through to Grade 6 (up to the 12 year-olds). This organisation of the curriculum by means of a worked-out curriculum arrangement, based on Montessori's holistic education principles, has been developed for ages 0 to 12, and revised over time. Furthermore, links between Montessori's suggestions for a holistic and integrated curriculum arrangement and the RNCS for the Foundation and Intermediate phases of the GET band have been drawn up by the South African Montessori Association (SAMA) (Cunningham, Odendaal, Selema, Streak and van Staden, 2006).

It follows, then, that there needs to be a continuum of a holistic and integrated curriculum arrangement for the early adolescent phase of development (ages 12 to 15), namely Grades 7 to 9. *Holistic and integrated education* includes all learning areas and is more broadly based and more interconnected (Schaefer & Schaefer, 2006: 188).

However, currently there is no well-applied and tested Montessori-based *holistic and integrated organisation of the curriculum* for the 12 to 15 year group, as is found for the earlier age groups (Kahn, 2001: i). There are various suggestions and

discussions worldwide on what such an organisation of the curriculum should entail for the 12 to 15 year-old age group, but currently no apparent uniformity exists between the different schools (Kahn, 2006b: 1).

The South African *RNCS* is divided into eight learning areas that are specific, detailed and promote integration. In South Africa, although integration between learning areas is encouraged, no comparison has been made between the eight learning areas and the Montessori-suggested educational syllabus for Grades 7 to 9 (12 to 15 year-olds), as referred to earlier in this chapter.

However, experience from the younger age groups suggests that the best course of action would seem to be the development of a fully integrated learning programme for the Grade 7 to 9 class of the Knysna Montessori School. This can be achieved by investigating prevailing themes and concepts in the RNCS, in order to integrate the learning areas of RNCS, as well as researching the relationship between the Montessori's holistic and integrated curriculum design and the RNCS.

1.4.3 Research questions

Based on the stated problem, as explained in 1.4.2, the following primary question is formulated for this study:

> *How can the South African RNCS best be arranged, according to Montessori, in a holistic and integrated manner, with the purpose of presenting a learning programme for the senior phase of the GET band at the Knysna Montessori School?*

Further, **secondary questions** that arise are the following:

- *What is the history and background of the RNCS?*

- *What are the unique features and aspects of Montessori's method of education?*

- *How is the curriculum arranged in a Montessori foundation and in the intermediate phases of the GET band to provide continuity of education?*

- *How can the different businesses of the senior phase of the GET band in the Knysna Montessori School environment become incorporated into the learning programme?*

- *What would an integrated learning programme for the Knysna Montessori School's early adolescents look like?*

1.5 THE PURPOSE OF THE RESEARCH

The primary goal of this study is to present an integrated learning programme for the senior phase of the GET band at the Knysna Montessori School, based on research into Montessori's holistic and integrated education, and the eight learning areas of the RNCS.

The secondary goals of this study are:

- To conduct an in-depth and extensive literature review to gain a better understanding of the history and background of the RNCS.

- To conduct an in-depth and extensive literature review to identify and understand the unique features and aspects of Montessori's method of education.

- To conduct one-on-one, semi-structured interviews with the purpose of ascertaining how the curriculum should be organised in the Montessori pre-school, foundation phase and intermediate phase to facilitate continuity within the Knysna Montessori School.

- To arrange the emergent themes from the RNCS to determine how the different businesses in the senior phase of the GET band can be incorporated into the learning programme.

- To arrange the emergent themes from the RNCS, as well as Montessori's holistic and integrative approach, in order to present an integrated learning programme for the senior phase of the GET band at the Knysna Montessori School.

- To make recommendations for further research.

1.6 THE CLARIFICATION OF KEY CONCEPTS

1.6.1 The Montessori method of education

Unlike many educational philosophers, Montessori developed an educational method to implement her particular philosophy (Lillard, 1972: 50). The goal of the Montessori method is to develop children's sensory and cognitive skills, while at the same time building their character (Gisolo, 2005: 4). Her philosophy was based on a *pre-designed, child-centred learning environment* (Mooney, 2000: 29).

The focus in this method is on the following principles (Lillard, 1972: 29, 39, 50):

- *Discipline* and *liberty*, where children learn internal motivation through freedom of choice and consequence;
- *Independence*, in particular self-discipline, and doing activities themselves;
- A prepared *environment*;
- *Observation* of each child and his/her interaction with the work and each other; and
- The role of the *teacher* as observer and preparer of the environment.

For the purpose of this study, the Montessori method of education refers to the education methodology where the learner is central to education and through interacting and discovering the prepared environment, learning takes place.

1.6.2 Revised National Curriculum Statement

The Oxford Advanced Learner's Dictionary (Wehmeier, 2005: 360) defines curriculum as the subjects taught by an educational institution. It is a formal statement of what is to be learnt (Marshall, 1998). In South Africa, the RNCS forms the basis of the educational system of South Africa (Department of Education, 2002a: 1). In its broadest sense, the RNCS encapsulates the country's vision of societal change, and through the learning outcomes and assessment standards, represents priorities and ideas of what "good education" entails (Department of Education, 2002a: 1).

The RNCS is divided into eight learning areas, each stipulating the concepts, skills and values on a grade-by-grade basis. The RNCS specifies the goals, expectations and outcomes for each learning area through related learning outcomes and assessment standards (Department of Education, 2002a: 10).

1.6.3 Learning programme

Learning is defined as the ability "to gain knowledge, information, comprehension or skills" (The American Heritage® Dictionary of the English Language, 2004a). *Programme* is defined as "a plan or system of academic and related or auxiliary activities" (The American Heritage® Dictionary of the English Language, 2004b). The RNCS (Department of Education, 2002a: 15) defines a *learning programme* as "structured and systematic arrangements of activities which promote the attainment of learning outcomes and assessment standards for the phase".

For the purpose of this study, a learning programme will refer to a three-year structured and systematic arrangement of the themes, learning outcomes and assessment standards of the different learning areas, which will help the Grade 7 to 9 class at the Knysna Montessori School to gain knowledge, information, comprehension and skills.

1.6.4 Holistic education

Holistic education is founded on three basic principles, namely balance, inclusion and connection (Miller, 2007: 13). It involves the development of the whole learner in all

aspects of human development (Forbes, 1996: 5; Seed, 1992: 42). It is often linked to integrated curriculum arrangement and rooted deeply within the learner's environment (Taylor & MacKenny, 2008: 144).

For the purpose of *this study*, holistic education is defined as education through the integration of all aspects of the learner's life, namely physical, cognitive, moral, social and emotional, within a prepared environment (Martin, 1997: 16).

1.6.5 Integrated curriculum arrangement

Montessori's method of education entails the arrangement of the curriculum in an *integrated* manner. Sharan and Tan (2008: 57) define integrated curriculum as "curriculum organisation which cuts across subject matter lines to focus upon comprehensive life problems or broad areas of study, to bring together various segments of the curriculum into meaningful association".

Abel and Lederman (2007: 543) define curriculum integration as the organisation of the curriculum around:

- Issues and problems related to the real world that have personal significance to the learner;
- The use of knowledge and content, bridging distinct subjects or learning areas;
- The use of knowledge to solve an existing problem and not testing grade levels; and
- Emphasis on projects and activities with real applications.

Therefore, when referring to *integrated curriculum arrangement* in this study, the researcher refers to the method of education whereby learners are given the whole, integrated picture first, as well as their place within that whole, before exploring more detailed problems and knowledge. This is an alternative way of organising information from the RNCS, where information is arranged according to learning areas, although some overlapping does exist.

1.7 THE RESEARCH DESIGN

1.7.1 Introduction

Flick (2007a: 119) defines research design as “a systematic plan for research”. Research design not only sets out the methods used to gather and analyse data, but also the philosophical foundation, theoretical perspectives and paradigm of the research project (Buntting, 2006: 43 – 44; Levy, 2000: 372; Crotty 1998: 5; Calhoun-Brown, 1998).

In the following sections, a brief summary of these elements is presented. A detailed discussion of the research design will be presented in Chapter Four.

1.7.2 Philosophical foundation

This research study will emerge within the parameters of a *constructivist* philosophical foundation. Constructivism views reality as being constructed by the researcher and those researched, and acknowledges the influence of the environment in the research (Schulze, 2003: 10; Papps, 2005: 3; Crossan, 2002: 52). The reality is seen as being constructed, “as becoming, rather than being” (Adler, 2005: 11 – 12).

In this research study, the influence of the Knysna Montessori School’s culture, environment, and staff, as well as the researcher’s involvement, will be taken into account in the design of the constructs.

1.7.3 The theoretical approach

This research is further underpinned by two theoretical perspectives, namely *interpretivism* and *critical theory*.

In the *interpretivist* perspective, researchers place the emphasis on the thorough exploration of the influence of the context within which the research takes place (Williams, 1996: 38). Furthermore, interpretive research ties in with constructivism, as it assumes that reality is socially constructed (Benton & Craib, 2001: 10; Myers,

1997a; Vasconcelos, 1997: 2). This study will seek to recognise the influence of the context within which the research takes place, namely the Knysna Montessori School, and to see reality as socially constructed within this context.

Within *critical theory*, the aim is to study relationships and connections between societal structures (Cohen, Manion & Morrison, 2000: 28). Reality is studied from the perspective of "what might be", rather than "what is" (Swanson & Holton, 2009: 86). The aim of *critical researchers* is to emancipate people and transform the *status quo* (Brooke 2002; Hirschheim & Klein 1994; Kemmis, 1985: 144). The aim of this study is to change the present situation, using the learning areas as loose standing entities, to a more holistic and integrated curriculum arrangement.

1.7.4 The research paradigm

The research paradigm reflects the nature of the inquiry and reflects the basic assumptions and beliefs supporting the research study (Yang & Miller, 2007: 143; Phillimore & Goodson, 2004: 34). The research paradigm is determined through the type of research, viz. qualitative or quantitative research, and the research methodology, viz. basic or applied. This research study falls within the *applied qualitative* research paradigm.

Grady (1998: 5) presents seven characteristics of *qualitative* research. The researcher is required to:

- Understand, describe and interpret the phenomenon;
- Seek a complete holistic understanding of the phenomenon;
- Collect data from a personal perspective;
- See reality as dynamic and changing, as the research progress;
- Evolve theories and answers through data collection;
- Conduct research in the natural setting;
- Focus on rich and descriptive data collection methods.

Applied research aims at solving an immediate practical problem (Ary*, et al.*, 2006: 37; Wiersma, 1980: 10). In this study this is the problem of curriculum integration in the senior phase of the GET band at the Knysna Montessori School.

Furthermore, this study will employ a *grounded theory* approach, as it aims at grounding theory in the data gathering and analysis, rather than testing a preconceived theory (Flick, 2007b: 148; Esterberg, 2002: 34; Vockell & Asher, 1995: 448; Sherman & Webb, 1988: 3). Grounded theory is a research paradigm where data collection and analysis are done simultaneously, together with constant and simultaneous comparison (Flick, 2007b: 148).

1.7.5 Research methods

Crotty (1998: 6 – 7) defines research *methods* as the concrete techniques and procedures used to gather and analyse data. These should be described as specifically as possible. The purpose of defining the research methods early in the study is to ensure clarity and direction throughout the study (Biggam, 2008: 129).

An overview of data collection and data analysis procedures will be given below. More detail pertaining to the application of each method in this study will be given in Chapter Four.

1.7.5.1 Data collection

Within the context of this study, the following data collection strategies will be employed:

- Literature review;
- Interviews;
- Document analysis.

1.7.5.1.1 Literature review

The review of literature typically summarises past studies and provides a basis for future investigations (Alasuurti, Bickman & Brannen, 2008: 536). In order to gain an overview and information regarding the RNCS and Montessori method, as well as providing an in-depth understanding of this curriculum and method, the researcher needs to do an in-depth and extensive literature review.

1.7.5.1.2 Interviews

One-on-one semi-structured interviews, where a checklist will be set up prior to the interviews to ensure that all the critical data necessary for this study are covered, will apply (O'Leary, 2004: 164). This format will give the researcher the freedom to follow lines of inquiry that might be relevant to the study, but which have not necessarily been included in the checklist. This format is most valuable to this particular study, as the purpose of the interviews is to gather information on the Montessori school and its application to the RNCS. This is used in conjunction with document analysis (Cohen, Manion & Morrison, 2000: 268).

An availability and purposive sampling strategy will apply to this study. An availability sample represents the selection of participants on the "basis of convenience" (Chambliss & Schutt, 2009: 106). The purposive sampling strategy refers to the selection of participants for a particular purpose (Engel & Schutt, 2005: 122). Within the Knysna Montessori School there is a limited number of teachers with the necessary knowledge, expertise and training needed to provide rich and descriptive data relevant to this study.

1.7.5.1.3 Document analysis

Within this study, it is necessary for the researcher to gain a greater understanding of both the RNCS and the development of OBE in South Africa, as well as the Montessori method, and holistic and integrated curriculum arrangement. To this end, documents will play a vital role in gaining background information.

However, it is essential that documents be evaluated according to their (Thomas, 2004: 197):

- Authenticity
- Credibility
- Representativeness
- Meaning

The data collection from documents will include the following:

- A theoretical reflection on Outcomes-based Education (OBE) and the Revised National Curriculum Statements (RNCS) through the study of documents.

  Data will be collected directly from the RNCS policy documents, published by the Department of Education of South Africa, and other related documents. A literature review will be used to interpret the data, providing the researcher with background information on the nature of the RNCS and OBE.

- A theoretical perspective, through the review of documents and interviews on the Montessori method, with a specific focus on the senior phase of the GET band, as well as holistic and integrated education.

  Data regarding the Montessori method will be gathered by means of literature and with the help of interviews. Data concerning the Montessori method, with particular reference to the adolescent, and holistic and integrated education will also be collected from any relevant literature, Montessori's own works, interviews with Knysna Montessori School staff, and various brochures, conference proceedings, websites and information leaflets from Montessori Schools across the world.

1.7.5.2 Data analysis

Within the grounded theory paradigm and within this research study, data analysis will take place through:

- Document analysis, encompassing
  - memo-ing,
  - coding
  - constant comparison,
  - bracketing.
- Sorting.

An overview is presented below.

1.7.5.2.1 Document analysis

Wildy, in O'Donoghue and Punch (2003: 115), affirms that *document analysis results* in:

- The identification of emerging concepts and relationships between them;
- The checking of the emerging theory against the competing theory;
- A newly generated theory being placed in context with the existing relevant theory in the literature.

The study of these documents enables the researcher to:

- Contextualise the symbolic meaning of the text;
- Track the process of the document's creation and its influence on education;
- Allow for an emerging understanding through exploration; and
- Use the understanding gained through the document analysis to transform the *status quo* of the Knysna Montessori School in terms of its learning programme (Rademakers, 2004: 12; Altheide, 1996: 12).

Belzer (2003: 1) lists four steps in document analysis, namely

- memo-ing: the process of keeping track of the data-collection process.
- coding: the process of finding underlying themes
- constant comparison: constantly comparing emergent themes with existing themes.
- bracketing: the process of assessing the data-collection context and avoiding researcher bias.

Through these four steps the researcher will:

- Construct topologies, i.e. the schemes for classifying the data, viz. broad categories with sub-categories, which may then lead to theory. This process is continuous throughout the document analysis;
- A review of the literature, where ideas referred to in other literature sources might help with the transferability of the research;

- Construct an account of the emerging themes and categories.

1.7.5.2.2 Sorting

Sorting is putting the disconnected data into a coherent working whole (Munhall, 2001: 231) in order to prepare for the final stage of *writing* the research document. This could be done through a diagram, indicating interconnections and relationships (Alasuurti, Bickman & Brannen, 2008: 473).

This data analysis of this research study will be conducted in two phases as follows:

- Document analysis and grounded theory coding of the RNCS and comparison of the emergent themes with Montessori's holistic integrated method of education.

  Using grounded theory, the RNCS for the eight learning areas, will be coded and analysed in order to answer the main research question, namely:

  > *How can the South African RNCS best be organised in a holistic and integrated manner, with the purpose of creating a learning programme for the senior phase of the GET band at the Knysna Montessori School?*

- Finally, this will result in the emergence of grounded theory in the format of a learning programme for the senior phase of the GET band at the Knysna Montessori School (Grades 7 to 9). Based on the information obtained, an integrated learning programme will hopefully emerge; this will be presented in Chapter Five.

The research design for this study can be graphically represented, as in Figure 1.1.

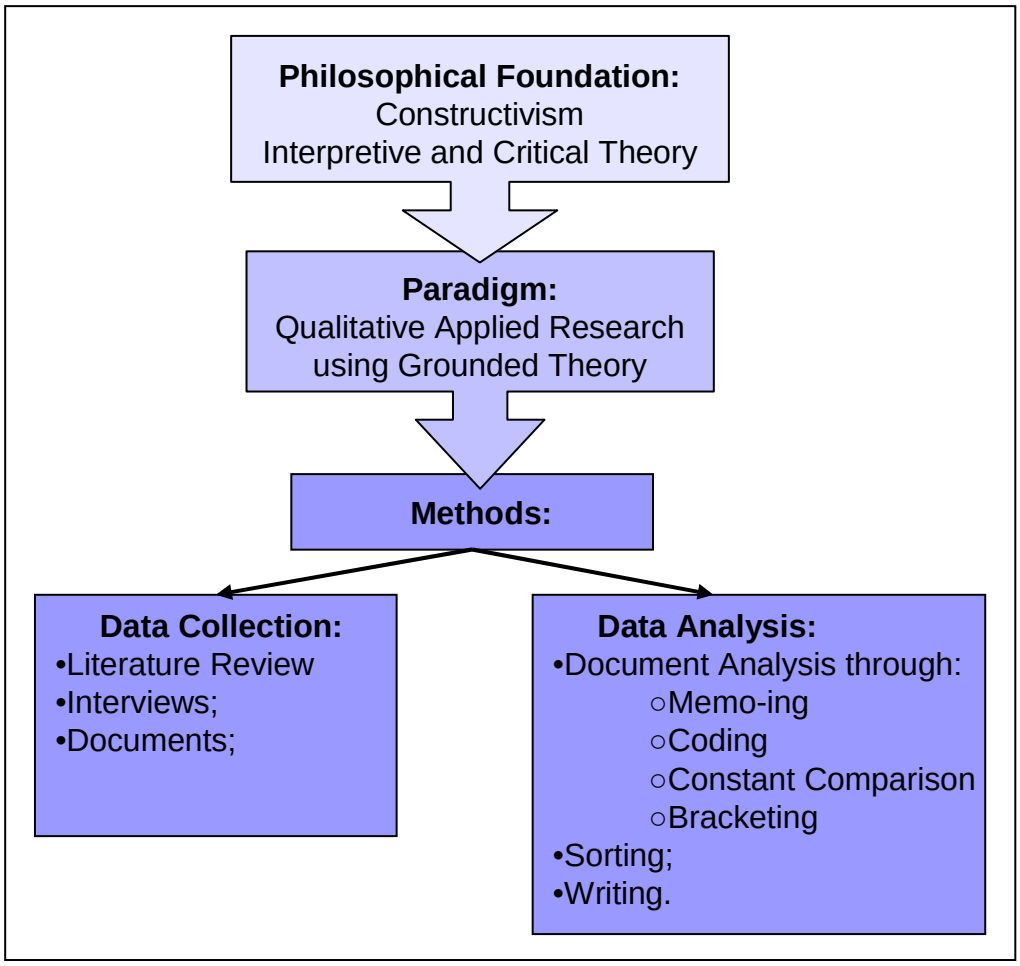


Figure 1.1: Research design

1.7.6 Trustworthiness

Trustworthiness in research is crucial, as it is in all research disciplines, irrespective of the methods employed (Sherman & Webb, 1988: 86). Trustworthiness refers to the manner in which data are acknowledged to be true, applicable, consistent and unbiased (Shongwe, 1996: 63).

Trustworthiness is ascertained through credibility, transferability, dependability and confirmability (Bloomberg & Volpe, 2008: 85; Lincoln & Guba, 1985: 89). Each of these aspects will be discussed in detail in Chapter Four. Below follows the main question that needs to be answered for each.

1.7.6.1 Credibility

Credibility refers to the researcher's confidence regarding the findings and whether the data gathered are a true reflection (Ary, *et al*., 2006: 504; Potter, 1996: 195; Lincoln & Guba, 1985: 300). The quality and richness of the information gathered become the focus, rather than the sample size (Hoepfl, 1997; Patton, 1990).

The key question to determine the credibility of a study is:

> *How can confidence in the "truth" of the findings of this study, with the focus on data-gathering and analysis, be established?*

In this study, credibility is ensured through prolonged engagement in the field, data triangulation and member-checking.

1.7.6.2 Transferability

Transferability refers to the probability that the research findings have meaning when compared with others in similar situations (Ary, *et al.*, 2006: 507). Although this research study is context-specific, viz. the Knysna Montessori School, and the aim is not to generalise the findings, they should be transferable to other Montessori schools in South Africa.

The key question to ask in order to determine whether the study is transferable is:

> *How can the researcher determine the extent to which this study can be applied to other similar contexts?*

In this study, transferability will be assessed through (Bloomberg & Volpe, 2008: 78) the richness of the descriptions included in the study and the amount of detailed information provided by the researcher.

1.7.6.3 Dependability

This criterion refers to the probability of producing similar results, should the study be replicated (De Vos, 1998: 350).

The main question which determines dependability is:

> *How can the findings be repeated with similar methodologies within the same or similar contexts?*

Evidence of dependability will be given in the thesis and the audit trail. Rich description will include an outline of the research design and the decisions made during the data-gathering process and the analysis. Furthermore, the researcher will provide particulars on how the grounded theory was developed by the use of the literature review, document analysis, interviews, and constant comparisons.

1.7.6.4 Confirmability

Confirmability indicates the neutrality (unbiased nature) of the research (Ary*, et al.,* 2006: 511; Lincoln & Guba, 1985: 300).

The main question to be answered to determine confirmability is:

> *How can the researcher's bias best be managed?*

Confirmability will be ensured through the following strategies (O'Leary, 2004: 50 – 51):

- Researcher–participant relationship
- Triangulation

1.7.7 Ethical considerations

Ethical issues in qualitative research refer to the protection of the human rights of the participants in a study (Ary, *et al.*, 2006: 472). Many research institutions have *Ethics Committees* to ensure that basic human rights are protected. The Nelson Mandela

Metropolitan University has a Human Ethics Committee, through which the researcher obtained approval for the study (See Appendix 1).

This research study has *limited human interaction* and is mainly focused on grounded theory and document analysis. However, the Head Directress (further referred to as the Principal) of the Knysna Montessori School has requested that this study be conducted in order to help solve the immediate problem the school is experiencing with the application of Montessori's holistic and integrated curriculum arrangement in conjunction with the South African curriculum, as set out in the RNCS.

The Principal plays a major role in the research as a significant source of information regarding the Knysna Montessori School, as well as by providing information and experience regarding early adolescents in a South African Montessori school and hostel environment.

Furthermore, Knysna Montessori School *staff members* are interviewed with the intention of providing comprehensive knowledge and understanding of the school's application of the Montessori method and the RNCS. The Principal and staff members will be interviewed at different stages of the research.

The following strategies must also be adhered to in order to ensure ethical integrity:

- *Explaining the purpose and ground rules of the research*: This will be done before every interview, during informal discussions and any updates of the research progress.

- *Maintaining a good rapport*: A good rapport already exists between the researcher and the staff, and the researcher will continually ensure that this remains the case.

- *Maintaining respect and dignity*: Mutual respect and dignity between the researcher, the Principal and the staff are critical aspects of a good working relationship and are to be maintained throughout the course of the study.

- *Demonstrating scientific integrity and competence*: Through good research practices, the researcher will attempt to demonstrate scientific integrity and competence throughout the course of the study.

- *Obtaining informed consent*: The Principal and staff of the Knysna Montessori School have given their written consent for the interviews. Permission for the research project to be conducted was granted through the Nelson Mandela Metropolitan University Human Ethics Committee.

- *Protecting the participants' rights to privacy and confidentiality*: Should the names of any learners, parents or colleagues be mentioned during interviews, the researcher will change these to ensure that the rights to privacy and confidentiality of the individuals are protected. This is also applicable to the names of those staff members who will be formally interviewed.

- *Voluntary participation*: The Principal and staff of the Knysna Montessori School are all voluntary participants.

- *Ensuring transparency*: Transparency will be achieved through regular informal meetings with the Principal and staff of the Knysna Montessori School, where the progress, data collection and analysis, as well as possible findings, will be discussed with them.

- *Safety monitoring*: The interaction between the researcher and the interviewees at the Knysna Montessori School will be limited to interviews and idea sharing. Physical safety monitoring will not play a role. However, the researcher will attempt to maintain a relaxed and informal atmosphere to ensure the interviewees' feelings of safety and security.

- *Providing feedback*: Regular meetings will be held with the Principal to ensure that she is kept up to date with the progress, feedback from the promoter and findings of the research, and also to ensure that short staff meetings take place regularly.

1.8 OUTLINE OF THE RESEARCH PLAN

The research will be documented according to the following chapters:

Chapter 1: Orientation, problem statement and purpose of the study, concept clarification, overview of the research design, the methodology and the research plan

Chapter 2: A theoretical reflection on outcomes-based education (OBE) and the Revised National Curriculum Statement Grades R- 9 (schools) (RNCS)

Chapter 3: A theoretical framework of the Montessori method, with specific reference to the adolescent, and holistic and integrated curriculum arrangement

Chapter 4: Research design and methods

Chapter 5: Research findings and integrated learning programme

Chapter 6: Conclusions, implications, recommendations and limitations of the study, as well as recommendations for future research

1.9 CONCLUSION

This chapter has given a brief introduction to the research and the problem statement which this study will address. It has also provided an overall presentation of the purpose of the research and the clarification of the concepts used. An overview of the research design, focusing on the underlying philosophical foundations, theoretical perspectives, research paradigm and the methods to be employed has been presented. The trustworthiness of the research and the necessary ethical measures have also been discussed. An outline of the planned chapters has already been presented.

Chapter Two will give a theoretical reflection on OBE and the RNCS.

CHAPTER TWO

A THEORETICAL REFLECTION ON OUTCOMES-BASED EDUCATION (OBE) AND THE REVISED NATIONAL CURRICULUM STATEMENT GRADES R- 9 (SCHOOLS) (RNCS)

2.1 INTRODUCTION

A literature review, according to McMillan and Schumacher (1997: 612), is a condensed critique of the status of knowledge with a particular educational focus. In this chapter a brief introduction to curriculum and an overview of Outcomes Based Education (OBE) will be presented, through the literature review. This chapter focuses, in particular, on the development of the Revised National Curriculum Statement RNCS, through a brief overview of the NQF and Curriculum 2005. In addition, a critical reflection on the implementation of OBE and the RNCS is to be presented.

2.2 DEFINING CURRICULUM

Defining curriculum is not a simple matter (Marsh & Willis, 2007:8). There are numerous and often contrasting definitions. The word originates from Latin "curriculum", referring to chariot courses and the word "*currere*" literally means "to run". Hence, curriculum refers to running a course (Smith, 2000). Curriculum can be defined in a very specific context, or a much broader context. Within a very specific context, curriculum is defined as the subjects or courses necessary to complete a particular programme of study (Marsh & Willis, 2007: 9; Adams, Shea, Liston & Deever, 2006. 155).

In the broader sense, curriculum can be defined as all the experiences the learner gains from education, including the affective domain (Marsh & Willis, 2007: 9; Adams, Shea, Liston & Deever, 2006. 155). Braslavsky (2003: 1) refers to the term

curriculum as an “existing agreement between society, the State and educational professionals, regarding the educational experiences that learners should undergo during a certain phase of their lives”.

Smith (2000) uses Aristotle’s categorisation of knowledge into the theoretical, practical and productive categories, as a basis for defining curriculum. Figure 2.1 graphically represents how curriculum can be viewed according to these three categories. Each is discussed accordingly.

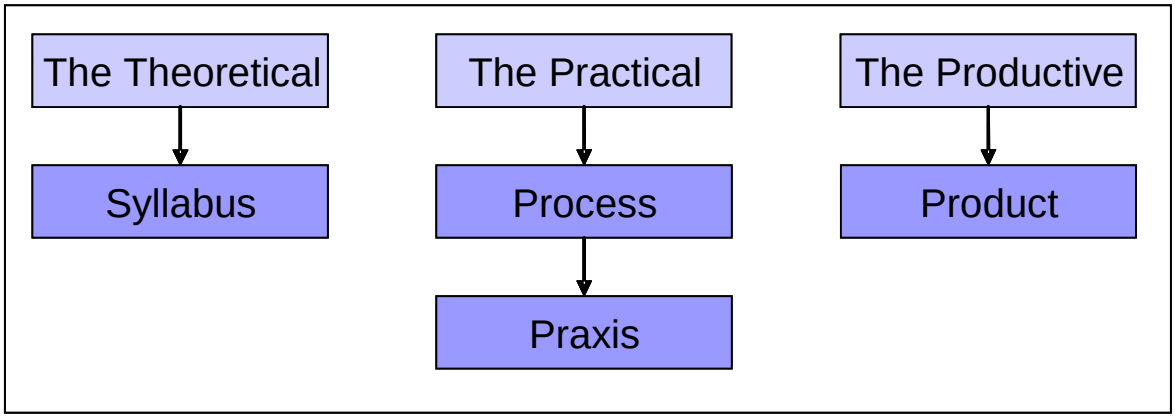


Figure 2.1: Curriculum defined according to Aristotle’s categories of knowledge

2.2.1 Curriculum defined within the theoretical category of knowledge

Defining the word curriculum within the *theoretical* category equates curriculum to *syllabus* (Smith, 2000). Syllabus refers to *content* used as the basis for various courses (Merriam-Webster Online, 2008; Nunan, Candlin & Widdowson, 1988: 6). Marsh and Willis (2007: 13) indicate that curriculum includes the term syllabus, but point out that curriculum is much more than just the content to be taught within a particular course of learning.

Smith (2000) concurs with Marsh and Willis (2007: 13) and also declares that equating the syllabus to curriculum limits planning to the transference of content only.

There are various *issues* that arise from this approach to curriculum.

- Firstly, curriculum as a syllabus, viz. a theoretical, content focus, assumes the content and programme to be of great importance, not considering the practical classroom situation and any learner's input. Curriculum is therefore looked upon as very limiting in terms of *interaction* and success, or failure is measured by very specific pre-arranged objectives (Mednick, 2006: 2; Smith, 2000).

- Secondly, the nature of the objectives for a syllabus often limits a *holistic* perspective and connection between concepts, providing a learner who has, despite long lists of trivial information, no coherent understanding of how it all connects (Smith, 2000).

- Thirdly, Smith (2000) mentions the problem teachers experience in the transference of information in order to reach the objectives of a particular course. Yet curriculum, in the theoretical approach, focuses very strongly on the *teacher* and the teaching aspect of teaching and learning (Mednick, 2006: 2).

- Lastly, this approach overlooks any learning that takes place during the *interaction* between teacher and learner, which may not be in the pre-specified objectives (Fish & Coles, 2005: 30; Smith, 2000).

2.2.2 Curriculum defined within the practical category of knowledge

When considering curriculum within the *practical* category of knowledge, curriculum can firstly be *defined as a process*. Curriculum as a process means to consider the interaction of teacher, learners and knowledge (Smith, 2000). It implies not only the actual time of interaction in the classroom, but also the planning and assessment. Stenhouse (1975: 5), who developed the best-known process model of curriculum theory and practice, defined curriculum as follows: "A curriculum is an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of effective translation into practice". Hence, curriculum as a process is not very prescriptive, but rather evolving, with "*meaning-making*" and *thinking* at its core (Smith, 2000).

One of the *main concerns* with this approach to curriculum is that there is a considerable variety of content within the classroom. This impacts heavily on *assessment*, especially in cases where standardised examinations are the main method of assessment (Smith, 2000; Stenhouse, 1975: 95). A second concern is the quality of the *teachers*, who are expected to have a degree of wisdom and be competent in 'meaning-making', while interaction within the classroom takes place (Mednick, 2006: 3).

If teachers are not competent in attributing meaning, this will impact heavily on the quality of learning that takes place. In order to overcome this problem, curriculum packages were developed to focus on the process of discovery and problem-solving (Mednick, 2006: 3; Smith, 2000). However, the danger is that the process of discovery becomes the product, and again limits learners in their *holistic* thinking (Grundy, 1987: 77).

The second definition of curriculum within the *practical* category of knowledge is that of *curriculum as praxis*. This is similar to the process model, in that it views curriculum as a process. However, focus is centred on the collective human well-being and emancipation (Smith, 2000). Curriculum as a praxis focuses on the teacher, the learners and their shared interaction in deriving collective meaning (Smith, 2000, Grundy, 1987: 115). At its core, praxis embraces informed, committed action (Roessingh, n.d.: 5).

The *problems* that arise from curriculum as praxis are similar to that of curriculum as a process. Not only is there a problem when standardised *assessment* is the norm, but teachers are required to reflect on their actions and ideas critically, which again relies on the quality of the *teacher* (Smith, 2000). Constant review and reflection are vitally important strategies for this model to succeed (de Cossart & Fish, 2005: 136).

2.2.3 Curriculum defined within the productive category of knowledge

The last definition of curriculum is as a *product*, linking it to Aristotle's productive category of knowledge. This approach to curriculum focuses on the assessment of

pre-determined *outcomes* or products of education and is the dominant mode of organising education today (Smith, 2000). Central to this approach is the formulation of behavioural objectives, with clear outcomes.

The choice of content and method can be organised in advance (Fish & Coles, 2005: 68; Flinders & Thornton, 2004: 87). This approach additionally allows teachers to choose the appropriate content and method fitting to their specific context and qualities (Sahlberg, 2005a: 112).

One of the *limitations* of this approach to curriculum, according to Flinders and Thornton (2004: 87), is that it is impossible to pre-determine all behavioural and content outcomes in advance. The complex and interactive nature of education in the classroom achieves outcomes that would be too *numerous* to predict (Fish & Coles, 2005: 68; Kelly, 2004: 65). Therefore, product-oriented curricula exist mainly outside the real classroom situation (Smith, 2000).

A second limitation is the inability to formulate specific outcomes for *certain subjects*, for example the Arts, where specific outcomes could place constraints on learners, rather than expand learners' experiences (Flinder & Thornton, 2004: 88). Thirdly, the measurement of outcomes is problematic, as it is often very difficult to evaluate the *impact* of learner experiences (Kelly, 2004: 65; Smith, 2000). The danger is that teachers, in order to measure the outcomes, break them down into smaller units, thus losing the *holistic* nature of learning (Smith, 2000).

In post-apartheid South Africa, the curriculum focus is on the achievement of learning outcomes, as well as the demonstration of the skills necessary for achieving the learning outcomes. It therefore falls into Aristotle's categories of curriculum as a process, as well as a product. Hence, for the purpose of *this study*, curriculum is defined as the management of all aspects of teaching and learning, including the learning environment, with the focus on the process of attainment, demonstration and the measurement of pre-determined outcomes.

The South African past and present approaches to curriculum are discussed in detail in the following sections.

2.3 CURRICULUM DEVELOPMENT PRIOR TO THE 1994 ELECTIONS

Prior to the 1994 elections and recent curriculum reform in South Africa, the curriculum followed a *content-based approach*, similar to Aristotle's theoretical category of knowledge, and was therefore based on a syllabus. Within the content-based approach, teachers were the main source of knowledge, who would "deposit" knowledge in the learners (Abrahams, 2001: 11). The content-based curriculum was time driven, as the content had to be covered within a limited time-span (Abrahams, 2001: 11 – 12).

Finally, to assess the success of learning, examinations were written and learners either passed or failed, depending on their mastery of the content (Abrahams, 2001: 12; Laubser, 1997: 10).

Olivier (1998: 31) explained that the *process of content-based* curriculum development started with an overall goal for a particular subject, followed by the selection of content needed to achieve this goal. Smith (2000) summarises the steps, as given by Taba (1962) as follows:

Step 1: Diagnosis of need
Step 2: Formulation of objectives
Step 3: Selection of content
Step 4: Organisation of content
Step 5: Selection of learning experiences
Step 6: Organisation of learning experiences
Step 7: Determination of what to evaluate and the methods of evaluation

Nan-Zhao (2006: 10) lists the following *common problems* of a content-based curriculum approach:

- Curriculum decision-making is very *centralised*;
- The relevance of the learning content is often *outdated*;

- *Human values* and *social/life skills* are often neglected;
- The *discrepancy* between general and vocational, as well as between science and humanistic education components are problematic in real-life situations;
- *Teachers* have a low level of participation in curriculum decision-making and their professionalism in curriculum development is inadequate; and
- Subject content is often *overloaded*.

2.4 CURRICULUM DEVELOPMENT IN POST-APARTHEID SOUTH AFRICA THROUGH OUTCOMES-BASED EDUCATION

The *abolition of apartheid* and the emergence of a truly democratic South Africa since the elections of 1994, has led to reform within the different social contexts, education being one such context (Lumby, 2007: 23). This reform focused on the Government of National Unity's recognition of the basic *human rights*, the *multi-cultural* society of South Africa, the *need* for training towards economic empowerment, and human resource development (Botha, 2002: 1; Pretorius & Lemmer, 1998: vii – ix; Bhola, 1994: 7).

Through curriculum transformation, the government hoped to address the past racial inequalities, high drop-out rates, comparatively poorly qualified teachers, emphasis on rote-learning and the misrepresentation of South Africa's people (Ramolefe, 2004: 19).

In the light of the *democratic reform*, the ANC government elected to address educational transformation by implementing **outcomes-based education** (OBE) as a model, in line with international trends, and the model most likely to succeed in dealing with the inequalities of the past and the challenges of the future (Coleman, Graham-Jolly & Middlewood, 2003: 171; Botha, 2002: 2).

Spady and Marshall (1994: 1) concur with Kudlas (1994: 32) that *outcomes-based education* (OBE) is as old as mankind. An example given by Spady and Marshall (1994: 1) is teaching a child to safely cross the road. The outcome of the lesson is clear and the child can demonstrate competence once the concept has been

mastered. Van der Horst and McDonald (1997: 7) describe OBE as an approach that focuses on the result, which is the outcome of the learning and instruction.

Kudlas (1994: 32) and Spady (1993: 1) furthermore point out that OBE is a process, focusing on the results of learning and organising the learning experience around the achievement of results.

Therefore, the focus shifted from what needs to be taught in terms of content, to the *end result* of learning and the *skills needed* to acquire this end result (Ramoroka, 2006: 15). The starting point in an OBE approach is the outcomes that learners should achieve. From this follows the selection of content (Killen, 2007: 55 – 56). Hence, OBE links very closely to Aristotle's *productive* category of knowledge, viz. viewing the curriculum as a *product* (Sahlberg, 2005b: 25).

OBE focuses on pre-determined outcomes, often on behavioural outcomes, and allows teachers to arrange the content and method to achieve these outcomes within their particular context.

However, OBE also links with curriculum as a *process* (Maree & Fraser, 2004: 7), falling within Aristotle's practical category of knowledge. OBE not only focuses on the end-product, that is to say outcomes, but also on the demonstration of processes, such as problem solving, skills and values (Maree & Fraser, 2004: 7; Olivier, 1998: 21).

Outcomes are not seen as the end-product of education, but as a starting point for lifelong learning. Thus, in the paradigm of OBE, curriculum can be seen as an interdependence of curriculum as both product and process (Maree & Fraser, 2004: 7; Malan, 1997: 16 – 17; Weiss & Regan, 1991: 207).

According to Killen (2000: 20), *fundamental* to the OBE approach, is the belief that all learners can succeed, although not necessarily at the same time, or in the same manner. The OBE approach is a *learner-centred* approach, emphasising learning through doing, problem-solving and skills development (Abrahams, 2001: 12;

Christie, 1999: 282). The transference of knowledge and skills learnt within the classroom situation to real-life situations lies at the heart of OBE.

Learners are assessed individually through their demonstration of competence in achieving the outcomes (Laubser, 1997: 10).

2.4.1 Basic principles of OBE

Spady (1994) gives four *basic principles for OBE*, namely:

- *Clarity of focus* - clarity of focus refers to the focus on the end result that the learner will be able to accomplish. This is done through helping learners develop competencies, clarification of long-term and short-term learning outcomes, as well as by assessing the significant outcomes;

- *Design down* – design down starts with the end product, or outcome of learning and then designs the learning programme accordingly. This is done through the systematic development of a curriculum, which works back from the outcomes, as well as linking planning, teaching and assessment to these outcomes;

- *High expectations* - high expectations refer to the setting of high performance standards and pushing learners further than they would normally be able to go;

- *Expanded opportunities* - expanded opportunities give the learner opportunities to learn the same thing in different ways in order to cater for all the different learner needs (Butler, 2004: 8 – 9; Killen, 2000; Spady 1994: 10 – 18).

2.4.2 Characteristics of OBE

The following are presented as key *characteristics of OBE* (Spady, 1993: 3):

- OBE focuses on learners' *continued success* after formal education (Killen, 2000: 20; Spady, 1993: 3);

- OBE prepares learners for *lifelong learning* and for the world of work and responsible citizenship (Nan-Zhao, 2006: 13; Spady, 1993: 3);
- OBE is not time-based, and learners work at their *own pace* (Steyn & Wilkinson, 1998: 13; Spady, 1993: 3);
- OBE focuses on success as an integral part of learning, where every learner has the *potential to succeed* (Spady, 1993: 3);
- OBE focuses on *real-life* problems and issues that learners will encounter after school, in other words, it is intended to be a *preparation for life* (Nan-Zhao, 2006: 13; Spady, 1993: 3);
- OBE is *future-oriented*, focusing on the outcomes that learners should achieve by the end of their schooling, as well as preparing learners for a future that is often uncertain (Nan-Zhao, 2006: 16; Spady, 1993: 10);
- OBE, furthermore, aims at creating *problem-solvers* and *creative thinkers* (Christie, 1999: 282; Taylor, 1997:1).

OBE has become a *favourable model* for curriculum reforms since the 1990s, as it not only includes different stakeholders, such as teachers, parents, media, trade unions, educational experts and political parties, but has also given politicians, parents and learners a more specific account of what is expected in terms of learning outcomes (Crisan, 2005: 63; Sahlberg, 2005a: 114).

Curriculum reform in England, Wales, New Zealand, many parts of the United States and Australia, as well as in South Africa, were built on an OBE philosophy and curriculum approach (Watt, 2006: 4; Sahlberg, 2005a: 114). However, Botha (2002: 4) remarks that the implementation of OBE in these countries has not been without its problems.

2.4.3 Teaching, learning and assessment

In OBE, teaching, learning and assessment are inseparable (Mdluli, 2004: 68). There has been a major shift in teachers' approaches to teaching, learning and assessment with the change in the educational paradigm. Outcomes-based education focuses on learning experiences through the use of teaching and assessment strategies (Killen, 2007: 38). Killen (2007: 68) asserts that the teaching

strategy determines the learning experiences of learners. In the following paragraphs, a brief overview of each of these aspects is given.

2.4.3.1 Teaching strategies and learning experiences

Mokhaba (2004: 196) defines *teaching strategies* as the means by which teachers reach the desired outcomes, and thereby create the learning experiences (Killen, 2007: 69). Such methods include the organisation of techniques, subject matter and teaching resources in order to reach the desired outcomes (van der Horst & MacDonald, 1997: 124). Teaching strategies further involve the manner in which teachers organise the learners.

Van der Horst and MacDonald (1997: 124), supported by Fraser, Loubser and van Rooy (1993: 137), indicate that the two best-known teaching strategies in OBE are inductive and deductive teaching strategies.

2.3.4.1.1 Inductive teaching strategies

Inductive teaching strategie*s involve* learners in making a discovery from the particular to the general, or from the parts to the whole (Mokhaba, 2004: 196). The underlying principle is allowing learners to move from what is known to that which is unknown. Such a strategy allows for applying a particular theory to a general context (van der Horst & MacDonald, 1997: 126). Clark and Starr (1996: 200) indicated that inductive strategies support different learning styles, where learning takes place through learners' own efforts and at their pace. These must be in line with the principles of OBE.

Kramer (1999: 93) presented the following inductive strategies most commonly used (See Figure 2.2).

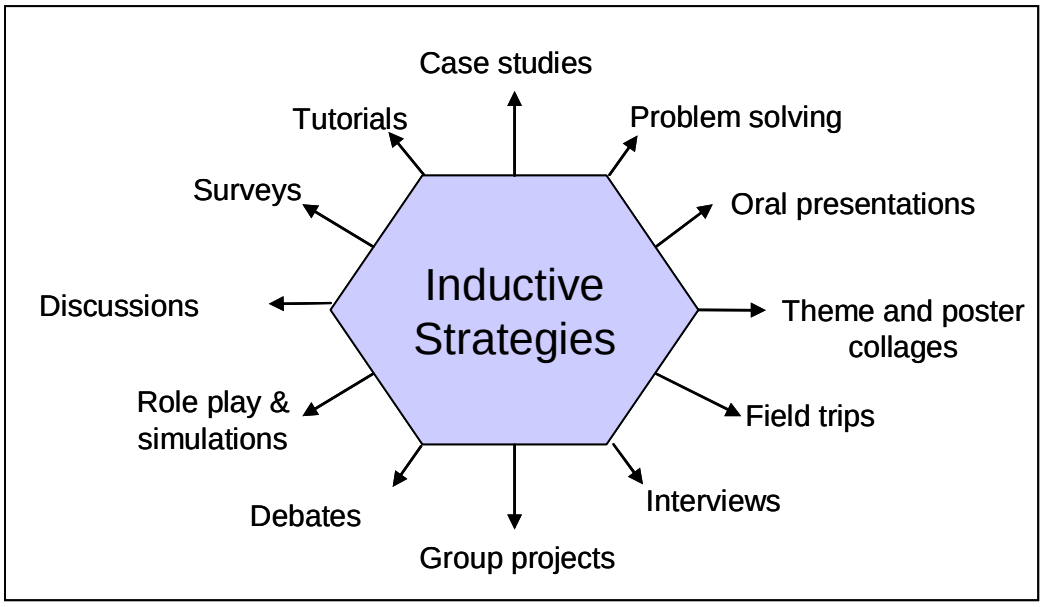


Figure 2.2: Inductive teaching strategies

2.3.4.1.2 Deductive teaching strategies

Deductive teaching strategies involve the learners' progress from the whole to the parts or from the general to the specific (Mokhaba, 2004: 197). Deductive methods tend to be more teacher-centred and learners' participation is limited to the application of a given statement (Naidoo, 2004: 11).

According to Kramer (1999: 93), the following are typical deductive strategies used in teaching (See Figure 2.3).

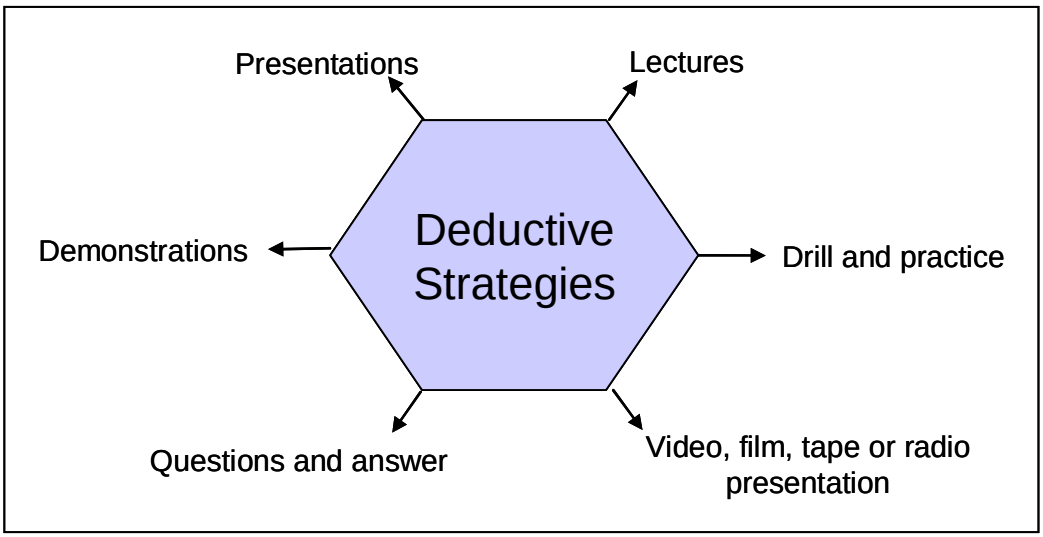


Figure 2.3: Deductive teaching strategies

2.3.4.2 Assessment

Educational assessment is the systematic determination of the degree to which learners have achieved set outcomes (Maree & Fraser, 2004: 248). Assessment strategies should be incorporated in the planning stage of teaching and learning. It is therefore essential that assessment strategies should ascertain whether outcomes have been reached, and such strategies should reflect the outcomes being assessed.

2.3.4.2.1 Assessment strategies

The following have been suggested as OBE *assessment strategies*:

- *Continuous assessment*: Continuous assessment (often referred to as CASS) takes place throughout a particular course (Pretorius, 1998: 83). Continuous assessment is defined as "a continuous planned process of gathering information on learners' performance, measured against the assessment standards" (Department of Education, 2002b: 125). This suggests that continuous assessment forms the crux of assessment within OBE. This form of assessment supports the principles of OBE and constitutes 75% of the learners' total assessment in the senior phase of the General Education and Training Band (GET) (Maree & Fraser, 2004: 253).

- *Formative assessment*: This is carried out during instruction (Pretorius, 1998: 83). Formative assessment is supportive of learning, non-judgemental and provides constructive criticism to the learners (Maree & Fraser, 2004: 35), with the aim of strengthening learning (Department of Education, 2002b: 126).

- *Summative assessment* is usually conducted at the end of a lesson, phase or year, and is concerned with the final outcome of a particular piece of work (Maree & Fraser, 2004: 33; Naidoo, 2004: 15; Pretorius, 1998: 83). The Department of Education (Department of Education, 2002b: 126) defines this form of assessment as the regular reports on learners' progress.

- *Diagnostic assessment* is used at the beginning of a lesson to determine the learners' entry levels (Pretorius, 1998: 83).

- *Criterion-referenced assessment* describes a learner's progress in terms of a set of criteria or standards, independent of other learners' achievements (Pretorius, 1998: 83).

- *Authentic assessment* suggests moving away from traditional pen-and-paper tests to developing a broader picture of the learners' progress (Maree & Fraser, 2004: 37). Authentic assessment focuses on learners' processes, products or performance in which they have learnt to judge their own work and adopt goals for self-improvement (Pretorius, 1998: 83). This form of assessment includes strategies such as portfolios, projects and practical tests. In line with OBE principles, learners are given multiple opportunities for improving competence and performance, and a wide range of occasions allow them to demonstrate their knowledge and skills (Maree & Fraser, 2004: 37).

- *Holistic assessment* implies that all the learning outcomes assessed are to be integrated (Pretorius, 1998: 83).

2.3.4.2.2 Methods, tools and techniques of assessment

Within the different assessment strategies, teachers have to use different *methods, tools and techniques* in order to achieve effective assessment.

- *Assessment methods* depict the manner in which learners are assessed, as determined by the teachers. Each method must have clearly defined criteria in order for the method to be successful (Dzegere, 2006: 31).

- *Assessment tools* are used to record information when engaging in assessment activities. The tools should be appropriate to the task, be linked to clearly defined criteria and be made known to learners prior to assessment. Furthermore, they must give constructive feedback to learners in order to improve their future performance (Dzegere, 2006: 34).

- *Assessment techniques* are the application decided upon by the teacher for assessing a particular method (Dzegere, 2006: 34).

Table **2.1** provides a summary of possible assessment methods, tools and techniques to be used in an OBE classroom (Gauteng Department of Education & Gauteng Institute for Curriculum Development, 2000).

Methods	Tools	Techniques
Self-assessment Peer assessment • Group-to-learner • Group-to-group • Learner-to-learner • Learner-to-group • Class-to-learner Group assessment Interviews Conferencing Observation Oral questions/answers Self-reporting & answers by learners Performance assessment Recognition of prior learning	Portfolio Observation sheet Worksheet Journal Questionnaire Cassette Assessment grid/rubric Exhibition Photographs/videos Profiles Tests & examinations Written assignments Performances	Project work Collage Research project Survey Debate/argument Role-play Interview Drama Presentation Panel discussion Practical demonstration Scenario Construction Music/songs/poetry/rhymes Story telling/ Oral presentation Model making/plans/ design, e.g. toys sculpture/paintings drawings/graphs Mind mapping Game design Physical activities Maps Posters and charts Tables Descriptions Written presentations, e.g. reports, essays etc.

Table 2.1: Assessment methods, tools and techniques for OBE classrooms

2.4 CONTENT-BASED EDUCATION VERSUS OBE

The previous sections examined the curriculum development in South Africa, namely the content-based curriculum prior to the 1994 election and the post-apartheid OBE curriculum. In terms of OBE, the basic principles of OBE, the characteristics of OBE, together with the teaching strategies and assessment within the OBE paradigm have all been discussed.

In summation,

Table **2.2** encapsulates the differences between content-based curriculum in South Africa prior to the 1994 election and OBE in post-apartheid South Africa (Nan-Zhao, 2006: 13 – 15; du Plessis, 2005: 19 – 20).

Content-based Education	Outcomes-based Education
Passive learners	Active learners
Exam-driven approach	On-going assessment
Rote-learning	Critical thinking, reasoning, reflection and action
Content-based, divided into subjects	Integrated content and relevant learning, connected to real-life situations
Textbook and worksheet bound, as well as teacher-centred	Learner-centred, teacher is a facilitator, using a combination of group-work and team-work.
Syllabus is rigid and non-negotiable	Learning programmes are guides giving the teacher freedom for innovation and creativity within the programme design
Learning responsibility lies with the teacher, as well as the motivation of the learners	Learners are responsible for own learning and internally motivated, stemming from feedback and affirmation of their worth
The public is not involved in curriculum design	Comment and input from all stakeholders are encouraged
Emphasis on what teacher hopes to achieve	Emphasis on learners' abilities and what they can achieve
Rigid time-frames for content	Flexible time-frames to allow learners to work at own pace

Table 2.2: Comparison between content-based education and OBE.

2.5 THE PROCESS OF EDUCATIONAL REFORM IN SOUTH AFRICA

In order to reform education and ensure *qualification standards* the South African Qualifications Authority (SAQA) was established in 1995 (SAQA, 1995). SAQA's purpose was firstly to develop and implement the National Qualifications Framework (NQF), and secondly to register all qualifications in South Africa. The NQF was established in 2000 and provided a framework for Education and Training at all levels in South Africa (South African Mountaineering Development and Training Trust, 2007; South African Qualifications Authority Act, 1995).

The purpose of the NQF was to provide a basis from which curriculum could be legitimately reformed (Daniel, Habib & Southall, 2003: 269).

2.5.1 NQF Objectives

The *five objectives* of the NQF encompass quality statements for all education and training in South Africa (Maree & Fraser, 2004: 176). These objectives encapsulate the following principles:

- Education and training is *integrated*;
- Education, training and career paths are *accessible*, allowing for progression and mobility;
- Education and training have developed a *quality* approach;
- *Redress* of past inequalities;
- Focus on *full development* of each learner to achieve social and economic development of the nation (Maree & Fraser, 2004: 176 – 177).

2.5.2 Education bands

Formal education in South Africa is divided into *three major bands,* as recognised by the NQF (SAQA, 1998: 3). The first band is the *General Education and Training* Band (GET), which includes Grades R – 9. The second band is the *Further Education and Training* Band (FET), constituting of Grades 10 – 12. The last band is the *Higher*

Education and Training Band (HET), which includes all degrees, diplomas and certificates, as well as higher degrees and further research.

The overseeing of standards within these three bands is the responsibility of SAQA.

The *GET band* of education forms part of formal compulsory schooling and is implemented by both public and independent schools (SAQA, 2001: 13; Republic of South Africa, 1996). The GET band prepares learners for further education, as well as ultimately for the work environment (SAQA, 2001: 15), and it aims to equip learners with the necessary skills to make choices for further learning (Department of Education & Department of Labour, 2003: 14). The Department of Education (2000: 1 – 2) considers the GET band as a "whole" qualification, based on eight learning areas, consisting of 66 specific outcomes (Coleman, Graham-Jolly & Middlewood, 2003: 176).

Adult Basic Education and Training (ABET) also falls within the GET band. ABET is a qualification for people over 15 years of age with an educational level lower than Grade 9 (Sibiya, 2004: 77). It is the equivalent of basic schooling that learners receive from Grade R to Grade 9 (Umalusi, 2005: v; Sibiya, 2004: 77; Aitchison, Houghton & Baatjies, 2000: 15). ABET helps to equip adult learners with life skills, such as literacy, budgeting and operating an ATM, as well as specific skills within the workplace (Umalusi, 2005: 11).

A summary of the division of the NQF is presented in Table 2.3. .

<table>
<tr><th>BAND</th><th>School Grades</th><th colspan="3">NQF LEVEL</th><th>QUALIFICATIONS</th></tr>
<tr><td rowspan="4">HIGHER EDUCATION AND TRAINING</td><td rowspan="4"></td><td colspan="3">8</td><td>Doctorate Degrees</td></tr>
<tr><td colspan="3">7</td><td>Masters degrees;
Honours degrees;
Postgraduate diplomas</td></tr>
<tr><td colspan="3">6</td><td>General First Degree;
Professional First Degree postgraduate;
Bachelor’s Degree</td></tr>
<tr><td colspan="3">5</td><td>First Diploma;
Higher Certificate;
Certificate</td></tr>
<tr><td rowspan="3">FURTHER EDUCATION AND TRAINING</td><td>12</td><td colspan="3">4</td><td rowspan="3">Diplomas
and
Certificates</td></tr>
<tr><td>11</td><td colspan="3">3</td></tr>
<tr><td>10</td><td colspan="3">2</td></tr>
<tr><td rowspan="10">GENERAL EDUCCATION AND TRAINING</td><td>9</td><td rowspan="3">Senior Phase</td><td rowspan="10">1</td><td rowspan="10">Grade 9
and
Adult Basic Education and Training Level 4</td></tr>
<tr><td>8</td></tr>
<tr><td>7</td></tr>
<tr><td>6</td><td rowspan="3">Intermediate Phase</td></tr>
<tr><td>5</td></tr>
<tr><td>4</td></tr>
<tr><td>3</td><td rowspan="4">Foundation Phase</td></tr>
<tr><td>2</td></tr>
<tr><td>1</td></tr>
<tr><td>R</td></tr>
</table>

Table 2.3: Summary of NQF Bands

Within the GET band there are three phases, namely

- the foundation phase - grade R to grade 3;
- the intermediate phase - grade 4 to grade 6; and
- the senior phase - grade 7 to grade 9.

The senior phase of the GET will form the central **focus** of this study, as the research problem entails the learning programme of the senior phase.

The *senior phase* of the GET band is considered the first exit point for compulsory education and may only occur once a learner reaches Grade 9, or the age of 15, depending on which comes first (Republic of South Africa, 1996).

In order for learners to attain the *General Education and Training Certificate: Schooling*, they have to achieve 120 credits between Grades 7 to 9, although these credits will only be awarded at Grade 9. This certificate was awarded for the first time in 2008 (Department of Education & DoL, 2003: 17).

As a result of the educational reform and movement towards OBE in South Africa, Curriculum 2005 and, subsequently the Revised National Curriculum Statement (RNCS) were developed. These developments will now be critically examined by means of the literature review.

2.6 THE DEVELOPMENT OF CURRICULUM 2005

The first stage in the creating of a national curriculum was the development of *Curriculum 2005*, which hoped to meet the needs of the new Government of National Unity (Eastern Cape Department of Education and Media in Education Trust, 2003: 2). Within Curriculum 2005, the elements discussed below were present.

2.6.1 Design features of Curriculum 2005

Curriculum 2005 had several design features. Figure 2.4 gives a schematic overview of the different design features, each of which is discussed.

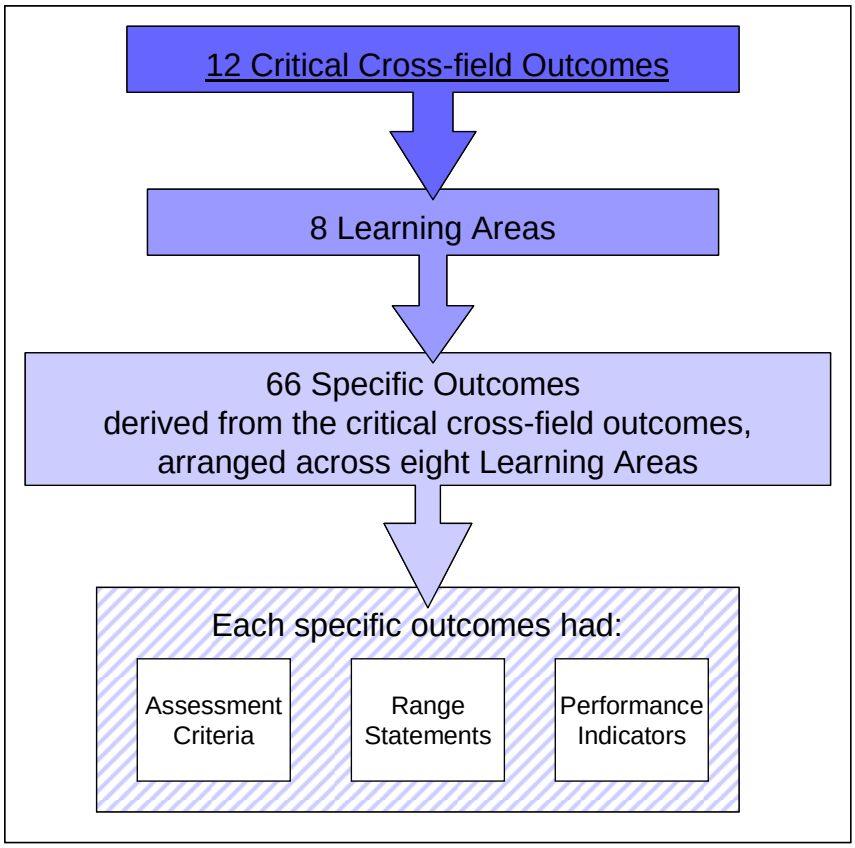


Figure 2.4: Design Features of Curriculum 2005.

2.6.1.1 Critical cross-field outcomes

Derived from the constitution, twelve *critical cross-field outcomes* were developed as all embracing to the Curriculum 2005, and are set out in the South African Qualifications Act (1995). The purposes of the critical cross-field outcomes were to produce learners that would not only be lifelong learners, but also learners who would maintain a democratic society (Department of Education, 2002a: 11). These outcomes were to be addressed within each learning area and were seen as embracing all teaching and learning (see Figure 2.4) (Daniel, Habib & Southall, 2003: 272).

The twelve *critical outcomes* stated that learners were to be able to:

- *Identify* and *solve problems* in which responses display that responsible decisions, using critical and creative thinking, have been made;
- Work effectively *with others* as members of a team, group, organisation, community;

- Organise and *manage themselves* and their activities responsibly and effectively;
- Collect, analyse, organise and critically evaluate *information*;
- *Communicate* effectively, using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
- Use science and technology effectively and critically, showing responsibility towards the *environment* and *health* of others;
- Demonstrate an understanding of the *world* as a set of related systems by recognising that *problem-solv*ing *contex*ts do not exist in isolation (Department of Education, 2002a: 4; Department of Education, 1*997:* 13 – 14).
- Reflect on, and explore, a variety of *strategies* to learn more effectively;
- *Participate* as responsible citizens in the life of local, national and global communities;
- Be culturally and aesthetically *sensitive* across a range of social contexts;
- Explore *education* and career opportunities;
- Develop *entrepreneurial* opportunities (Department of Education, 2003a: vii; Department of Education, 2002a: 11; Department of Education, 1997: 13 – 14).

2.6.1.2 Learning areas

Curriculum 2005 comprised eight *learning areas*, viz.

- Language, Literacy and Communication;
- Mathematical Literacy, Mathematics and Mathematical Sciences;
- Natural Sciences;
- Technology;
- Human sciences and the social sciences;
- Arts and Culture;
- Life Orientation; and
- Economic and Management Sciences (Eastern Cape Department of Education, 2001: 39 – 40).

2.6.1.3 Specific outcomes

From the critical cross-field outcomes, 66 specific outcomes were derived and arranged across the eight learning areas. Niebuhr (1996: 15) defines *specific outcomes* as a "description of knowledge, skills and values" that learners must have acquired by the end of a specific phase. Specific outcomes do not describe content or method of teaching, but are linked to a specific context, and support the critical outcomes (Olivier, 1998: 17). The intention of specific outcomes was for teachers to organise learning and resources, and to shift the focus towards the process of learning, rather than test learners' knowledge (Daniel, Habib & Southall, 2003: 272).

Each specific outcome contains the following:

- In general terms *assessment criteria* indicate the observable processes and products through which learners indicate their achievements (Mokhaba, 2004: 68). Assessment criteria are attached to a particular assessment task, in order to determine the attainment of a specific outcome (Niebuhr, 1996: 16). They provide broad indicators of the evidence, which learners submit, provide or present for assessment (du Plessis, 2005: 43).
- *Range Statements* are also known as grade-level outcomes. These describe the complexity and range of expected learner performance at the exit point of a programme (Malan, 1997: 12). Range statements are fixed, whereby learners demonstrate their achievements of specific outcomes (Wessels & van den Berg, 1998: xxi).
- *Performance Indicators*: Performance indicators are detailed requirements, which learners should achieve in terms of knowledge, skills, attitudes and values (Oliver, 1998: 35 – 36; Department of Education, 1997: 10 – 15). Performance indicators serve to ascertain the progression from one NQF level to the next (Musker, 1997: 82).

2.6.2 Organisation and implementation of Curriculum 2005

Teachers were provided with three aids, which assisted them in arranging the curriculum. These were:

- Learning programmes;
- Phase organisers;

- Programme organisers.

Each will be discussed below.

2.6.2.1 Learning programmes

Learning programmes were sets of guidelines for each learning area, designed to assist teachers in implementing the curriculum. Each programme combined different sets of outcomes, which allowed learners to work towards the attainment of specific outcomes, as well as integrating the critical cross-field outcomes (Olivier, 1998: 35 – 36; Department of Education, 1997: 10 – 15). These learning programmes usually consisted of sets of learning activities, which considered the specific outcomes, assessment criteria, range statements and performance indicators for the different learning areas (EC Department of Education, 2001: 41).

2.6.2.2 Phase organisers

Phase organisers were themes stipulated by the Department of Education (EC Department of Education, 2001: 42). They assisted teachers with the development and organisation of content and were used in the learning programmes. These themes were tools assisting teachers in the grouping of learning experiences for curriculum planning. They also supported the organisation of teaching and learning (Mkhwanazi, 2006: 1). The five phase organisers identified in Curriculum 2005 were:

- Communication;
- Culture and society;
- Economy and development;
- Personal development and empowerment;
- The environment (Department of Education, 1997: 13).

2.6.2.3 Programme organisers

Programme organisers, unlike phase organisers, which were determined by policy documents, were created by teachers and materials developers. Programme organisers consisted of topics appropriate and relevant to age groups and were sub-

sets of the phase organisers, which were too broad to have been utilised in programme development (EC Department of Education, 2001: 42; Maskew, Miller & Longman, 2001: 10).

Under the phase organiser, "*Personal development and empowerment*" for grades 7 and 8, Maskew, Millers and Longman (2001: 10) provided any of the following as programme organisers: Our bodies; caring for ourselves and others; understanding feelings; becoming more assertive; and suchlike. Another example, from the 2005 Grade 9 Common Task for Assessment, was "celebrating indigenous South African cultures" as a programme organiser under the phase organiser of "*Culture and Society*" (Department of Education, 2005: 3).

2.6.3 Evaluation of Curriculum 2005

In 2000, the Minister of Education, Professor Kader Asmal, put together a *Curriculum Review Committee* to assess the implementation of Curriculum 2005 and put forward recommendations for improvement. The area of focus of the committee was the GET Band of Education (Daniel, Habib & Southall, 2003: 277). This committee investigated the following:

- The level of understanding of OBE;
- Key success factors and strategies to strengthen the implementation of the new curriculum;
- The new structure of the curriculum;
- Recommendations for the implementation of the new curriculum in grades 4 to 8 in 2001 (Chisholm, 2000: 4).

Based on the findings of the review committee, Chisholm, Volmink, Ndhlovu, Potenza, Mohamed, Muller, Lubisi, Vinjevold, Ngozi, Malan & Mphahlele (2000: 18 – 21) presented the following *key findings*:

- There was strong support for Curriculum 2005, but understanding of the curriculum varied.
- Curriculum 2005 had a skewed curriculum structure and design.
- There was insufficient follow-up support to teachers and stakeholders.

- The time-frames given were unrealistic and unmanageable.
- Curriculum 2005 and the assessment thereof lacked alignment.
- The learning and teaching support materials varied greatly in quality, and were often unavailable.
- Teachers were not adequately oriented, trained and developed.
- The transfer of learning was limited in actual classroom practice.

The committee members interviewed teachers, departmental officials and other stakeholders, and found the *weaknesses of Curriculum 2005* to be mainly the following:

- Teachers became unmotivated as the *language* used in the policy documents was difficult to comprehend.
- Curriculum 2005 had too many *design features*, such as the learning programmes, phase and programme organisers, range statements and performance indicators. The programme development was therefore time-consuming and teachers tried to include all these design features, neglecting the core concepts.
- Curriculum 2005 required a combination of knowledge from different learning areas. However, this presented problems, as there was insufficient guidance to teachers on *what* to teach, as well as *how* to teach. Consequently, learners were taught the same concepts at the same level repeatedly, not acquiring the knowledge and skills needed for progression (du Plessis, 2005: 46; Eastern Cape Department of Education and Media in Education Trust, 2003: 3).

In order to *address* the *weaknesses* and issues in Curriculum 2005, the Review Committee proposed that a revised curriculum structure should be introduced, which supported changes in the following:

- Teacher orientation and training;
- Learning support materials and organisation;
- Staffing and resourcing of curriculum structures;
- The functions of national and provincial education departments (Daniel, Habib & Southall, 2003: 278; Department of Education, 2001: 1).

The proposal to address the *overload* of the GET band curriculum was to reduce the number of learning areas from eight to six, allocating more time to mathematics and languages. It was further suggested that Economics and Management Sciences, as well as Technology be absorbed into other learning areas (du Plessis, 2005: 28; Daniel, Habib & Southall, 2003: 278). However, it was finally decided not to reduce the number of learning areas (Department of Education, 2002a).

In order to resolve the problems related to the *complexity* of curriculum design and terminology, the Review Committee proposed a revised, streamlined National Curriculum Statement for Early Childhood Development, GET, FET, as well as ABET (Daniel, Habib & Southall, 2003: 278).

Another recommendation was that the proposed National Curriculum Statement should retain the critical cross-field outcomes, but remove the 66 specific outcomes, assessment criteria, phase- and programme organisers, range statements, performance indicators and expected levels of performance (Chisholm, *et al*., 2000: vii).

In the light of the suggestions by the Review Committee, the Department of Education, with other stakeholders, commenced the process of *revising Curriculum 2005*. The Council of Education Ministers resolved that:

- A description of the kind of *learner* envisaged at the end of the GET band, should be set out in clear terms of *knowledge, skills, values* and *attitudes*;
- A Revised Curriculum Statement should be presented in clear simple *language*, and include the requirements at various levels and phases;
- The concerns regarding curriculum *overload* should be addressed (du Plessis, 2005: 48; Department of Education, 2001: 1).

The Curriculum Review Committee's suggestions and resolution by the Council of Education Ministers led to the development of the Revised National Curriculum Statement (RNCS).

2.7 THE DEVELOPMENT OF THE RNCS

The RNCS is based on the OBE approach and spells out what learners should know, do and value by the time they exit from school at the end of Grade 9 (du Plessis, 2005: 48; Eastern Cape Department of Education and Media in Education Trust, 2003: 12). The most important changes made to Curriculum 2005 are that the RNCS is simpler and that teachers and stakeholders would understand it better. Since it can be better implemented, it has a greater likelihood of developing the skills and values which the curriculum seeks to develop (du Plessis, 2005: 49; Eastern Cape Department of Education and Media in Education Trust, 2003: 8 – 10).

The *RNCS* consist of *two sections*. The first section is the *Overview document* that gives an introduction to the development of the RNCS, as well as an overview of the eight learning areas (Department of Education, 2002a). The second section consists of *eight statements*, each pertaining to a specific learning area.

2.7.1 Principles underlining the RNCS

There are five *major principles* that underline the RNCS (Department of Education, 2002a: 10), viz.

- *Social justice, healthy environment, human rights and inclusivity*: As stipulated in the South African Constitution, the RNCS aims at including principles of social justice, respect for the environment and human rights in all the different learning areas. The challenges of sensitivity towards poverty, inequality, race, gender, age, disability and HIV/AIDS, are attempted in the RNCS. By stipulating minimum requirements, an inclusive approach is adopted.

- *Retaining Outcomes-based education principles*:
    - A principle of OBE is its *design-down* characteristic (Spady, 1994: 10 – 18). The RNCS retains the critical cross-field outcomes stated in Curriculum 2005, but have changed it to seven critical and five developmental outcomes and from this, designed the learning

outcomes and assessment standards (Department of Education, 2002a: 11).

- A second principle of OBE is having *high expectations* (Spady, 2004: 10 – 18), which the RNCS endorses, anticipating that learners will become fully participatory in South Africa's economic and social life;
- Lastly, OBE calls for *expanded opportunity* (Spady, 1994: 10 – 18), which is achieved by the RNCS through the focus on participation, learner-centredness and activity-based education, learning outcomes and assessment standards. This leaves much room for creativity, innovation and interpretation by the teachers of what is to be taught.

- *High level of skills and knowledge for all*: The learning outcomes and assessment standards aim at providing a strong base from which the previously disempowered population can now achieve a high level of necessary skills and knowledge across all learning areas (Department of Education, 2002a: 12).

- *Clarity and accessibility*: This principle links with the principle of OBE, viz. *clarity of focus* (Spady, 1994: 10 – 18). The RNCS achieves this through very clear presentation of learning outcomes and assessment standards, focusing on what learners are to achieve by the end of each grade and each phase. Moreover, the learning outcomes and assessment standards are written in a clear, understandable format, with an unambiguous definition of goals and outcomes needed to allow learners passage from one level to the next. Furthermore, it is envisaged that the RNCS will be available in all eleven official languages, and also in Braille (Department of Education, 2002a: 12).

- *Progression and integration*: Integration, integral to OBE, ensures that learning areas are linked and related. The RNCS also provides conceptual progression from one grade to the next, where each learning area becomes more complex, and enlarges its expectations of the learners. In addition, the assessment standards of the different learning areas should not be seen in isolation, as they need to be integrated into both different outcomes and different learning areas (Department of Education, 2002a: 13).

2.7.2 Design features of the RNCS

The RNCS became a more streamlined version of Curriculum 2005. The following diagram illustrates the interaction between the different elements of the RNCS (see Figure 2.5).

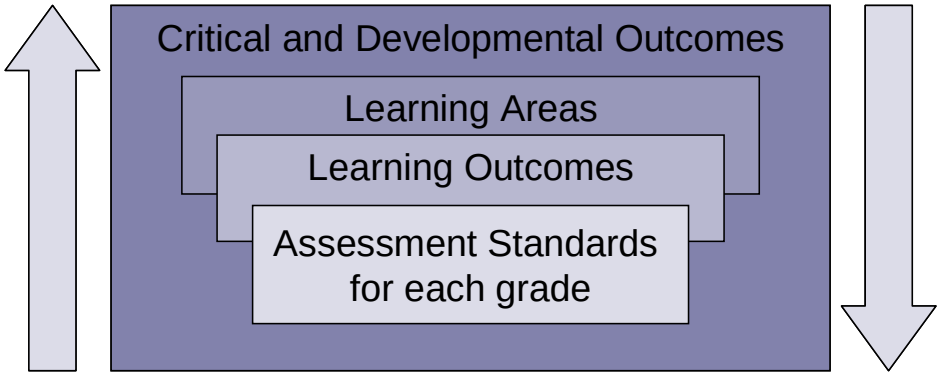


Figure 2.5: Interaction between RNCS elements

The different design features of the RNCS are discussed below.

2.7.2.1 Critical and developmental outcomes

In line with the recommendations of the Curriculum Review Committee, the twelve critical cross-field outcomes originally set out in Curriculum 2005, did not change (see 2.6.1.1). However, they have been reformatted as *seven critical outcomes* and *five developmental outcomes* (Eastern Cape Department of Education and Media in Education Trust, 2003: 5 – 6). These outcomes are based on the South African Constitution and describe the kind of citizen that the education system in South Africa wishes to shape. The outcomes are contained in the South African Qualifications Act (1995) and are broad, generic and cross-curricular.

2.7.2.2 Learning area statements

The *learning area statements* supply *guidelines* on the requirements and expectations of the GET band of education and address the relationship between human rights, social justices and a healthy environment. Learning area guidelines

are only applicable for the GET band, and are referred to as subject guidelines in the FET phase.

The learning area statements are *divided into the three phases* of the GET band, each with its own assessment standards, indicating progression from one grade to the next. The phases are:

- Foundation Phase (Grade R – 3);
- Intermediate Phase (Grade 4 – 6);
- Senior Phase (Grade 7 – 9).

The learning area statement encompasses five chapters for each learning area (Department of Education, 2002b – 2002i), viz.

- *Chapter 1: Introduction:* The national curriculum statement is introduced with the definition, purpose, features, scope and learning outcomes for that particular learning area.
- *Chapter 2: Foundation Phase (Grades R – 3):* An introduction to this phase is given and the assessment standards under each learning outcome for each grade are stated, indicating progression from one grade to the next.
- *Chapter 3: Intermediate Phase (Grades 4 – 6)*: As in Chapter 2, an introduction to this phase is given and the assessment standards under each learning outcome for each grade are stated, indicating progression from one grade to the next.
- *Chapter 4*: *Senior Phase (Grades 7 – 9)*: As in the previous two chapters, an introduction to this phase is presented with the assessment standards under each learning outcome for each grade, indicating progression from one grade to the next.
- *Chapter 5: Learner Assessment:* This chapter provides the assessment principles of OBE, as well as information and guidelines for assessment and assessment management, record keeping and reporting.

2.7.2.3 Learning areas

A *learning area* is a field of knowledge containing skills and values, with unique features and links to other fields of knowledge and learning areas (Kwa-Zulu Natal

Department of Education, 2003: 26; Department of Education, 2002a: 9). However, despite alluding to integration as essential to OBE in the learning area statements, no indication is given of how such integration should take place (Department of Education, 2002b – 2002i).

There are *eight learning areas* in the RNCS and they differ slightly in name from the original eight set out in Curriculum 2005. They are:

- Languages;
- Mathematics;
- Natural Sciences;
- Technology;
- Social Sciences;
- Arts and Culture;
- Life Orientation;
- Economic and Management Sciences.

Each learning area has its own unique learning outcomes and assessment standards. Furthermore, the RNCS provides each learning area with a particular purpose, features and scope. Each document gives guidelines and information on assessment and record keeping, as well as a glossary of the terminology used (Department of Education, 2002b – 2002i).

2.7.2.3.1 Languages

The *Language learning area* statement includes all eleven official languages, as well as Braille and South African Sign Language (Department of Education, 2002a: 19). It is important for South Africans, with their multicultural society, to be proficient in more than one language. Learners are therefore required to be proficient in at least two languages and able to communicate in other languages also.

Wherever possible, learners' should be taught in their *home language*, particularly in the Foundation Phase, where they learn to read and write. Careful planning is necessary to teach other languages (Department of Education, 2002b: 4).

In the Language learning area statement, the following are given as the *purposes* of all languages (Department of Education, 2002b: 5):

- *Personal*: to form a personal identity and create sustainable relationships with the family and the community.
- *Communicative*: to communicate efficiently within a variety of social contexts.
- *Educational*: to develop thinking and reasoning and to retain the ability to access information.
- *Aesthetic*: to create, interpret and play imaginatively within different textual formats.
- *Cultural:* to understand and appreciate languages, cultures and their heritage.
- *Political*: to assert oneself and to challenge others, to be able to persuade others of a particular point of view, and to sustain, develop and transform identities.
- *Critical*: to understand the relationship between language, power and identity, and to challenge the uses of these where necessary; to understand the dynamic nature of culture; and to resist persuasion where necessary.

2.7.2.3.2 Mathematics

The Department of Education (2002c: 4) *defines Mathematics* as “a human activity that involves observing, representing and investigating patterns and quantitative relationships in physical and social phenomena and between mathematical objects themselves”. It is through this process that new ideas and insights develop.

Mathematics has its *own language* of symbols and notations when describing numerical, geometric and graphic associations. It is based on investigation and it is often used within the social, political and economic contexts.

The *purpose* of Mathematics is to develop (2002c: 5):

- A critical understanding of the use of *mathematical relationships* in social, environmental, cultural and economic contexts;
- *Confidence* and *competence* in any mathematical situation;

- An *appreciation* and love of mathematics and a spirit of curiosity;
- An understanding of the *diverse* historical, cultural and social practices of mathematics;
- A recognition of mathematics as being part of *creative* human activity;
- A clear *conceptual understanding,* enabling learners to make sense of mathematics;
- The specific knowledge and skills necessary for the *application* of mathematics to physical, social and mathematical problems, the study of related subject matter (for example, other learning areas), and to further mathematical studies.

2.7.2.3.3 Natural Sciences

Natural Sciences seek to understand natural phenomena through observation and the testing of ideas and the drawing up of hypotheses (Department of Education, 2002d: 4). Methods of inquiry used in the Natural Sciences include a systematic approach to scientific inquiry, promoting replication and objectivity. Furthermore, the acquisition of new knowledge changes existing scientific knowledge over time.

The Natural Sciences learning area statement gives the *purpose* of the Natural Sciences as (Department of Education, 2002d: 5):

- The development and use of science process skills in different settings;
- Developing and applying scientific knowledge and understanding;
- Appreciating the relationships and responsibilities between science, society and the environment.

2.7.2.3.4 Technology

Technology focuses on the use of knowledge, skills and resources to provide solutions that will meet people's needs and desires. These solutions can either take the form of working systems or products. In today's society, these solutions need not focus only on economic and social factors, but should focus also on environmental factors (Department of Education, 2002e: 4).

Considering the practical and problem-solving aspects of technology, the Department of Education (2002e: 4) *defines* Technology as "the use of knowledge, skills and resources to meet people's needs and wants by developing practical solutions to problems, taking social and environmental factors into consideration."

The *purpose* of Technology as a Learning area is to contribute towards learners' technological literacy (Department of Education, 2002e: 5), through:

- developing and applying *specific skills* in order to solve technological problems;
- understanding and using the Technological *concepts and knowledge*;
- appreciating the *relationships* between people's values and attitudes, technology, society and the environment.

2.7.2.3.5 Social Sciences

Social Sciences are defined as the relationship between people and the environment, which includes the social, political, economic and environmental aspects, as well as human values, attitudes and beliefs (Department of Education, 2002f: 4). The study of History and Geography are essential to the study of Social Sciences.

The *purpose* of Social Sciences in terms of *History* is to enable learners to progressively develop (Department of Education, 2002f: 4):

- A general knowledge and understanding of the history of all South African people;
- An understanding of South Africa's diverse past and how this informs the present reality (historical consciousness);
- An understanding of the interpretation of heritage;
- An appreciation of oral tradition and archaeology, and the influence of the environment on historical development;
- Critically responsible citizens, within the framework of human and environmental rights;

- An understanding of social development patterns and technology's impact on society and the environment;
- An understanding of different human organisations, as well as interacting and participating with them;
- The ability to critically interpret a wide range of information, including sources offering different perspectives on the same issue or event.

The *purpose* of Social Sciences in terms of *Geography* is to enable learners to progressively develop (Department of Education, 2002f: 5):

- A knowledge and understanding of their own and others' geographical surroundings, location and how people and places relate;
- An understanding of the interaction between people and the environment as a result of physical and human processes;
- A consciousness of spatial associations and a balanced, critical and empathetic understanding of the changing world;
- An informed concern for the environment and willingness to participate in creating a sustainable environment;
- Sustainable attitudes, values and conduct within the constant social, economic, political and environmental change.

2.7.2.3.6 Arts and Culture

The *Arts and Culture* learning area is defined as the study of South African art and cultural traditions. Arts and Culture studies the spiritual, material, intellectual and emotional aspects of society (Department of Education, 2002g: 4).

The *purpose* of the Arts and Culture learning area is to (Department of Education, 2002g: 4):

- Provide exposure and experience for learners in Dancing, Drama, Music, the Visual Arts, Craft, Design, Media and Communication, Arts' Management, Arts' Technology and Heritage;

- Develop creative, innovative and accountable citizens, in line with the Constitution of South Africa;
- Provide access to Arts and Culture education in order to redress past imbalances;
- Promote nation-building and develop national culture awareness;
- Create a productive resource through the development of creativity in South Africans;
- Develop skills, knowledge, attitudes and values in Arts and Culture, preparing learners for lifelong learning;
- Create an awareness of the symbolic language of Arts.

2.7.2.3.7 Life Orientation

Life Orientation is seen as essential in the holistic development of learners. It is *defined* as the equipping of learners for meaningful and successful living in South Africa's changing society (Department of Education, 2002h: 4). The Life Orientation learning area concerns itself with the social, personal, intellectual, emotional and physical growth of learners.

Life Orientation's *purpose* is to (Department of Education, 2002h: 4):

- Empower learners to achieve their full physical, intellectual, personal, emotional and social potential;
- Develop relationship skills for the contribution to family, community and society, while applying the Constitution's values;
- Implement their constitutional rights and responsibilities, in order to help build a truly democratic South Africa;
- Become accountable for their health and answerable to the environment;
- Become an active and responsible citizen, through the practising of life skills.

2.7.2.3.8 Economic and Management Sciences

According to the Department of Education (2002i: 4), *Economic and Management Sciences* may be defined as the "efficient and effective use of different types of

private, public or collective resources" that will satisfy people's needs and wants, but at the same time, consider the impact on the environment and society.

Economic and Management Sciences describe its *purpose* as enabling learners to (2002i: 4):

- Become economically literate;
- Become responsible and accountable in the use of economic and management concepts and principles;
- Critically understand and reflect on the creation of wealth;
- Appreciate and uphold the value of savings and investments in economic development;
- Develop entrepreneurial skills in order to help transform South Africa's socio-economic environment;
- Comprehend the effect of economic actions on human, natural and financial resources and socio-economic systems.

2.7.2.4 Learning outcomes

Specific outcomes, phase organisers and programme organisers of Curriculum 2005, have been reduced and transformed to *learning outcomes* in the RNCS (Malesa, 2006: 33). The RNCS (Department of Education, 2002a: 14) *defines* learning outcomes as a "description of knowledge, skills and values" that learners must have acquired by the end of a specific phase. Learning outcomes must be clear, and stated in terms which may be observed and then measured after learning has taken place (Bouslama, Lansare, Al-Rawi & Abonamah, 2003).

Oliver (2002: 36) argues that the learning outcomes are embedded in the learning areas and contribute to the achievement of critical outcomes, as well as serving as a basis for planning.

Learning outcomes do not describe content or methods of teaching (Kwa-Zulu Natal Department of Education, 2003: 33). However, they are the *basis* to be used by teachers when choosing teaching strategies, content and learning activities.

Furthermore, the context within which teaching and learning take place must aid in the achievement of learning outcomes, and can only be done if clear outcomes are set (Killen, 2007: 3).

The move from *specific* outcomes in Curriculum 2005 to *learning* outcomes in the RNCS was justified by the need to *integrate the curriculum* (Ramoroka, 2007: 41; Pudi, 2006: 107). Learning outcomes are designed in such a manner that they can be integrated with learning outcomes from different learning areas (Mwakapenda, 2008: 196; Ramoroka, 2007: 41; Heinemann, 2005). Integration between learning areas is defined as a key principle within the RNCS, requiring learners to complete tasks and activities by applying knowledge and skills from different learning areas or different parts of the same learning area (Department of Education, 2002i: 58).

However, in practice, little or no integration between learning areas are done and learning areas tend to be treated as separate units (Thusi, 2006: 64). *The integrative aspect of the learning outcomes will be essential and of vital importance in the development of an integrated learning programme for the Knysna Montessori School, as set out in the problem statement.*

Each learning area has its own unique learning outcomes that remain consistent through the GET band. A brief overview of each learning area's learning outcomes will be provided below (Department of Education, 2002a: 20 – 28).

a. *Languages*

Languages have *six learning outcomes*, viz.

- Listening
- Speaking
- Reading and viewing
- Writing
- Thinking and reasoning
- Language structure and use

b. *Mathematics*

The mathematics learning area statement gives five *learning outcomes*, viz.

- Numbers, operations and relationships
- Patterns, functions and algebra
- Space and shape (Geometry)
- Measurement
- Data handling

c. *Natural Sciences*

Natural Sciences have three *learning outcomes*, viz.

- Scientific investigations
- Constructing scientific knowledge
- Science, society and the environment

d. *Technology*

The Technology learning area has three *learning outcomes*, viz.

- Technological processes and skills
- Technological knowledge and understanding
- Technology, society and the environment

e. *Social Sciences*

Social Sciences have six learning outcomes, which are divided into three for History and three for Geography, viz.

- Historical inquiry
- Historical knowledge and understanding
- Historical interpretation
- Geographical inquiry
- Geographical knowledge and understanding
- Exploring issues

f. *Arts and Culture*

The Arts and Culture learning area has four learning outcomes, viz.

- Creating, interpreting and presenting
- Reflecting
- Participating and collaborating
- Expressing and communicating

g. *Life Orientation*

Life Orientation has five learning outcomes, viz.

- Health promotion
- Social development
- Personal development
- Physical development and movement
- Orientation to the world of work

h. *Economics and the Management Sciences*

Economics and Management Sciences have four outcomes, viz.

- The economic cycle
- Sustainable growth and development
- Managerial, consumer and financial knowledge and skills
- Entrepreneurial knowledge and skills

2.7.2.5 Assessment standards

The *assessment standards* are grade specific and give details of the level, the depth and breadth at which learners must achieve the learning outcomes (Department of Education, 2002a: 14). Assessment standards are progressive from one grade to the next and describe the values, skills and knowledge necessary to achieve an outcome.

As with the learning outcomes, assessment standards *do not dictate* teaching methodology. They form the basis when choosing content and context in teaching and change from grade to grade to define progression (Kwa-Zulu Natal Department of Education, 2003: 33).

This study focuses on the assessment standards of the *senior phase of the GET band*. More analysis and discussion of the assessment standards for the different learning areas will be presented in Chapter Five.

2.7.2.6 Learning programmes

Kwa-Zulu Natal Department of Education (2003: 33) *defines learning programmes* as "structures and systematic arrangements of activities", which will assist the learner to realise the outcomes and assessment standards, as defined by the grade. The Department of Education (2003a: 2) defines a learning programme as the framework allowing planning, organising and managing of classroom practice within a particular phase. Du Plessis (2005: 51) confirms that a learning programme is a plan for all the grades within a phase and is the first and broadest level of planning, providing teachers with an overview of teaching, learning and assessment for the whole phase.

The Department of Education (2003: a - g) has suggested a process in developing a learning programme, going back and forth between the different areas. These are:

- Selection of learning outcomes
- Identification of assessment standards
- Determining the teaching, learning and assessment framework and core knowledge and concepts, both at the broad level of the school and community, as well as at the specific level of the learning area in terms of content, teaching, learning and assessment and barriers to learning
- Allocation of time, referring to both the weighting of time allocated to each learning area as well as to the balance of workload of the learners
- Integration of learning areas, as well as the resources that will be required in a broad context

A graphic representation of this process is presented in Figure 2.6. (Department of Education, 2002a: 10 – 11)

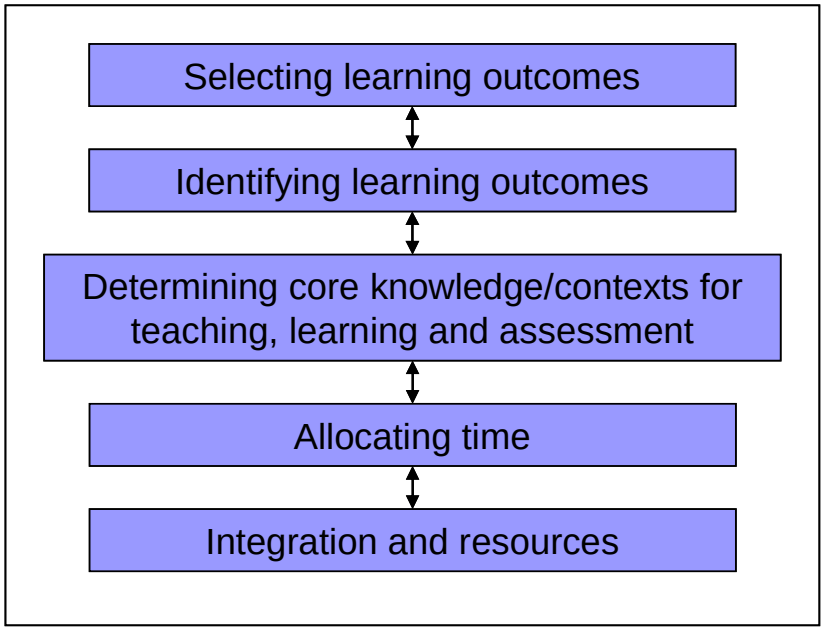


Figure 2.6: Process for developing a learning programme

It is important that learning programmes *cover* all the learning outcomes and assessment standards for each grade and for each learning area. It is the responsibility of the school to set up learning programmes and ensure that the allocated time is given to each learning area (Department of Education, 2003b: 1). Therefore, learning programmes are not nationally uniform and will differ from area to area, and school to school, depending on the needs and diversity of particular regions (du Plessis, 2005: 51).

In order to assist in the achievement of national standards, national learning programme guidelines were drawn up at national level, in collaboration with the different provinces. These programme guidelines manifested eight "*Teacher's Guide for the Development of Learning Programmes*", one for each learning area. These guidelines indicate that integration is central to OBE, but give very little guidance to teachers on *how* to integrate different learning areas (Department of Education, 2003b – 2003g).

From learning programmes, teachers will develop work schedules and lesson plans, which will form the basis for teaching and learning. This process is graphically illustrated in Figure 2.7 (Department of Education, 2003a: 3).

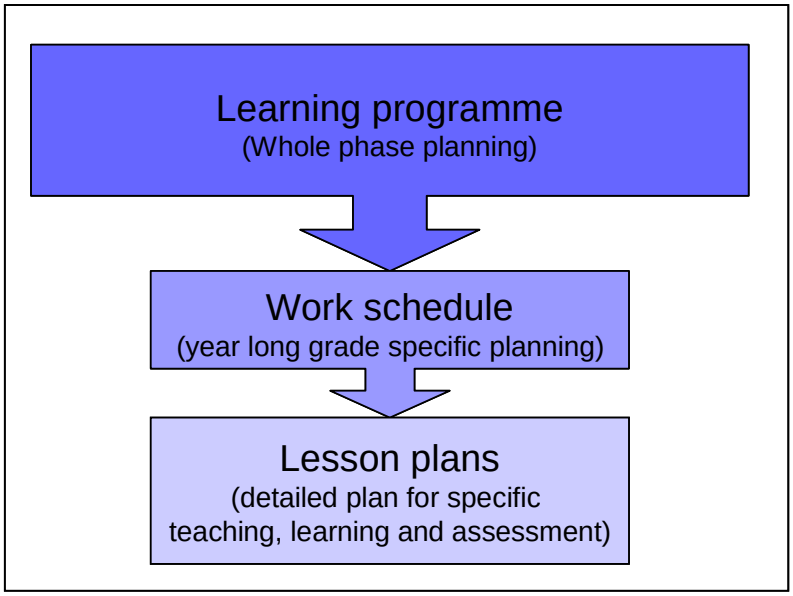


Figure 2.7: Stages of planning within the RNCS

The *working schedule* is a year-long plan with greater detail for a particular grade (Department of Education, 2003a: 11). It draws upon the learning programme and gives a more comprehensive overview of time allocation, assessment tasks, resources and integration. A working schedule often divides the learning programme into weeks, indicating specific assessment tasks, resources and the integration that links to the work covered in each previous week.

The last aspect of planning is the *lesson plan*, which is drawn from the work schedule and set up by individual teachers (Department of Education, 2003a: 12). A lesson plan should include different learning styles, teaching approaches and methodologies, barriers to learning, specific resources, prior knowledge of the learners (Department of Education, 2003a: 4).

2.8 COMPARISON BETWEEN CURRICULUM 2005 AND THE RNCS

Table 2.4 provides a summative comparison between the different design features of Curriculum 2005 and the RNCS as discussed (adapted from Mkhwananzi, 2006: 12 and Malesa, 2006: 33).

Curriculum 2005	RNCS
Critical cross-field outcomes: 12 broad, genetic cross-curricular outcomes	**Critical outcomes:** 7 critical and 5 developmental cross-curricular outcomes for the GET band.
Learning Areas: • Language, Literacy and Communication • Mathematical Literacy, Mathematics and Mathematical Sciences • Natural Sciences • Technology • Human and Social Sciences • Arts and Culture • Life Orientation • Economics and Management Sciences	**Learning Areas:** • Languages • Mathematics • Natural Sciences • Technology • Social Sciences • Arts and Culture • Life Orientation • Economics and Management Sciences
Outcomes-Based Education: Considers, at the starting point of the curriculum design process, the knowledge, skills, values and attitudes learners are expected to achieve.	**Outcomes-Based Education:** Principles have not changed.
Specific outcomes: Derived from learning areas and specify what learners are able to do at the end of a learning experience.	**Learning outcomes:** Indicates knowledge, skills and values for achievement at the end of each grade and each phase.
Phase organisers: Policy prescribed tools, grouping outcomes in order to assist planning and integration.	**Learning programmes:** Arrangement of learning activities, set up at school level in order to achieve learning outcomes.
Programme organisers: Themes chosen by teachers reflecting local and social priorities.	

Curriculum 2005	RNCS
Assessment criteria: Broad pointers in determining the achievement of a specific outcome on what learners must present, submit or provide for assessment.	**Assessment standards:** Indicates knowledge, skills and values for achievement of the learning outcomes for each grade, ensuring progression.
Range statements: Indicates scope, depth, complexity and parameters of achievement.	
Performance indicators: Detailed requirements of knowledge, skills, attitudes and values that need to be mastered to ensure progress.	
Complex language and over-laden curriculum.	**Simplified language with more streamlined curriculum.**

Table 2.4: Comparison between Curriculum 2005 and the RNCS

2.9 CRITICAL REFLECTIONS

Although it has been indicated that the concept of OBE is supported in South Africa (Nkopodi, 2006: 77; Chisholm *et al*., 2000: 18), it has been met with some criticism (Jansen, 2008: 26). Through a literature review of different research projects regarding the implementation of OBE and the RNCS, a critical reflection is presented below, focusing in particular on curriculum planning and curriculum implementation (Oliva, 1992: 26).

2.9.1 Curriculum planning

Typically, State-developed curricula, as is the case of South Africa's RNCS, tend to involve civil servants, who have inadequate experience in curriculum development (Oliva, 1992: 27). Such curriculum developments are inclined to provide little information regarding the development of the curriculum.

2.9.1.1 Stakeholder involvement in the curriculum development process

Curriculum development should be done by *curriculum experts* (Jansen, 2008: 26), as well as all the necessary *stakeholders* in the curriculum process (Crisan, 2005: 63). Crisan (2005: 63) argues that curriculum is an ever-changing process that should have input from all stakeholders involved in the results of curriculum development. Pudi (2006: 101) and the African National Congress (1995: 8) emphasise that successful educational reform will only be possible if all the stakeholders are involved in the process of change. Crisan (2005: 63) supports this statement and indicates that it is good practice in curriculum development to involve stakeholders from the beginning in the curriculum change process.

However, curriculum development over the past decade *did not involve* all the necessary stakeholders (Jansen, 2008: 26). The Learning Area Committees were driven by a small, elite group, without the input of teachers from different socio-economic backgrounds (Jansen, 1997: 5).

Furthermore, due to the need for total reform of the apartheid curriculum, curriculum experts from the pre-apartheid era were marginalised and replaced with inexperienced civil servants (Jansen, 2008: 26). This resulted in a skewed curriculum, not allowing the majority of teachers' access to, or to acquire any understanding of OBE.

2.9.1.2 Teacher involvement in the curriculum design process

Du Plessis (2005: 129) maintains that it is essential for *teachers* to be part of the curriculum development process in order to take ownership and assist with the effective implementation thereof. Reynolds (1992: 14) also insists that teachers need to be stakeholders in the entire curriculum development process, from initial planning to reviewing and evaluation.

However, Jansen (1997: 5) argues that teachers are still viewed as implementers, rather than as participating developers of the curriculum.

2.9.2 Curriculum implementation

The second phase of curriculum development is that of curriculum implementation. There are indications in recent research (Malesa, 2006: 69) that teachers will struggle with the implementation of the RNCS at school level. Malesa (2006: 69) found the main cause for this struggle is the lack of knowledge and skills from district level down to school level. This can only be achieved through teacher training.

Effective implementation will only take place once the learning programmes, work schedules and lesson plans are developed in line with the RNCS policy documents (Gauteng Institute for Educational Development, 2004: 141, 144). However, Msila (2008: 199) and Sedibe (1998: 227) suggest that effective implementation of OBE will only become a reality once the need for teacher training and appropriate teaching and learning resources are met.

2.9.2.1 Teacher training

In order for teachers to effectively implement the curriculum, it is essential for them to have high quality, suitable *training* (Msila, 2008: 202; Human Sciences Research Council, 2005: 115; Brady, 1996: 13). In recent research, it has been found that teachers, who have been trained in OBE, are confident of its implementation in the classrooms (Mkhwanazi, 2006: 72). Msila (2008: 202) and Nkopodi (2006: 76) support this statement in instances where research has showed that new knowledge of OBE increases self-confidence and motivation amongst teachers.

Mailula, Laugksch, Aldrige and Fraser (2003: 12) found that teachers with training, who have been exposed to OBE and have been working within an OBE environment, have become increasingly familiar with the terminology and methodology.

2.9.2.1.1 Uncoordinated and insufficient training

In a study done in the Eastern Cape, it was found that training was uncoordinated and insufficient (du Plessis, 2005: 220). These findings were supported in two studies, where teachers felt that due to insufficient training on the implementation of the new strategies, they were unable to handle new teaching, and learning methods

in overcrowded classrooms deteriorated and consequently the standard of education has also deteriorated (Blignaut, 2008: 113; Malesa, 2006: 61).

2.9.2.1.2 Training lacked real-life application

From one study undertaken in Gauteng and another in the Northern Province, teachers felt that the training was good, but that it lacked real-life application, i.e. the use of real classroom situations, rather than simulations during training (Nkopodi, 2006: 72; Mokgaphame, 2001: 31). In the real classroom situation participants found it difficult to apply what they had experienced in the simulations.

2.9.2.1.3 Training time constraints

Malesa (2006: 64) indicated a real concern regarding the lack of time spent on in-depth training of teachers. Mokgaphame (2001: 68) also indicated the time spent on training had been insufficient for teachers to fully conceptualise the new methods of teaching.

2.9.2.2 Curriculum support and monitoring

Once training has been done, it is essential for district officials to continue to *support and monitor* classroom practice in order for principals and teachers to become familiar and confident in OBE and the implementation of the RNCS. However, du Plessis (2005: 251) and the Organisation for Economic Co-operation and Development (OECD) (2008: 176) noted that due to the vast distances in the more rural areas, support and monitoring of implementation was often lacking.

Jansen (1997: 8) and the Human Sciences Research Council (HSRC) (2005: 82) also argued that there is a lack of support to teachers in the implementation of OBE in South Africa. Jansen (2008: 26) maintains that there is a weak system of accountability, where rural and township schools are seldom monitored, and improvement in the delivery of the curriculum in these schools is unlikely in the near future.

Support and monitoring should also be the responsibility of *school management.* Todd and Mason (2005: 232) have stressed the importance of a successful school environment and management in implementing OBE effectively in South Africa. Du Plessis (2005: 132) stipulates that the success of the school curriculum development process and the initiative of the teacher will be largely determined by the support received. However, Mokgaphame (2001: 61) indicated that no support was provided to principals in the Northern Province on how to effectively implement and manage OBE in their schools, which in turn did not enable the principals to provide support to their teachers on the implementation of OBE.

2.9.2.3 Curriculum planning for the classroom

Planning should encapsulate the resources, skills, knowledge, values and attitudes, as well as assessment (Malesa, 2003: 69). The effectiveness of curriculum implementation depends on the degree to which the teacher is able to do planning (du Plessis, 2005: 129).

In a study undertaken at UNISA, Pudi (2006: 107) discovered that teachers are unfamiliar with the terminology of OBE and the RNCS, and their lack of knowledge in this regard has a detrimental effect on their drawing up of learning programmes. Du Plessis (2005: 236) found that teachers, especially those in rural areas in the Eastern Cape, showed little or no evidence of formal planning.

2.9.2.4 Application of OBE principles

In a study conducted in Limpopo province, it was found that teachers know little about the theory of OBE and are therefore not applying the principles in their classrooms (Ramoroka, 2006: 114). There is still a strong trend towards the use of traditional methods of teaching in the classrooms.

2.9.2.5 Overcrowded classrooms

Teachers felt that one of the major drawbacks in the implementation of OBE was overcrowded classrooms (Malesa, 2006: 61; Nkopodi, 2006: 75, 80; Thusi, 2006: 45).

This has had an effect in particular on teaching strategies, discipline and teacher feedback.

2.9.2.5.1 Teaching strategies

One of the teaching strategies of OBE is group work and co-operative learning. Group work is an excellent strategy that could help to alleviate the problem of lack of resources (Naidoo & Savage, 1998: 128).

However, Malesa (2006: 61) and Nkopodi (2006: 75) found that teachers have difficulty in using group work as a teaching and learning strategy, as it becomes difficult to monitor learner progress, especially in overcrowded classrooms. Both teachers and learners lack the skills necessary for group work to be a successful activity (Sibisi, 2005: 53; Naidoo & Savage, 1998: 128).

2.9.2.5.2 Discipline

In a study undertaken in Gauteng and Mpumalanga, it was found that teachers struggle with discipline, especially when conducting group work (Nkopodi, 2006: 80; Thusi, 2006: 55). Teachers felt that while group work sounded good in theory, it is very impractical in reality.

2.9.2.5.3 Teacher feedback

Teacher feedback refers to feedback given to learners throughout teaching as well as after assessment. Todd and Mason (2005: 288) argue that better performance in classrooms is a direct result of teacher feedback, rather than class size. They reason that when teachers are effective in enhancing learning and the basic resources are present in the classroom, teacher feedback has the biggest impact on effective learning. Once teachers are able to enhance learning through better classroom management and record-keeping, feedback becomes more effective, leading to better learning (Ramoroka, 2007: 119; Todd & Mason, 2005: 228 – 229).

2.9.2.6 Hands-on discovery of learning

There are teachers who feel that learners gain more from the changes in the curriculum (Malesa, 2006: 62). In particular, some teachers felt that the hands-on discovery, rather than theoretical content, gives learners the opportunity to become lifelong learners and develop a deep understanding and wide range of knowledge (Malesa, 2006: 62). This suggests that, despite the teething problems, in this context teachers are still positive about the changes in the curriculum paradigm.

2.9.2.7 Resources

Teachers' ability to effectively use resources determines the success of support materials (Gauteng Department of Education, 2004: 87). Learner and teacher resources should provide for opportunities, activities and experiences in line with OBE standards.

However, one of the problems experienced with the implementation of OBE is related to the lack of resources (Blignaut, 2008: 109; van Deventer, 2008: 139; Nkopodi, 2006: 79; Thusi, 2006: 45; HSRC, 2005: 3; Todd & Mason, 2005: 234). Not only are basic resources, such as textbooks, electricity, and classroom space, not always available, but some schools report not even having the new policy documents (Nkopodi, 2006: 79; Pudi, 2006: 108; Thusi, 2006: 45; HSRC, 2005: 3). Teachers feel that due to these constraints, they are obliged to use more traditional methods of teaching (Malesa, 2006: 71).

2.9.2.8 OBE Assessment

OBE requires more formative assessment, which is essential to provide learners and teachers with feedback on whether the outcomes are being achieved. This form of assessment is a continuous process and allows learners to show progression through handing in draft copies of assignments and work, and being allowed to improve until a final near-perfect copy is achieved (Maree & Fraser, 2004: 34). However, this leads to several issues surrounding curriculum assessment.

2.9.2.8.1 Assessment terminology

In OBE, learners need to be clear on what is being assessed, prior to the assessment process (Maree & Fraser, 2004: 34; Linn & Gonlund, 1995: 6). However, from the study done in the Limpopo province, teachers are unclear about the meaning of the terminology around assessment, and are therefore unclear on what needs to be assessed prior to handing out an assessment task (Ramoroka, 2006: 95). Furthermore, van Deventer (2008: 139) and Thusi (2006: 53) found that teachers in the Western Cape and Mpumalanga were unclear on how to use different assessment techniques simultaneously.

2.9.2.8.2 Focus on promotion requirements

Although there is a move towards OBE in practice, teachers still tend to assess in the traditional way, where they focus on the promotion requirements, rather than the levels of performance, as a basis for promotion (Blignaut, 2008: 111; van Deventer, 2008: 141; Malesa, 2006: 62). Singh (2005: 101) calls for a change in the attitude of teachers, whereby assessment is seen as an integral, rather than separate, part of teaching and learning.

2.9.2.8.3 Increased paper load

Teachers feel that they spend more time on assessment and that the paper work is increased and has become a disadvantage (Thusi, 2006: 45; Sibisi, 2005: 54; Singh, 2005: 100 – 103).

2.9.2.8.4 Record keeping

Record keeping is an essential aspect of effective continuous assessment (Maree & Fraser, 2004: 145). In order to measure progress, it is fundamental to have well-kept records of learners' assessment. However, in the Limpopo study, it is clear that very few teachers keep such records (Ramoroka, 2006: 97). Record keeping is seen as being time-consuming and teachers find it difficult to provide records of learner achievements (Singh, 2005: 102 – 103).

2.9.2.8.5 Advantages of OBE assessment

Despite the problems with the implementation of OBE assessment, Singh (2005: 100 – 103) points out a number of advantages of OBE assessment that teachers in Kwa-Zulu Natal have identified, viz.

- Learners are exposed to skills-related, creative and enjoyable assessment tasks.
- Marks are a better reflection of learners' performance.
- Teachers are able to get a better picture of the learners' abilities through outcomes-based assessment.

2.10 CONCLUSION

Chapter Two has provided a short definition of curriculum, a brief overview of curriculum development, in particular the paradigm shift in South Africa from a content-based approach to OBE. Furthermore, a historical overview of the development of the RNCS has been provided through a literature review of the NQF and Curriculum 2005. Lastly, a critical reflection on the implementation of OBE and the RNCS was presented.

In summation, the long-term impact and success of OBE in South Africa can only be measured once various factors affecting its effective implementation have been addressed. In order to meet the demands of OBE and the RNCS, and effectively implement them in all South African schools, Todd and Mason (2005: 235) strongly emphasise that successful teacher training lies at the heart of educational reform in South Africa. Only through the training of teachers, principals and officials, will teachers be empowered to resource their classrooms effectively, and be able to efficiently implement OBE.

Chapter Three will present an overview of the Montessori Method, with specific reference to the adolescent, and curriculum arrangement.

CHAPTER THREE

A THEORETICAL FRAMEWORK FOR THE MONTESSORI METHOD, WITH SPECIFIC REFERENCE TO THE ADOLESCENT, AND HOLISTIC AND INTEGRATED CURRICULUM ARRANGEMENT

3.1 ORIENTATION

The three main components of the Montessori method lie in the interaction between the child, the prepared environment and the teacher (London Montessori Centre, 1989: 22). Figure 3.1 gives a diagrammatic representation of the interaction between these three different components. Within the Montessori method of education, the learner is central to education and through interacting and discovering the prepared environment, learning takes place. The teacher has the role to observe and guide the learner, as well as prepare and maintain the environment in order for the learning process to take place.

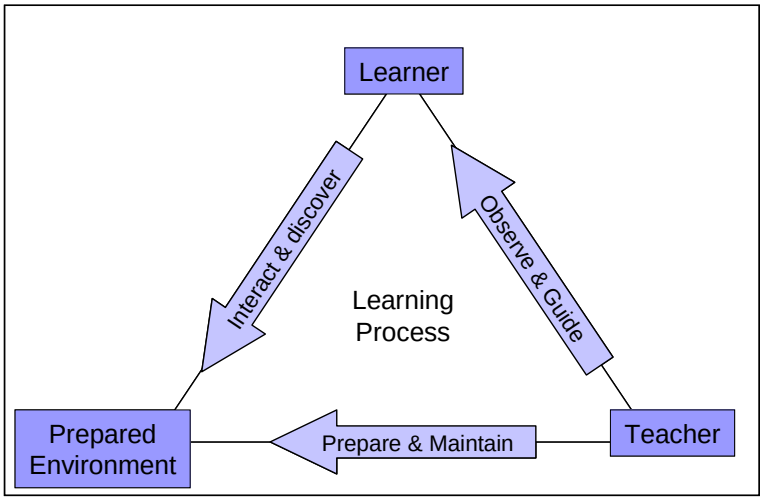


Figure 3.1: Interaction between the learner, the teacher and the curriculum within the prepared environment

This chapter presents a theoretical overview and background to each of these three components within the Montessori method of education. Lastly, within the premise of this study, the curriculum arrangement within a Montessori school needs closer investigation. Therefore, the last section of this chapter provides a theoretical

foundation for the holistic integrated curriculum arrangement prevalent in Montessori schools.

3.2 THE LEARNER

The theories of Montessori and Piaget show certain similarities in terms of the stages of human development (Donnelly, 2008: 3). Piaget, a student of Montessori's work, supported her reasoning that children develop through meaningful work, focusing on active participation within the prepared environment, rather than having information imparted to them by the teacher (Mooney, 2000: 62).

Like Montessori, Piaget developed his theories from his observations of children (Seldin & Epstein, 2006: 51; Mooney, 2000: 33 – 34; Gopnik, 1996: 225). Table 3.1 gives a comparison between Montessori and Piaget's developmental planes or stages.

<table>
<tr><th colspan="4">Montessori</th><th colspan="2">Piaget</th></tr>
<tr><th>Planes</th><th colspan="3">Ages in years and description</th><th>Ages in years</th><th>Description</th></tr>
<tr><td rowspan="2">Plane 1:

0 to 6</td><td rowspan="2">Infancy</td><td>0 to 3</td><td>Spiritual embryo & Unconscious creator</td><td>0 – 2</td><td>Sensory Motor Stage</td></tr>
<tr><td>3 to 6</td><td>Conscious worker</td><td>2 – 7</td><td>Pre-operational Stage</td></tr>
<tr><td rowspan="2">Plane 2:

6 to 12</td><td rowspan="2">Childhood Moral Development</td><td>6 to 9</td><td>Imagination and moral development</td><td rowspan="2">7 – 12</td><td rowspan="2">Concrete-operational Stage</td></tr>
<tr><td>9 to 12</td><td>Critical thinking</td></tr>
</table>

<table>
<tr><th colspan="4">Montessori</th><th colspan="2">Piaget</th></tr>
<tr><th>Planes</th><th colspan="3">Ages in years and description</th><th>Ages in years</th><th>Description</th></tr>
<tr><td rowspan="2">Plane 3:

12 to 18</td><td rowspan="2">Adolescence Social Development</td><td>12 to 15</td><td>Formation of self and economic independence</td><td rowspan="4">12 – adulthood</td><td rowspan="4">Formal Operational Stage</td></tr>
<tr><td>15 to 18</td><td>Academic development</td></tr>
<tr><td rowspan="2">Plane 4:

18 to 24</td><td rowspan="2">Maturity</td><td>18 – 21</td><td>Career preparation and tertiary education</td></tr>
<tr><td>21 – 24</td><td>True financial independence</td></tr>
</table>

Table 3.1: Comparison between Montessori and Piaget's developmental stages

The Montessori method places the child at the heart of education. The following section firstly discusses Montessori's planes of development, and thereafter Piaget's developmental stages, with reference to similarities and any differences from Montessori. Finally, the development of adolescents is covered in more detail through the study of their general physical, moral, cognitive, social and emotional development.

3.2.1 The planes of development according to Montessori

In order to understand the Montessori method it is necessary to understand the *planes of development* more fully (Beyleveld, 2008). Montessori (Liveable Learning, 2007; Standing, 1957: 108) has divided children's development towards adulthood into *four planes* (or stages) *of development*:

- The first plane, 0 – 6 years (this includes pre-school and Grade R);
- The second plane, 6 to 12 years (this includes grades 1 to 6);
- The third plane, 12 to 18 years (this includes grades 7 to 12); and
- The fourth plane, 18 to 24 years (young adults).

Montessori represents these stages of development as four six-year planes, each with an opening and closing phase. The opening phase "opens up to a set of particular experiences and consequently to the related acquisitions and conquests", while the closing phase merges these achievements in preparation for the next phase (Feez, 2007: 242; Grazzini, 1996b, 174).

Figure 3.2 illustrates Montessori's four planes of development (Grazzini, 1979: 30; Montessori, 1971).

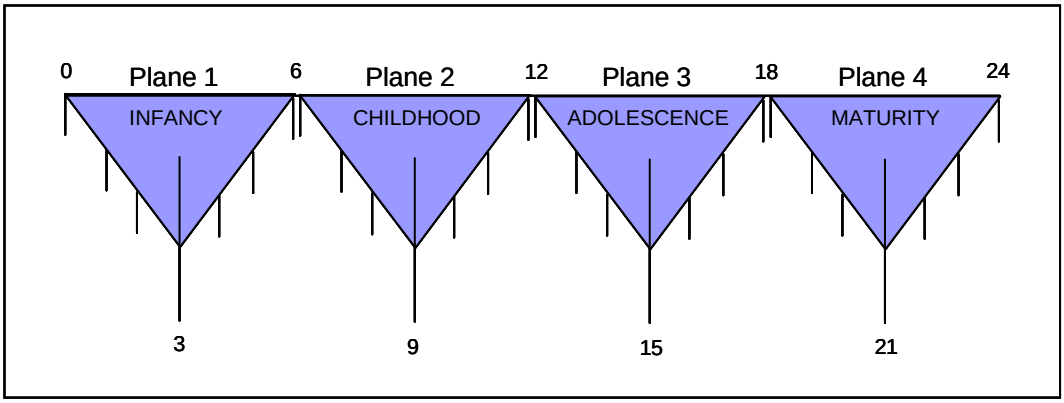


Figure 3.2: Montessori's four planes of development

Montessori education is designed with the spiritual, social, mental, emotional and physical needs of the child in mind, as well as the *sensitive periods* (Donnelley, 2008: 3; Feez, 2007: 243). Montessori (1966: 38) defines a sensitive period as "a transient disposition and limited to the acquisition of a particular trait". An example of a sensitive period is the ease of learning languages in 0 to 6 year-olds. Hence this age is the most sensitive period for language acquisition (Blakemore & Choudhury, 2006: 305).

It is therefore a span of months or years during which people are particularly receptive to specific experiences and are influenced by their absence (Bee & Boyd, 2002: 13). Sensitivities are passing impulses guided by an internal drive for growth and such impulses generally occur during a specific age. The Montessori Foundation (2007) gives the following overview of sensitive periods:

- A period of special *receptivity* and psychological attitude;

- An *internal force* directing children to specific qualities and elements in their environment;
- A phase where children focus their attention on specific aspects of the *environment*;
- A time of *passion* and *commitment*;
- Concentrated and prolonged activity which leads to *persistent energy* and *interest*.

Once a particular skill or trait has been attained, the sensitive period passes, and the next period begins. It is possible that a particular trait is not attained, this having a lifelong consequence on the development of a person (Montessori Foundation, 2007; Montessori, 1966: 41).

Each phase is discussed below to give an overview of Montessori's view on development. However, as early adolescence is the focus of this study, more detail on the development and the needs of adolescents will be discussed later in this chapter.

3.2.1.1 The first plane: Infancy (ages 0 to 6)

The *opening phase of infancy* occurs at the ages of 0 to 3. This is also termed the "the spiritual embryo" (Grazzini, 2006b: 174; Montessori, 1998: 55). During this period infants develop different functions related to movement and intellect, each function developing separately at first before being able to combine the different functions (Feez, 2007: 247; Montessori, 1988: 55 – 75). This opening phase is also referred to as the "unconscious creator", in which children absorb the environment around them and construct their own reality (Feez, 2007: 245).

In the *closing phase of infancy*, during the ages of 3 to 6, the "unconscious creator" is transformed into the "conscious worker". Montessori defines work as activity guided by the mind; this is also referred to as children's developmental work (Cossentino, 2006; Montessori, 1988: 152). Developmental work depicts any activity that engages children's interests and uses both body and mind. This embraces all activity that contributes to health, wellbeing and self-construction, and includes both work and

play (Liveable Learning, 2007; Standing, 1957: 108 – 113; Montessori, 1966: 193-195).

During this phase, children become absorbed in perfecting activities they have only observed during the opening phase of infancy. Their choices in activities are guided by their intelligence and they have a great need for repetition, until perfection is achieved (Montessori, 1988: 152 – 153).

Figure 3.3 summarises the *sensitive periods for the infancy* plane of development (Montessori Foundation, 2007; Freckleton, 2001).

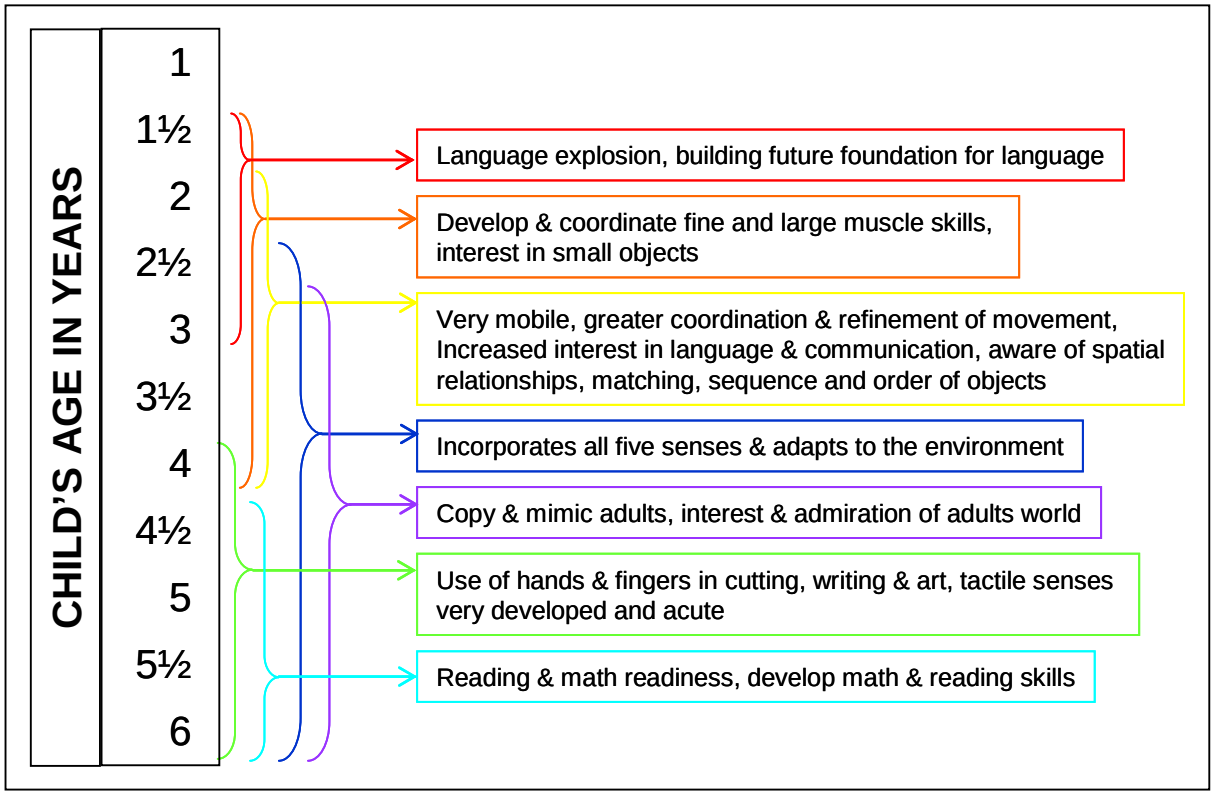


Figure 3.3: Sensitive periods during the infancy plane of development

3.2.1.2 The second plane: Childhood (ages 6 to 12)

The *second plane of development* is childhood, with an opening phase of children between the ages of 6 to 9, and a closing phase of children between the ages 9 to 12. The *second plane*, 6 to 12 years, is considered as the 'Age of Reason and Mental Activity' (Australian AMI Alumni Association, 2006).

During this plane children focus on their intelligence, learn through reasoning, imagination and logic, cross the bridge from the concrete to the abstract and are curious about the universe, creation and all other aspects of life (Freez, 2007: 246; Liveable Learning, 2007; Australian AMI Alumni Association, 2006; Grazzini, 1996: 216; Standing, 1957: 113 - 115).

During the second plane of development, children become more socially aware and develop the desire to spend time in each other's company (Montessori School of Westfield, 2007; Seldin & Epstein, 2006: 43). In contrast to the first plane of development where children adapt and find their place within their home environment, the second plane develops children's adaptation to both change, as well as creating a sense of awe and belonging to the planet (Hatch House Montessori, 2008).

This is also a time of greater physical strength and health (Grazzini, 1996: 217).

During the *opening phase* of the second plane of development (6 to 9 year-olds), children begin to awaken to other humans and outer aspects of life (Grazzini, 2006b: 176 – 177; Montessori, 1966: 66). The emphasis here is on self-discipline and the building of character, including grace and courtesy (Montessori, 1948). The sensitive period in the 6 to 9 year-old age group is learning fairness and it is an excellent time to teach children the rules of games. This links with Kohlberg's second stage of moral development, which will be discussed later in this chapter (see 3.2.3.3).

This age group consists of typically "black-and-white" thinkers, where situations are either right or wrong, with few grey areas. Children in this stage are usually exposed to the whole cosmos and the wonder of life (Beyleveld, 2008).

In the *closing phase* of childhood (9 to 12 year-olds), children become very critical and are able to look at the world in wonder from a more critical perspective. They are still imaginative, but use their imagination to focus on very particular ideas (Beyleveld, 2008). Furthermore, their critical thinking allows them to be able to see grey areas in moral questions, linking with Kohlberg's third stage of moral development, as will be discussed later in this chapter (see 3.2.3.3).

It is of critical importance that children in the closing phase are now introduced to as many of the basic elements of language, mathematics and the cosmos as possible, as the foundations for later development are laid during this phase (Montessori, 1989: 6).

3.2.1.3 The third plane: Adolescence (ages 12 to 18)

Early adolescence is the opening phase of the third plane of development, (ages 12 to 15), while later adolescence (ages 15 to 18) forms the closing phase. This distinction corresponds with Vrey's (1979: 167) distinction of early adolescence (ages 12 to 15) and middle adolescence (ages 15 to 18; see 3.2.3; and Toni & Olivier, 2004: 195). The early adolescent age is the focus of this study.

The *opening phase* of the third plane resembles the opening phase of the first plane (0 to 3 years age group), in that there are great transformations, both physically and mentally (Long, 2001: 63; Standing, 1957: 115). Puberty marks the end of childhood by way of the profound physical changes that take place. During this period, early adolescents tend to look inwards and realise their role in life, not just as a part of society, but as individuals within society (Grazzini, 2006b: 177).

This gives rise to the two needs for early adolescents: protection during the time of this difficult physical transition; and an understanding of the society in which they are about to play their part as adults (Seldin & Epstein, 2006: 45; Montessori, 1948: 53). During the early adolescent phase, early adolescents are more creative and experience a need for more concrete work, even though they can be very abstract in their thinking. They furthermore have a great need for physical movement, as well as focused constructive work, especially where they can express themselves, serve others and feel a sense of belonging within their society (Long, 2001: 63 - 65, Montessori, 1948: 53 – 54).

This is the sensitive period for justice within early adolescence their community and the setting of personal values (Gang, 2001: 5).

Early adolescence is also the age of learning economic independence (Kahn, 2006b: 13; Liveable Learning, 2007; Standing, 1957: 115 - 118). As part of their focus on their role within society, adolescents become initiated into economic independence through the production and exchange of goods, as well as economic value, which helps the process of *valorisation*. Valour means “courage” or “bravery” and is derived from the Latin word “valere”, meaning “to be strong or worthy” (Long, 2001: 69).

Höglund (2006: 158) defines valorisation as becoming aware of one’s capabilities, assets, as well as one’s weaknesses. This awareness is an internal knowing of the self. Valorisation is achieved through work, activity, experience, action and practical tasks. It also comes through socialisation, developing self-discipline and especially through economic contribution and independence (Höglund, 2006: 151, 154 – 155; Long, 2001: 69 – 70).

Valorisation steers adolescents towards maturity and the co-ordination of all their potential (Kahn, 2006b: 7 – 8). It is achieved through the prepared environment and the teachers’ efforts in ensuring independence and key experiences during this phase (Long, 2001: 71). Long (2001: 70) mentions that a valorised personality displays joy, selflessness, optimism, confidence, dignity, self-discipline, independence, co-operation, helpfulness, the ability to work with others and good judgement.

The main aim of education, according to Grazzini (2006c: 279), is the process of developing the full human potential by valorising adolescents.

In the *closing phase of the third plane*, later adolescents are on their final path to adulthood and being prepared to enter society. They still need protection, have to learn about themselves and learn to understand their society (Grazzini, 2006b: 179). The older adolescents move towards critical thinking and meta-cognition, master articulation and analysis and are able to furnish pragmatic solutions to problems. Meta-cognition can be defined as thinking about one’s own cognition and processes related to cognition (Flippo & Caverly, 2008: 121 – 122).

They are more emotionally stable, their interpersonal relationships become more consistent and they achieve moral maturity (Engelfried, 2006: 267). The later adolescence phase involves becoming more academic in nature, and here the subjects are no longer integrated (Beyleveld, 2009).

This study focuses on the opening phase of the third plane of adolescence (ages 12 to 15).

3.2.1.4 The fourth plane: Maturity

The *fourth* and last *plane* of development is the plane towards maturity after school (18 to 24 years). This plane corresponds with Vrey's distinction (1979: 167) of late adolescence (ages 18 to 22) (Toni & Olivier, 2004: 195). During this plane young adults become a part of society and start to play an active role within their community and answer their vocational calling (Grazzini, 2006b: 183). As in the second plane of development (6 to 12 year-olds), the plane of maturity is a phase of calm and uniform growth (Grazzini 1996: 213).

The opening phase of maturity usually relates to tertiary education, and this is a time when individuals plan and craft a career for themselves. During the closing phase of maturity, young adults learn to become financially independent. They furthermore become very sure of what they want and seek to develop themselves and their lives further (Montessorian World International, 2005).

Maturity's *sensitive period* relates to social responsibility, moral independence and work training, in order to contribute to the common good of humanity (Feez, 2007: 248). Consequently, Montessori's developmental phases culminate in a pathway towards being of service to humanity, where people are enabled to achieve their fullest potential (Feez, 2007: 248).

3.2.2 The stages of development according to Piaget

Piaget's theory was largely based on the *cognitive-structural* aspect of human development, whilst Montessori's phases focused on different sensitive areas; not

only on the cognitive development, but also on the emotional, social and moral development (Feez, 2007: 243; Bee & Boyd, 2002: 37, Lillard, 1972: 25). Piaget, like Montessori, observed that all children go through a process of *discovery* of their world in four distinct stages (Santrock, 2006: 45; Bee & Boyd, 2002: 37).

This is consistent with Montessori's view that children develop through a series of progressive advancement, each phase building on the previous phase (Lillard, 1972: 24).

Organisation and adaptation underlie this cognitive-structural development. Piaget (Wadsworth, 2004: 13 – 14; Sutherland, 1992: 25) explained that humans are continually *adapting* to new information and experiences to increase their understanding. This can be described as the inclusion of and adjustment to new information, both being processes which increase understanding.

Such inclusion and adjustment aspects of development take place through assimilation or accommodation. *Assimilation* involves the acquisition of new information using already-established structures of knowledge in order to understand the new information. *Accommodation* takes place when new structures of knowledge are created within an individual, in order to adjust to new information. This could also cause a change in the existing structure of knowledge.

Furthermore, Piaget stated that there is a desire for *equilibrium,* which is the motivation for cognitive development. Equilibrium entails the processes of assimilation and accommodation that are balanced against each other, so that new knowledge continuously fits into the individual's internal structure of knowledge (Santrock, 2006: 45 – 46; Bee & Boyd, 2002: 37 – 38; Louw, 1991: 73).

Both assimilation and accommodation are consistent with Montessori's views on the development of children. *Piaget and Montessori* have both acknowledged the need of children to learn through experience and from the concrete to the abstract (Mooney, 2000: 63; Lillard, 1972: 24, Piaget, 1963a: 123). They also agreed that the environment plays an important role in the development of the intellect of children (Mooney, 2000: 63).

Piaget furthermore indicated that through the developmental stages, children begin as being totally centred in their own bodies and move to increasing *social awareness* through the interaction with the environment, peaking at early adolescence (Piaget & Inhelder, 1969: 149). Piaget's theories have consequently provided more theoretical foundations for Montessori's view that socialisation and imagination develop naturally as children interact within their environment (Lillard, 1972: 25). This offsets the criticisms that both Piaget and Montessori tended to overlook the social development of children (Santrock, 2006: 247).

Piaget's *four stages* of development are as follows:

- Sensory-motor stage: birth – 2 years
- Pre-operational stage: 2 – 7 years
- Concrete-operational stage: 7 – 11 years
- Formal-operational stage: 11 years to adulthood

3.2.2.1 Sensory-motor stage: birth – 2 years

Through the combination of physical actions and sensory experiences, infants *construct their world*. Initially, infants' actions are based on the reflex level and develop to coherent practical applications and symbols towards the end of this stage (Santrock, 2006: 45; Bee & Boyd, 2002: 39; Louw, 1991: 77).

This stage *correlates* with Montessori's opening phase of infancy, where the infant is termed the "unconscious absorbent mind" and Piaget refers to their reflexive behaviour and construction of reality. Montessori states that infants construct their reality from observation and absorption, similar to Piaget's theory (Feez, 2007: 245).

In *criticism of Piaget's* infant development theory, Santrock (2006: 179) and Bee and Boyd (2002: 41) argue that it is oversimplified and that infants' cognitive development is more complex and highly developed.

3.2.2.2 Pre-operational stage: 2 – 7 years

Piaget sees the *pre-operational stage* as a transitional stage between the sensory-motor stage and the concrete operational stage. This stage is dominated by the development of symbols for communication and thinking, and the child moves beyond the connecting of senses with a physical action (Santrock, 2006: 46, Bee & Boyd, 2002: 39, Craig, 1996: 51).

Dacey and Travers (1996: 170) have both emphasised the importance of language and the opportunity to talk to adults in the pre-operational stage. Other characteristics of this stage are the following:

- Children focus on the self and cannot put themselves into the place of others, referred to as *egocentrism* (Santrock, 2006: 255; Dacey & Travers, 1996: 170).
- Children focus on one aspect of an object and ignore all the other aspects. Piaget refers to this as *centration* (Santrock, 2006: 255; Dacey & Travers, 1996: 170). This feature was acknowledged by Montessori in her development of educational materials, where one new concept at a time is introduced (see 3.4.1.2) (Seldin & Epstein, 2006: 34; Lillard, 1997: 11).

During this stage, Piaget maintains that children are "*pre-moral*" and have little comprehension of rules (Sigelman & Rider, 2003: 352). Both Montessori and Piaget discovered that children between the ages of 3 and 6 years are unable to distinguish between reality and fantasy, or what is right and wrong, and need guidance in differentiating (Feng-Mei Shih, 1996: 23, 25; Lillard, 1972: 45).

Challenging Piaget, Bee and Boyd (2002: 159) argue that children, despite their egocentrism, are able to understand that their reality are different from others, and are able to express such differences verbally and emotionally. Dacey and Travers (1996: 172) point out that Piaget has underestimated the mental abilities of this stage of development and these children are more competent than Piaget assumed them to be (Flavell, 1992: 999).

3.2.2.3 Concrete-operational stage: 7 – 11 years

During this *stage* of development, children are able to classify on several levels, think logically and are able to comprehend mathematical concepts which they have experienced in the concrete (Bee & Boyd, 2002: 39; Craig, 1996: 51). They now start to move from the concrete to the abstract, doing mentally what they previously needed to experience physically (Santrock, 2006: 300). Each of these changes is consistent with Montessori's observations, where children still use the concrete in order to move to the abstract in the childhood plane of development (Seldin & Epstein, 2006: 89).

Piaget outlined *changes* that take place during the concrete-operational stage as follows:

- *Conservation*: Children now have the capability to understand that the change of shape does not alter the quantity of an item (Bee & Boyd, 2002: 222 – 223, Dacey & Travers, 1996: 222). An example provided by Bee and Boyd (2002: 223) is that a clay sausage can be rolled back into a ball, yet is still the same amount of clay.
- *Seriation*: Children have the ability to arrange articles in order, or series, according to one aspect, such as weight, size or volume (Slavin, 2003: 37; Dacey & Travers, 1996: 222).
- *Classification*: Children are able to classify objects with increasing complexity, grouping objects with similar properties within a larger group (Slavin, 2003: 37; Dacey & Travers, 1996: 222).

Montessori's childhood curriculum also places strong emphasis on conservation, the arrangement of objects and on the classification and categorisation of objects (Seldin & Epstein, 2003: 78 – 101).

3.2.2.4 Formal-operational stage: 11 years old to adulthood

Through Piaget's observations, the formal-operational stage is characterised by the development of the cognitive, as well as the affective development (Wadsworth, 2004: 129; Piaget, 1963b: 20 – 21).

This stage entails that early adolescents develop the ability to see beyond the present and visualise *hypothetical and abstract* situations (Mwamwenda, 1989: 68 – 69). Their thinking tends to become increasingly logical and the need for concrete understanding of concepts becomes less (Slavin, 2003: 38 – 39; Fontana, 1995: 57). Donald, Lazarus and Lolwana, (2006: 56) maintain that concrete experiences should not be discounted completely during this stage, which is in line with Montessori's method.

In the previous stage, children were able to classify a specific object according to one aspect. In the formal-operational stage, early adolescents are able to understand the interdependence of different aspects and use this in problem-solving (Dacey & Travers, 1996: 313; Fontana, 1995: 57). This is referred to as *lattice-group structure* (Fontanta, 1995: 57), where there are infinite possibilities of relating to different aspects, allowing early adolescents to test various hypotheses in order to solve a problem or a hypothetical future problem.

However, early adolescents still move between *concrete and formal operations* (Hamachek, 1995: 125; Mwamwenda, 1989: 68). In Montessori middle-school education, although there is a shift from the concrete to the abstract, a strong emphasis is still placed on concrete experience in order to understand theoretical concepts (McNamara, 2008: 168 – 169; Montessori, 1949: 66). Through such practical experiences, early adolescents are able to solve meaningful problems and develop logical thinking (Seldin & Epstein, 2006: 158).

Formal thought should therefore develop out of concrete experiences (Mwamwenda, 1989: 73). Furthermore, according to Montessori (Seldin & Epstein, 2006: 158), the middle-school programme should be presented in an integrated manner, whereby early adolescents are able to connect different disciplines (Feldman, 2008: 268; Kahn & Feldman, 2008a: 223; Moudry, 2008: 208 – 209), once again being consistent with Piaget's ability of adolescents towards lattice-group structures.

Observing the thought patterns of early adolescents, Piaget maintained that they tend to still be *egocentric* (Wadsworth, 2004: 131). This egocentrism relates to adolescents' new-found ability to think logically, and they assume that everyone else

has this ability. It is often the cause of strife in families when adolescents challenge what may appear to them to be their parents' illogical thinking (Craig, 1996: 427).

Wadsworth (2004: 132), Inhelder and Piaget (1958: 346) maintain that this particular form of egocentrism diminishes when adolescents enter the world of work and are required to adapt to the world as it is, rather than to its adolescent idealised form.

Piaget further observed the tendency of early adolescents to set democratic *values* and to become aware of the importance of the groups and the decisions made by the group (Dacey & Travers, 1996: 313). This observation is consistent with Montessori's view that early adolescents set their values and social skills, in which peer influence is of critical importance (Seldin & Epstein, 2006: 45).

3.2.2.5 General challenges to Piaget's Theory

Piaget has been criticised for not differentiating between the *competency* and the *performance* of children (Sigelman & Rider, 2003: 183). It is argued that there are more factors, such as language ability, complexity, personal motivation and memory capacity, which could influence the results of the tests conducted by Piaget (Slavin, 2003: 41).

Another criticism which has been levelled against Piaget is that individuals' cognitive abilities are a *gradual development,* rather than falling into distinct stages, as was suggested by Piaget. Modern research indicates that cognitive development tends to be content-specific, where one domain precedes and may develop faster than another (Sigelman & Rider, 2003: 183; Louw, van Ede & Louw, 1998: 82).

However, Donald, Lazarus and Lolwana, (2006: 56) indicate that Piaget never proposed a sudden and distinct development from one stage to the next.

Piaget was further criticised for not considering the development of the mind through *social interaction* (Mooney, 2000: 60). His experiments presented isolated cases with researcher/child interactions, not focusing on how social interaction might shape the cognitive development of children (Sigelman & Rider, 2003: 184).

The previous section gave an overview of Montessori's planes of development, and Piaget's stages of development were compared to these planes of development. The following section will give an overview of the general development of adolescents.

3.2.3 Adolescent development

A common division of adolescents development occurs according to three stages, namely early adolescence (ages 11 to 14); middle adolescence (ages 14 to 17) and late adolescence (ages 17 to 21) (Hay, Levin, Sondheimer & Deterding, 2006: 113; Johnson & Woodhead, 2003: 110; Lemcke, Pattison, Marshall & Cowley, 2003: 3; Corr & Balk, 1996: 140). Vrey's (1979: 167) distinction between the adolescent stages differs slightly. He sees these as being early adolescence (12 to 15 years old), middle adolescence (15 to 18 years old) and late adolescence (18 – 22 years old) (Toni & Olivier, 2004: 195).

These stages are not always distinct and many adolescent developments might occur at slightly different ages (Hay, Levin, Sondheimer & Deterding, 2006: 113; Hamachek, 1975: 175). Adolescent development in general is discussed in this section according to the different areas of human development, viz.

- Physical
- Cognitive
- Moral
- Social
- Emotional

3.2.3.1 Physical development of adolescents

Due to the increase in growth hormones, a marked *growth spurt* occurs during adolescence (Sigelman & Rider, 2003: 124; Hamachek, 1975: 179). Boys and girls grow at different rates, girls faster at first, roughly peaking at about 12 years and reaching their adult height at about 16 - 17 years of age. Boys, on the other hand, reach their peak growth rate at about 13½ years, reaching their adult height at about

18, sometimes as late as 20 – 21 years of age (Hay, Levin, Sondheimer & Deterding, 2006: 113; Sigelman & Rider, 2003: 124 – 125; Slavin, 2003: 87; Louw, 1991: 387).

Other major physical changes that occur during puberty are tabulated in Table 3.2. (Slavin, 2003: 87; Dacey & Travers, 1996: 305)

Girls	Boys
Budding of breasts	Enlargement of the testes
Appearance of pubic and underarm hair	Pubic hair growth
Menarche – first menstruation	Enlargement of the penis
Adult height reached	Spermarche – first ejaculation
	Facial hair appears
	Voice deepens
	Strength and adult stature
	Adult height is reached

Table 3.2: Major physical developments in adolescents

Sexual maturation occurs during the pubescent stage, usually earlier in girls than in boys. According to Sigelman and Rider (2003: 125), the average age in the United States for girls to reach sexual maturation is 12½ and boys around 13 years of age. There appears to be a difference between different ethnic groups, where African American girls tend to reach sexual maturity at an average of nine months before the European American girls (Sigelman and Rider, 2003: 125).

However, the main factor in determining sexual maturity appears to be nutrition (Santrock, 2003: 365; Louw, 1991: 339; Mwamwenda, 1989: 43).

The *timing* of development with early adolescents is critical in how boys and girls perceive themselves within their social group (Santrock, 2006: 368; Louw, 1991: 389; Hamachek, 1987: 173). The onset of early development tends to be viewed more negatively by girls than by boys (Sigelman & Rider, 2003: 127 – 129; Dacey & Travers, 1996: 306 – 309; Mwamwenda, 1989: 44 - 45).

In reference to the timing of development, early adolescents become obsessed with their peer group and fitting in, whereas later adolescents become more focused on themselves and their individuality (Dacey & Travers, 1996: 307).

3.2.3.2 Cognitive development of adolescents

In the previous section, Piaget's theory of the *cognitive development* of adolescents was discussed (see 3.2.2.4). This section provides a brief overview of the cognitive changes, which appear during adolescence.

The changes in adolescents' thinking are ascribed to the physical thickening of the *cerebral cortex* in the brain and the increased efficiency of the neuronal pathways (Blakemore & Choudhury, 2006: 297; Bee & Boyd, 2002: 282 – 283). During this period, the brain both produces and consumes more energy than during any other stage in human development. The effect of this development is that there is a marked change in thinking between children and early adolescents (Sigelman & Rider, 2003: 113; Strauch, 2003: 203; Bee & Boyd, 2002: 283).

The *prefrontal cortex*, the part of the brain controlling emotions and resisting impulses, also undergoes notable changes during the adolescent years (Santrock, 2006: 374; Blakemore & Firth, 2005: 114 – 117; Healy, 2004: 125; Strauch, 2003: 26 – 29, 35). Adolescents are still fluctuating between reacting in emotional ways and making decisions without emotions (Steinberg, 2005: 73).

These changes explain why early adolescents are sometimes capable of logical, calculated reasoning and at other times react more emotionally to problems, and it sheds some light on the tendency in early adolescents to take risks (Steinberg, 2007: 57).

Furthermore, a second growth spurt occurs in the *frontal lobes of the cerebral cortex* around the age of 17, continuing on into adulthood. This development controls logical thinking and is the reason why such a difference is seen in the later adolescents' abilities to plan and solve problems (Blakemore & Choudhury, 2006: 305; Bee & Boyd, 2002: 283).

Santrock (2006: 385) maintains that one of the most important changes in adolescents' thinking is their ability to *make decisions*. Adolescents are at a stage where they are inundated with decisions to be made; amongst others, those about career and friendship, as well as physical, sexual and emotional decisions (Santrock, 2006: 385; Steinberg, 2005: 74; Craig, 1996: 428). Adams and Berzonsky (2006: 236) and Slavin (1996: 316) indicate that adolescents are able to anticipate a broader range of results from their actions, to choose between different actions in order to achieve single and multiple goals, and to learn from their successes and failures regarding the decisions they have made.

However, Steinberg (2005: 72) emphasises the predominance of emotional over logical decision-making strategies in adolescents. Steinberg (2005: 72 – 73) further points out that with experience, adolescents and young adults learn to regulate their emotional decision-making.

Elkind (Kerr, 2008: 33; Kuterbach, 2007; Sigelman & Rider, 2003: 179) suggested that the development of formal operational thought leads to the *egocentrism* found in adolescence, thus building on Piaget's theory of adolescent cognitive development. Adolescents experience a heightened sense of self-awareness as a result of meta-cognition (Kuterbach, 2007). According to Elkind (Kuterbach, 2007; Sigelman & Rider, 2003: 179; Slavin, 1996: 314), egocentrism points to adolescents' exaggeration of their own importance, individuality and the dimensions of their own problems.

Elkind (Kerr, 2008: 33; Sigelman & Rider, 2003: 179; Vartanian, 2000) have identified two kinds of adolescent egocentrism. The first kind pertains to the "imaginary audience". The "*imaginary audience*" points to the preoccupation of adolescents with their own thoughts and themselves, assuming that others think about them in the same way they think of themselves (Kerr, 2008: 33; Louw, 1991: 406). They are incapable of differentiating between their own thoughts and those of others (Slavin, 1996: 322). In this form of egocentrism, adolescents are increasingly aware of what others might think of them and they spend this period "playing" to this audience (Sigelman & Rider, 2003: 179; Slavin, 1996: 314; Louw, 1991: 406).

The second kind of egocentrism prevalent in adolescents is the "*personal fable*".This is dominated by the tendency to think that they are unique and to feel that rules and the laws of nature apply only to others (Craig, 1996: 428; Slavin, 1996: 322). Their own emotions are extreme and no-one could possibly feel as elated or depressed as they do (Sigelman & Rider, 2003: 179; Louw, 1991: 406). This form of egocentrism tends to lead to more risky behaviour than that of the merely imaginary audience (Sigelman & Rider, 2003: 179; Smith, Cowie & Blades, 2003: 312; Craig, 1996: 428; Gerdes, 1998: 155; Slavin, 1996: 315).

The new-found cognitive abilities in adolescents are often turned towards moral reasoning (Craig, 1996: 428). This leads to the next aspect of adolescent growth, namely moral development.

3.2.3.3 The moral development of adolescents

Morals are *defined* as pertaining to principles of right and wrong (Wehmeier, 2005: 953; Mwamwenda, 1989: 108). However, this definition limits morals to principles, excluding the choices and actions individuals take with regard to moral decisions (Campbell & Christopher, 1996: 1). There is little consensus among researchers on the subject of how best to define "morality" (Nado, Kelly & Stich, 2009).

For the purpose of this study, morals are defined as actions taken by a person driven by their own sense of what is right and wrong (Wehmeier, 2005: 953).

As part of their *decision-making* and *increased cognitive* abilities early adolescents are faced with numerous moral decisions. Such decisions include whether or not to have sexual intercourse before marriage, involvement with drugs and feelings towards peers involved in drugs, social security amongst peers, the role of finances and the role of religion (Jacobs & Klaczynski, 2002: 145; Craig, 1996: 428).

These are all moral dilemmas faced by adolescents as they move towards adulthood, and developing and integrating their own moral code is one of the most essential issues to be resolved (Pienaar, Beukes & Esterhuyse, 2006: 359; Sigelman & Rider,

2003: 356; Louw, 1991: 409). The development and integration of moral codes supports Montessori's concept of valorisation during adolescence.

Piaget suggested that a correlation exists between moral development and the stages of development (Atkinson, 1997: 5; Slavin, 2006: 53; MacDonald & Stuart-Hamilton, 1996: 402; Louw, van Ede & Louw, 1998: 375). His theory is based on the assumption that moral reasoning develops because of the increased cognitive abilities (Slavin, 2006: 53; Grant, 2002: 296 – 297; Louw, van Ede & Louw, 1998: 375). Piaget distinguished three different stages of moral development, corresponding not only with the cognitive developmental stages, but also with the level of egocentrism in children. Briefly, these stages are (Slavin, 2003: 53; Smith, Cowie & Blades, 2003: 260; Grant, 2002: 296 – 297; Louw, van Ede & Louw, 1998: 375):

- *Pre-moral judgement*: (From birth to 4 or 5 years old) Children in pre-moral judgement are unable to understand the rules of a game;
- *Moral realism/heteronomous morality*: (From 4 or 5 years to 9 or 10 years old) Rules are seen inflexible and determined by a higher authority. Punishment and consequence are both seen as fair, and acceptable behaviour is judged by adults' acceptance and reactions to such behaviour;
- *Moral relativism/autonomous morality*: (9 – 10 year-old and older) Rules are created and agreed upon by peers and can be changed by mutual consent. Fairness implies that individuals' needs are taken into account, or by equal treatment, and punishment should be relative to the misdemeanour. The intentions of an individual are considered important and should be regarded in deciding on the consequence.

Adolescents fall into the moral relativism stage which occurs when the social world of early adolescents expands to include their peers (Kerr, 2008: 35; Slavin, 2003: 54; Louw, van Ede & Louw, 1998: 375). Piaget suggests that moral reasoning is advanced through peer-to-peer conversations, where the peers are considered as equals. However, in a family where parents are authoritarian, moral reasoning is less likely to develop to the same degree (Santrock, 2006: 260).

Kohlberg built his theory of moral development on Piaget's theory, and suggested more distinct divisions, namely three levels of moral development, each with two stages (Bee & Boyd, 2002: 328; Slavin, 2003: 54; Mwamwenda, 1989: 109). Briefly, these stages are:

- *Pre-conventional level*:
  According to Kohlberg (1976: 33), this is the level of most children under nine years of age, as well as some adolescents and adult lawbreakers (Santrock, 2006: 334; Smith, Cowie & Blades, 2003: 262 – 263).
    - *Stage 1: Punishment and obedience orientation*: The physical consequences of actions determine for the child the rightness of the action.
    - *Stage 2*: *Instrumental relativist orientation*: At this level, what satisfies the needs of the child is considered right, although there are elements of reciprocity.
- *Conventional level:*
  Most adolescents fall within this level of moral development (Santrock, 2006: 334; Smith, Cowie & Blades, 2003: 263; Kohlberg, 1976: 33).
    - *Stage 3: "Good boy – Good Girl":* The approval of others determines what is seen as good behaviour.
    - *Stage 4: "Law and order" orientation:* At this stage, doing one's duty and respecting authority are considered to be right, as well as upholding the existing social order.
- *Post-conventional level:*
  A minority of adults after the age of 20 reach this stage (Santrock, 2006: 334; Smith, Cowie & Blades, 2003: 263; Kohlberg, 1976: 33).
    - *Stage 5: Social contract orientation*: The moral behaviour of this stage is defined by the group and focuses on what is considered good for the group. It is flexible and can be changed through consensus.
    - *Stage 6*: *Universal ethical principle orientation:* The correct behaviour and actions are self-chosen at this stage and tend to be based on the individual's own ethics rather than conventional morals (Santrock, 2006: 333; Slavin, 2003: 54 – 55; Grant, 2002: 297 – 303; Craig, 1996: 386 – 387).

Both Piaget and Kohlberg suggested that moral reasoning can be taught and that children's *moral reasoning* can be developed and increased through interaction with others who are a stage or two above them (Santrock, 2006: 260; Slavin, 2003: 56). Parent-child relationships and debates also play a strong role in the development of moral reasoning.

A major *criticism* of both *Piaget* and *Kohlberg's* theories on moral development is that moral reasoning does not necessarily equate to moral action (Craig, 1996: 386; Slavin, 2003: 59). In particular, Kohlberg's theory was criticised for being culturally biased and based on the male norm of moral reasoning (Santrock, 2006: 336; Slavin, 2003: 58 – 59).

An *implication of adolescents'* ability to reason on morals is their discovery of discrepancies between their elders' and parents' moral theories and their moral practice (Newcombe, 1996: 441; Louw, 1991: 404 - 405). They question their parents' choices and criticise their actions when they notice such inconsistencies (Sigelman & Rider, 2003: 178; Louw, 1991: 405). However, this criticism is essential in the development of one's own personal value system (Louw, 1991: 409).

Bee and Boyd (2002: 332) argue that, although cognitive development plays a critical role in adolescents' ability to reason about morals, the *social environment* also plays an important role (Craig, 1996: 451; Louw, 1991: 415). Adolescents, who are in an environment where opportunities for mutual and meaningful discourse on moral issues are encouraged, develop more mature moral reasoning skills (Atkinson, 1997: 5; Bee & Boyd, 2002: 332). However, the ability to reason on moral issues in a mature manner does not necessarily imply implementation of those moral issues (Slavin, 2006: 59; Bee & Boyd, 2002: 333).

Myers (1997b: 55) indicates that adolescents tend to be more conventional in their moral reasoning, conforming to the rules of the peer group. This conformity is essential in adolescents' development towards responsible adulthood, indicating the importance of their social development in their moral development and reasoning.

3.2.3.4 Social development of adolescents

Social development takes place through socialisation. Dacey and Travers (1996: 188) define *socialisation* as creating and maintaining relationships with others in order to adjust behaviour according to society's standards. Another definition of socialisation is presented by Weidman, Twale and Stein (2001: 4) as the process of attaining knowledge, skills and character, in order to become an effective member in society. Kalmus (2006: 226) expands this theory, indicating that the process of socialisation is twofold. Firstly, society imposes its culture onto individuals; and secondly, individuals absorb culture from society.

For the purpose of this study, socialisation is defined as the transmission of standards, culture and appropriate behaviour to individuals through social processes. Social development helps create core values, skills and attitudes that will carry adolescents through to adult life (Craig, 1996: 9).

Social development in adolescents is characterised by a more significant increase in *peer relationships* and a natural move from parental dependence towards *autonomy* (Sigelman & Rider, 2003: 390; Bee & Boyd, 2002: 323; Gouws, Kruger & Burger, 2000: 5; Corr & Balk, 1996: 140; Steinberg & Silverberg, 1986: 841 - 851). According to Gouws, Kruger and Burger (2000: 77), the role of the peer group is to provide a framework within which adolescents can experiment with different roles and behaviour and receive feedback.

Several forms of peer relationships are discussed below.

Close friendships and social interaction tend to focus more on "intimacy and self-disclosure" (Sigelman & Rider, 2003: 390; Slavin, 2003: 92). Adolescents increasingly choose close friends who share similar values and beliefs regarding smoking, drugs, and other contentious issues (Sigelman & Rider, 2003: 390; Slavin, 2003: 92; Smith, Cowie & Blades, 2003: 309; Bee & Boyd, 2002: 323; Gerdes, 1998: 165).

These close relationships are the major source of camaraderie, support and importance (Santrock, 2006: 408; Gouws, Kruger & Burger, 2000: 76). By the age of

12, adolescents perceive their same-sex close friendships as equal to the support of their parents and by the age of 16, the principal source of such support (Slavin, 2003: 92, Graig, 1996: 448; Gouws & Kruger, 1994: 120).

Because such a high emphasis is placed on self-disclosure and support within these friendships, the value of trustworthiness and faithfulness become more important (Bee & Boyd, 2002: 322; Craig, 1996: 447).

The need to conform to a *peer group* is at its peak during the ages 11 to 13 years (Louw, van Ede & Louw, 1998: 452). Conformity refers to the predisposition of adolescents to yield to social pressure (Louw, van Ede & Louw, 1998: 452). However, such conformity does not always imply negative behaviour and a great many adolescents wish to conform in terms of their dress code, time together spent with friends and even social causes (Santrock, 2006: 409; Louw, van Ede & Louw, 1998: 454). Damon, Lerner and Eisenberg (2006: 1022 – 1023) and Santrock (2006: 409) distinguish between cliques and crowds.

Cliques are small groups with a common identity, usually averaging five to six same-sex individuals (Santrock, 2006: 409; Craig, 1996: 449; Louw, 1991: 419). Same-sex cliques form a safe base from which to explore cross-sex relationships (Sigelman & Rider, 2003: 391). During later adolescence, cliques transform to include members of the opposite sex (Damon, Lerner & Eisenberg, 2006: 1022 – 1023; Sigelman & Rider, 2003: 391; Craig, 1996: 449).

A close friendship may develop between members within a clique, although this is not always the case (Damon, Lerner & Eisenberg, 2006: 1022). Furman, Brown, and Feiring (1999: 275) and Adams and Berzonsky (2006: 321) indicate that cliques are significant for discussions about romantic relationships and assist in encouraging such relationships during middle and late adolescence.

Crowds are larger groups and are defined by reputation and often through common activities, such as sport, or computers, as opposed to cliques, which are defined by similar interests (Santrock, 2006: 409; Craig, 1996: 449). Crowds usually evolve from cliques, being more prominent during early and middle adolescence and less

prominent during late adolescence (Damon, Lerner & Eisenberg, 2006: 1022 – 1023; Adams & Berzonsky; 2006: 337).

Some studies have shown a close correlation between membership of a crowd and self-esteem. For instance, as Santrock (2006: 409) and Craig (1996: 449) point out, learners who belong to the "popular crowd" tend to have a higher self-esteem than those belonging to a less-popular crowd. The purpose of crowds is to allow for cross-sex relationships to form, and towards the end of adolescence, crowds loosely disperse to form groupings of couples (Sigelman & Rider, 2003: 391; Juntunen & Atkinson, 2002: 217).

Peer groups evolve during the adolescent years, changing from same-sex cliques at early adolescence to dating couples by late adolescence (Sigelman & Rider, 2003: 391; Louw, 2002: 450; Furman, Brown & Feiring, 1999: 318; Coleman & Henry, 1990: 113). This evolution of peer and group relationships within adolescence is represented in Figure 3.4. (Dunphy, 1972)

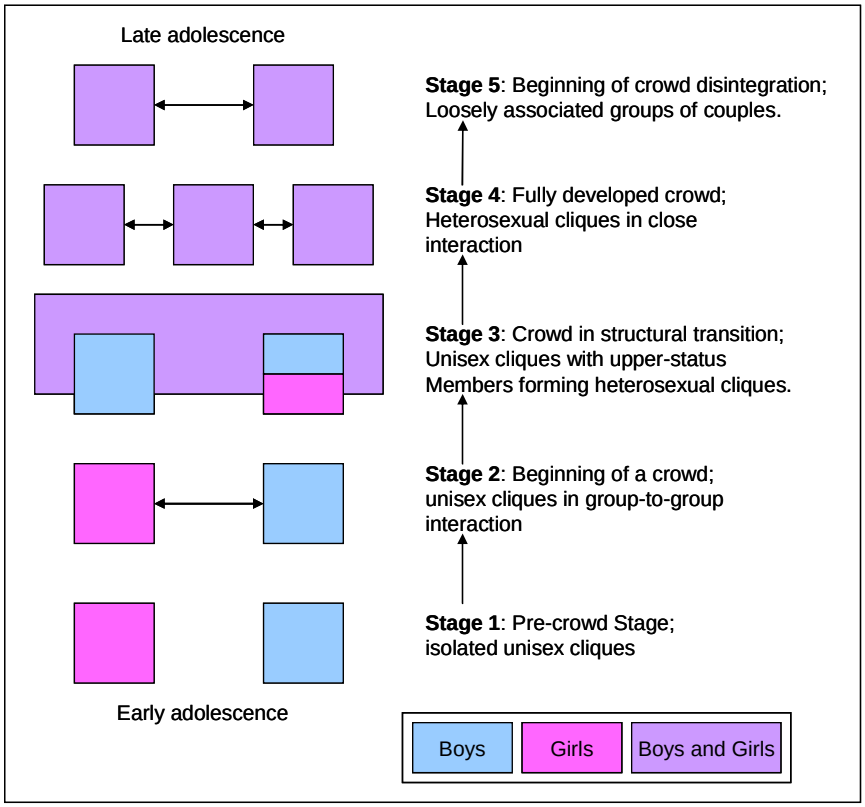


Figure 3.4: Stages of group development in adolescence

Another form of socialisation is the emergence of *romantic relationships* during adolescence. Santrock (2006: 410) suggests that adolescents spend a lot of time on dating or thinking about dating. Early romantic relationships in the younger adolescents serve as a learning curve for more serious dating later (Adams & Berzonsky, 2006: 321; Louw, van Ede & Louw, 1998: 458). They spend their time on learning how to make themselves attractive to the opposite sex, how to interact with the opposite sex and how they fit in and are perceived by the peer group (Santrock, 2006: 411; Craig, 1996: 448).

At this stage, early adolescents prefer to go out in groups. By age 16, later adolescents tend to maintain more traditional relationships, lasting longer than two months (Santrock, 2006; Craig, 1996: 448; Furman, Brown & Feiring, 1999: 278 – 281).

Furman, Brown and Feiring (1999: 278 – 281) distinguish four *phases* in the development of *romantic relationships*, namely:

- *Stage 1: Initial infatuation*: This stage is characterised by initial "crushes" or attraction towards a particular person, although often without interaction and intimacy.
- *Stage 2: Affiliative romantic relationship*: During the second stage, romantic relationships form within a group and interactions tend to stay mostly within the group.
- *Stage 3: Intimate romantic relationship*: During this stage, adolescents become more intimate and tend to separate themselves more from the group, preferring each other's company to that of their peers and friends.
- *Stage 4: Committed romantic relationship*: This final stage closely mirrors adult romantic relationships with commitment and intimacy.

Louw, van Ede and Louw (1998: 458) present the development of *romantic relationship functions* as follows:

- *Level 1 (13 to 15 years old):* The function of this level is for relaxation and entertainment with tentative heterosexual intimacy.

- *Level 2 (14 to 17 years old):* At this level, the function of romantic relationships is socialisation, when adolescents become skilled in their interactions with the opposite sex. Relationships tend to be short-lived.
- *Level 3 (16 to 19 years old):* The function of level 3 is for the achievement of status through romantic relationships, when long-term relationships with more intimacy develop.
- *Level 4 (18 to 25 years old):* At this level, the function of romantic relationships comprise courting and the finding of a marital partner, which involves sexual intimacy and loyalty to each other.

The *relationships* of adolescents with their *parents* also undergo changes. These changes are largely ascribed to adolescents' search for autonomy (Sigelman & Rider, 2003: 392; Smith, Cowie & Blades, 2003: 305; Bee & Boyd, 2002: 321; Craig, 1996: 441). Autonomy refers to adolescents' ability to govern themselves in the absence of supervision (Damon, Lerner, & Eisenberg, 2006: 1038). Autonomy can be promoted by parents by (Damon, Lerner, & Eisenberg, 2006: 1038):

- Being a competent *role-model* in decision-making strategies;
- *Encouraging* autonomous decision-making within the family context;
- *Rewarding* autonomous and responsible decision-making outside the family context;
- *Instilling* self-worth in adolescents through responsible parenting styles.

Researchers agree that adolescents need their parents to provide a *safe base* from which they can develop their autonomy (Adams & Berzonsky, 2006: 564; Sigelman & Rider, 2003: 390; Bee & Boyd, 2002: 322- 323; Furman, Brown and Feiring, 1999: 195; Newcombe, 1996: 446). Adolescents who feel they have a secure, safe base, achieve better academically and have good peer relationships and are less likely to take unnecessary risks (Sigelman & Rider, 2003: 390; Bee & Boyd, 2002: 322).

The development of the cognitive domain in adolescents also causes them to view their parents as individuals, rather than as parents (Adams & Berzonsky, 2006: 66; Louw, van Ede & Louw, 1998: 445; Newcombe, 1996: 446). However, this may give

rise to *increased conflict* in the home when adolescents discover the discrepancies between parental theory and practice (Louw, van Ede & Louw, 1998: 444; Newcombe, 1996: 441).

Conflict between parents and adolescents was found to increase during the early adolescent years and to decrease towards the end of adolescence (Santrock, 2006: 406; Smith, Cowie & Blades, 2003: 305; Louw, van Ede & Louw, 1998: 445; Craig, 1996: 441). Conflict generally arises over household duties, dress and appearance, manners and academic achievements (Santrock, 2006: 405; Smith, Cowie & Blades, 2003: 305; Craig, 1996: 441). However, Santrock (2006: 406) recognises that conflict between adolescents and their parents is a natural move towards adulthood and that moderate conflict is a natural part of their development.

Furthermore, it is important that parents realise their role in being essential support systems and attachment figures during their adolescents' transitional period and see conflict as part of adolescents' move towards autonomy (Adams & Berzonsky, 2006: 258; Santrock, 2006: 406; Renshaw, 2005: 7 – 8).

3.2.3.5 Emotional development of adolescents

Due to the cognitive, social and physical changes, adolescents experience intense mood swings from one situation to the next (Louw, van Ede & Louw, 1998: 434). Their emotional development undergoes a period of intense self-focus, linking with Piaget's concept of egocentrism (Focus Adolescent Services, 2006: 5 – 8).

In their shift towards emotional maturity, adolescents experience the following *emotional changes*, often giving rise to conflict (Townsend, 2006: 77):

- *Striving* for *independence*, yet experiencing the necessity of being dependent on parents.
- *Questioning* of family values, beliefs and authority.
- Experiencing of *extreme emotions*, which often cloud their judgement.
- Focusing on *immediate gratification*, rather than focusing on the future.

Blakemore and Choudhury (2006: 303) and Morgan (2005: 26) suggest that the emotional changes experienced by adolescents are partly related to hormonal changes, but more so by the *developments* in the *brain*. Apart from the growth of the prefrontal cortex, as discussed under 3.2.3.2, there are indications that emotional processing is more active during early adolescence through increased activity in the amygdale, the part of the brain that controls "gut" feelings (Casey, Jones, & Hare, 2008: 118; Feinstein, 2006: 19; Morgan, 2005: 28 – 30).

Consequently, adolescents are inclined to react more on an emotional level through the amygdale, than on a rational level from the prefrontal cortex (Casey, Jones, & Hare, 2008: 118; Feinstein, 2006: 19). Research also points out that adolescents are not always able to clearly interpret facial expressions and tone of voice, which may give rise to irrational emotional outbursts and conflict between adolescents and adults (Blakemore & Choudhury, 2006: 307; Feinstein, 2006: 20; Morgan, 2005: 31).

Corr and Balk (1996: 140) explain the emotional tasks of adolescents and their subsequent conflict in three phases. These are summarised in Table 3.3. (Corr & Balk, 1996: 140)

Phase 1	**Early adolescence (Ages 11 to 14)** *Task*: Emotional separation from parents. *Conflict*: Abandonment vs. safety
Phase 2	**Middle adolescence (Ages 14 to 17)** *Task*: Competency/Mastery/Control *Conflict*: Independence vs. dependence
Phase 3	**Late adolescence (Ages 17 to 21)** *Task*: Intimacy and commitment *Conflict*: Closeness vs. distance

Table 3.3: Tasks and resulting conflict in adolescence

It is clear that adolescence is a period of immense growth, not only physically, but also cognitively, morally, socially and emotionally. Many of the developments during adolescence can be related to hormonal changes, as well as development of the brain.

This section has given an overview of Montessori and Piaget's development theories, as well as the different development areas of adolescents in particular. The following section will look at the role of the teacher within a Montessori environment.

3.3 THE TEACHER

Within the Montessori community, teachers are referred to as directors or directresses. This is from Montessori's Italian word "direttrice", implying co-ordinator or administrator of an office or factory (Seldin & Epstein, 2006: 38). Some schools prefer to call their teachers "guides".

3.3.1 The goals of the teacher

Seldin and Epstein (2006: 38) outline four goals of the Montessori teacher, viz.

- *Awaken* the *spirit* and *imagination* of the learners;
- *Encourage* the learners' natural desire for *independence* and sense of self-esteem;
- *Support* the learners in developing *self-discipline*, manners, courtesy and grace, allowing them to become full members of society;
- *Assist* the learners in their *independent thinking*, through their observations, questioning and exploration of ideas.

3.3.2 The role of the teacher

The teacher is the link between the child and the environment (Schmidt & Schmidt, 2009: 35). The role of the teacher is to observe the learners and to *prepare the environment* according to the needs that have been observed, in conjunction with the curriculum (Association Montessori Internationalé, 2007b; Avelon Children's Montessori School, 2006; Boushel, Fawcett & Selwyn, 2000: 121; Mooney, 2000: 26; Montessori, 1998: 252; Lillard, 1972: 82 - 83). For example, if the Maths teacher within the 9 to 12 class environment notices the boys refining their fine-motor skills through detailed drawings, she could encourage them to focus on geometric drawing,

demonstrating the use of protractors and a pair of compasses, thus channelling their need for fine-motor skills development towards the curriculum requirements.

Teachers are responsible for creating a joyful and stimulating environment and should place a strong emphasis on the encouragement of the learners' efforts (Boushel, Fawcett & Selwyn, 2000: 121). This encouragement helps learners to develop self-confidence and self-discipline.

The teacher has the further role of *demonstrating* the use of the material, available activities or equipment (as discussed in more detail under 3.4.1.2). However, it is only through observation that a teacher can determine exactly which activity to demonstrate and when it should be demonstrated. Towards grades 4 to 6, the teacher becomes a less active and more passive observer, ensuring that the environment is stimulating and self-directing (Gisolo, 2005: 5; A Child's Place Montessori School, 2005; Standing, 1957: 304 – 305).

Finally, the teacher has the function of setting an *example* to the children, the parents and the other directresses at the school (Lillard, 1972: 83), as well as attending to *public relations* by interpreting the Montessori aims to the community at large (Association Montessori Internationalé, 2007b; Avelon Children's Montessori School, 2006; Lillard, 1972: 86).

3.3.3 Teacher observation

One of the main tasks of the teacher is to *observe* the learners (Schmidt & Schmidt, 2009: 41; AMI, 2007b; Avelon Children's Montessori School, 2006; Lillard, 1972: 79-82; Morrish, 1970: 217). Only through methodical observation can the teacher determine what their needs are, what they are not getting from the environment and where to guide them so that they may ultimately become truly independent (Mooney, 2000: 33 – 34; Montessori, 1964: 108 – 110).

Montessori further believed that only through observation is the teacher able to truly determine the curriculum needs of the learners (Seldin & Epstein, 2006: 51; Mooney, 2000: 35). In the Montessori environment, the teacher observes individual learners

and their engagement with work, while keeping an eye on the environment as a whole. In a traditional class, the teacher observes the class as a whole, maintaining discipline, but does not always ascertain whether the learners are absorbing the work they do (Bronsil, 2003: 2).

A Montessori teacher will assist directly, with the child's permission, or indirectly without hindering the child's natural discovery (Schmidt & Schmidt, 2009: 41).

Three areas of observation of the child that Montessori teachers specifically focus on are (Seldin & Epstein, 2006: 51 – 52; Lillard, 1972: 81 – 82):

- *Work*: Observation of the learners' work, what tasks they do, the time they spend on the task, the concentration with which they are involved in a particular task, persistence in completing a task despite distractions, how they manifest a desire to progress and how many periods of spontaneous activity learners have during a day;
- *Conduct*: Observation of learners' ordered and disordered actions, changes of behaviour during engagement with work, socialisation with peers and expressions of joy, serenity and affection, in particular during focused activity;
- *Obedience*: Observation of learners' response when they are summoned, when they intelligently take part in work with others rather than distracting others; observation of obedience relating to order in work and the physical environment and observation when learners obey eagerly and happily. The teacher also needs to observe changes in obedience in terms of the learners' work and conduct.

3.3.4 The three-period lesson

Central to the Montessori method of education, is the process of *discovery* of new knowledge and understanding (Schmidt & Schmidt, 2009: 35). This is aided by the three-period lesson. The "*three-period lesson"* is a unique term used in Montessori education. It refers to the three phases a teacher will use when introducing new concepts and equipment, the practice thereof and finally, the mastery. The three

periods might, depending on the concept, be followed within one lesson, or over the course of a few days.

Through the three-period lesson learners are led from the concrete to the abstract (Seldin & Epstein, 2006: 36). The three-periods are as follows:

- *First period – Didactic presentation*: During the first period, the new concepts are presented to the learner. The teacher presents the questions to review prior knowledge and to stimulate interest in the present work. During this period the teacher empowers the learner to be a seeker of information, rather than merely presenting all the information to the learner (NAMTA Center for Adolescent Studies, 2009: 3; Compass Montessori School, 2008; Kahn & Feldman, 2008b: 250). Ewert-Krocker (2003: 1) suggests that the first period during the adolescent phase should initiate a challenge to the learners and aim at gaining interest and problem-solving ideas.

- *Second period – Exploration*: This phase presents the research and information finding, as well as setting up a work-schedule. The teacher's role during this period is asking meaningful, interpretive questions that will guide the learner to deeper understanding and higher cognitive functions (Kahn & Feldman, 2008b: 253). Brief summaries of work done thus far, or oral feedback, should be given to assist learners with their time-management, as well as give teachers the opportunities for further mediation (NAMTA Center for Adolescent Studies, 2009: 3; Compass Montessori School, 2008).

- *Third period – Student presentation*: At this last stage the learner needs to provide proof of mastery. This is usually done through presentations, whether of a written, oral, or creative expression. The aim is for the teacher to assess the learners' mastery, and for learners to realise their own achievement and accomplishment in the task (NAMTA Center for Adolescent Studies, 2009: 3; Compass Montessori School, 2008).

Figure 3.5 presents a graphical representation of the three-period lesson pertaining to adolescent education. The decline in teacher involvement and the increase in student involvement is represented by the two triangles.

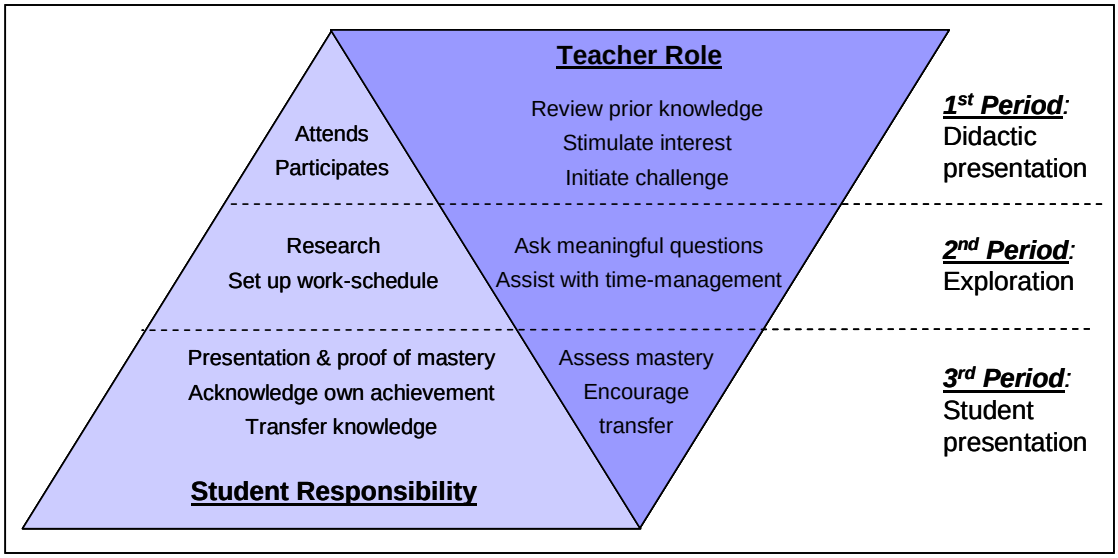


Figure 3.5: Graphical representation of the three-period lesson

3.3.5 The teacher in the adolescent years

During the adolescent years, the teacher should have a solid *understanding* of (Seldin & Epstein, 2006: 165; Seldin, 1998: 5):

- The concept of "*Erdkinder*" (Children of the earth), as defined by Montessori (this concept is discussed in more detail under 3.4.3);
- Montessori education at early childhood and primary school levels in order to understand their development prior to adolescence and the middle school;
- Adolescent development and psychology;
- Up-to-date secondary education teaching methods and curriculum innovation;
- Counselling strategies to both individuals and groups;
- Conducting field-studies, which should include the running of small businesses, community service projects, farming and land-based projects, as well as internships;
- Organisation, structure and the running of a Montessori middle school;
- Administration and classroom leadership;
- Observation, record-keeping and assessment strategies.

The next section looks at the prepared environment, in particular the role of the environment, on learner development. The focus is on Montessori's view of the environment, as well as the developmental tasks of adolescents which emphasise the role of the environment.

3.4 THE PREPARED ENVIRONMENT

The *environment* within the premise of this study refers to the educational setting within which teaching and learning take place. Mooney (2000: 24) defines the Montessori environment as not only the physical classroom and outdoor area, but also the adults and learners within that space. Cuevas (1997: 107) defines the Montessori prepared environment as the context within which learners are helped to sustain their concentration without any developmental obstacles.

The preparation of the environment and its role in education are central to Montessori's method (Dyck, 2002: 53).

Through the prepared environment, learners *explore* and *discover*, rather than being taught, facts and content (Seldin & Epstein, 2006: 33; Lillard, 2005: 305 Rathunde, 2001: 28; Mooney, 2000: 24). Through the prepared environment learners are naturally stimulated to discover and construct new knowledge in line with their sensitive periods (Gutek, 2004: 19). This process is termed "*auto-education*" and implies that when learners are ready to learn a new concept, they will naturally do so (Gutek, 2004: 19; Chakrabarti, 1995: 81).

The task of the educator is to prepare the environment in such a manner as to cater for this natural discovery (Schmidt & Schmidt, 2009: 35; Chakrabarti, 1995: 81). An example of the process of discovery in the adolescent years was presented by McNamara (2008: 169). He drew attention to the rules and formulae in mathematics, geometry and science as the points of arrival, not the points of departure. In other words, learners should be guided to explore problems and synthesise their own discovery of the rules and formulae, instead of the rules and formulae being given to them without any context or relevance by way of explanation.

This process of learning through doing and discovery is consistent with *Bruner's theory* of "discovery learning". Bruner's theory involved the active participation of learners in discovering underlying facts and in constructing knowledge (Quinn, 2000: 98; Hamachek, 1995: 232). This could take place either through pure discovery, with no direction from the teacher, or through guided discovery, where the teacher poses questions or problems, encouraging learners to discover the solution themselves (Leonard, 2002: 37; Quinn, 2000: 98).

From Bruner's point of view, structure is essential to learning, as

- the essential elements of a subject are more easily grasped;
- structured patterns are more easily remembered;
- a person who understands the structure is able to determine the details with more ease (Quinn, 2000: 97; Hamachek, 1995: 234).

Within the Montessori approach, structure is given through timelines and integrated curriculum arrangement (see 3.5.3.2).

In order to create focus and concentration, Montessori pre-primary and primary schools have a *three-hour working period* in the mornings. This period is defined as a period during which children engage in self-selected activities without external interruptions (Schmidt & Schmidt, 2009: 109; Daoust, 2004: 15; Lillard, 2005: 109-110). During this time, learners are free to choose their work and engage in learning and may decide to work individually or in pairs or small groups (Becker & Becker, 2008, 4).

In the pre-school, one three-hour working period is from 9:00 to 12:00 in the morning, after which the children have break. In primary school years, learners may have another two-hour or three-hour working period after the lunch break (Becker & Becker, 2008: 4; Lillard, 2005: 109). No specifications as to the length of the work periods in adolescence were presented by Montessori (1948), although one three-hour working period from 9:00 to 12:00 and a two-hour from 13:00 to 15:00 were suggested for the adolescent learner (Beyleveld, 2009).

Montessori education seeks to create a *learner-centred environment* best suited to the specific sensitivities of learners in each plane of development (Centenary of Montessori Movement, 2006: 2; Ewert-Krocker, 2001: 454). Montessori affirmed that the first aim of the prepared environment is to make learners independent of adults (Standing, 1957: 267). Therefore, the environment is a place where the learners are increasingly active and the teacher becomes increasingly passive.

The environment should be set up in such a way that learners can develop at their own pace and be stimulated to become progressively more independent through their own activities and experiences (Burnett, 2007: 330; Grazzini, 2006a: 222; Boushel, Fawcett & Selwyn, 2000: 121).

3.4.1 Seven key principles of the Montessori environment

There are seven *key principles* of a Montessori classroom (Lillard, 1972: 51 – 74). Each of these will be discussed below.

3.4.1.1 Mixed-age groups

Montessori schools are generally arranged in *three-year age groupings*. Each learner spends approximately three years within a particular environment, divided up into ages 3 to 6 year olds, 6 to 9 year olds, 9 to 12 year olds, 12 to 15 year olds and 15 to 18 year olds (Lillard, 2005: 20). The reasoning behind this mixed age group is to give the older learners the opportunity to teach and help the younger learners in the class, thereby revising the work they have already completed (Lillard, 1972: 75 – 76).

This also develops the sensitivity of the older learner to the needs and development of the younger learners, as their helping of younger learners may not infringe on the natural progress of the younger learners.

The purpose of the Montessori mixed-age groups parallels with *Vygotsky's* theory of the zone of proximal learning. Vygotsky proposed that children learn at two levels. The lower level refers to what learners can learn independently and the higher level to what learners can learn with assistance. The difference between these two levels

is referred to as the zone of proximal learning (Bodrova, 2003; Hamachek, 1995: 163 – 164). Both Montessori and Vygotsky proposed that through external stimulation learners develop more than if left to develop at their own pace.

In Montessori schools this external stimulation is both through the working with equipment (see 3.4.1.2), as well as social interaction (Seldin & Epstein, 2006: 80), while for Vygotsky learners are stimulated through constructive social interaction, either with an adult or an older classmate (Berger, 2005: 155; Ivic, 2000: 473; Hamachek, 1995: 165 – 164).

At the Knysna Montessori School, the classes are divided up into mixed-age groups. An overview of the age group and the comparison to the National Qualification Forum Band is presented in Table 3.4.

Knysna Montessori Classroom	NQF Band	Grades	Ages
Toddler class			2 to 3 year-olds
Pre-school		Ages 3 and includes Grade R	3 to 6 year-olds
6 to 9 class	Foundation phase of the GET band	Grades 1 to 3	6 to 9 year-olds
9 to 12 class	Intermediate phase of the GET band	Grades 4 to 6	9 to 12 year-olds
12 to 15 class	Senior phase of the GET band	Grades 7 to 9	12 to 15 year-olds
15 to 18 class	Further Education and Training Band	Grades 10 to 12	15 to 18 year-olds

Table 3.4: Overview of classes at the Knysna Montessori School

At the *Knysna Montessori School* the age groupings are as follows (Beyleveld, 2009 and feedback from the interviews):

- *2 to 3 year olds (Toddler class)*: This class consists of a maximum of 16 children with one teacher and one assistant.

- *3 to 6 year olds (Pre-school including grade R)*: At the Knysna Montessori School, the 3 to 6 year-old group consists of three classes, each a maximum

of 20 children. Each class is run by one teacher and one assistant. Children spend three years in the same group with the same teacher, progressing at their own pace.

- *6 to 9 year olds (Foundation, grades 1 to 3)*: The 6 to 9 year old class is considered as one class with a maximum class size of 60 learners (20 per learners per grade) with three teachers and one assistant. However, the class is divided into three distinct areas, namely mathematics, languages and cultural studies (for more detailed discussion on the different areas in the classroom, see 3.4.2.2). These learners are divided into three equal register groups and move as a group from one area to the next. This arrangement was initiated to assist with general classroom management and to help the 6 to 9 year olds with order and time management. However, this is not general Montessori practice, nor the ideal situation within the Knysna Montessori School (Beyleveld, 2009). As with the preschool class, the 6 to 9 year olds spend three years in the same class with the same teacher, progressing from grade 1 to 3 during this time.

- *9 to 12 year olds (Intermediate phase, grades 4 to 6)*: The 9 to 12 year old class can cater for 60 learners (20 per grade), with three teachers and one assistant. However, currently this class consist of 42 learners, two teachers and one assistant. This class is an open-plan class, divided into three areas (See 3.4.2.2). For administrative purposes, learners are divided into two register groups. However, during the work periods, learners do not work in their register groups, as in the 6 to 9 year old class.

- *12 to 15 year olds (Senior phase, Grades 7 to 9)*: The middle school of the Knysna Montessori School can cater for 60 students, maximum 20 per grade. Currently, the class consists of 39 learners. Teachers become more specialised in this age group, and there are currently seven teachers, some of whom teach both middle and high school classes. This age group is presently run on a traditional timetable system, with the different learning areas treated separately. Some integration projects are done that link different learning areas together, but presentation and work are still done in allocated learning

area time slots. This system is not ideal and is too rigid. The principal would like to change to a three-hour working period in the morning, as seen in the pre-primary and primary school (Beyleveld, 2009).

- *15 to 18 year olds (Further Education and Training Band, Grades 10 to 12)*: During the high school years, Montessori schools become more traditional in their approach. The Knysna Montessori High School caters for 60 learners, 20 per grade. Currently, there are a total of 30 learners in the 15 to 18 year old class, with seven specialist teachers, some of whom also teach in the middle school. This class is run on a traditional timetable system, with very little integration between the different subjects.

3.4.1.2 The Montessori equipment

Seldin and Epstein (2006: 24) define the Montessori materials or equipment as "sequenced learning activities". Lillard (1972: 60) points out that the purpose of the equipment is to provide learners with stimuli which will hold their attention and instigate the process of concentration and discovery. Attention, concentration and discovery are some of the fundamental concepts of the Montessori method (Montessori, 1915: 12).

Both Montessori and Vygotsky are seen as constructivists, suggesting that children can construct their knowledge. For Montessori, this construction of knowledge takes place through interaction with the environment, whether it be social or whether it be through the concrete equipment. Vygotsky sees the social interaction within the environment as the main influence in the construction of knowledge (Berger, 2005: 155; Ivic, 2000: 473; Hamachek, 1995: 163; Vygotsky, 1981: 163).

There are *six principles* to Montessori's equipment. Each principle will be discussed below with meaningful examples where possible, taking into account that very little equipment was designed with the adolescent and middle school in mind. The six principles to Montessori's equipment are (Lillard, 1972: 61 – 65):

- *Meaningfulness:* The equipment must be meaningful to the learners' plane of development and also cater for their sensitive stages. For example, preschool learners tend to focus their attention on the sensory aspects of the equipment, such as size, colour, texture, shape, sound, weight, smell, and suchlike. Primary school learners, on the other hand, are interested in the sequencing and sorting of ideas and concepts. At the adolescent age, learners are interested in connections between events, findings, issues and moral justice (Seldin & Epstein, 2006: 35).

- *Difficulty of error:* The difficulty of error refers to the isolation of a single concept within the equipment that will allow the learner to more readily identify the problem the equipment is posing (Schmidt & Schmidt, 2009: 35; Grazzini, 2006a: 223; Lillard, 1972: 61 – 65). For example, in the pre-primary school, the tower of blocks (called the Pink Tower), represents only differences in size from one block to the next, without any variation in shape, colour, design and texture (see Figure 3.6) (Nienhuis Montessori, 2008: 23).

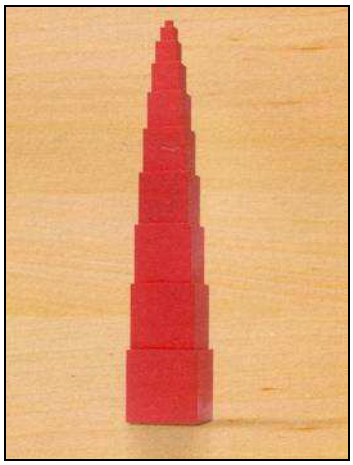


Figure 3.6: The Pink Tower

- *Simple to complex design and use:* Equipment is designed in a certain order of simplicity to complexity; one piece of equipment starting with a simple concept, and the next in the sequence building on the same concept at a more complex level. Figure 3.7 (Nienhuis Montessori, 2008: 23, 50, 52) presents an example in the use of different rods (the red rods: no 1), teaching firstly, the concept of length at preschool level. The next set of rods (number rods: 2) is coloured in

red and blue lines, used for the association of numbers to length and simple addition and subtraction. The third set of rods (small numerical rods: no 3) are much smaller in size and they are used in conjunction with a board chart (number rods chart: no 4) for solving simple mathematical problems and the introduction to writing mathematical problems at pre-school level.

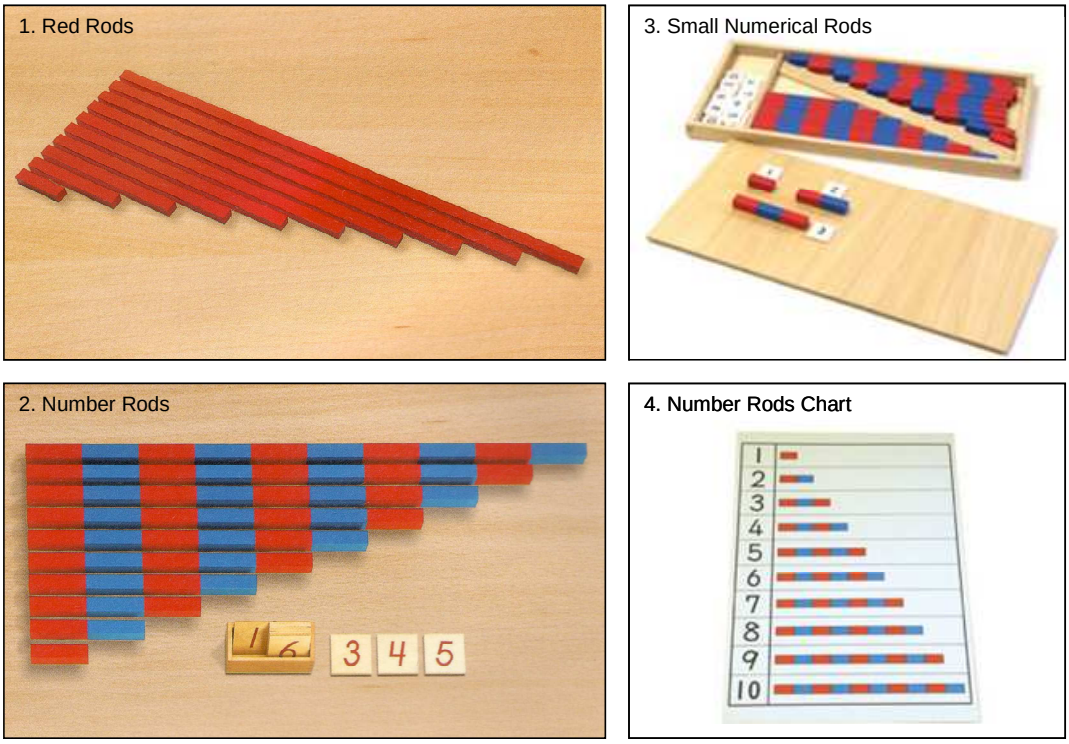


Figure 3.7: Simple to complex design of Montessori equipment

- *Prepare learners indirectly for future learning:* Through the experience of success in their activities, learners are more self-confident and ready for more learning (Schmidt & Schmidt, 2009: 35). Through indirect preparation, learners' confidence is boosted and learning takes place with the minimum anxiety and frustration. Examples of such indirect learning are the cylinder blocks (see Figure 3.8) (Nienhuis Montessori, 2008: 22), a piece of equipment where learners manipulate different size knobs in different orders, using the coordination of thumb and finger. This is indirect preparation for holding a pencil when learning to write. McNamara (2008: 171) indicates that through the discovery of mathematics in the middle school, adolescents are indirectly preparing thinking strategies which they will use in the future.

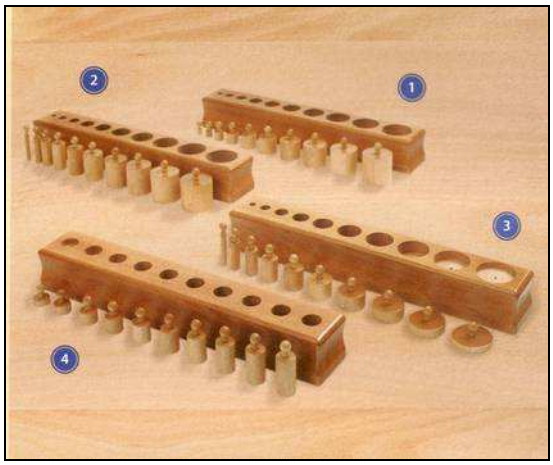


Figure 3.8: Cylinder Blocks

- *Move from concrete to abstract:* Initially the equipment starts with a concrete concept and then moves towards more abstract representations of the concrete concept (Schmidt & Schmidt, 2009: 35). An example is the binomial and trinomial cubes (see Figure 3.9). At its concrete level in pre-school and foundation phase, these two pieces of equipment are a complex puzzle, using sorting skills of cubes and rectangular prisms to rebuild the original cube. At the intermediate and senior phase, these same pieces of equipment are used to demonstrate the algebraic binomial, namely $(a + b)^3$ and the algebraic trinomial, namely $(a + b + c)^3$, where a = 3cm, b = 4cm and c = 5cm (See Figure 3.9) (Nienhuis Montessori, 2008: 32).

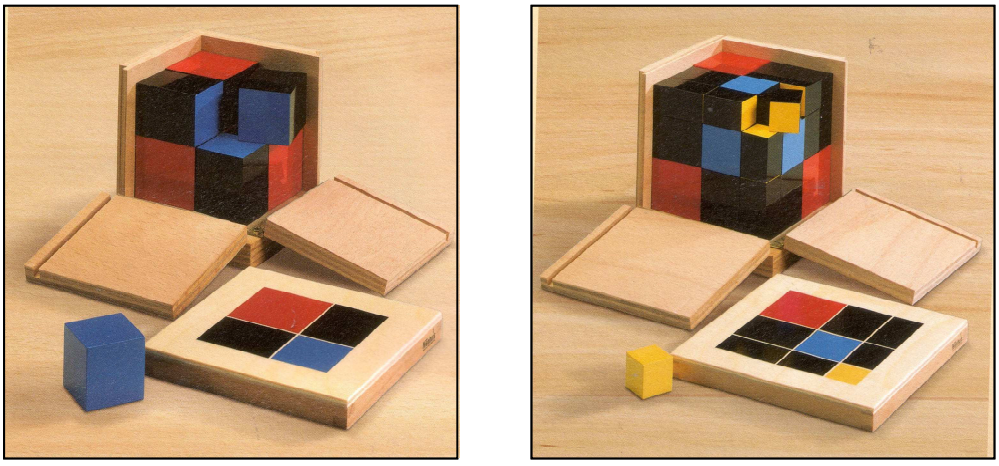


Figure 3.9: The Binomial and Trinomial Cubes

- *Control of error:* The last principle of the Montessori equipment is the control of error, which is built into the equipment. The equipment is self-correcting and

learners can detect their own errors, as they work with a particular piece of equipment, and correct it; thus learning takes place (Boushel, Fawcett & Selwyn, 2000: 121). If learners are unable to see their error, despite the design of the material, they need to then either practise with that specific piece again, or return to a more concrete piece of equipment. Control of error is a built-in system of assessment, focusing on self-assessment (Schmidt & Schmidt, 2009: 106).

The introduction of new equipment to a learner is determined by the learner's readiness, as well as the teachers' observations of the learner's development. Teachers use the first period of the three-period lesson to introduce new equipment, either on a one-on-one basis, or in a small group. The three-period lesson was discussed under 3.3.

3.4.1.3 Liberty (Freedom)

A basic principle of the Montessori method is *liberty* within a *structured environment* (London Montessori Centre, 1989: 14). Liberty refers to the choices learners make about which work they choose to do (Schmidt & Schmidt, 2009: 35). This is the greatest expression of themselves and their intelligence. Montessori describes discipline as active discipline, i.e. self-discipline. Through their liberty and choices, learners become self-disciplined. This means that they become masters of themselves, able to act from choice and accept the consequences of that choice (Montessori, 1964: 86 – 87).

Through liberty, learners learn *independence*. Independence extends to the concept "*help me do it myself*", which is a fundamental concept of the Montessori method (Grant, 2008: 891). Learners are helped to become independent in all areas, from academic work and cognitive development through to practical life, such as washing dishes, cooking, cleaning and more. Independence and liberty link very closely to Montessori's concept of "auto-education".

Without the freedom of choice, “auto-education” cannot take place (Chakrabarti, 1995: 81). Montessori believed that through independence learners develops self-esteem and self-mastery (Montessori, 1964: 95 – 101).

3.4.1.4 Structure and order

The principal of structure and order in the universe needs to be reflected in the classroom environment too (Schmidt & Schmidt, 2009: 38; Lillard, 1972: 56). Structure and order imply that every piece of equipment has its own place and is easily accessible to the learner. However, a classroom should be adaptable to change, as the needs of learners change (Lillard, 1972: 57).

Through an ordered environment, learners learn to structure their thoughts and thinking, thus expanding their intelligence (Schmidt & Schmidt, 2009: 38 – 39; Lillard, 1972: 56).

3.4.1.5 Emphasis on reality and nature

Montessori environments prepare learners for the *real world* through being true to real life and freeing learners from illusion (Seldin & Epstein, 2006: 214; Lillard, 1972: 57). The school environment does not only consist of pedagogy and mental development, but includes care-taking and physical health, after-school sport and activities, safety, as well as the informal social interaction between learners, and between learners and staff members too (Marin & Brown, 2008: 1).

The equipment and tasks in each environment are geared to imitate the real world. In the *pre-school*, the practical life section reflects reality and learners are encouraged to clean, wash, serve lunch, and care for the class animals and plants (Seldin & Epstein, 2006: 57 – 61).

In the *foundation and intermediate phase*, learners work to get a job done, but continue to have tasks and responsibilities, such as cooking and baking, washing up and classroom cleaning duties, care for the class plants and animals, attending to the

class vegetable garden, if the school has one, and helping to organise special events, (Seldin & Epstein, 2006: 138).

During the *senior phase and further education and training phase*, the prepared environment reflects a real community, regardless of whether the school is a boarding school or a day school. Early adolescents are expected to clear and tidy their classroom at the end of the day, care for the class plants, take responsibility for equipment, whether computers or tools used in technology, arrange field trips and special events.

During the senior phase, learners further emulate career responsibilities through the businesses they run (Beyleveld, 2009; Seldin & Epstein, 2006: 150 – 168). The *businesses* at the Knysna Montessori School include the running of the hostel kitchen, a wood chopping enterprise, a hothouse and vegetable garden, a chicken coop for the production of free-range eggs, a small tuck shop for the hostel learners, a maintenance business for the repair of school equipment, the school magazine, as well as a banking occupation, where all the spending of the hostel learners is consolidated.

Learners are required to keep their own personal budgets, as well as keeping the books of their different businesses. Each business runs for one term and profits are shared among all the members of the business (Beyleveld, 2009). At the end of the term, learners are required to write a CV and apply for the business of their choice. However, all learners will have the opportunity to be in most of the businesses during the course of their grade 7 to 9 years (Beyleveld, 2009).

As each concept has only one piece of equipment in a class, the learners need to learn to *share* and *respect* the work of each other, as in the real world (Lillard, 1972: 58; Schmidt & Schmidt, 2000: 35). Furthermore, the multi-age grouping represents a natural order of the world of work and reality, and a certain amount of comparison and contrasting takes place (Seldin & Epstein, 2006: 214).

Different capabilities, different choices and different individuals are tolerated and relationships are fostered within such a multi-age grouping (Seldin & Epstein, 2006: 214).

3.4.1.6 Beauty and atmosphere

Beauty and atmosphere in the Montessori environment are based on simplicity. Everything within the environment is of good design, good quality and attractively displayed. Colours are bright, but harmonious, and the areas warm, inviting participation from learners (Lillard, 1972: 59). According to Montessori (Mooney, 2000: 27), creating an inviting and beautiful environment should be regarded as a teaching skill. Creating a beautiful environment contributes to the education of the senses of learners, providing them with a "key to guide (their) exploration of the world" (Montessori, 1949: 182 – 183).

3.4.1.7 Development of community life

The *development of community* life refers to the learner's sense of belonging to a community and being an active and contributing member of that community. This is done through four key elements (Lillard, 1972: 74):

- *Sense of ownership and responsibility*: The classroom belongs to the learners with its learner-sized furnishings (see Chapter 1), and a sense of responsibility is fostered through the learners' tasks in caring and maintaining the daily order of their environment.
- *Responsibility for each other*: Within the learning environment learners have freedom in their social relations. However, they are restricted in their socialisation when they disturb or interfere with another learner's learning process. Through this restriction learners develop a sense of responsibility for each other's learning and rights. Furthermore, as learners are allowed to work together to a certain degree, they also learn responsibility in their relationships with one another.

- *Different age groups*: The grouping of three age groups in a Montessori class creates a sense of community, as learners who are the same age, spend three years together, and those who are a year apart in age will spend two years together (Lillard, 2000: 214). The grouping of learners into three age groups was discussed under 3.4.

- *Open plan classrooms*: Classrooms are ideally open plan with waist-high partitions between the different classrooms. This allows younger learners to become inspired by the future possibilities and older learners to be able to retreat to a less-challenging and simpler environment. However, in practice, open-plan classrooms are seldom truly achieved.

- *Collective education*: Montessori's emphasis was more on individual and small group education, but she did find a need for collective education as a preparation for life. Collective education within this context refers to times in the day when an entire class is required to be quiet and collective order is thereby achieved. This is done through the "silence game", whereby learners are invited to see how silent and immobile they can be. Instructions are whispered and acts are achieved in the quietest possible manner. The learners have a responsibility to maintain this silence and they take a certain pleasure in this collective achievement.

3.4.2 Physical classroom layout

Each age group has specific areas within the classroom. These areas are discussed below according to each age group.

3.4.2.1 Pre-school classroom

The pre-school classroom environment (ages 0 to 6) consists of five areas, viz.

- *Practical life*: This area includes personal care, social manners, care of the environment and the preparation of food. Furthermore, it includes equipment and activities designed to help learners develop their concentration span,

good working habits, co-ordination, and their ability to pay attention to details, such as noticing the control of errors within the equipment and its usage. The aim of this area is to encourage independence (Millard Public Schools, 2004).

- *Sensorial:* Through the use of equipment, such as objects of size, colour, texture, shape, sound, weight, smell, this area prepares and develops the senses, and aids with categorisation (Millard Public Schools, 2004; Gettman, 1987: 65, 160).

- *Mathematics*: Through manipulative concrete equipment, as discussed under 3.4.1.2, this area provides and assists learners with the opportunity to internalise numbers and sequences, symbols and basic operations in mathematics. An example presented earlier was the different rods for learning to count through to basic mathematical operations (See 3.4.1.2 and ; Millard Public Schools, 2004; Gettman, 1987: 159).

- *Language*: Through concrete equipment, as discussed under 3.4.1.2, learners are assisted in internalising sounds and written language, as well as composing words, sentences and eventually entire stories. This area also includes good examples of learners' literature, ranging from simple to more advanced text. Equipment and activities which assist in the development of handwriting, such as the sandpaper letters (see Figure 3.10) (Nienhuis Montessori, 2008: 40), are also included in this area (Millard Public Schools, 2004; Epstein, 2002: 13 – 17).

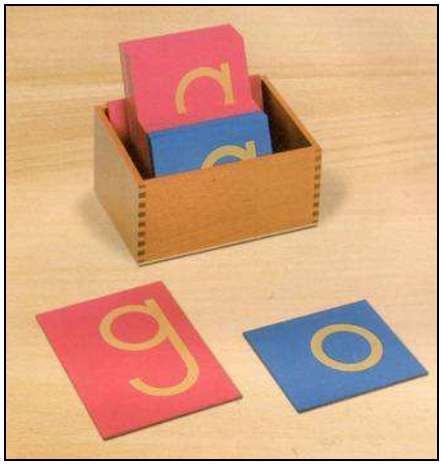


Figure 3.10: The sandpaper letters

- *Cultural Studies*: This area includes all the subject matter that is not covered in the other four areas, such as arts, geography and science. An example of geography subject matter covered in the pre-school area is land and water forms. Through the use of the land and water form cards and trays (see Figure 3.11) (Nienhuis Montessori, 2008: 95), learners explore the difference between a lake and an island, a gulf and a peninsula and a strait and an isthmus, by pouring water into the tray.

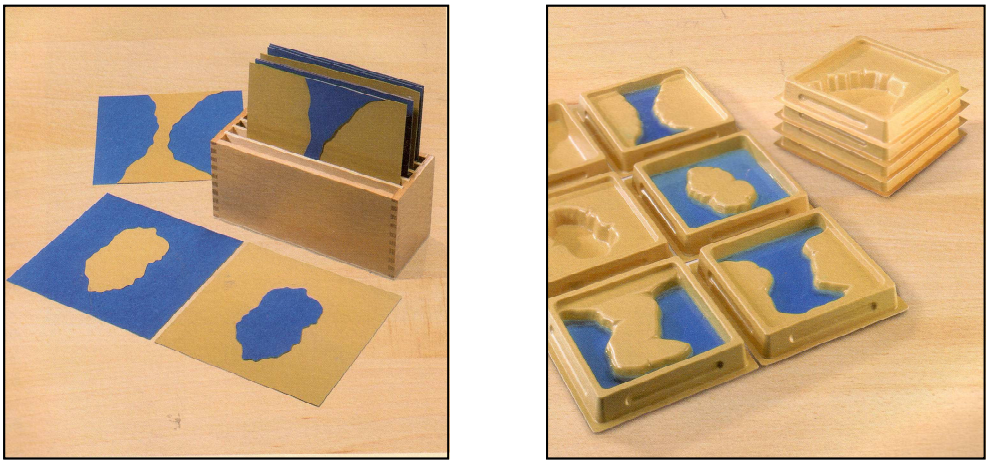


Figure 3.11: Land and water form cards and trays

3.4.2.2 The 6 to 9 year and 9 to 12 year classroom

The 6 to 9 year classroom (grades 1 to 3) and 9 to 12 year classroom (grades 4 to 6) consists of three main areas, namely languages, mathematics and cultural studies. Each will be discussed below.

- *Languages*: Similar to the pre-primary school, the language area prepares and further develops learners' reading and writing skills. In Montessori schools the language area focuses on grammar, word studies, sentence analysis, and word clarification, according to formation, inflection and use (Seldin & Epstein, 2006: 75 – 79; Quest Montessori School, 2005; Montessori, 1973: 12 – 170). An example of a typical activity in the Montessori primary school classroom is sentence analysis, using different symbols to represent parts of speech. Figure 3.12 (Nienhuis, 2008: 44) shows the most common symbols used. The noun and adjective are both triangles, showing that they are related to each

other, while the verb and adverb both being circles also indicate relationship. Using symbols for sentence analysis not only makes it a concrete exercise, but also makes the concepts easier to master (Seldin & Epstein, 2006: 78 – 79).

Key to grammar symbol box

Noun	Article	Adjective	Numeral	Preposition
Verb	Adverb	Pronoun	Conjunction	Interjection
Participle	Copula	Abstract	Auxiliary verb	Spiritual

Figure 3.12: Grammar symbols for sentence analysis

- *Mathematics*: Mathematics in the primary school classroom focuses on an ever-increasing shift from concrete to abstract thinking. New mathematical concepts are introduced, using specific Montessori equipment, as discussed under 3.4.1.2. Through practice and manipulation of the equipment, learners internalise the concepts and are then ready to experience the passage to abstraction (Seldin & Epstein, 2006: 80). Mathematics covers the four basic operations, as well as long multiplication and division, prime numbers and factorisation, fractions, squaring, cubing, square roots and cube roots.

  Geometry is very concrete and includes the study of lines, triangles, quadrilaterals, polygons, circles, work with a protractor and a pair of compasses, Pythagoras' Theorem, the linear measurement and the measurement of time, temperature and money, as well as perimeters, areas

and volume and capacity (Seldin & Epstein, 2006: 80 – 90; Quest Montessori School, 2005; Montessori, 1973: 259 – 318).

- *Cultural Studies*: Cultural studies, explained under cosmic education (see 3.5.3), involve the integration of different learning areas (except for pure mathematics and grammar studies in language) under five timelines. As learners are able to select their research within the timelines (see 3.5.3.3), and are guided by their enthusiasm and interest in different areas, they cover a wider range of knowledge than that prescribed by the RNCS, according to Beyleveld (2009).

3.4.2.3 The 12 to 15 year classroom

The *physical layout* of a 12 to 15 year classroom (grades 7 to 9) is less prescriptive and will differ from one school to the next (Seldin & Epstein, 2006: 160 – 161). Ideally, according to Seldin and Epstein (2006: 160), the middle school should have separate, smaller classrooms and meeting areas, centred around a home classroom, designed for quiet study and reading time. The smaller classrooms should include the science lab, the maths lab, seminar rooms, the arts studio and the crafts workshop, as well as a kitchen area, where learners can prepare their own meals.

At the *Knysna Montessori School*, most of the middle school learning and teaching take place in their home classroom. This classroom is divided into language, mathematics and cultural studies areas. They have a separate computer room, arts room and technology room (with wood-work and metal-work tools). An extra, smaller space is available for small group lessons and lessons requiring multi-media in teaching and learning (Beyleveld, 2009).

The grade 7 to 9 learners at the Knysna Montessori School are weekly boarders and are responsible for the cleaning of their dormitories. Lunch is cooked by the house mother and her assistants, while the learners are responsible for making breakfast and dinners, as one of the student business projects run at the school (Beyleveld, 2009).

3.4.3 The 12 to 15 year prepared environment

Sigelman and Rider (2003: 272) indicate that successful adolescent educational environments should provide supportive interaction with teachers along with academic challenges and an increase in self-direction. The prepared environment includes the essential elements of liberty (freedom), order, reality and nature, beauty, Montessori equipment and community living (Gisolo, 2005: 5; Lillard, 1972: 51 – 74).

Ewert-Krocker and Kahn (1999: 170) describe adolescents as "*social embryos*", where understanding and working within society are of paramount importance. As mentioned earlier in this chapter (see 3.2.1.3), adolescents go through the sensitive period of justice and personal dignity. This includes an understanding of interdependence, integrity and reliability relating to trust, honesty and commitment in their personal relationships (Seldin & Epstein, 2006: 45; Haines, 2005: 6).

Therefore, during the adolescent years, the prepared environment should represent society within the context of the natural and social world. This includes interactions within the school community, the local community, as well as the global community (Kahn & Feldman, 2008b: 243).

With this in mind, Montessori suggested the concept of "*Erdkinder*", where adolescents live on the land and learn from the land within a closed society (Haines, 2005: 6). "Erdkinder" is the German word for "Earth Children", referring to Montessori's vision of early adolescents living and working on an operating working farm in order to mature in safety.

Her reasoning behind the concept of "Erdkinder" was that adolescents need time away from the close family unit to live within a smaller version of bigger society, in order to become, in due course, a conscious member of greater society (Haines, 2005: 6). Within a communal living set-up, adolescents are given opportunities to develop an understanding of society within a safe environment.

To understand the needs of adolescents and subsequently prepare a suitable environment for them, a closer look will be taken at Havighurst's *developmental tasks* for the adolescents (Ewert-Krocker, 2001: 435). Havighurst (Ewert-Krocker, 2001:

435 – 463; Louw, 1991: 379) presented several developmental tasks which adolescents need to complete on their path towards maturity.

Developmental tasks are defined as specific tasks that individuals need and want to accomplish at a particular time in their lives. These tasks are a combination of the individual's needs and the demands of society's accepted norms (Uhlendorff, 2004: 54). The concept of developmental tasks signifies that individuals are responsible for their own development, suggesting active learning and relating to Montessori's theory of learning through discovery.

The developmental tasks of *adolescents* are:

- Creating more *mature relationships* with peers, both boys and girls.
- Attaining their *masculine or feminine* role within society.
- Accepting their *physical changes* and new adult bodies.
- Reaching *emotional independence* from their parents and adults.
- Preparing for *marriage* and family.
- Planning and preparation for a suitable *career*.
- Developing their own *ideology* – a set of suitable values and ethics to guide their behaviour.
- Becoming *socially responsible* in their behaviour.
- Developing and adjusting to the demands of their new *cognitive abilities* (Peterson, 2004: 3; Ewert-Krocker, 2001: 457 – 462; Gouws, Kruger & Burger, 2000: 64; Havinhurst, 1947: 2).

From the developmental tasks outlined above, it is clear that adolescents need to develop and mature in all areas, viz. physical, cognitive, moral, social and emotional. This is referred to as a *holistic approach* (Cossentino, 2007: 32). Furthermore, they have the responsibility of becoming active members of their society, contributing to this society in an accountable manner.

Therefore, the *prepared environment of the adolescent*, whether a farm community or an urban school, should strive to create a setting where adolescents are given

opportunities to explore, express themselves and experience the different tasks they need to accomplish (Seldin & Epstein, 2006: 45; Ewert-Krocker, 2001: 463 – 465; Montessori, 1965: 142).

The focus of this study is the development of an integrated learning programme for the Knysna Montessori middle school. Montessori schools in South Africa use the RNCS as their curriculum. The difference between traditional schools and Montessori schools lies in the manner in which the RNCS is arranged. The following section will address the organisation of the curriculum within the Montessori method.

3.5 HOLISTIC INTEGRATED CURRICULUM ARRANGEMENT

Montessori education is based on *meeting the needs* of learners on their different planes of development (Schaefer & Schaefer, 2006: 192). In keeping with this, the curriculum needs to be arranged to meet the developmental and psychological needs of adolescents (Grazzini, 2006a: 224 – 225). Therefore, a more holistic approach to the curriculum needs to be taken in order to achieve the development of the adolescent as a whole.

3.5.1 Holistic education

Taggart (2001: 326) points out that *holistic education* has it roots in Rousseau, Froebel and Montessori. Holistic education strives to consider and nurture the whole development of the learner (Forbes, 1996: 5). Martin (1997: 11 – 12) represents the idea of holistic education arising from the interaction of a person with all levels of human development, within a particular environment or worldview (see Figure 3.13) (adapted from Martin, 1997: 12). Holistic education goes beyond academic learning and is seen as the interaction and integration of all aspects of life into the learner's understanding of the world (Martin, 1997: 16).

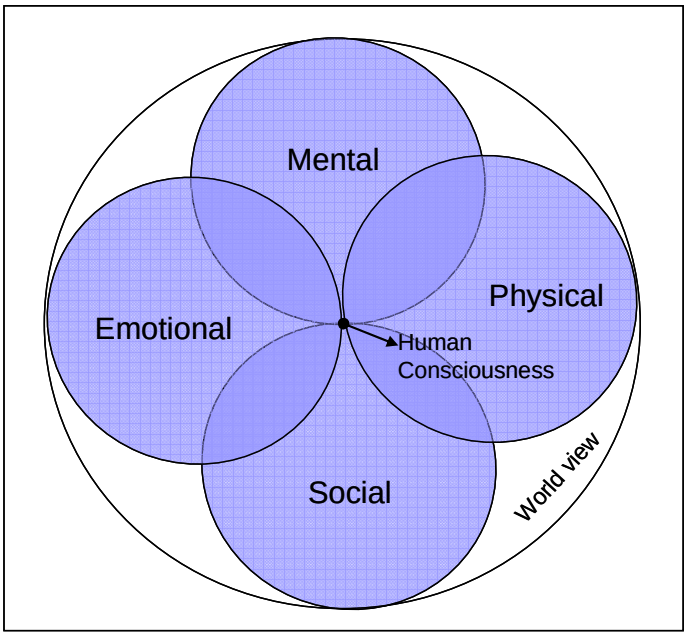


Figure 3.13: Holistic Education as the interaction of human development within the worldview

Martin (1997: 13 – 18) has proposed *seven criteria* for a holistic approach to education. Education, in order to be holistic, should:

- Develop *all levels* of the learner, namely the physical, mental, social and emotional. This is congruent with Montessori's approach to education as she considered all aspects of learners' development of equal importance for complete development (Montessori Discovery School, 2007; International Montessori Index, 2002).

- Value the importance and significance of each learner's own *life experience*, with inherent respect for the worth of each learner. Experience and learning through experience are central to the Montessori approach, where the focus is on learning in the concrete, and moving towards the abstract (Australian Association Montessori Internationale Alumni Association, 2006; Liveable Learning, 2007; Standing, 1957: 113 - 115).

- Expand individual consciousness and awareness of the greater aspects of life of which humans are an integral part. From this point of view, consciousness is referred to as individual's awareness of its *interconnectedness* of all aspects of life within their particular world and world view (Martin, 1997: 27).

Montessori places great emphasis, especially in the primary schooling years, on helping learners to see the "whole" picture and to understand how the work they study relates to the "bigger picture" (Grazzini, 2006a: 231; Schaefer & Schaefer, 2006: 187).

- Consider the natural *developmental stages* of the learners. The Montessori method creates a curriculum that will nurture and enhance the developmental stages, as described in the planes of development, and will meet the sensitive periods of each developmental stage (Grazzini, 2006a: 225; Seldin & Epstein, 2006: 42).

- Take place in the spirit of *love and respect* for each learner, inclusive of their individual abilities and gifts. Montessori's philosophy is based on respect for each learner and nurturing the growth towards adulthood (Schmidt & Schmidt, 2009: 39; Mandala Learners' House, 2002: 1).

- Recognise personal *creativity* and understand that all individuals express their own creativity in different ways. Montessori education acknowledges the importance of individual creativity. The Arts consequently form part of the integrated curriculum, and are not seen as separate subjects (Seldin & Epstein, 2006: 234).

- Aim to *empower* each learner in each chosen and particular walk of life. Martin (1997: 43) implies that learners have a unique calling and interest, and through education and the influence of teachers, should each have the freedom to realise their interests and passions. Beyleveld (2009) agrees with this aim, and suggests that Montessori acknowledged the importance of the learner's vocational calling as early as within the 9 to 12 year-old age grouping. Already, these younger learners, through their research work, are free to explore different themes and topics, giving the teacher an indication of their interest, as this theme or topic will surface in all their research work.

Thus, the Montessori's method of education can be described as "holistic education".

Another aspect of Montessori education is its *integrative principle* (Kahn & Feldman, 2008a: 223; MacDonald, 2008: 47; Schaefer & Schaefer, 2006: 188). In her book, "From Childhood to Adolescence", Montessori (1948: 7) states that "to teach details is to bring confusion; to establish the relationships between things is to bring knowledge".

The following section will present the theoretical basis for an integrated curriculum. This section aims at creating a better understanding of an integrated curriculum, keeping in mind the main problem of this study, namely arranging a learning programme for the senior phase of the Knysna Montessori School based on the conjunction of Montessori's holistic, integrated education with the RNCS.

3.5.2 Integrated curriculum

An *integrated curriculum* is *defined* as the connections made between all elements of learning, viz. the subject matter, the activities within an organisation and outside it, and between the past, present and future (Preedy, 1989: 31). Shoemaker (1989: 5) points out that in an integrated curriculum, teaching and learning are interactive and should be presented in a holistic manner, reflecting the reality. Warnod (2002: 1) and Madinabeitia (2007: 56) support the idea that an integrated curriculum reflects the real world and learners learn within meaningful contexts.

Another definition of an integrated curriculum is the "blending, fusion or unification of disciplines" (Oliva, 1992: 517).

Disciplines are described as a systematic arrangement of concepts and reasoning patterns, where different problem-solving methodologies are grouped together (Roth, 1994: 48). Disciplines are not the same as subjects, which are strategies to organise teaching schedules. Disciplines can be defined as a "specific body of academic knowledge" (Department of Education, 2003h: 6; Gardner & Boix-Mansilla, 1994: 16 – 18).

Bruner (1971: 19 – 22) proposed the principles on which structuring of the curriculum according to disciplines is as follows:

- Disciplines are not stagnant, but rather *dynamic*, evolving over time.
- Each discipline uses a unique and different *method of inquiry*, and therefore not only the scientific method of inquiry, but many other different methods exist.
- The aim of education should be to develop different *modes of inquiry* within the learners.

An integrated curriculum therefore, is the *integration of different disciplines* and has its foundation on the principle that concepts and thoughts in any discipline have not occurred in isolation (Lacy, 2002: 58; Shoemaker, 1989: 5). Lake (1994: 3) and Taba (1962: 299) point out that integration is inevitable, and that the individual learners have to integrate the knowledge into their own actions and manners.

An integrated curriculum supports *different levels of cognition*, and fosters a higher order of thinking skills (Lacy, 2002: 58). This implies a move from factual knowledge to a deeper conceptual understanding (Erickson, 2002: 7; Armstrong, 2000: 117). Bloom's taxonomy gives an overview of the different levels of cognition that are often used in education (Huitt, 2004; Warnod, 2002: 2).

Bloom defined six levels of cognition on a scale from lower-order thinking to higher-order thinking (see Figure 3.14. The six levels of cognition are as follows (Gregory & Chapman, 2006: 121; Huitt, 2004; Warnod. 2002: 2; Anderson & Lawton, 1992: 326 – 327):

- *Knowledge*: Learning the facts and rote-learning;
- *Comprehension*: Interpretation and understanding of information, as well as the ability to apply information in a similar situation;
- *Application*: Application of information to a new and different situation;
- *Analysis*: The ability to break down a bigger concept into its components, while examining the different components for better understanding;
- *Synthesis*: Bringing together different components to form an original whole or original product;

- *Evaluation*: Judging in the light of certain criteria, or the development and application of standards.

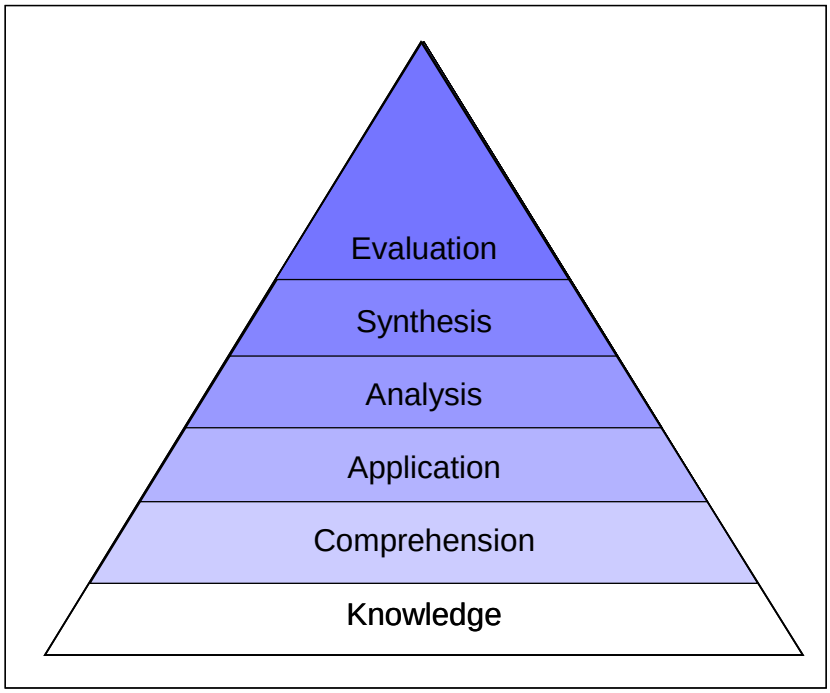


Figure 3.14: Bloom's taxonomy

In keeping with Bloom's levels of cognition, Erickson (2002: 5) represented the differences between the lower-order thinking, factually based, and the higher-order, more integrated thinking, where learners are able to form generalisations and hypotheses (see Figure 3.15).

In Erickson's model, a traditional, discipline-based curriculum tends to focus on facts and topics, whereas an integrated curriculum promotes the generation of theory.

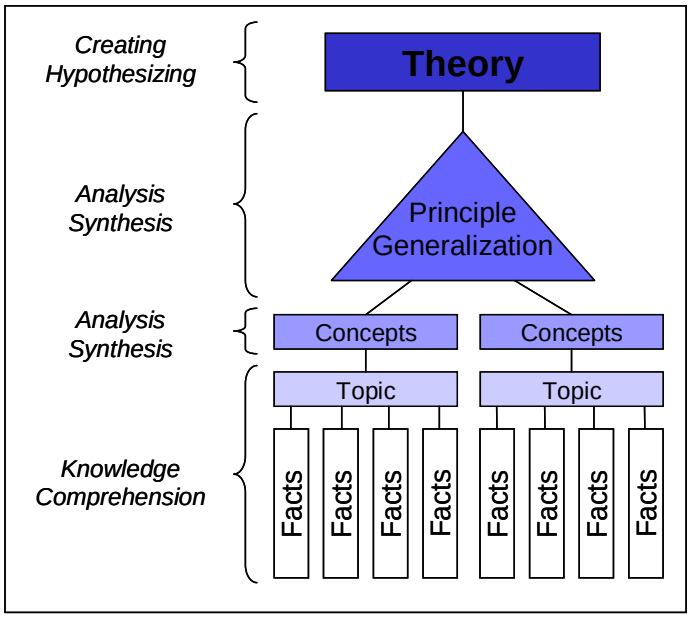


Figure 3.15: Structure of knowledge of Erickson

An integrated curriculum relies on the understanding of *multiple intelligences* (Lacy, 2002: 39; Armstrong, 2000: 39). Intelligence is defined as the ability of a person to solve problems, to deal with abstractions and to learn (Slavin, 2003: 125). Armstrong (2000: 22) and Gardner and Hatch (1989: 6) have described eight different aspects of intelligence. These are:

- *Logical/Mathematical*: The capacity to work with patterns, abstract relationships, categorisation and classification, arithmetic and strategy games;
- *Verbal/Linguistic*: Sensitivity to words, sounds and rhythms, as well as the different functions of language;
- *Musical/Rhythmic*: An awareness of sounds, appreciation of rhythm, melody and harmony and musical expressiveness;
- *Naturalist*: A fine sensory discernment of natural objects, such as plants and animals;
- *Visual/Spatial*: Visualisation, through pictures, colours and puzzles, which transform initial perceptions and accurately promotes perception of the visual-spatial world;
- *Bodily/kinesthetic*: Learning through physical activities to control the body's movements skilfully;

- *Interpersonal:* Learning through sharing with peers and having the ability to respond appropriately to moods and temperaments, desires and the motivation of others. Interpersonal learners tend to be leaders;
- *Intrapersonal:* Self-motivation and learning best by working alone on projects. Forming the ability to discriminate one's own feelings and having the knowledge of one's own strengths and weaknesses.

Within an integrated curriculum, the *focus is on the learner,* and it is therefore necessary to consider the needs of individuals (Kahn & Feldman, 2008a: 223; Lacy, 2002: 90). The knowledge of different levels of cognition and multiple forms of intelligence is of the utmost importance in order to design and arrange the integrated curriculum appropriately (Warnod, 2002: 3). Armstrong (2000: 39) indicates that Montessori's method of teaching caters for multiple aspects of the individual's intelligence.

The integrated curriculum is ideal for the Gestalt learner and allows learners to see the bigger picture (Ediger, Rao & Ediger, 2006: 71; Warnod, 2002: 1; Stoehr & Buckey, 1997: 13; Clark & Clark, 1994: 105). A Gestalt learner is a learner who needs to see the bigger picture in order to understand the parts that make up the whole picture (Ediger, Rao & Ediger, 2006: 71; Stoehr & Buckey, 1997: 13).

A definition of Gestalt provided by Nikolaïs and Louis (2005: 41) is "the total or the whole as it is reflected in its parts". Gestalt focuses on the holistic view of organisations, systems and individuals (Swanson & Holton, 2009: 116; Hitchins, 2007: 75). Figure 3.16 illustrates the difference between a learner who learns from the parts or steps, in order to understand the whole, and the learner who needs to see the whole in order to understand the parts (Gestalt) (adapted from Stoehr & Buckey, 1997: 13).

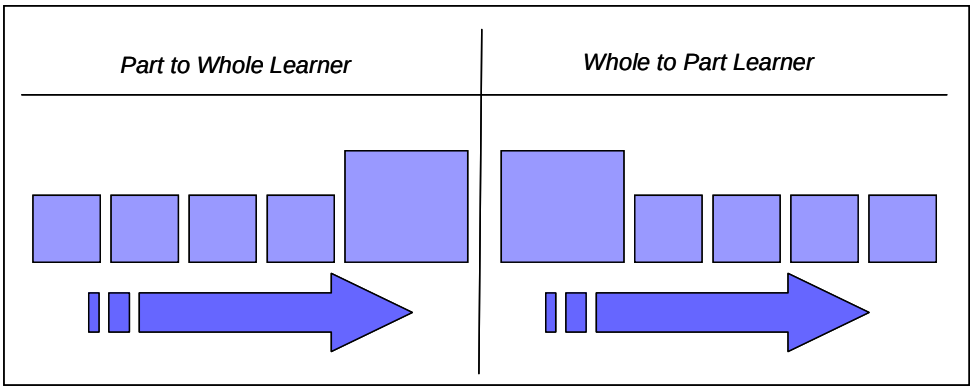


Figure 3.16: Learning through seeing the whole picture

Lacy (2002: 58) indicates that an integrated arrangement of the curriculum has the *advantages* of:

- Implying *wholeness* and *interconnectedness* (as it is found in the real word), rather than separation and fragmentation (Fogarty, 2009: 94; Lacy, 2002: 58; Clark & Clark, 1994: 105);
- Giving a *broader view* of the subject matter within different disciplines (Lacy, 2002: 58; Farrel, 1999: 194);
- Fostering *teamwork* between teachers (Fogarty, 2009: 94; Lacy, 2002: 58);
- Allowing learners to encounter and connect with personally *meaningful questions* (Lacy, 2002: 58);
- Encouraging learners' *imagination* and developing their level of *concentration* (Fogarty, 1999: 94; Lacy, 2002: 58);
- Allowing for more *higher-order thinking* in learners (Lacy, 2002: 58);
- Creating more *long-term learning* amongst learners (Lacy, 2002: 58; Farrel, 1999: 195; Clark & Clark, 1994: 105);
- Promoting *creativity* and *mindfulness* (Lacy, 2002: 58; Farrel, 1999: 195);
- Creating opportunities where learners can spontaneously *see connections* between concepts and different areas of study (Lacy, 2002: 58; Farrel, 1999: 194).

Curriculum integration takes place on a *continuum*, as indicated in Figure 3.17 (Lake, 1994: 3; Oliva, 1992: 518).

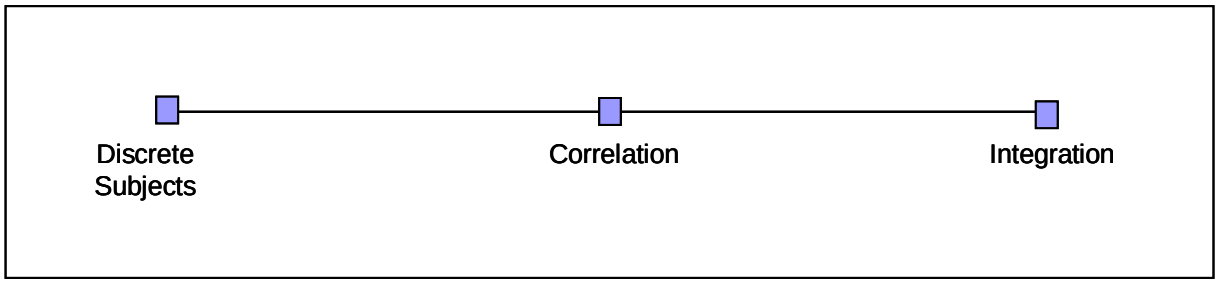


Figure 3.17: Subject - Integration continuum

At the discrete subjects' end of the *continuum*, curriculum developers maintain individual subjects with no integration or reference to each other (Fogarty, 2009: 10; Lake, 1994: 4). Between the individual subjects and full integration, correlation takes place, where subjects are related to each other, whilst still remaining separate.

Here, relationships between disciplines could be simply pointed out, such as the relationship between history and literature, or maths and science. Correlation could be done vertically, across two or more grades, or horizontally, across different subjects. Once subjects lose their identities through correlation, the point of integration is reached at the other end of the continuum; the subject matter is arranged in a manner that eliminates individual subjects, whether through themes or problem-solving (Fogarty, 2009: 10 – 11; Lake, 1994: 3; Oliva, 1992: 518).

However, implementation of an integrated curriculum has proved *problematic* (Fogarty, 2009: 95; Lake, 1994: 4; Posner & Rudnitsky, 1997: 17). Some of the problems are the following:

- Integrated curriculum can *lack intellectual coherence* when it draws from different disciplines and consists of disconnected sections of content.
- All too often a selected theme for integration is *too narrow* and does not maintain challenging learning experiences.
- Some teachers see subject-based and integrated curriculum as being *mutually exclusive.* When teaching only through subjects, there is a possibility that learners are denied potentially rich learning encounters. Conversely, curriculum planners and teachers are inclined to include too many subjects, depriving learners of in-depth study of one or more subjects.

Drake and Burns (2004: 11 – 12) and Oliva (1992: 517) indicate that curriculum can be integrated, either throughout a *whole school*, where a core curriculum is created with problems to be solved, leading to the use of different subjects in order to solve them, or within a *classroom*, using thematic teaching or unit plans without regard for disciplines. Within the Montessori philosophy, and in the pre-primary and primary school classes of the *Knysna Montessori School*, a *whole-school approach* to curriculum integration is taken; in line with holistic and cosmic education (Cosmic education was discussed in more detail under 3.5.3).

Moore (2005: 50) and Lacy (2002: 59) point out that within middle schools four *models of curriculum integration* have proved to be successful. These are:

- *Single-subject integration*: applying the content and skills of one subject to real-life situations.
- *Co-ordinated model*: two or more teachers coordinate and integrate their single subjects, presenting this new integrated subject to the same learners separately, but with mutual co-operation. Contrary to the primary school classes, this method has been used in the Knysna Montessori middle-school model (Beyleveld, 2009).
- *Integrated core model*: one teacher integrates two or three subjects to learners over the course of two or three lessons.
- *Integrated double core model*: Two teachers work together with the same learners, joining their integrated core models; for example presenting mathematics within the framework of sciences or language within the framework of social studies.

Posner and Rudnitsky (1997: 17) and Drake and Burns (2004: 11) have indicated that curriculum integration could take place through a *parallel disciplinary approach*, where the content of several disciplines can be correlated. An example is the historical study of the industrial revolution could correspond to literature on factory work conditions during that period and a scientific study of machines (Posner & Rudnitsky, 2001: 14). This approach is similar to the integrated double core model outlined by Moore (2005: 50) and Lacy (2002: 59).

Another approach mentioned by Posner and Rudnitsky (2001: 14) is the *interdisciplinary approach,* which combines a variety of disciplines through the study of a single central problem. This method has also been used with some success at the Knysna Montessori School (Beyleveld, 2009). One such example that was used at the Knysna Montessori School is the creation of a community centre in one of the Knysna townships.

Learners had to investigate the topology, the present settlement, the climatology, the needs of the community, alternative energy sources, the history of Knysna's development and possible future developments. At the end of the project, learners had to present a business plan for the building of the community centre, with relevant costing, as well as a scaled-down model of the community centre.

Lastly, *thematic curriculum planning* as a curriculum approach is the study of the bigger picture, which integrates several disciplines (Fogarty, 2009: 77; Posner & Rudnitsky, 2001: 14). Similarly, Erickson (2002: 64) distinguishes between the *co-ordinated multi-disciplinary approach* and the *integrated inter-disciplinary approach*. The co-ordinated multi-disciplinary approach is fact-based and includes a variety of disciplines (Erickson, 2002: 64; Johnson, 2002: 98). However, it lacks a conceptual framework, which would help learners to link different concepts and disciplines, and tends to stay on a lower-order level of thinking.

Within a co-ordinated multi-disciplinary approach, teachers seldom move beyond facts and topics, not allowing learners' to progress beyond lower-order thinking, consisting of knowledge and comprehension (Erickson, 2002: 5).

In contrast, the *integrated inter-disciplinary approach*, presents a problem or theme, forcing learners to integrate the facts they have gathered from different disciplines and subjects, and allowing for higher order thinking to take place (Erickson, 2002: 64; Johnson, 2002: 99). Furthermore, learners' interest is held, as the topic is usually relevant to their own lives.

This approach could be applied either through mixing different disciplines (inter-disciplinary) or within a single discipline (intra-disciplinary) (Erickson, 2002: 64). The

key is to use a conceptual framework and problem-solving in order to achieve integrated study, providing the concepts that will lead to principle generalisation and eventually to theory generation (Drake & Burns, 2004: 11; Erickson, 2002: 64; Johnson, 2002: 99).

In order for a topic or problem to qualify as having an integrated inter-disciplinary approach, Erickson (2002: 64) suggests the *following criteria*:

- A *conceptual framework* which forces higher-order thinking, moving beyond mere facts.
- The *problem or topic*, which becomes the tool for understanding conceptual ideas.
- Each discipline should be *studied in depth* and with integrity, in order to fully solve the problem or deal with the topic.
- The conceptual model should allow learners to *integrate* knowledge and *transfer* knowledge from past to future, as well as across cultures.

This section provided the theoretical basis for integrated curriculum design. In Montessori schools during the pre-primary and primary school years, curriculum is presented in an integrated manner. It is necessary to have an understanding of how the curriculum is arranged during the pre-primary and primary school years in order to create a continuum in curriculum arrangement when designing the integrated learning programme for the Knysna Montessori Middle School.

The following section will discuss integration through cosmic education in Montessori primary schools, and how pre-primary school prepares learners for cosmic education in the primary school.

3.5.3 Cosmic education

During primary schooling, Montessori arranged the curriculum to what is described as "*cosmic education*". The Greek word "*cosmic*" is defined as order and harmony. In the context of Montessori education, cosmic refers to creating order and harmony within the curriculum, through relating to all the elements (Holten-Sinder & Johnson, 2000). *Cosmic education* gives learners a mental representation of the larger design of the universe and is characteristically inter-disciplinary (Montessori Discovery School, 2007; Montessori, 1989: 5 - 6).

Cosmic education involves the process of leading learners to research and explore by giving them a vision of the whole picture of reality (Grazzini, 2006a: 231; Schaefer & Schaefer, 2006: 187). Through cosmic education, learners understand that different disciplines are not compartmentalised or isolated, but they should therefore rather start to appreciate the natural order and unity of the universe (Grazzini, 2006a: 232).

Understanding cosmic education has posed *difficulties in its application* to reality. It would appear that despite the best efforts, cosmic education still gets confused and mixed with subject education (Schaefer & Schaefer, 2006: 188). The purpose of cosmic education, as opposed to curriculum arrangement according to single subjects, is to allow learners to be able to understand where they fit into the whole, as well as how to become life-long learners (Grazzini, 2006a: 221).

Montessori used a *metaphor of weaving* when describing cosmic education. The cosmic view of life contains all the ideas or threads of the weave or whole, beautiful in its totality, the whole being greater than the individual parts. However, it is helpful to examine different threads and how they are woven into the whole structure of reality (Schaefer & Schaefer, 2006: 188; Montessori, 1979: 27; Montessori, 1946: 66).

Beyleveld (2008) views *cosmic education as an hourglass*, where firstly the whole picture is presented (the top bubble of the hourglass); then there follows a specific focus on a particular aspect of the whole which is duly examined (the middle of the

hourglass); and lastly, the findings of the examination are placed back into view on the whole picture (the bottom bubble of the hourglass).

Teaching the learning areas by using a cosmic approach gives scope to expand and research greater depth into a specific field or topic (Grazzini, 2006a: 224) and deepens learners' views of the universe (Allen, 2006: 429).

3.5.3.1 Curriculum arrangement through cultural studies

In Montessori elementary schools, the curriculum is traditionally divided into three areas, namely maths, languages and cultural studies (Quest Montessori School, 2005) (see 3.4.2.2). Cosmic education is presented in a Montessori environment through *cultural studies*. Cultural studies is a term that has its roots in the Italian word '*cultura*'. Montessori considered a well-cultured person as a highly knowledgeable person, not only in mathematics and languages, but of the world in general (Grazzini, 2006a: 224). Hence, the term cultural subjects or cultural studies refers to the different disciplines and learning areas, and therefore the entire body of knowledge.

3.5.3.2 Cultural studies in the first plane of development

During the *first plane of development*, the pre-primary school years, cultural studies serve to indirectly prepare learners for education in later planes (Standing, 1957: 363). The focus at this early age is on concrete materials demonstrating concepts of subjects, such as geography, history and the arts. Since learners experience the sensitive period of language acquisition during this plane of development, the focus is on building vocabulary; for example learning the correct names for different landforms (Seldin & Epstein, 2006: 94).

Maths has its own demarcated area in the classroom (see 3.4.2.1).

3.5.3.3 Cultural studies in the second plane of development

Cultural studies in grades 1 to 6 is intended, as a subject, to inspire the imagination and instil a sense of awe and wonder in the learner in regard to the whole cosmos

(Kahn, 2008: 2). It is with this in mind that during the *second plane of development* (grades 1 to 6), cultural studies are arranged according to five *timelines*, presenting learners with a holistic view of knowledge (Quest Montessori School, 2005; Montessori, 1989: 5). Timelines are a method of integrating and arranging the curriculum during the second plane of development. They take the form of stories that are told in order to stimulate the learner's imagination and encourage further study (Montessori Assessment and Learning, 2006: 1).

The five timelines, which include the different learning areas, are:

- *Timeline of the universe*: This timeline covers the creation of the universe, the solar system, earth, volcanoes, oceans, mountains, atmosphere and all aspects of the physical world, including physics and geology (Montessori Assessment and Learning, 2006; Quest Montessori School, 2005). It is usually introduced by a material timeline of 22m long, represented in Figure 3.18. This timeline presents an overview of the entire timeline, from the creation to the coming of man. It aids learners in understanding the relativity of time in terms of the time it took for planets and stars to form, life to appear, reptiles', mammals' and lastly humans' time on earth.

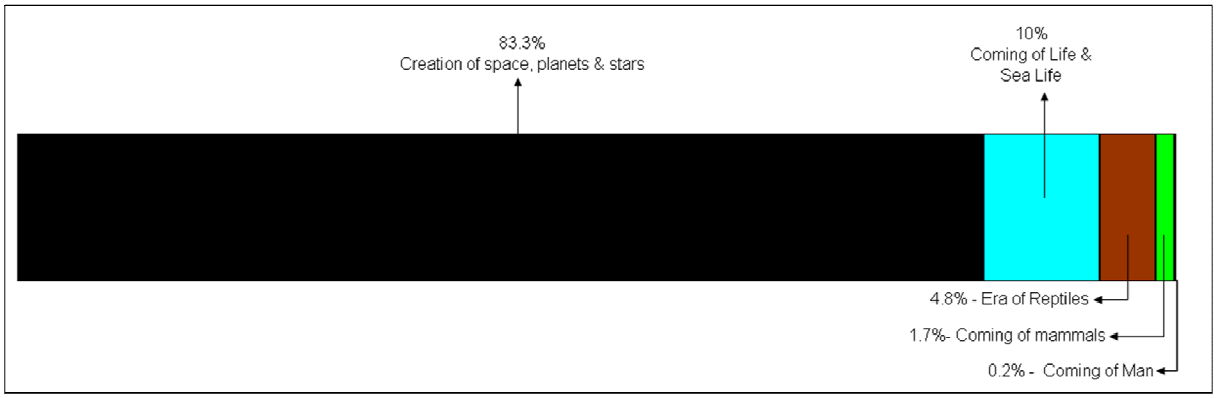


Figure 3.18: Timeline of the universe

- *Timeline of life on earth*: The second timeline deals with all life on earth, from prehistoric life to present animal and plant life (Montessori Assessment and Learning, 2006; Quest Montessori School, 2005). One representation of the

timeline of life on earth is the “Clock of Eras”. This represents the different eras of life on earth in relation to a 12- hour period (see Figure 3.19).

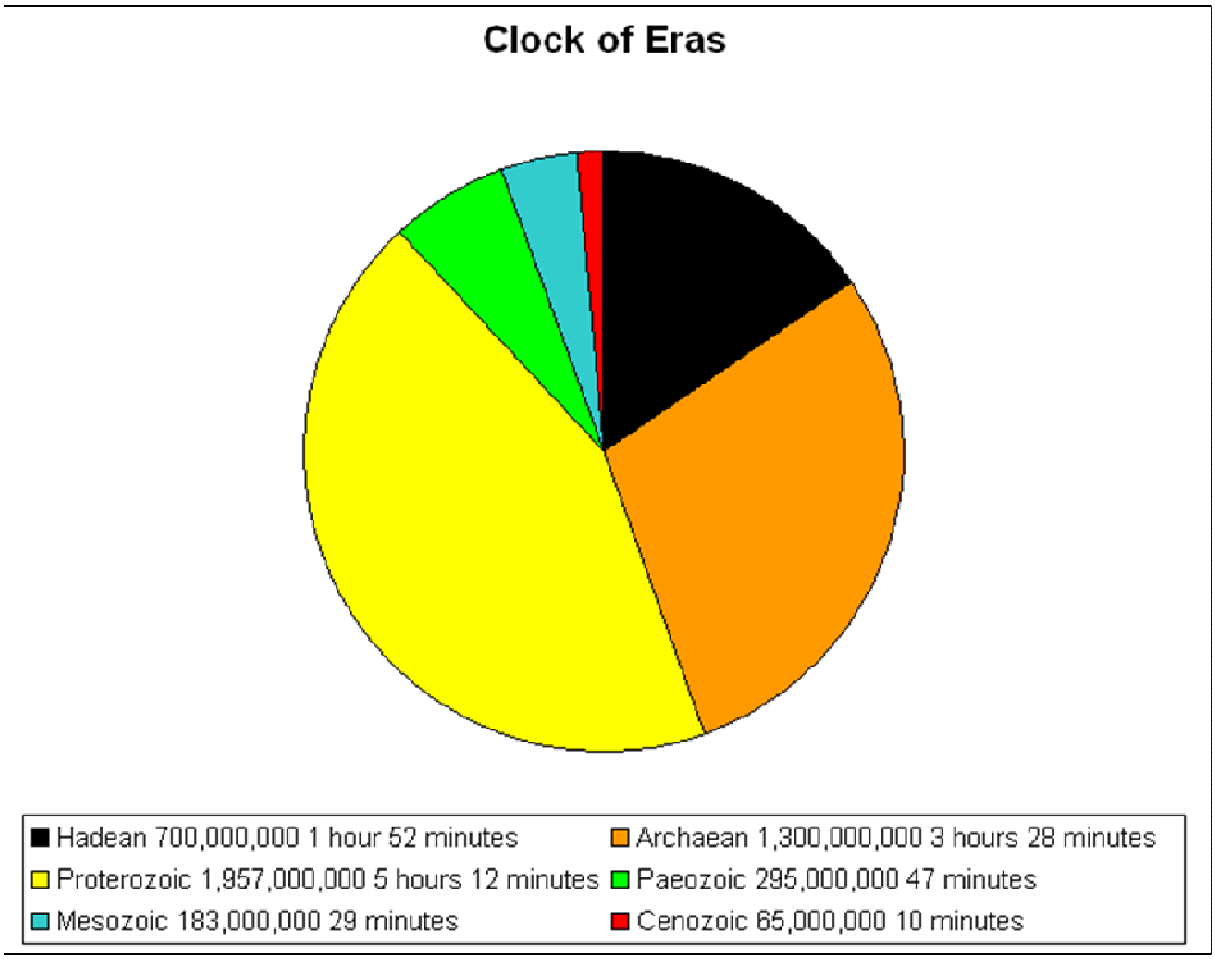


Figure 3.19: Clock of eras

Another presentation of the Timeline of Life is through a wall chart, indicating the different development of species, their distinction and ice ages in relation to the different eras (Nienhuis, 2009).

- *Timeline of man*: The third timeline tells the story of man through the ages. This timeline covers the appearance of man, the rise and fall of ancient civilisations, modern civilisations, the needs of man and the influence of topography on culture and political geography (Montessori Assessment and Learning, 2006; Quest Montessori School, 2005). This timeline is often represented by smaller specific timelines that have been created by the

teacher. One example of a wall representation of the timeline of early man is provided in Figure 3.20 (Montessori Services, 2009).

Figure 3.20: Timeline of early man

- *Timeline of literacy*: This timeline deals with all aspects of communication, both verbal and oral. The development of speech and writing through the ages, and the origins and structures of the different languages are researched (Montessori Assessment and Learning, 2006; Quest Montessori School, 2005). Different aspects of the timeline of literacy can often be researched by the learners and then placed on the classroom wall in the form of a timeline.

- *Timeline of numeracy*: In this timeline, learners research the history of numbers and counting throughout the ages, different base-number systems, as well as major mathematical discoveries through the ages. The discovery of zero through to big numbers is also covered (Montessori Assessment and Learning, 2006; Quest Montessori School, 2005). As with the timeline of literacy, learners research different aspects which are then placed on the classroom wall in a timeline format.

Each timeline is contained within the previous one, presenting thereby a view of the world in smaller focus. The “nested” inter-relatedness of the various timelines is presented in Figure 3.21.

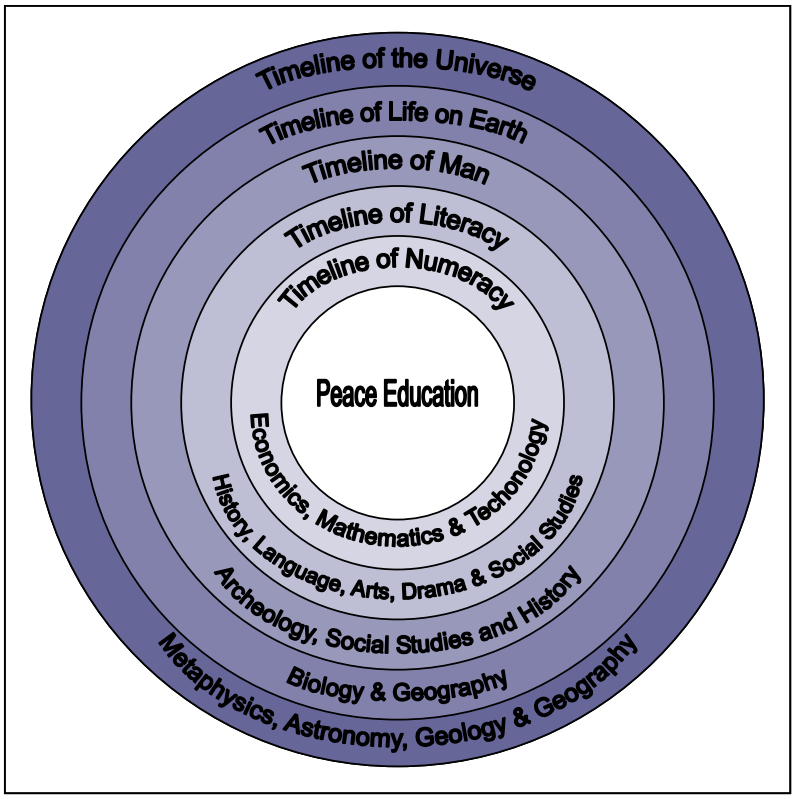


Figure 3.21: Nested property of the five timelines

When a timeline is presented, either to a whole class or a combination of different classes, the event is usually treated as a special occasion. Timelines contain a wealth of knowledge and are sometimes accompanied by experiments to demonstrate a particular fact (Montessori Assessment and Learning, 2006: 1 – 2).

During the second plane of development (grades 1 to 6), cultural studies are presented through the "*project method*" and are hands-on (Seldin & Epstein, 2006: 133; Standing, 1957: 362). After the introduction of the timeline, learners choose their own topic of research, related to and stemming from discussions around the timeline. Consequently, in a class, there will be many different research projects; each learner focusing on what has inspired him/her (Standing, 1957: 364).

Thus learners are building up an ever-expanding system of knowledge (Standing, 1957: 365). Once all the different projects have been completed, sometimes by a deadline, learners share their knowledge through presentations, tests, exhibitions, journals, games, art works, and suchlike (Seldin & Epstein, 2006: 126 – 137).

3.5.3.4 Curriculum arrangement in the third plane of development

However, as Grazzini (2006a: 228) points out, cosmic education is only applicable to the grades 1 to 6, and a *different approach to curriculum arrangement* is needed for the 12 to 15 year olds, early adolescents in grades 7 to 9, which is the focus of this study.

Seldin and Epstein (2006: 35) support the view that during the senior phase (grades 7 to 9) an *integrated approach to curriculum arrangement* should also be followed. The concept of a holistic integrated approach to education is thus still highly applicable during the adolescent years.

As in the other age groups, the *objective of the curriculum* during the adolescent years is to aid the growth of the character and personality of individuals within the framework of their society (Davis, 2006: 52; Seldin, 1998: 3). As discussed earlier in this chapter, the early adolescent is growing towards adulthood and the adult world (Grazzini, 2006b: 177). The curriculum should therefore be organised in such a way that it will assist this development, and the development of the different areas of the individual, namely physical, mental, moral, social and emotional in order to reach this objective (Seldin, 1998: 3).

The early adolescents' social development and interest in their role in society sees a shift from the cosmos in primary schooling to a historical quest (Kahn, 2008: 2).

Montessori (1949: 65 – 67) suggested the arrangement of the curriculum for the 12 to 15 year olds (grades 7 to 9) according to the following headings:

- *Self-expression*: Adolescents are in the process of self-formation, hence the need for avenues of expression for their thoughts and feelings. This is done through:
    - Music
    - Language (Literature and creative writing)
    - Art

- *Psychic development*: According to Montessori (Ewert-Krocker, 2006c: 43), psychic development refers to the potential inherent intelligence of the adolescent. This is not only developed through mathematics and languages, but also through the process of growing towards responsible adulthood.

  Psychic development is presented through:
  - Moral education
  - Mathematics
  - Language (language structure and analysis)

- *Preparation for adult life*: This section is the arrangement of all the sciences, history, and technology. Montessori suggested that during adolescence, the curriculum is not integrated according to the five timelines, but as follows:

  - The study of the earth and all living things (Nature): This includes geology, geography, prehistoric periods, biology, comparative anatomy, cosmology, botany, zoology, physiology and astronomy (Kahn & Feldman, 2008a: 231; Ewert-Krocker, 2006c: 41).
  - The study of human progress and the building up of civilisation (man-made world): This includes physics, chemistry, mechanics, engineering, and genetics integrated into the history of science and technology (Kahn & Feldman, 2008a: 231; Ewert-Krocker, 2006c: 41).
  - The study of the history of humanity (as a whole): This includes scientific discoveries, geographical explorations, environment and contact between different people, war, religion, patriotism, a detailed study of one period, the present day and nation, law, and government, the history of art, literature, music and theatre (Kahn & Feldman, 2008a: 232; Ewert-Krocker, 2006c: 41).

The best possible arrangement of the RNCS for the Knysna Montessori Middle School will emerge through data analysis and interpretation in Chapter Five.

3.6 CONCLUSION

Chapter Three has presented a theoretical overview of the learner, the teacher and the prepared environment. In the examination of the learner, a more detailed comparison between Montessori's four planes of development and Piaget's stages of development were presented. In particular, Chapter Three has looked at adolescents' physical, cognitive, moral, social and emotional development. The teacher's role within the Montessori environment was also discussed, after which the prepared environment was presented in more detail.

In order to solve the problem presented in this study, namely the arrangement of an integrated learning programme for the Knysna Montessori School, a theoretical overview of curriculum arrangement within the Montessori method of education has been presented. This included holistic education, integrated curriculum arrangement, and cosmic education.

Chapter Four will present the research design and the methods to be utilised.

CHAPTER FOUR

RESEARCH DESIGN AND METHODS

4.1 INTRODUCTION

In Chapter One an orientation of the research project, as well as a brief overview of the research design was presented. Chapter Two provided a literature review on the development of the Revised National Curriculum Statement (RNCS) and the development of Outcomes-Based Education (OBE) in South Africa. Chapter Three commenced with a theoretical perspective on the Montessori method of education. Montessori's planes of development were compared with Piaget's developmental stages, which served as a conceptual framework for the study. In addition, adolescents' development was also discussed. Holistic and integrated curriculum arrangement was investigated and presented.

Chapter Four sets out the research design that guided the study (Kvale, 2002: 309). This includes the problem statement, research design, issues surrounding trustworthiness and a brief summary of the ethical measures.

4.2 PROBLEM STATEMENT

This section provides an overview of the problem statement, in particular the orientation to the formulation of the problem, as well as the problem formulation itself and research questions.

4.2.1 Orientation to problem formulation

The orientation of the formulation of the research problem is presented with regard to both international and South African perspectives on Montessori adolescent education (Grades 7 to 9).

4.2.1.1 The global perspective

Montessori (1948: 53 – 67) expressed her vision for *adolescent education* (Grades 7 to 9) in the "Erdkinder Appendices" in her book titled, "From Childhood to Adolescence". However, most of her life's work was spent on pre-primary and primary school education, the "Erdkinder Appendices" being her only reference to adolescent education.

This resulted in Montessori's adolescent education being very experimental and an ever-evolving process (Ayer, 2006: 105 – 106). In 1997, Kahn (1997: i) indicated that despite there being approximately 150 adolescent programmes in the United States of America (USA), no sustainable programmes existed based on Montessori's principles, as laid out in her "Erdkinder Appendices". At that stage, teachers from across the globe began to meet at conferences titled, "The Adolescent Colloquium", the first of its kind being held in 1996 in Cleveland, Ohio. The second colloquium was held in 2001, the third in 2006 and the fourth in 2008.

The intention of these colloquiums was to enable adolescent educators to share and help clarify adolescent programmes within the Montessori context (Kahn, 1997: i – ii).

Through these conferences, adolescent educators in Montessori schools started clarifying and deliberating on Montessori adolescent education. The *first* Adolescent Colloquium (NAMTA, 1996) focused mainly on taking stock of where adolescent education was at that stage, and in setting up a list of what needed to be done in order to understand and develop adolescent education within the Montessori context.

In 2001 (NAMTA, 2001) more clarity emerged from the *second Adolescent* Colloquium, and concepts such as "Erdkinder" were deliberated and more clearly defined. The needs and key experiences of adolescents, as well as the prepared environment for the adolescent, were also discussed. Some discussions on how to present adolescent mathematics and the humanities also emerged.

These discussions were the start of determining how to integrate the adolescent curriculum within a Montessori school. However, no clear guidelines emerged, apart from the clear need to present the curriculum in an integrated manner.

During the *third* Adolescent Colloquium (NAMTA, 2005), more attention was given to the studying of different disciplines within a Montessori adolescent environment, and the necessity for an integrated curriculum was established. Many of the speakers during this colloquium shared how their schools present different disciplines, mostly attempting to integrate, either through arranging the curriculum according to Montessori's suggestions, as indicated in the "Erdkinder Appendices" (Ewert-Krocker, 2006: 41; Kahn, 2006c: 62; Kjaer & Waski, 2006: 297), or through using cosmic education and the timelines (Boyle, 2006: 312; Grazzini, 2006a: 221; Schaeffer & Schaefer, 2006: 187).

In 2008, at the *fourth* Adolescent Colloquium (NAMTA, 2008), more specific programmes were shared amongst the delegates. During this colloquium, participants embarked on a closer investigation into the integration of different disciplines within a Montessori adolescent programme. A distinct move from discipline-based integration, to whole formative synthesis, was also presented (Kahn & Feldman, 2008a & 2008b). Kahn and Feldman (2008a: 231 – 232) suggested that Montessori's three histories under the heading "Preparation for adult life" (discussed in Chapter Three under 3.5.3.4), go beyond discipline integration, in that integration in this manner studies humanity as a whole. It appears from the papers at the Fourth Adolescent Colloquium, that cosmic education belongs in the primary school and that integration of the curriculum for adolescents has become more comparable with Montessori's layout in her "Erdkinder Appendices" (See Chapter 3, 3.5.3.4).

From the four colloquiums, it is apparent that the integration and arrangement of the curriculum for adolescent education (Grades 7 to 9) has evolved and that more clarity emerges with each conference. Although no uniform layout and arrangement of the curriculum exists (Kahn, 2006b: 1), most adolescent programmes base their curriculum arrangement on Montessori's suggestions on curriculum arrangement for "Erdkindern" (NAMTA, 2008).

4.2.1.2 The South African perspective

The South Africa Montessori Association (SAMA) has a total of 75 Montessori schools registered in South Africa (SAMA, 2009). The Knysna Montessori School is the *only* Montessori school registered with SAMA that includes a *senior phase of the General Education and Training Band (GET)* (Grades 7 to 9) and a Further Education and Training Band (FET) (Grades 10 – 12). This makes the Knysna Montessori School unique within the South African context.

Kahn (2006a: 403) indicates that in the United Stated in 2006, Montessori *adolescent programmes* grew at a rate of approximately 25 programmes per year and that many primary school programmes were looking at expanding to middle school and adolescent programmes. This global trend, although not at the same pace, could be expected to continue in South Africa. There are other schools in South Africa that wish to extend their primary school programmes to middle school programmes, but find it a difficult task to keep authentic Montessori practice in line with the RNCS (Beyleveld, 2009). Two other schools in South Africa previously extended their primary school programme to the senior phase of the General Education and Training Band (Grades 7 to 9). One school closed their adolescent programme, due to their inability to reconcile Montessori principles with the RNCS. The other school uses the Cambridge system of education, and runs its adolescent programme in a traditional manner (Beyleveld, 2009). This puts the Knysna Montessori School in the unique position of preparing the path and setting the standard for adolescent education in Montessori schools in South Africa.

Although suggestions of curriculum arrangement have been made through the four USA Adolescent Colloquiums, there is currently *no uniformity* internationally in the programmes. Furthermore, the programmes suggested at the Adolescent Colloquiums are based on the curriculum of the USA and its different states. All South African schools use the RNCS as their curriculum framework. It is therefore not possible to simply duplicate any particular middle school programme in existence outside South Africa, as this would not cover all the aspects of the RNCS.

Hence, there is a *need* at the Knysna Montessori School to arrange a holistic and integrated learning programme using the RNCS as a framework from which to set up

work schedules and lesson plans for the senior phase (Grades 7 to 9). This research study therefore explores the RNCS, as well as Montessori's method of education, in particular its holistic and integrative nature, with the intention of developing an integrated learning programme for the Knysna Montessori School.

4.2.2 Problem formulation

When formulating a problem statement, the researcher should consider the following (Walliman, 2006: 31):

- Find an *interest* in the broad problem area;
- *Refine* the interest to a possible topic;
- *Question* the topic from several viewpoints; and
- Define the *rationale* for the study (see 1.3).

Walliman (2006: 32) further indicates that sub-problems delineate the scope of the main problem and, as a whole, should summarise the primary problem.

With these considerations in mind, the research questions were formulated.

Primary research question:

> *How can the South African RNCS best be arranged, according to Montessori, in a holistic and integrated manner, with the purpose of presenting a learning programme for the senior phase of the GET band at the Knysna Montessori School?*

Secondary research questions:

- *What is the history and background of the RNCS?*

- *What are the unique features and aspects of Montessori's method of education?*

- *How is the curriculum arranged in a Montessori foundation and in the intermediate phases of the GET band to provide continuity of education?*

- *How can the different businesses of the senior phase of the GET band in the Knysna Montessori School environment become incorporated into the learning programme?*

- *What would an integrated learning programme for the Knysna Montessori School's early adolescents look like?*

4.3 PURPOSE OF THE RESEARCH

The primary aim of this constructivist, interpretive and qualitative research is to apply a grounded-theory approach in order to explore the RNCS, as well as Montessori's holistic and integrative method of education so as to design an integrated learning programme for the senior phase of the Knysna Montessori School. Such an integrated learning programme will assist the effective education of Grades 7 to 9 within a Montessori environment, both at the Knysna Montessori School and other schools in South Africa who wish to extend their programmes to the senior phase.

Secondary aims drawn from the primary aim are:

- To conduct an in-depth and extensive literature review to gain a better understanding of the history and background of the RNCS.

- To conduct an in-depth and extensive literature review to identify and understand the unique features and aspects of Montessori's method of education.

- To conduct one-on-one, semi-structured interviews with the purpose of ascertaining how the curriculum is organised in the Montessori pre-school, foundation phase and intermediate phase, in order to facilitate continuity within the Knysna Montessori School.

- To arrange the emergent themes from the RNCS to determine how the different businesses in the senior phase of the GET band can be incorporated into the learning programme.

- To arrange the emergent themes from the RNCS, as well as Montessori's holistic and integrative approach, in order to present an integrated learning programme for the senior phase of the GET band at the Knysna Montessori School.

- To make recommendations for further research.

4.4 THE INVESTIGATOR'S POSITION

As Head of Department for the Knysna Montessori Middle and High School, it is in my interest, and that of the school, to conduct this study. The expansion of the school to middle and high school education has proved problematic in terms of keeping teaching and learning in line with the Montessori method of education, while considering the requirements of the RNCS. The organisation of the curriculum, in order to be most effective for adolescents' developmental needs, has not been an easy task (Beyleveld, 2009). The necessity for integration is evident, but has proven difficult. It is with this in mind that this study was undertaken.

4.5 THE RESEARCH DESIGN

The essence of the research problem should be to determine the paradigm and methods to be employed to best solve the problem (Levy, 2000: 371). However, an understanding of the basic philosophical assumptions of the research underlies all the decisions in the paradigm and methods (Levy, 2000: 371; Woods & Trexler, 2000: 293; Myers, 1997a: 3). The theoretical underpinning of the research should present a framework and justify the paradigm and the methods employed (Esterberg, 2002: 10; Crotty, 1998: 7; Reichardt & Rallis, 1994: 15).

The philosophical foundation, research paradigm and methods constitute the three elements of research design (Levy, 2000: 372; Crotty 1998: 5; Calhoun-Brown, 1998) (Figure 4.1).

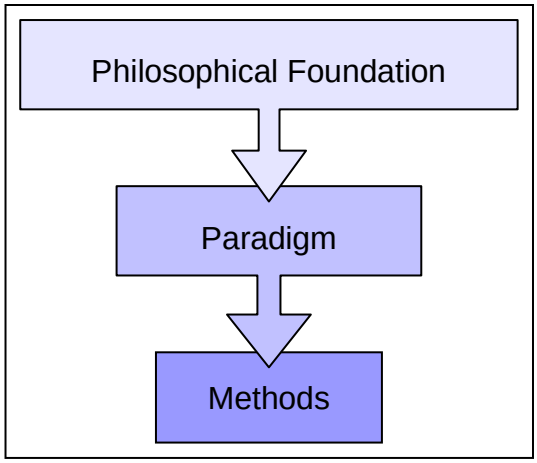


Figure 4.1: Three levels of research design

The purpose of the three elements is to ensure the soundness of the research and to shape the methodologies and methods employed in the research (Crotty, 1998: 5). Sim and Wright (2000: 27) indicate that through the different elements of the research design, the researcher will provide a better perspective on the project.

In the following sections, each of these elements is discussed with particular reference to this research project and is graphically represented throughout, for further clarity.

4.6 THE PHILOSOPHICAL FOUNDATION

Qualitative researchers approach their studies with a certain worldview. This is a basic set of beliefs or *philosophical assumptions* guiding their inquiries for constituting “valid” research results (Creswell, 1998: 74; Myers, 1997a: 3). Philosophical foundations signify "a basic set of beliefs that guide actions … taken in connection with a disciplined inquiry" (Guba, 1990: 17). Philosophical assumptions are based on certain universal characteristics, comprising subjects such as “matter,

mind, reality, reason, truth, the nature of knowledge and the proofs for knowledge" (Crossan, 2002: 48).

Philosophical assumptions present the framework for helping the researcher decide what research methods to apply (Esterberg, 2002: 10; Reichardt & Rallis, 1994: 15). Easterby-Smith, Thorpe and Lowe (1997) have pin-pointed the following three reasons why *philosophical investigation* should be considered important and necessary:

- It assists the researcher in *defining* and *refining* the research design;
- It assists the researcher in *identifying* and *evaluating* the various methodologies available, thereby avoiding any unsuitable use; by discovering the limitations of various approaches early on in the research process;
- It helps the researcher with the *selection* and/or *adaptation* of methodologies previously outside his/her understanding and experience.

Figure 4.2 shows how philosophical assumptions in research can be arranged on a continuum from positivism to post-modernism with constructivism in between the two extremes (Neuman, 2005: 62; Schulze, 2003: 9).

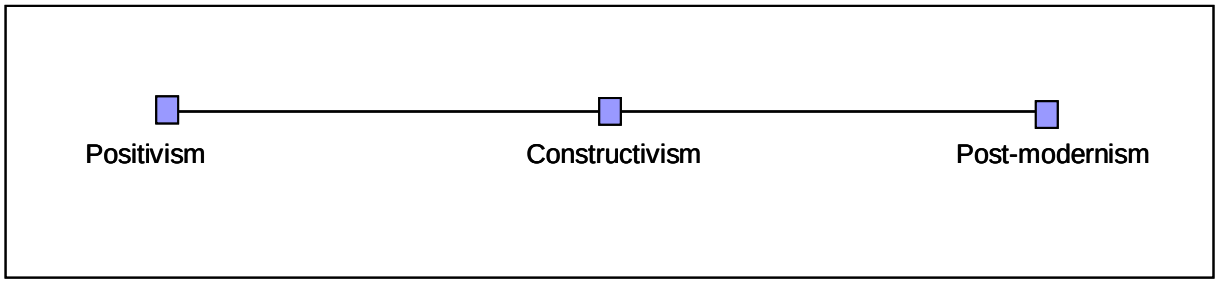


Figure 4.2: Positivist-post-modernist continuum

Positivism tends to underpin quantitative research, as it assumes that reality can be objectively measured and described independently of the researchers and their methods (Myers, 1997a: 3). Within the social sciences, positivists assume the study of phenomena as hard facts and the inter-relationship between these facts constitutes scientific laws (Crossan, 2002: 49). *Reality* is then described by the

empirical findings of the researcher, which can be measured and physically verified through the senses (Myers, 1997a: 3; Orlikowski & Baroudi, 1991: 5).

Knowledge is accumulated through the objective testing of hypotheses, thoroughly formulating any underlying generalisations (Fischer, 1998: 130; Sabatier & Jenkins-Smith, 1993: 231). Here the goal is to generate a structure of empirical generalisations that are able to explain behaviour through social and historical perspectives, not relating to a specific time, place, or circumstance (Fischer, 1998: 130). In positivist philosophy, the researcher is an objective outsider (Schulze, 2003: 9).

At the other end of the continuum, *post-modernism* denies all objectivity and argues that reality is defined by the expressions people use, which include their own biases and filters of reality (Dills & Romiszowski, 1997: 299). Similarly, the researcher's biases will influence how reality is perceived and may be quite different from the people they observe (Schulze, 2003: 10). Post-modernists see values and facts as inseparable and truth as value-laden. *Reality* is assumed to be the narrative people use, and post-modernists gain insight through the reading and re-reading of these narratives, without making any generalisations (Schulze, 2003: 11, Knapik, 2002: 2).

Between these two extremes the *constructivists* can be found, who observe reality as being constructed by the researcher and the people participating in the research (Botella and Herrero, 2000: 408; Schulze, 2003: 10). Aspects influencing this reality are, amongst others, culture, gender and cultural beliefs. Furthermore, the relationships between behaviour, attitudes and the environment are observed and recognised in the research (Papps, 2005: 3; Crossan, 2002: 52).

In contrast to the positivist approach, constructivists seek to find sound proof of the existence of phenomena, rather than the absolute truth through generalisation laws (Jackson & Sorensen, 2006: 166; Crossan, 2002: 52). Conversely, unlike post-modernism and similar to positivism, reality cannot be generalised to other contexts; and constructivists tends to generate hypotheses, or test theories (Schulze, 2003: 10). Reality is seen as being complex and not easily quantifiable (Broido, 2002).

In his critique of constructivism, Fischer (1998: 133) argued that researchers are only able to *construe the meaning* of their findings against an array of explanations and understandings which, in themselves, are the products of other interpretations. Consequently, Fischer (1998: 136) views the results as ambivalent. In contrast to this statement, Crotty (1998: 31) reasoned that researchers working in the constructivist philosophical assumption actively construct scientific knowledge, rather than passively observing the laws of nature. This results in the personal interpretation of the researcher. It also confirms the link that follows by means of the *interpretive* theory (see discussion further on).

The constructivists do not focus on the evidence and data alone, but rather on the underlying suppositions organising them (Fischer, 1998: 136; Toulmin 1990: 27). Therefore, knowledge in the constructivist paradigm is the product of a series of active adaptations of what is already known. These adaptations are based on experiences within a particular time and place (Davis, Maher & Noddings, 1990: 108).

This *research project* falls within the constructivist philosophical foundation. Constructivism acknowledges the researcher's participation and bias in the process, as well as the influence of culture and the environment. This research project considers the fundamental influence that the culture and environment of the Knysna Montessori School has had on the final research product. Botella and Herrero (2000: 409) recognized this influence, in asserting that reality does not exist in a vacuum, but is influenced by the context; and different constructions of reality are therefore possible.

Schulze (2003: 10) indicates that constructivism should *generate theory*, be based on logical, empirical evidence and generate end results which can be applicable for other contexts. It should also recognise the influence of the researcher on the methodology and results. This study, through various paradigms and methods, generates a theory in the form of a learning programme, which can be applicable to other contexts, such as different South African Montessori schools.

The result is strongly influenced by the researcher's experience, as well as that of the Principal and staff members of the Knysna Montessori School.

4.6.1 Interpretive research

Two theoretical approaches underpin this research, viz. interpretivism and critical theory. *Interpretive research* starts out from the assumption that reality is socially constructed and as such ties in with constructivism (Benton & Craib, 2001: 10; Myers, 1997; Vasconcelos, 1997: 2). Its central purpose is to understand, to gain a perspective on and to describe a phenomenon, within the social and cultural context of the natural setting (Woods & Trexler, 2000: 295).

Interpretive research provides a detailed and descriptive account of an understanding, a process or a point of view from the perspective of those involved (Ary, *et al.*, 2006: 463) and focuses on how people interpret their reality (Kelliher, 2005: 123; Myers, 1997: 4). The underlying premise of interpretivism is that by observing people within their societal framework, a greater possibility exists for understanding their perceptions of their own actions and thoughts (Kelliher, 2005: 123; Hussey & Hussey, 1997).

In line with the interpretivist paradigm, *this research* seeks to interpret, understand and describe a Montessori-based learning programme, within the cultural context of the Knysna Montessori School. It furthermore examines Montessori's holistic and integrative education and the RNCS as a social construct and from the perspective of those involved in its development. The interpretivist approach ultimately supports this research, as it constitutes a social inquiry within a particular social context (Henning, 2004: 20), i.e. not only Montessori schools in South Africa, but also South African education in general.

Although interpretive research is highly beneficial in providing a contextual perspective, it has been subject to some *criticism*. Interpretivism is seen as the interpretation of social context and language, and as such, has been criticised as being idealistic and subjective (Schulze, 2003: 12). This implies that there is more to reality than human construction, and that reality is rooted in ideas (Wehmeier, 2005: 739).

This research is firmly based within the context of South African education and specifically Montessori education in South Africa, and it is believed that interpretive

research best solves the main problem. Furthermore, to avoid issues of idealism, there is a critical assessment of the issues of transferability, validity and reliability. These issues are discussed in more detail when considering the trustworthiness of this study.

4.6.2 Critical theory

In *critical theory* reality is seen as historically constituted, being produced by people, and consequently exposed to change (Higgs & Smith, 2002: 80; Gibson, 1986: 4). Critical research (or theory) recognises the constraints of the environment and aims to liberate, emancipate and change an unacceptable *status quo* (Brooke, 2002; Myers, 1997: 4; Hirschheim & Klein, 1994).

The main aim of critical researchers is to comprehend connections and relationships between different structures in society (Cohen, Manion & Morrison, 2000: 28), and the subsequent transformation of these structures (Brooke 2002; Hirschheim & Klein 1994; Kemmis, 1985: 144). Within the realm of education, critical theory can be described as the emancipation and transformation of oppressive and unsatisfactory aspects of a particular context, through the awareness and understanding of rationally responsible beings (Neuman, 2005: 74; Ponterotto, 2002: 399; Hickey, 1997: 3). Such transformation tends to be practical in nature (Neves-Silva, 2007: 10). According to Popkewitz (1984: 45), the goal of educational critical theory is to "change the world, not to describe it".

An important aspect of critical theory is that of *language*. Critical theorists understand that language may not always be neutral and objective in its description of the world, and the use of language to construct the world and meanings is therefore important (Denzin & Lincoln, 2003: 441). Language is the means of interpreting reality, and critical theorists see it as being both objective and subjective (Peca, 2000: 10). Critical theory works on the premise that reality is created by man; and it seeks to distinguish between reality and appearance in all areas of life, both on an individual level, as well as within a particular context (Peca, 2000: 12).

This study seeks to transform the present *status quo*, where learning areas are used as subjects, to a more integrated learning programme for the Knysna Montessori School, and suggests a critical theorist perspective. It is consequently necessary to consider language as a means of interpreting reality, and also the ability to distinguish between reality and appearance within a particular environment.

This study attempts to interpret reality, both objectively and subjectively, and by ensuring the trustworthiness issues, such as dependability and confirmability. These issues are discussed in more detail under the heading of trustworthiness.

In conclusion, the theoretical approaches which support this study are interpretivism and critical theory. Figure 4.1 is changed as follows to integrate those decisions made thus far (Figure 4.3):

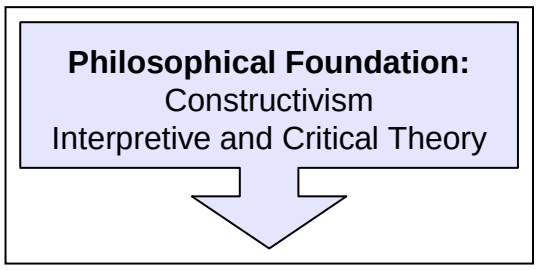


Figure 4.3: Theoretical perspectives such as interpretivism and critical theory

4.7 THE RESEARCH PARADIGM

The *research paradigm* reflects the nature of the inquiry. A research paradigm is defined as the basic set of beliefs or assumptions underpinning the research inquiry (Yang & Miller, 2007: 143; Phillimore & Goodson, 2004: 34). Decisions regarding the research paradigm lie deeply rooted in the philosophical foundation of a study, and draw on the 'world view' held by the researcher (Crossan, 2002: 6; Law, Stewart, Letts, Pollock, Bosch & Westmorland, 1998: 3).

The research paradigm describes the rationale behind the choice of methods employed to gather and analyse the data (Crossan, 2002: 6; Levy, 2000: 376; Crotty, 1998: 7).

The research paradigm indicates the research methodology, namely the qualitative or quantitative methods used, as well as the type of research to be done, viz. basic or applied research (Perry & Perry, 2005: 74). Once this has been decided upon, the researcher can investigate different practical methods that are considered to be suitable for solving a particular research problem. Figure 4.1 has been altered to indicate the research paradigm decisions that need to be made (see Figure 4.4).

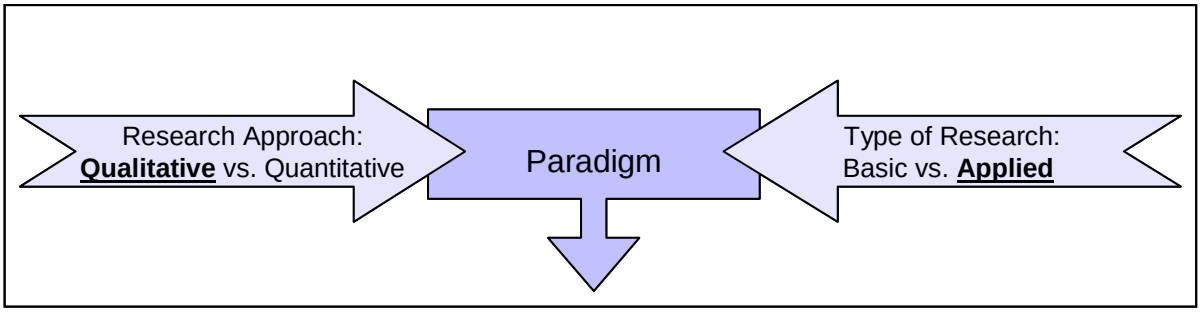


Figure 4.4: Influence of research approach and type of research on the choice of paradigm

4.7.1 Research methodology

The nature of reality, based on the philosophical foundation, determines whether a study follows a qualitative or quantitative *methodology* (Crossan, 2002: 48; Perry & Perry 2005: 74; Law *et al.*, 1998: 3). Qualitative research is defined as "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss & Corbin, 1990: 17). Quantitative research deals with the measurement and analysis in terms of numbers, in order to arrive at the proof of a theory (Wehmeier, 2005: 1187).

Perry and Perry (2005: 74) and Larson-Freeman and Long (1991) put *research* on a *continuum* between qualitative and quantitative, rather than at two opposing extremes to the mutual exclusion of one another (Figure 4.5).

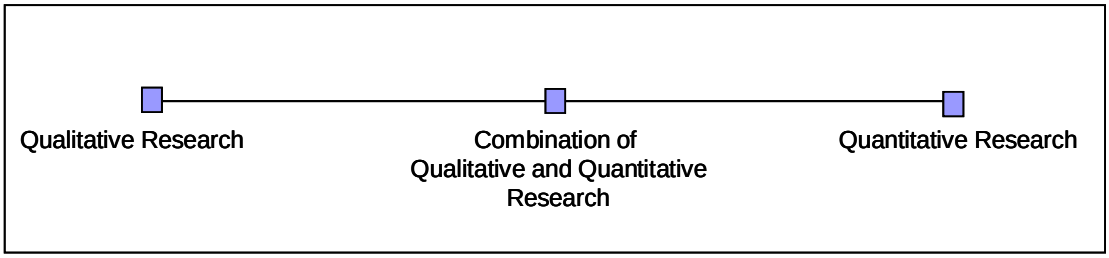


Figure 4.5: Qualitative-quantitative research approach (a continuum)

Qualitative research has the following characteristics:

- It is *holistic* in nature, which implies that it looks at the larger picture and aims at understanding the whole (Ary, Jacobs & Razavieh, 2002: 426; Yin, 1994: 43).

- It is predisposed to *inductive reasoning* (Meyers & Sylvester, 2006; Trochim, 2006; Sprinthall, Schmutte & Serois, 1991: 102; Sherman & Webb, 1988: 5). Qualitative researchers start with observation to determine a pattern, from which a tentative hypothesis or theory is derived, while further observation culminates in final construction of the theory (Trochim, 2006; Ary, *et al.*, 2002: 430).

- It is characteristically *descriptive*, as the researcher is interested in describing the process or phenomenon, while understanding and meaning are attained through words (Marshall & Rossman, 1999: 33). Burns and Grové (1993: 31) mentioned that through descriptive studies new meanings can be discovered, as well as the frequency with which a phenomenon occurs. This leads to the categorisation of the information.

- It is *interpretive,* as it aims at determining the "how" and "what" of a phenomenon from the point of view of those involved (Silverman, 1997: 121).

- It is *contextual,* as it takes place within a specific social context, which lies within a broader context of paradigms and disciplines (Mouton & Marais, 1990: 17). The context of this study is the Knysna Montessori School.

The constructive nature of *this study* lends itself to *qualitative* research (Glesne & Peshkin, 1992: 8; Golafshani, 2003: 600). The research paradigm of interpretive research and critical theory tend to promote qualitative research and are complementary to one another (Kelliher, 2005: 123; Golafshani, 2003: 600; Kaplan & Maxwell, 1994). As the aim of this study is to analyse text, both from documents and

interviews, and not to quantify the data, the use of the qualitative research approach is considered to be most suitable.

A common *criticism of qualitative* research is its lack of absolute objectivity and generalisability to a more general context (Hancock, 2002: 3), while the researcher has the primary responsibility of ensuring trustworthiness (Golafshani, 2003: 600). Issues of trustworthiness will be discussed in detail in 1.7.6.

Thomas (2006: 239) provides the following *underlying purposes* of an inductive approach. These correlate with the constructivist philosophy in terms of theory generation:

- To condense raw text data into a brief summary;

- To link the objectives of the study to the summary, ensuring these links are trustworthy and the objectives are met; and

- To develop a model or theory, by recommending credible relationships between the concepts (Ary, *et al.*, 2006: 33; Thomas, 2006: 239).

Thietart (2001: 274) expands on these purposes by proposing *two levels* of design within *inductive* research. The first is *conceptual*, allowing the researcher to determine the nature of the concepts. The second is *operational*; the specific methods are employed to draw observations from research. In inductive reasoning, these levels occur simultaneously, implying that the method used to conceptualise observations is also the method used to draw observations from the research (Thietart, 2001: 274).

Consequently, it is evident that the choice of paradigm and methods both need to take into account the inductive approach underlying the research.

4.7.2 The type of research

Prior to determining a particular paradigm, a decision had to be made regarding the type of research to be done, namely basic or applied research. *Basic research* tends to be highly theoretical, hypothetical in nature and deals mainly with abstract constructs (Perry & Perry, 2005: 73). Basic research aims to obtain the empirical data required to formulate and expand theory.

This type of research takes place within very controlled conditions and produces results with limited direct application (Ary, *et al.*, 2006: 36; Thomas, Nelson & Silverman, 2005: 5). The essential aim is to expand the frontiers of knowledge without any regard to the application thereof.

Applied research is very practical in nature and is mainly concerned with the application of new knowledge in the solving of day-to-day problems (Perry & Perry, 2005: 73). Furthermore, applied research has little control over the research setting, but aims to solve a problem, which will have direct benefits for the participants.

Perry and Perry (2005: 73) place basic and applied research on a linear *continuum* with varying degrees in between (Figure 4.6). The nature of the problem statement will determine where a research project will lie on this continuum. Perry and Perry (2005: 73) maintain that no research is purely basic or purely applied, and each incorporates aspects of the other.

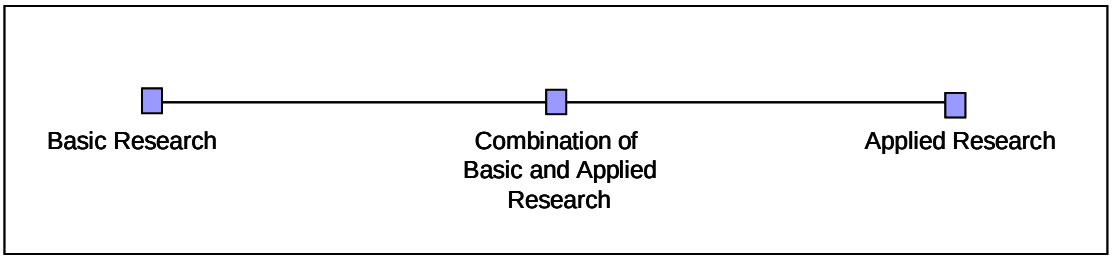


Figure 4.6: Basic-applied research continuum

In educational research Perry and Perry (2005: 73 – 74) distinguish three categories of research along the basic–applied research continuum. These are:

- *Basic research*: Research that tests theories of educational practices, and provides underlying theory for more practical research.

- *A combination of basic and applied research*: Research in education, which is concerned with practical important problems in education, but where the aim is to seek data that can serve as a basis for broader application.

- *Applied research*: Research for making administrative and management decisions about particular settings, such as schools. This provides immediate answers to highly practical questions on which decisions will be based.

On the continuum of basic–applied research, *this study* leans towards applied research. The purpose of *applied research* is to solve an immediate practical problem. It is oriented towards a specific problem and produces a solution for that specific problem (Ary*, et al.*, 2006: 37; Wiersma, 1980: 10). Through applied research, researchers can often solve their problems at the appropriate level of complexity. Wiersma (1980: 11) affirmed that problem-solving is directed towards an applied goal. Research associated with the learning programme of a specific school, as is the case in this research study, is often done through applied research (Perry & Perry, 2005: 73 – 74).

One of the *criticisms of applied research* is that it is a-theoretical in nature (O'Hair & Kreps, 1990: 13). This implies that the role of theoretical perspectives is sometimes found to be inconsequential. O'Hair and Kreps (1990: 13), as well as Myers (1997a: 3), argued that all good research should have a strong theoretical underpinning and philosophical foundation, regardless of its basic or applied nature. Another aspect regarding the theoretical basis of applied research is the study of the theory surrounding the problem statement (O'Hair & Kreps, 1990: 53).

Applied researchers have a responsibility to study the underlying theory relating to their particular problem, as was done in this study, in order to ensure rigorous and trustworthy research. Such underlying theoretical exploration was covered in depth in Chapters Two and Three of this study.

4.7.3 The research paradigm for this study

The justification for the choice of a particular research paradigm must relate back to the philosophical foundation of the research (Levy, 2000: 371; Crotty 1998: 2). Within qualitative research, there are many different kinds of research, such as:

- *Phenomenology*: to understand the essence of the human experiences of a specific phenomenon;

- *Grounded theory*: to develop a theory grounded in field data, rather than working from an existing premise;

- *Ethnography*: to describe and interpret a cultural and social group after involvement over some time; and

- *Case Study*: to develop an in-depth analysis of a single case or multiple cases (Trochim, 2006; Hancock, 2002: 4; Creswell, 1998: 76 – 78; Law *et al*, 1998: 2-3; Myers, 1997).

These considerations led the researcher to *grounded theory* as a qualitative approach that is most suitable for this study. Davidson (2002) describes grounded theory as a kind of research where theory is developed from the data analysed, rather than vice versa. Strauss and Corbin (1990: 24) define grounded theory as "a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon". Strauss (1967: 22-23) specifies grounded theory as the methodical analysis of documents, field notes, and interviews through coding and comparison, producing a well-constructed theory. Grounded theory aims at developing a theory grounded on the data, rather than the testing of a preconceived theory through statistical research (Esterberg, 2002: 34; Vockell & Asher, 1995: 448; Sherman & Webb, 1988: 3).

In order for a research problem to be solved through grounded theory, Carson, Gilmore, Perry, and Gronhaug (2001) and Levy (2000: 378) provide *three characteristics*. These are:

- Research must be *interpretive* in its philosophical foundation;
- Research should be about *complex social processes*; and
- There should be very *few existing theories on* the phenomenon.

This study suits all three of these characteristics well.

Grounded theory furthermore *interrelates* very well with both the qualitative approach, and the inductive nature of qualitative research (Thomas, 2006: 239; Pope, Ziebland & Mays, 2000; Miles & Huberman, 1994: 9). This correlates with the inductive reasoning associated with qualitative research, where research moves from the specific to the more general. Grounded theory furthermore correlates with a critical theoretical assumption, as it generates a substantive theory, with practical applications to context-based problems (Laws & McLeod, 2004: 11). In that regard, this study also fits a grounded theory approach well. Lastly, grounded theory can lie within the constructivist philosophical foundation in that knowledge is not only constructed, but different vantage points and implications are made clear (Charmaz, 2006: 184).

The *product* of grounded theory is the emergent theory, grounded in the data (Laws & McLeod, 2004: 8). Although a rich description of the data is necessary, the primary focus remains the emergent theory (Laws & McLeod, 2004: 8; Strauss & Corbin, 1990: 274). Wilson and Hutchinson (1991: 268) and Alston and Bowles (2003, 208 – 220) confirm that the ultimate aim of grounded theory is to produce a substantial middle-range theory, explaining the issue under study. Middle-range theory implies that it can be applied to a certain degree within broadly specified contexts (Mjøset, 2005: 3). In this study, an integrated learning programme will hopefully emerge from the data as the product of the research process.

Glaser and Strauss (1967: 237) present some *guidelines* for assessing a good quality grounded theory. These entail:

- *Fit* – does the theory fit the essential field of study where it will be used?

- *Understandability* – Will those outside the essential field of study understand the theory?

- *Transferability* – Can the theory be applied to different areas within the essential field of study?

- *Control* – Will the product of the grounded theory allow the end-user some control as circumstances change over time?

Alasuurate, Bickman and Brannen (2008: 470) provide an overview of grounded theory, rooted within a constructivist philosophical foundation. The assumptions, logics and objectives of constructivist grounded theory are presented in Table **4.1** (Alasuurate, Bickman & Brannen, 2008: 470)

Constructive Grounded Theory:
Assumes multiple realities; Assumes mutual construction of data; Assumes the researcher constructs categorisations; Views the representation of data as problematic, relativistic, situational and partial; Assumes the observer's values, priorities, positions, and actions affect views; Acknowledges subjectivities in data analysis, recognises co-construction of data; Engages in reflexivity; Seeks participants' views and choices as being integral to the analysis; Views generalisations, as partial, conditional and situational in time, space, positions, actions and interactions; Focuses on constructing interpretations; Aims for an interpretive understanding.

Table 4.1: Constructivist grounded theory

Grounded theory follows an *emergent design*. An emergent design implies that the final product of research is not predetermined and that the methods used to gather and analyse the data might change as the study progresses (Creswell, 2003: 181 – 182). A general pattern will emerge as the initial coding takes place, which will ultimately develop into broad themes and finally strengthen into a grounded theory

(O'Leary, 2004: 96; Creswell, 2003: 181 – 182). Data gathering and analysis methods will change as new data are gathered, and the research paradigm cannot fully specify in advance which methods will be used (Thomas, 1992: 69).

A *disadvantage* of an emergent design is that the results may be haphazard, and less structured (O'Leary, 2004: 96; Thomas, 1992: 69). This implies that the researcher needs to be more conscientious with issues around trustworthiness.

This section is aimed at providing an overview of grounded theory, bearing in mind the philosophical foundation of this study. It is necessary that in keeping with the constructivist philosophical foundation, grounded theorists consider a range of theoretical possibilities and investigate their own research principles and practices (Hesse-Biber & Leavy, 2008: 163).

Grounded theory provides a means to cater for the data collection (Alasuurati, Bickman & Brannen, 2008: 470). The following section on methods looks at the specific methods that will be used in the research. Figure 4.1 has been adapted to reflect the decisions made thus far (Figure 4.7).

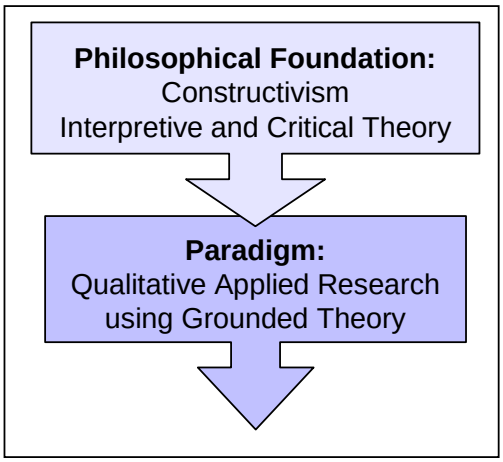


Figure 4.7: Research paradigm, including approach and type of research

4.8 RESEARCH METHODS

The research philosophy and paradigm, together with the various logistical considerations, will guide the researcher in the choice of data-gathering and analysis methods (Levy, 2000: 379; Biggam, 2008: 85).

Qualitative research does not necessarily stipulate a single research method (Schurink, 1998: 241). Various methods of data gathering and analysis exist within the qualitative research approach. These include observation, interviews, participant observations and the collection and study of documentation or reports (Ary, et al., 2006: 34; Strauss & Corbin, 1990: 18; Creswell, 1998: 121; Denzin & Lincoln, 1994: 1). Creswell (1998: 121) adds audio-visual materials as another data-collection technique. Ary, *et al*. (2006: 462) and Dick (2005) also indicate that interviews, observations, documents and literature are all potential sources of information in grounded theory traditions.

Figure 4.8 represents schematically the data-collection and data-analysis methods that will be used in this research study.

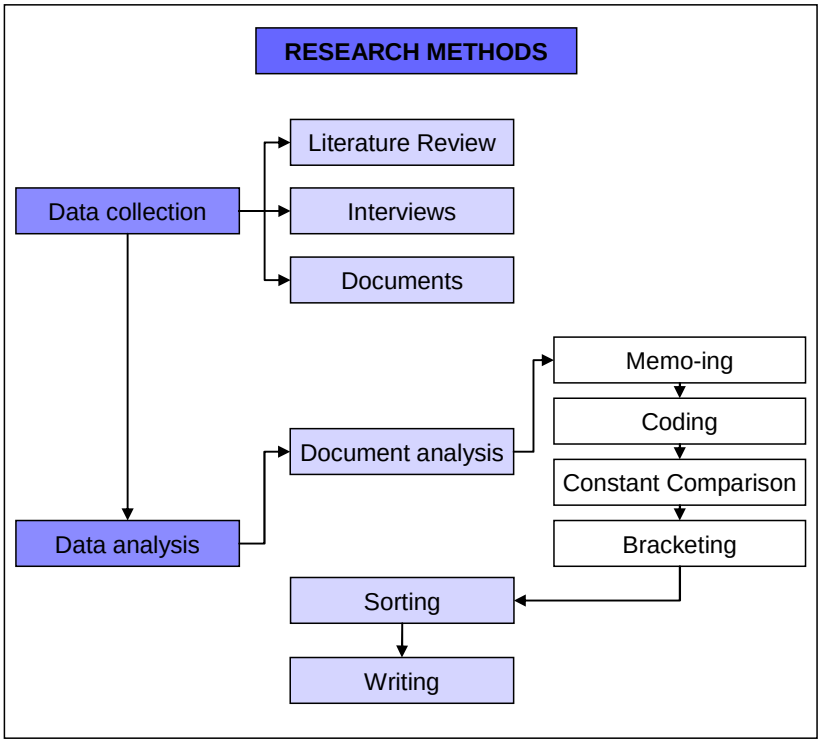


Figure 4.8: Research methods

4.8.1 Data collection

A range of data collection strategies are available to the qualitative researcher (Creswell, 1994: 148). Keeping in mind the primary research question, the data for this study were collected through:

- Literature review;
- Interviews;
- Documents.

Each of these data-collection methods is described below.

4.8.1.1 Literature review

Keeping the secondary problem statements of this study in mind, a *literature review* was undertaken first. Hart (1998: 13) *defines* a literature review as the study of scientific writings (books and articles), both published and unpublished, containing "information, ideas, data and evidence written from a particular standpoint". This must fulfil the aims and objectives of a particular study. It also encompasses the exploration and assessment of all the literature relative to the research study. Ary, *et al.* (2006: 464) refer to the literature study as a content or document analysis and state that it is widely used in educational research.

An *advantage* of a literature study is that it is unobtrusive and the presence of the observer does not influence what is being observed (Flick, 2006: 252). Another advantage is that the researcher does not need to enlist cooperation from the subjects, or get permission to do the study (Ary, *et al.*, 2006: 464). A further advantage is that the literature often goes beyond the perspectives of the members in a particular field (Flick, 2006: 252).

One of the *purposes* of the literature review, mentioned by Ary, *et al.* (2006: 464), is to describe any previous research, the relevant literature and the prevailing practices. These must correlate closely with the research study being undertaken. In addition to this, the literature review is important for grounding the arguments, indicating that the findings are in agreement with the existing literature and that they go beyond, or possibly even contradict, the existing research (Flick, 2006: 62; O'Leary, 2004: 79; O'Donoghue & Punch, 2003: 115).

Furthermore, it facilitates the researchers in developing their own research design and proves their credibility as a researcher (O'Leary, 2004: 84; Bell, 1999: 92). More

extensive research reports, such as a thesis, should always include a literature review (Flick, 2006: 62; O'Leary, 2004: 83).

The rationale for a literature review in this study is to facilitate the researcher in gaining an overview and information regarding the RNCS, and the Montessori method of education, as well as providing an in-depth understanding of holistic and integrated curriculum arrangement. Although the literature review forms a major part of this study, it will be supplemented by interviews and document analysis as well.

The results of the literature review were recorded in Chapters Two and Three. Literature will also be used further on to validate the research findings.

4.8.1.2 Interviews

Interviews are a valuable form of data collection as they enable direct verbal interaction between individuals (Buntting, 2006: 54; Denzin & Lincoln, 2003). Interviews give the researcher access to the point of view and perspective of the interviewee (Fraenkel & Wallen, 2005; Kvale, 1996: 14). Interviews are based on the belief that meaningful knowledge is generated by individuals through conversation (Cohen, Manion & Morrison, 2000: 267).

This is consistent with an interpretive theoretical perspective, and is often used in the qualitative approach (Buntting, 2006: 54).

4.8.1.2.1 Insider research and interviews

As the researcher is deeply involved with the running and working of the Knysna Montessori School, considerations regarding insider research needs to be considered. There are *advantages* and *disadvantages* involved with conducting insider research (Crossley & Vulliamy, 1997: 200).

Arksey & Knight (1999: 67) presents the following as advantages and disadvantages to insider research:

Advantages:

- Access is gained more easily.
- Knowledge of the culture and issues of the setting is already in place.
- Through the drawing on shared experiences, the researcher can attain a better rapport with the interviewees.
- Richer data can be obtained as the interviewee feels more confident with an insider.
- Authenticity of data can be determined more easily.

Disadvantages:

- Role conflict could occur, for example being a colleague or a researcher.
- Interviewing colleagues of a higher status could be problematic.
- Future working relationships could be jeopardised through intimate details that are shared during interviews.
- The validity of the research could be compromised if the researcher is too close to the subject matter.

For the purpose of this study, the researcher feel that the use of insider research is more advantageous as the researcher's inside knowledge and expertise would help establish a better understanding of the interviewees' responses and extract more detailed account of the subject matter.

4.8.1.2.2 Types of questions

There are two *types of questions* that could be asked during an interview (Flick, 2006: 150; Sapsford & Jupp, 2006: 159). These are:

- *Open-ended questions*: No categories or particular responses are pre-determined by the interviewer and respondents are free to answer as they see fit;

- *Closed questions*: A particular response is predetermined by the researcher, and the interviewee could have a choice of different options.

4.8.1.2.3 Interview structure

Interview structures will vary, depending on the context and purpose, and can be done in three formats, viz. structured, semi-structured and unstructured.

In *structured interviews*, a list of predetermined questions is asked of all the respondents in the same sequence, frequently using the same wording for all (Buntting, 2006: 55; Moonie, 2000: 436). This form of interviewing is fairly rigid and does not allow the researcher to follow up on thoughts and themes emerging from the interview (Livesey & Lawson, 2008: 75; Moonie, 2000: 436). The disadvantage is that important questions may not be included and could affect the research adversely (Bell, 1999: 137). The advantages are that the interviewer bias is reduced, as the research instrument can be checked for bias beforehand (Moonie, 2000: 436), and data analysis is greatly simplified (Bell, 1999: 138).

Structured interviews include closed and open-ended questions to allow for participants' responses and insights (Buntting, 2006: 56).

Semi-structured interviews are more flexible and not completely predetermined (Wellington, 2000: 75). The interviewer can change and guide the order of the questions, or the wording, depending on the direction the interview is following (Buntting, 2006: 55). Ideas are presented during the interview and enough freedom is given by the interviewer to follow whatever direction the interview may be taking (Flick, 2006: 157; O'Leary, 2004: 164; Wellington, 2000: 75).

This allows for similar basic lines of inquiry to be followed with different interviewees, but it also allows for the liberty to pursue unusual or new insights (De Vos, Strydom, Fouché and Delport, 2005: 296; Buntting, 2006: 55; Denscombe, 2003: 167; Wellington, 2000: 74). A disadvantage is that bias by the interviewee and interviewer cannot be totally controlled or eliminated (Bell, 1999: 139).

Unstructured interviews attempt to draw out information, thoughts, views and beliefs around a particular issue or theme, without any pre-determined list of questions (O'Leary, 2004: 164). Consequently, unstructured interviews will vary from one interview to the next. No pre-determined lists of questions or order of questions are

set up by the interviewer (Wellington, 2000: 74). This format of interview gives the researcher total control to pursue any line of inquiry (Trochim, 2006; Buntting, 2006: 55).

Lofland and Lofland (1995: 85) define the aim of unstructured interviews as allowing interviewees to "speak freely on their own terms about a set of concerns the interviewer brings to the interaction, plus whatever else they might introduce". Aside from the issue surrounding bias, the interviewee could take control of the interview and manipulate the outcome of the interview (Livesey & Lawson, 2008: 19).

The *advantages* of interviews are that the researcher can explain the questions face-to-face and provide help and guidance (Livesey & Lawson, 2008: 16). It furthermore provides opportunities for probing, and such information is immediately available (Cohen, Manion & Morrison, 2000: 269).

The *disadvantage* of interviews is that they are time-consuming and this limits the number of responses which can be gathered (Buntting, 2006: 56). There are also four sources of possible error: the interviewer, the questions, the coding and the selected sample (Cohen, Manion & Morrison, 2000: 569). The word structure also plays a role in the interpretation of the data (Buntting, 2006: 56; Fontana & Frey, 2003), as this word structure could be misleading or even ambiguous (Fielden, 2008: 2).

Despite these issues, interviews still provide a powerful tool for data-gathering for this particular study, as they assist the researcher in gaining knowledge and understanding on how the Knysna Montessori School staff interpret and implement the Montessori Method, and the RNCS.

The *purpose* of choosing interviews as a method of data gathering in this study was to determine the *status quo* at the Knysna Montessori School in terms of curriculum integration, as well as gathering background information about the school, its educational methods and its development.

This research study conducted interviews on a one-on-one basis, using a semi-structured format. Semi-structured interviews are typical of a grounded theory paradigm (Anglin, 2002: 80). This ensured that the researcher was able to pursue her line of inquiry and data-gathering, while allowing enough freedom to follow another line of inquiry that might arise from the interview (Holloway & Wheeler, 2002: 34; Mouton, 2002: 105; Struwig & Stead, 2001: 87; Wisker, 2001: 168).

Open-ended interview sheets (see Appendix 2 to 4) were prepared in advance to ensure that critical information was included (O'Leary, 2004: 164) and scrutinised to avoid the following common questioning errors (Blanche, Durrheim & Painter, 2006: 300):

- Too many questions;
- Closed questions;
- Leading questions;
- Excessively probing questions;
- Poorly timed questions; and
- Why questions.

4.8.1.2.4 Sampling

The selection of the *sample of participants*, or the key informants to be interviewed, is a process that needs serious consideration. Wellington (2000: 73) and UNICEF (2006: 198) define key informants as those key individuals in the study, who have a good understanding of the issues to be explored. The researcher needs to establish the purpose of the interviews and the perspective from which the key informants will be interviewed (Wellington, 2000: 73). Therefore, the key informants will be the teachers, who have the most relevant experience and training in Montessori, as well as Outcomes-Based Education (OBE).

The sample size for this research project is limited to the teachers at the Knysna Montessori School and therefore *availability* and *purposive* sampling were employed as sampling strategies (Creswell and Plano Clark, 2007: 112; Denscombe, 2003: 15). Schutt (2006: 403) and Bachman and Schutt (2003: 106) define an *availability sample* as "elements being selected because they are available and easy to find".

Availability sampling is also known as “haphazard, accidental or convenience” sampling (Grinnell & Unrau, 2007: 150). This form of sampling is often used in social research when the researcher explores a specific new setting (Grinnell & Unrau, 2007: 151; Bachman and Schutt, 2003: 106). However, when using availability sampling, the researcher needs to explicitly describe the sampling procedures (Bachman and Schutt, 2003: 106), in order to avoid selection bias (Dattalo, 2008: 7). Selection bias is the systematic inclination to reject some elements from the sample (Dattalo, 2008: 7).

Purposive sampling refers to the researcher’s knowledge of the population in order to meet the research goals (Dattalo, 2008: 6). Chambliss and Schutt (2009: 123) define purposive sampling as the selection of participants for their unique position and for a distinct purpose. When using purposive sampling, the participants should be:

- *Knowledgeable* about the topic, theme or situation being studied;
- Willing to *talk*; and
- Represent a *range of viewpoints* (Creswell and Plano Clark, 2007:112; Teddlie and Yu, 2007: 80; Engel & Schutt, 2005: 122; Denscombe, 2003: 15; Berg, 2001:32; De Vos, 1998: 198).

Furthermore, when applying a purposive sampling strategy, the researcher should continue selecting participants, until the following *two tests* have been passed (Engel & Schutt, 2005: 122):

- *Completeness*: The interview provides an overall sense of meaning to the topic under investigation;
- *Saturation*: subsequent interviews add little new knowledge to the previous interviews.

When selecting the sample, the researcher used her knowledge of the staff’s position, length of employment at the Knysna Montessori School, training, as well as experience in Montessori schools as her basis for selection. The *selection criteria* for the sample of selection at the Knysna Montessori School are thus:

- *Position* held within the Knysna Montessori School as full-time teacher and head of the cultural studies area;

- Employed at the Knysna Montessori School for a *period* of two or more years;
- *Experience* in teaching for two or more years at either Montessori schools or traditional schools;
- *Trained* in traditional education methods or a three-year diploma in Montessori education methods.

The sampling process was done as follows:

Pre-school, including Grade R: There are three teachers in the pre-school. All three hold Montessori qualifications, but only one is studying towards a National Professional Diploma in Education (NPDE). This participant has been teaching in the Knysna Montessori School for 12 years and holds the position of Head of Department of the pre-school and junior school. Her knowledge and expertise in both Montessori and traditional education made her the most obvious choice as a participant from the pre-school section.

Foundation phase of the GET band (Grades 1 to 3): There are currently three teachers in this area. One teacher specialises in mathematics, one in language, and one teacher presents the cultural studies (see Chapter 3). As it is the aim of this study to integrate the RNCS, the cultural studies teacher was selected for both her expertise and experience in curriculum integration. She holds two Montessori qualifications and has taught from pre-school to Grade 6, with five years of teaching experience. As the purpose of the interviews in this research is to collect rich information on curriculum integration within a Montessori environment, as well as understand the Montessori method within the Knysna Montessori School, both the language and mathematics teachers were discounted, as they do not integrate their learning areas.

Intermediate phase of the GET band (Grades 4 to 6): In this area there are two teachers. One teacher holds a traditional qualification (4-year Senior Primary Diploma), has 13 years of traditional teaching experience, and three years of Montessori experience at the Knysna Montessori School. The other teacher is studying towards his NPDE and has three years experience in teaching, all at the

Knysna Montessori School. The choice of candidate fell on the teacher with the higher qualification and more experience.

Senior phase of the GET band (Grades 7 to 9): There are currently seven teachers in this class, some of whom teach the Grade 10 to 12 group. Only two teachers in this age group hold a Montessori qualification, one of whom is the Principal. Of the remaining five teachers, one holds a degree and an NPDE, one a teaching degree and the other three are studying towards their NPDEs. As the purpose of this study is to look at Montessori education, in particular the integration of learning areas within this phase, the researcher used her own knowledge of the teachers' experience and classroom practice to purposefully determine which candidates to interview. The teacher with the Montessori qualification was selected, as she is the only teacher in this age group attempting to integrate the curriculum and has the longest teaching experience (14 years) in Montessori schools. The other candidate chosen was the Principal, firstly as it was her request that this research study be conducted, and for her experience and vast knowledge of the Montessori method across all age groups. The other teachers were discounted as their experience and knowledge would not have provided rich and descriptive information on the Montessori method and its holistic and integrative properties.

A summary relating to the sample is listed in Table 4.2.

Participant	Traditional teaching experience	Montessori teaching experience	Highest qualification
Pre-school	None	12 years	Currently studying towards NPDE
Foundation Phase	None	5 years	Two Montessori qualifications covering from pre-school up to grade 6
Intermediate Phase	13 years	3 years	4 year Senior Primary diploma
Senior Phase: Teacher	None	14 years	Montessori pre-school diploma
Senior Phase: Principal	10 years	20 years	3-year teacher diploma; Montessori qualification from pre-school up to grade 6

Table 4.2: Summary of sample for interviews

High School (Grades 10 – 12): As indicated in Chapter Three, this section is traditional in its approach to subjects and does not integrate at all yet. Furthermore, none of the teachers in this area has any Montessori training or experience, and were employed for their expertise in High School education, with the purpose of preparing learners for the Grade 12 final examinations with the Independent Examination Board (IEB), assisting learners in choosing suitable career paths, as well as mentorship for these Grade 10 to 12 learners.

The first phase of the data-collection process was the interviewing of five teachers at the Knysna Montessori School. These semi-structured interviews took place in an open classroom on different afternoons, as follows:

Teacher Interviewed	Date	Time	Length
Cultural Studies teacher: 6 – 9 year old environment	19 May 2009	16:10	1 hour 6 minutes
Head teacher: 9 – 12 year old environment	20 May 2009	15:35	29 minutes
Head of Department: Pre-school and Junior School	21 May 2009	15:35	26 minutes
Head teacher: 12 – 15 year old environment	9 June 2009	16:10	59 minutes
Principal & teacher in the 12 – 15 year old environment	11 June 2009	16:00	59 minutes

The interviews were tape-recorded with the permission of the participants. During the interviews field notes were kept by both the interviewer, known as the moderator, as well as an independent observer (Babbie, 2005: 295). These were included in the audit trail. The independent observer, after each interview, wrote out her observations regarding the interview and the interviewee, and these were also included in the audit trail. In order for accurate data analysis, interviews were transcribed by an independent transcriptor (Holloway & Wheeler, 2002: 235 – 236; Babbie & Mouton, 2001: 293) and checked against the recording and the field notes by the researcher. See appendix 5 for the transcription of the interview with the Principal.

4.8.1.3 Documents

The *main documents*, which form the focal point of this study, are the RNCS and related documents, as well as literature pertaining to Montessori's holistic and integrated education. Other literature was referenced in order to gain a greater theoretical understanding of Outcomes Based Education and the RNCS, as well as Montessori methodology.

Documents are "constructed in particular contexts, by particular people, with particular purposes, and with consequences – intended and unintended" (Mason, 2002: 110). It is therefore necessary to take into account various features of each document being analysed. Thomas (2004: 197) provides the following *criteria for evaluating documents*:

- *Authenticity*: This refers to documents that are prepared by the stated author at the time given and therefore confirm a truly original work. This refers to the author's credentials, previous publications, peer reviews, affiliations with institutions, all of which play a role in determining the authenticity of the document (Cannon, 2005: 1; Thomas, 2004: 197; Richmond, 2003: 1);

- *Credibility:* The author's credentials and bias are influencing factors in credibility. It is therefore necessary to evaluate the purpose of the document, in addition to the author's point of view and given opinions, to determine credibility (Richmond, 2003: 1; Spanfelner, 2001: 1);

- *Representativeness*: This refers to how information has been selected for inclusion, and whether it represents only the author's point of view, or incorporates a wider context and opinion. To determine representation, the intentions of the author, over and above the selectivity of information represented, must be considered (Thomas, 2004: 197; Richmond, 2003: 1);

- *Meaning*: This refers to how both author and reader understand the content. Once again, it relates to the intention and the extent of coverage of a particular topic (Thomas, 2004: 197). A major drawback of document analysis is that the

author's intention might not be similar to that of the researcher of the particular research study (Robson, 2002: 358).

Qualitative document analysis finds meaning in the documents through information exchange, document format and literary tone (Altheide, 1996: 16), and it is important to review these aspects in order to ensure trustworthiness.

The data collection from documents included the following:

- A theoretical reflection on Outcomes-based Education (OBE) and the Revised National Curriculum Statements (RNCS) through the study of documents.

  Data were collected directly from the RNCS policy documents, published by the Department of Education of South Africa, and other related documents. A literature review was used to interpret the data, providing the researcher with background information on the nature of the RNCS and OBE.

- A theoretical perspective, through the review of documents and interviews on the Montessori method, with a specific focus on the senior phase of the GET band, as well as holistic and integrated education.

  Data regarding the Montessori method were gathered by means of literature and with the help of interviews. Data concerning the Montessori method, with particular focus on the adolescent, and holistic and integrated education were also collected from the relevant literature, Montessori's own works, interviews with Knysna Montessori School staff, and various brochures, conference proceedings, websites and information leaflets from Montessori schools across the world.

4.8.1.4 The role of the researcher

For the purpose of this study, the *researcher* will be the *research instrument* who needs to gather data from experts within the Knysna Montessori School environment who have both experience and expertise in teaching an integrated curriculum, as well

as Outcomes-Based Education (OBE) (Babbie, 2007: 184; Creswell and Plano Clark, 2007: 112; Denscombe, 2003: 15; Berg, 2001: 32; Struwig & Stead, 2001: 111, De Vos, 1998: 198).

The researcher forms an integral part of the data collection as the research instrument, and is seen as the organiser, evaluator and recorder of data (Holloway & Wheeler, 2002: 15 – 17; Mouton, 2002: 100; Struwig & Stead, 2001: 145). The researcher's involvement in the qualitative research process raised ethical and personal issues. In order to avoid such concerns, qualitative researchers need to pay special attention to their role in the research process. This includes (Creswell, 2003: 184 – 185):

- reporting on the background of the participants and the researcher, in order to present a more comprehensive understanding of the research topic, the setting, or the participants;

- commenting on the association between the researcher and the context within which the research takes place, or between the researcher and the participants in the study;

- obtaining ethical clearance for the research study;
- gaining permission from the school where the research is to take place;

- observing and reporting on possible sensitive issues that might arise during the course of the research.

The researcher has the further role of becoming skilled in the task of data retrieval and interpretation while remaining caring, considerate and impartial (Poggenpoel & Myburg, 2003: 418; Strauss & Corbin, 1990: 42). Lastly, through the preparation of an appropriate research design, the researcher has the responsibility to ensure that accepted qualitative strategies are followed (Eisner, 1991: 39; Lincoln & Guba, 1985: 39).

4.8.2 Data analysis

Data analysis within the grounded theory paradigm and within this research study took place through (Anglin, 2002: 80):

- Memo-ing, coding, constant comparison and discounting or bracketing; and
- Sorting.

Each is discussed below.

4.8.2.1 Document analysis

Document analysis is particularly well suited to a grounded theory paradigm and is an integrated and theoretically informed method, procedure and technique. It is used to locate, identify, retrieve and analyse documents according to their application, implications and meaning (Anglin, 2002: 80; Altheide, 1996: 2). In line with grounded theory, document analysis gathers and analyses data simultaneously (Brown, Stevens, Troiano & Schneider, 2002: 8; Bryman, 1987). Furthermore, the rationale behind choosing document analysis in this study was to solve the main research problem, viz. the development of an integrated learning programme for the Knysna Montessori School through the analysis of the RNCS and Montessori principles.

Document analysis is complementary to the *research design elements* discussed thus far. It is consistent with a *constructivist philosophy* in which reality is socially constructed and is not considered to be an absolute 'truth' (Silverman, 2005: 160). Through document analysis, the influences of culture and the environment (in this case education in South Africa, and the Knysna Montessori School environment and culture) were investigated. Similarly, document analysis is relevant to the interpretive- and critical theoretical perspectives of this study. It also leads to an emergent design, corresponding to grounded theory (Rademakers, 2004: 14).

Document analysis within the grounded theory paradigm takes place through memo-ing, coding and constant comparison, as well as bracketing (discounting) (Hesse-Biber & Leavy, 2008: 167; Altheide, 1996: 24). Each of these steps is discussed below.

4.8.2.1.1 Memo-ing

Strauss and Corbin (1990: 10) maintain that memo-ing is an integral part of the *grounded theory* process, as it is a system for keeping track of the data-collection, note-taking and coding processes, as well as theoretical questions, assumptions and coding summaries. This process of keeping track is also referred to as an *audit trail* (Ary, *et al*., 2006: 509; Meyers & Sylvester, 2006). This is discussed in more detail under trustworthiness (See 1.7.6).

Pandit (1996) makes a distinction between three different types of memos, namely:

- *Code memos*, which correlate with open coding and focus on theoretical labelling;
- *Theoretical memos*, relating to axial and selective coding and focus on theory characteristics and the evidence of the process;
- *Operational memos*, containing directions relating to the research design.

In this study, memo-ing played a crucial role. It assisted the researcher in actively engaging in the data, codes and categories, and keeping track of comparisons and emergent theories (Alasuurate, Bickman, & Brannen, 2008: 472). Records of memos were kept in the audit trail for trustworthiness purposes.

4.8.2.1.2 Coding

The verbatim transcripts from the taped interviews, as well as the RNCS documents were coded. An open-ended, inductive coding approach was applied. The research aims to construct a theory grounded in the document analysis, rather than testing any preconceived theory.

Grounded theory provides a means of data-analysis through specific *coding* prescriptions (Alasuurate, Bickman, & Brannen, 2008: 472; Allan, 2003: 1). Coding aims to find and conceptualise any underlying themes and issues within the data analysed (Allan, 2003:1; Douglas, 2003: 49). Strauss and Corbin (1990: 57) define coding as “the operation by which data are broken down, conceptualised, and put back together in new ways.”

A brief summary of the different coding methods within grounded theory are given, as follows:

- *Open coding*: This forms part of the initial coding, where data are closely scrutinised. Open coding is the name or label the researcher gives to different concepts, actions, words or events that have been observed during the data-gathering process (Douglas, 2003: 49; Pandit, 1996);

- *Axial coding*: This form of coding follows the initial open-coding, where data are regrouped. The researcher aims to find out the relationships between the open codes, in order to develop core codes within the selective coding process (Douglas, 2003: 50; Pandit, 1996). The researcher also observes how the different open codes interrelate with one another (Seale, 1999: 99);

- *Selective coding*: Core codes are the central themes emerging from the axial coding process. All the axial codes must refer to the core codes, either directly or indirectly (Dick, 2005; Douglas, 2003: 50).

Tesch (1990: 142 – 145) presented the following eight steps as guidelines when analysing data. These eight steps will assist the researcher in the coding of the data:

- Get an overall picture through reading the data to be analysed. This step provides the researcher with background information. While reading the information, the researcher jots down ideas about the data being analysed.

- Choose a document to be analysed and ask: “What is this document about?” Focus on the topic, not the content of the section under scrutiny. Write the topic identified in the margin of the document.

- Once three to five steps have been analysed in this fashion, write a list of all the topics that emerged in one document. Use one column per document analysed. Connect similar topics together with lines. On a separate sheet of paper, cluster similar topics together and give the cluster an appropriate name. Again on a new sheet, draw three columns, the first holding the major topics

derived from clustering; the second column holds unique topics that are pertinent to the research, despite the rarity of their occurrence; and the third column holds the residual topics.

- Return to the data, making fresh copies to work with. Using the topics from columns one and two as a preliminary organising system, write the appropriate topic next to each segment in the data. At this stage codes could be assigned to the different topics. This step will indicate the appropriateness of the initial topic description, as well as indicate possible new topics that might emerge. Keep memos on ideas and thoughts throughout this process.

- Refine the organisational system by providing the most descriptive word for each category. Reduce the total list of categories by re-clustering and determining topics and sub-topics.

- Make a final decision on the codes for each category and list them in a word processor, which can sort them alphabetically. This will help eliminate duplicates.

- Re-organise the data of the different categories in a logical order, where all the data belonging together are grouped together. At this point, the researcher should look at the actual content of the topics. This summary of the categories will help determine commonalities, uniqueness, contradictions and missing data in terms of the main research question. This might lead to recreating new categories and re-coding the data.

- If necessary, re-code the original set of data and code the remaining documents.

4.8.2.1.3 Constant comparison

Parallel to coding, there is the need for *constant comparison* and contrast (Altheide, 1996: 17); this need is deeply rooted within the grounded theory paradigm (Alasuurate, Bickman, & Brannen, 2008: 420; Taylor, 2006; Carver, Seaman &

Jeffery, 2004: 38; Dick, 2005; Thorne, 2000: 68; Seale, 1999: 96). Constant comparison is central to coding and is essential for determining major themes in the data being analysed. Ary, *et al.* (2006: 463) refer to this as the "*constant-comparative method of analysis*". Constant comparison is the process whereby newly gathered data are continuously being compared with previously gathered data and coded, for the purpose of refining the emergence of theoretical categories (Taylor, 2006; Dick, 2005; Dye, Schatz, Rosenberg & Coleman, 2000; Creswell, 1998: 148 - 149).

With constant comparison, data coding and categorising the data are *continually refined*. This implies that the criteria of the different categories started off vaguely, but, as more data are analysed, they become more defined and precise (Dey, 1993: 111). This requires flexibility and the ability to adjust to fresh observations and new emergent directions (Dye, *et al*., 2000; Dey, 1993: 111). Continual refinement is not explicitly part of the grounded theory paradigm, but it is critical in order to develop a sound grounded theory, and it was therefore essential that it be included in this study. This was mainly done through note-taking and reflection, as well as *memo-ing*.

Constant comparison takes place in *four stages*. In the *first stage* the data are coded into similar categories. This allows for similar ideas or themes to be compared. Patton (1990: 406) defines the first stage as determining patterns, themes, and categories, whereby the researcher is required to discriminate between significant data and those which are not appropriate to the study (Dye, *et al*., 2000). This stage is comparable to the *open coding* stage of coding grounded theory. Furthermore, the researcher is required to draw up rules whereby the data are compared, in order to determine their inclusion in a particular category (Lincoln & Guba, 1985: 347).

The *second stage* is the integration of categories, and the observation of how the different categories interact with one another. During this stage, the codes from the first stage are grouped together to form bigger categories. This stage relates to axial coding found in the grounded theory.

However, constant comparison goes further, wherein the axial codes are compared and contrasted with each other. The aim is not only to determine patterns and

variations, but also to find a descriptive and explanatory framework within the codes (Dye, *et al.,* 2000; Dey, 1993: 96; Lincoln & Guba, 1985: 341).

Memos, in particular *theoretical memos* found in grounded theory, played an important role at this stage. They helped the researcher to keep track of comparisons, contrasts and any decisions that had been made regarding the category interactions.

In the *third stage* no new categories or interactions emerge and it is called 'theory saturation' (Seale, 1999: 96 – 97; Lincoln & Guba, 1985: 339). This stage correlates with the 'sorting' stage of grounded theory, which is discussed under 4.8.2.2.

The *fourth stage* consists of the *writing* of theories, whereby the categories that emerged form the chapter headings and sub-headings (Seale, 1999: 96 – 97; Lincoln & Guba, 1985: 339).

Records of the coding process were kept in the audit trail to avoid issues around trustworthiness.

4.8.2.1.4 Bracketing (discounting)

This is the process whereby the researcher determines in which context the data were collected and how this has influenced the findings (Creswell, 1998: 52; Lemon & Taylor, 1997: 227). This step gives the opportunity to reassess the possibility of any researcher bias and to ensure trustworthiness (Ahern, 1999: 407; Burns & Grové, 1999: 362; Patton, 1990: 185).

Bracketing was used in this study. The researcher had to put her own preconceived ideas regarding curriculum arrangement aside, while coding and recoding the data, allowing themes to emerge (Creswell, 1998: 53; Lemon & Taylor, 1997: 227; Burns and Grové, 1993: 80).

4.8.2.2 Sorting

Sorting refers to the researcher's organisation of the coded information and memos in order to prepare for the final stage of *writing* the research document. Within the emergent grounded theory approach, sorting might take place in two stages, viz. to facilitate the emergent theory, and later to present the grounded theory to an audience (Alasuurti, Bickman & Brannen, 2008: 473). A diagram representing major ideas and relationships assists in making processes and structures visible (Alasuurti, Bickman & Brannen, 2008: 473).

Pandit (1996) adds a *final stage* to grounded theory analysis, viz. comparison of the grounded theory with the existing literature. Eisenhardt (1989: 545) is of the opinion that this process will enhance the general trustworthiness and also the transferability of the study.

4.8.2.3 Writing

The final stage of the research process was the writing of the thesis through different chapters, recording the research process, data analysis and findings.

4.8.2.4 Research process

This data analysis of this research study included the following steps:

- Analysis of the interview transcripts with the aim of extracting main themes to gain a better understanding of the implementation of the Montessori method of education at the Knysna Montessori School.

- Document analysis and grounded theory coding of the RNCS and comparison of the emergent themes with Montessori's holistic integrated method of education that took place.

- Using a grounded theory analysis, six of the eight learning areas of the RNCS (with the exception of languages and mathematics) were coded and analysed in order to answer the main research question.

- Finally, this resulted in the emergence of grounded theory in the form of a learning programme for the senior phase of the GET band at the Knysna Montessori School (Grades 7 to 9). The learning programme will be presented in Chapter Five.

Finally, the research design for this study can be graphically represented, as in Figure 4.9.

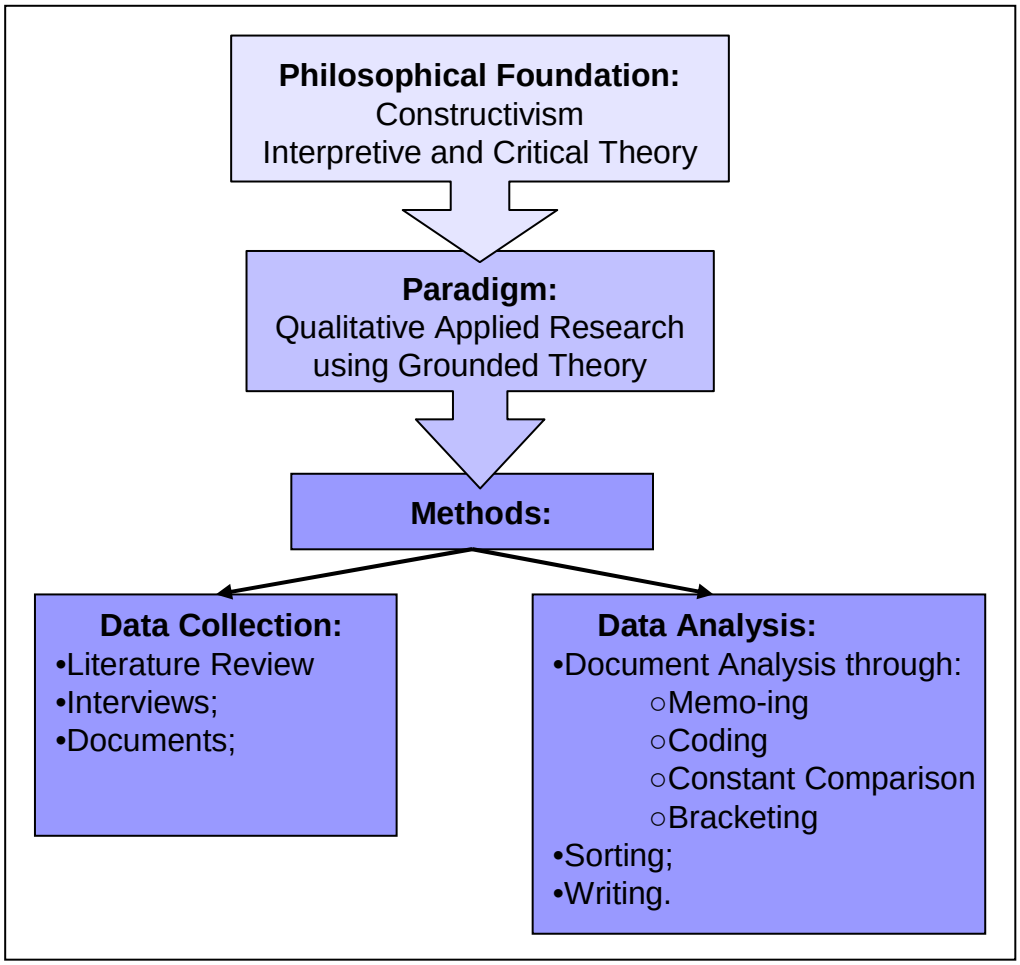


Figure 4.9: Research design

4.9 TRUSTWORTHINESS

Within the constructivist philosophical foundation, the *emphasis* on trustworthiness falls on the quality description of how a particular theory has been derived, rather than focusing on the replicability of the results (Buntting, 2006: 49; Dey, 1993: 251).

The aim of trustworthiness within the constructivist foundation is to accurately describe the phenomena and the findings (Douglas, 2003: 63). Trustworthiness is further seen as the soundness and reliability of qualitative research methodology (Holloway & Wheeler, 2002: 235; Babbie & Mouton, 2001: 276; McMillan & Schumacher, 1993: 481).

The recording of the research process and findings ensures trustworthiness (Creswell, 2003: 195 – 196; Struwig & Stead, 2001: 172; Rudestam & Newton, 2001: 98 – 99). One of the most important methods employed by researchers to keep track of trustworthiness issues is an audit trail (Guba & Lincoln, 1989: 242). Ary, *et al*. (2006: 509) and Meyers and Sylvester (2006), mention that an audit trail includes contextual descriptions, methods of data collection, detailed field notes, tape-recordings and other descriptive material.

Table **4.3** at the end of this section, contains a reference to the components of the audit trail conducted in this study.

In qualitative terms, the trustworthiness of the research is established in terms of its credibility, transferability, dependability and confirmability (Bloomberg & Volpe, 2008: 85; Lincoln & Guba, 1985: 300). Each of these criteria for trustworthiness will now be discussed in terms of this research study.

4.9.1 Credibility

In qualitative research, *credibility* addresses the "truth value" of the research study (Ary, *et al*., 2006: 504; Lincoln & Guba, 1985: 300). The focus is more on the quality and richness of the information gathered than on the size of the sample (Hoepfl, 1997; Patton, 1990). It refers to the accuracy of the information from the standpoint of the researcher, the participants and the reader (Bloomberg & Volpe, 2008: 86). Piantanida and Garman (1999: 147) emphasise that "credibility rests upon the researcher's ability to articulate the logic of justification in a clear and cogent manner."

The key question to determine whether a study is credible is:

> *How can confidence in the "truth" of the findings of this study, with the focus on data-gathering and analysis, be established?*

Methodological credibility refers to the reasoning behind the choice of methods in relation to the research questions posed (Bloomberg & Volpe, 2008: 86). It considers the relationship between the research design components, the research questions and the purpose of the study.

Interpretive credibility considers the data-analysis process and scrutinizes the quality of the researcher's interpretations and analysis (Bloomberg & Volpe, 2008: 86).

The *tools* for determining credibility are (McCabe, 2002: 46; Guba & Lincoln, 1989: 236 – 238):

- *Prolonged engagement in the field*: This allows the researcher to fully understand the context and culture of the research, as well as building trust and rapport with the participants (O'Leary, 2004: 115);

- *Persistent observation*: This gives the researcher the opportunity to understand the situation beyond the initial, and possibly superficial, level (O'Leary, 2004: 115);

- *Triangulation*: This term refers to the use of different sources to confirm the authenticity of a source or finding (O'Leary, 2004: 115; Denzin, 1989: 237);

- *Negative case analysis*: This establishes whether the theory developed fits every case (Lincoln & Guba, 1985: 301);

- *Member checking*: An external expert is requested to check the research process in order to ensure that all aspects of the research design and strategy are trustworthy.

In this research, prolonged engagement and persistent observation are already in place, as the researcher is a full-time employee of the Knysna Montessori School and has taught in all the age groups throughout the school. In addition, triangulation and member-checking techniques are also employed to ensure credibility. Negative case analysis will not play a role, as the end-product of this research is a grounded theory, with particular reference to the Knysna Montessori School, and the findings will not therefore be matched to any another case/school.

Further research and development from this theory could be investigated in later research, but currently fall outside the scope of this study.

In order to further enhance credibility, the researcher *triangulates* both data sources and data-collection methods (Bloomberg & Volpe, 2008: 86; Maxwell, 2005: 93). Mays and Pope (1995) define triangulation as the approach to data collection in which evidence is consciously gathered through a wide range of different, independent sources and methods. In interpretive research, no one method is completely neutral and without limitations (Buntting, 2006: 53). Furthermore, the use of different methods will reveal different aspects of the reality under investigation. It is therefore necessary that triangulation be used to counteract any threats to the credibility of the research data, by relating different types of data to each other (O'Hair & Kreps, 1990: 50; Hammersley & Atkinson, 1983: 199).

O'Hair and Kreps (1990: 50 – 52) and Patton (1990: 59) identified four different types of triangulation, namely:

- *Data triangulation*: This form of triangulation uses different methods of data collection (Buntting, 2006: 53; O'Hair & Kreps, 1990: 50). This study lies within the grounded theory paradigm and applies a literature review, interviews and document analysis as data-collection methods;

- *Theory triangulation*: Theory triangulation involves the consideration of how the phenomenon under scrutiny might be explained by multiple theories (Ary, et al., 2006: 505; Denzin, 1978: 39). This form of triangulation does not play a

major role within the scope of this study, as an original theory will be grounded through the data collection and analysis.

However, where possible, a comparison was drawn with similar theories in order to ensure credibility;

- *Investigator triangulation*: To ensure credibility in some studies, more than one researcher has been involved in the data-collection and analysis process (Buntting, 2006: 53). This study has used more than one researcher in the collection of data during interviews, where an independent person was present at the interviews in order to avoid researcher subjectivity.

  Additionally, more than one researcher was used in the coding of data. This is discussed in more detail under dependability;

- *Methodological triangulation*: This refers to the application of different methodologies in answering the same research question. It is usually employed when the main form of data collection is through the participation of research participants (O'Hair & Kreps, 1990: 52).

In this study, interviews are a secondary method of data collection and documents are the key method. Therefore, the methodological triangulation in this study is sound.

Evidence of triangulation is given in the audit trail, as well as throughout the study. It takes the form of documentary and interview citations and references throughout the research thesis.

Member checking involves the consultation with a group of fellow researchers (McCabe, 2002: 46). Member checking typically focuses on the process of research, rather than on the results, but should also include feedback to the members from whom the data were originally collected (Lincoln & Guba, 1985: 314). To this end, the Principal of the Knysna Montessori School, and other staff members who were

interviewed, received regular feedback on the progress of the study, as it pertains to their involvement. This has been documented and included in the audit trail.

Furthermore, the research was verified by the study promoter, and regular feedback of the study was discussed with the Principal of the Knysna Montessori School. The purpose is to avoid subjectivity on the part of the researcher and to receive critical feedback from the other researchers (McCabe, 2002: 46). Evidence of member checking will be given in the audit trail in the form of correspondence from the promoter.

4.9.2 Transferability

Ary *et al.* (2006: 507) define transferability as the degree to which the conclusions of a qualitative study can be applied to other similar contexts or groups. However, Hoepfl (1997) and Lincoln and Guba (1985) also assert that transferability is dependent on the degree to which the original theory can be transferred to other similar situations. In general, qualitative research does not place a heavy emphasis on generalisation, as it tends to be context-specific (Meyers & Sylvester, 2006).

However, as Dereshiwsky (1999) points out that this does not mean that research findings from qualitative studies need not apply to another situation, setting or population; they may well be applicable.

The key question to ask in order to determine whether the study is transferable is:

> *How can the researcher determine the extent to which this study can be applied to other similar contexts?*

Lincoln and Guba (1985: 316) emphasise that data cannot be readily transferred within the *qualitative interpretivist paradigm*, as this paradigm focuses on the human instrument and social context. Within the interpretivist approach, human behaviour and the social setting are commonly understood to be multi-layered, complex, irreducible, socially situated and unique (Buntting, 2006: 51; Cohen, Manion & Morrison, 2000: 21 - 22). The aim of interpretive research is to understand the social

context of the study, rather than to isolate laws that will describe the behaviour within different contexts (Buntting, 2006: 17). As a result, transferability does not refer to the generalisation of the study's findings, but rather to providing enough information on how conclusions were drawn, in order for other readers to determine their transferability (Bloomberg & Volpe, 2008: 78).

Lincoln and Guba (1985: 291-292) have identified the following *threats* to transferability:

- *Selection effects*: These entail how the selection of the sample is applicable to a very specific group and refer to the choice of participants in the study. In this research study, the participants have not been selected for their ability to generalise the context within which the study falls, but rather to provide rich information on the context. Therefore, selection effects might influence this study.

- *Setting effects*: These refer to when the results of a study are largely a function of the setting. In order to avoid such effects, the researcher bias is constantly being checked by the staff of the Knysna Montessori School, through feedback sessions, as well as by the promoter. This is described in more detail under confirmability. However, the familiar setting of the Knysna Montessori School was the setting for this research.

- *History effects*: This indicates that the results have been arrived at by a set of unique circumstances and are therefore not transferable. Although this study is unique in its context, namely the Knysna Montessori School, it will be transferable to other similar Montessori schools in future, even if it needs some adjustments according to the unique school's needs. The test of this transferability, however, lies outside the scope of this study;

- *Construct effects*: These refer to when the constructs being investigated are peculiar to a particular group. In order to overcome construct effects, multi-methods are employed to gather and analyse the data. Through the application of triangulation, as discussed under credibility, the researcher

grounds a theory, which should be transferable to different Montessori settings.

Bloomberg and Volpe (2008: 78) *assess* transferability through:

- *The richness of the descriptions included in the study*: These are considered a main technique for determining transferability (McCabe, 2002: 46). Apart from any detailed description of the research design, this study provides proof of the research process through both the thesis, and the audit trail.

  This proof includes transcripts and field notes from the interviews, coding decisions made through the study, document summary sheets, comments and feedback from the promoter, as well as minutes and notes from feedback meetings with the Principal and staff of the Knysna Montessori School.

- The amount of *detailed information* provided by the researcher: Not only should details regarding the research design be included, but also information regarding the context within which the data were gathered and analysed (McCabe, 2002: 46). This is done, as far as possible, by providing a rich description of time, place, context and the culture of the research study, which will enable other researchers to determine the study's transferability (Ary *et al*., 2006: 509; Meyers & Sylvester, 2006).

  Where applicable, proof was provided in both the thesis and the audit trail. This thesis includes an in-depth description of OBE and the RNCS in Chapter Two, the overview of the Montessori Method and context of the Knysna Montessori School in Chapter Three, as well as interview transcripts and field notes, and feedback from the meetings with the Principal and staff of the Knysna Montessori School in the audit trail.

4.9.3 Dependability

This criterion refers to the consistency and accuracy of the coding procedures (Meyers & Sylvester, 2006; Holloway & Wheeler, 2002: 255; Babbie & Mouton, 2001:

278), documenting changes and surprise occurrences in the phenomena being studied and in the research findings (Dereshiwsky, 1999). It also refers to the extent to which variations are tracked and explained (Ary *et al.*, 2006: 509).

The main question which determines dependability is:

> *How can the findings be repeated with similar methodologies within the same or similar contexts?*

Replication of the findings can be addressed in three ways (Cohen, Manion & Morrison, 2000: 119):

- *Stability of observations*: If the research is undertaken at a different time or place, the researcher should obtain the same results and come to the same conclusions. The researcher should aim, however, to describe the coding process of the documentary evidence logically and clearly, as this process is the core of dependability;

- *Parallel forms*: This implies that the researcher would reach the same conclusions if other phenomena within the context had also been studied. In order to ensure parallel forms, this study provides a rich description of the context and environment. It also provides details of the methodologies of the research. It aims at looking at the whole programme, in order to incorporate all aspects of the Knysna Montessori School environment, and provide an understanding of the RNCS.

- *Inter-rater reliability*: This method of addressing dependability, involves the repetition of the findings by another researcher with the same theoretical framework, drawing the same independent conclusions from the data. The strategy is two-fold, viz. coding of the data by another researcher, who reaches the same conclusions (Cohen, Manion & Morrison, 2000: 119). The researcher codes the data, leaves the analysis for a period of time; then recodes the data, and compares the two sets of coded material (Ary, et al., 2006: 510).

Both these strategies will be applied in this study. The researcher will code the data twice, using the grounded-theory paradigm and the study promoter and Principal of the Knysna Montessori School will each independently code them once.

The aim is to reach a high standard of accuracy and comprehensiveness (Bogdan & Biklen, 1992: 48).

Dependability is evidenced by a detailed documentation of the logic of the process and the methods followed (McCabe, 2002: 46; Guba & Lincoln, 1989: 242). Evidence of this is given in the thesis and the audit trail, where applicable. Rich description includes an outline of the research design and the decisions made during the data-gathering and analysis, details of the coding procedures, and the final coding decisions made. Furthermore, the researcher provides particulars on how the grounded theory was developed by the use of the literature review, document analysis, interviews, and constant comparisons.

4.9.4 Confirmability

Confirmability refers to the neutrality (unbiased nature) of the research (Ary *et al.,* 2006: 511; Struwig & Stead, 2001: 124; Lincoln & Guba, 1985: 300). It implies that the findings are an outcome of the research process, rather than a product of researcher bias and subjectivity (Bloomberg & Volpe, 2008: 87; de Vos, 1998: 350). Nevertheless, qualitative research is the result of the researcher's interpretation of a particular context and will inherently have some bias (Bloomberg & Volpe, 2008: 87).

The main question to be answered to determine confirmability is:

How can the researcher's bias best be managed?

O'Leary (2004: 57) suggests that confirmability assumes that the researcher is subjective, and needs to recognise his/her own subjective positioning, as well as manage and negotiate his/her potential biases. O'Leary (2004: 50 – 51) further suggests the following strategies for *ensuring confirmability*:

- *Researcher–participant relationship*: The researcher confirms the accuracy, relevance and authenticity of interpretations with the participants. In this study, this was done through the feedback sessions with the Principal and interviewed staff of the Knysna Montessori School. The field notes of the meetings are included in the audit trail.

- *Triangulation*: The researcher uses more than one source to confirm the authenticity of each source. As discussed earlier, this research study uses various methods of triangulation to ensure that the data and findings are not only credible, but also able to assist in identifying any researcher bias. Furthermore, feedback from the promoter provides a valuable third-party opinion and assists in producing an objective and neutral grounded theory.

In summation, *triangulation in this study* uses a literature review, interviews, document analysis, written and oral feedback and constant comparisons as methods of data collection and analysis. In the grounded theory paradigm, data collection and analysis take place mostly on a parallel level. Convergence of a major theme or pattern in the data from the various sources lends credibility to the findings (Ary *et al*., 2006: 505, Silverman, 1997: 25).

Consistencies between the different methods, when these are observed, will enhance the methodological credibility of the study and determine any underlying bias to be found in the different methods.

This section has dealt with the issue of trustworthiness and how it can be accomplished in this study. This issue is summarised in Table 4.3.

Research design elements	Research design components	Tools	Criteria for trustworthiness
Philosophical foundation	Constructivist foundation Interpretivist - and Critical theory	Documenting logic decisions regarding philosophical foundation and how these influence choices of paradigm and methods	Dependability and Credibility
Data collection strategies	Interviews with Principal & staff; Documents; Literature review	Audit trail	Dependability
		Data triangulation	Credibility
		Member checking	Credibility
		Researcher-participant relationship	Confirmability
Data analysis process	Document analysis through • coding; • memo-ing; • constant comparison; • bracketing. Sorting.	Detailed description	Transferability
		Documenting logic of decisions and methods used	Dependability
		Audit Trail	Credibility & Confirmability
		Member checking	Confirmability
		Researcher-researched relationship	Dependability
		Inter-rater coding	Confirmability
Presentation of findings	Written thesis	Subject to examination; Audit Trail available	Credibility Transferability Dependability & Confirmability.

Table 4.3: Demonstrating trustworthiness

4.10 ETHICAL MEASURES

Throughout the study, ethical measures were adhered to (De Laine, 2000: 87). The purpose of ethical measures is to protect the welfare of the research participants. This is increasingly becoming compulsory in South Africa (Blanche, Durrheim & Painter, 2006: 61).

At the Nelson Mandela Metropolitan University, ethical clearance is mandatory, and the researcher gained ethical clearance for this research study from this institution. A scanned copy of this clearance is included in Appendix 1.

Ethical considerations were discussed in detail in Chapter One. However, to recap, the researcher aimed to adhere to the following strategies to ensure ethical integrity:

- Explaining the purpose and ground rules of the research.
- Maintaining a good rapport with the participants.
- Maintaining the respect and dignity of all the participants.
- Demonstrating scientific integrity and competence.
- Obtaining informed consent.
- Protecting the participants' rights to privacy and confidentiality.
- Voluntary participation.
- Ensuring transparency.
- Safety monitoring.
- Providing feedback.

4.11 CONCLUSION

Chapter Four has provided an overview of the problem statement. Furthermore, a detailed description of the research design, including the philosophical foundations of the study, the research paradigm and the different methods employed to gather and analyse data, have been presented. Issues surrounding trustworthiness and a brief summary of the ethical measures of the study were also presented.

Chapter Five will present the findings of the research. Emergent themes will be discussed and compared with the themes emerging from other researchers' work. This will result in the integrated learning programme, grounded in the data analysis.

CHAPTER FIVE

RESEARCH FINDINGS AND INTEGRATED LEARNING PROGRAMME

5.1 INTRODUCTION

The main objective of this study has been to analyse the RNCS learning areas for the senior phase of the General Education and Training band (Grades 7 to 9), as well as to analyse Montessori's method of integrated and holistic education, in order to formulate an integrated learning programme for the Grade 7 to 9 age group at the Knysna Montessori School. Chapter 2 provided the researcher with a theoretical framework to the RNCS, whilst Chapter 3 gave a detailed report on the Montessori method of education, with specific focus on the adolescent learner. In Chapter 4, the research design and methodology were discussed. Data were collected through interviews, and the coding of the Revised National Curriculum Statement (RNCS) was carried out.

This chapter seeks to report on the emergent themes from both the interviews and the document analysis. It also seeks to provide a description of the emergent learning programme, based on the research findings.

Table 5.1 summarises the findings of the interviews into pertinent themes.

Themes	Categories	Sub-categories
1. Curriculum integration using timelines	1.1 Pre-school	1.1.1 Use of first timeline 1.1.2 Arrangement of curriculum a compromise 1.1.3 Use of RNCS
	1.2 Grades 1 to 3	1.2.1 Use of 1st three timelines 1.2.2 Linking learners interest to timeline
	1.3 Grades 4 to 6	1.3.1 Use all five timelines 1.3.2 Timeline covered per term
	1.4 Grades 7 to 9	1.4.1 Montessori & OBE combination 1.4.2 More traditional 1.4.3 Limited integration 1.4.4 Use of timelines

2. **Integration of businesses in Grade 7 to 9**	2.1 Integration with Learning Areas	2.1.1 Economic and Management Sciences 2.1.2 Life Orientation 2.1.3 More integration needed 2.1.4 Essential component
3. **Learning programmes**	3.1 Pre-school	3.1.1 Combination with work schedule 3.1.2 Varied from year to year 3.1.3 Linked to RNCS 3.1.4 Adaptation over time
	3.2 Grades 1 to 3	3.2.1 Flexible 3.2.2 Observation 3.2.3 Follow learner interests 3.2.4 Tick-off lists 3.2.5 Natural progression 3.2.6 Less prescriptive
	3.3 Grades 4 to 6	3.3.1 Three year programme 3.3.2 All grades work on same theme 3.3.3 Flexible 3.3.4 Follow learner interests 3.3.5 No formal learning programme 3.3.6 Correlate with RNCS
	3.4 Grades 7 to 9	3.4.1 No formal Montessori-based learning programme 3.4.2 Grade integration needed 3.4.3 Grade specific work to be covered
4. **Integration with and language**	4.1 Pre-school	4.1.1 Language integrated in all aspects 4.1.2 Language integrated into Cultural Studies 4.1.3 integrated in all aspects of class
	4.2 Grades 1 to 3	4.2.1 Continuous integration 4.2.2 Examples
	4.3 Grades 4 to 6	4.3.1 Integrated 4.3.2 Language integrated 4.3.3 Examples
	4.4 Grades 7 to 9	4.4.1 No formal integration 4.4.2 Individual teacher integration 4.4.3 could be integrated more
5. Assessment in an integrated curriculum arrangement	5.1 Pre-school	5.1.1 Formal assessment 5.1.2 Observation
	5.2 Grades 1 to 3	5.2.1 Continuous observation 5.2.2 Tick-off lists
	5.3 Grades 4 to 6	5.3.1 Continuous assessment 5.3.2 OBE assessment strategies
	5.4 Grades 7 to 9	5.4.1 OBE assessment methods, tools & techniques 5.4.2 Record keeping 5.4.3 Need for more verbal learning

6. **Advantages and disadvantages of integration**	6.1 Pre-school	6.1.1 See bigger picture 6.1.2 Advantages 6.1.3 No disadvantages
	6.2 Grades 1 – 3	6.2.1 Advantages 6.2.2 No disadvantages
	6.3 Grade 4 – 6	6.3.1 Advantages 6.3.2 One disadvantage
	6.4 Grades 7 – 9	6.4.1 Advantages 6.4.2 Disadvantage of planning 6.4.3 Disadvantage of type of teacher
7. Skills gained through integration	7.1 Pre-school	7.1.1 Independence 7.1.2 Self-discipline 7.1.3 Confidence
	7.2 Grades 1 – 3	7.2.1 Order 7.2.2 Concentration and focus 7.2.3 Respect
	7.3 Grades 4 – 6	7.3.1 Independence 7.3.2 Self-discipline 7.3.3 Research skills
	7.4 Grade 7 – 9	7.4.1 Research skills 7.4.2 Group work 7.4.3 Reading and comprehension

Table 5.1: Summary of emerging themes

5.2 INTERVIEWS: FINDINGS

Through interviewing teachers within the different age groups, the researcher attempted to establish an overview of the Montessori method of education as applied throughout the Knysna Montessori School. From the interviews, it became apparent that the curriculum is arranged in an *integrated* and *holistic* manner, by means of cultural studies (see 3.5.3.1) from pre-school (ages 3 to 6) through to the end of Grade 9 at the Knysna Montessori School.

The following broad themes emerged from the data analysis:

Theme 1: Curriculum integration using *timelines*

Theme 2: Integration of RNCS with *businesses* (Grades 7 to 9)

Theme 3: Learning *programmes*

Theme 4: Integration of mathematics and *language*

Theme 5: *Assessment* in an integrated curriculum arrangement

Theme 6: *Advantages* and *disadvantages* of integration

Theme 7: *Skills* gained through integration

5.2.1 Theme 1: Curriculum integration using *timelines*

5.2.1.1 Curriculum integration using timelines in the pre-school

The participants of the interviews indicated that at pre-school level cultural studies are arranged using only the first timeline, viz. the timeline of Creation, which spans the creation of the universe to the coming of man (Seldin & Epstein, 2006: 94). (See 3.5.3.2). One participant explained this as follows:

> *This timeline is presented to the children at the start of each year. Basically what we would do to start off with at the beginning of the year … we would take the material timeline, roll it out on the front lawn outside. Gather all the children and we would put objects and pictures on the timeline and little science experiments and activities and we tell the children the whole story from the time the earth started till the end of modern man today; and with the little pictures and objects that would explain as you go along… – it's a whole presentation – it's a 20 to 30 minute presentation where they get the whole broad overview*.

> *Hereafter, the curriculum is broken down into weekly themes for the rest of the year. The parents, being traditionally minded, requested that we put it* (cultural studies) *down so they can cover what we are covering at home at the same time, so we have now broken it down into weekly themes for the parents, which we have put up on the wall, so they can see what we are covering … every week and they can work with us at home, find books in the library, discussions, and work with us*.

However, the participant felt that dividing the timeline into weeks was not ideal, since it involves a compromise between the school and the parents:

> *I personally don't think it's optimal, because you're rushing the children when you have to go through it, but we've had to meet half way.* (However)*, it's followed through with the Montessori with the timeline and giving the whole picture and working through it in sequence from beginning to end.*

This participant further pointed out that in some cases the curriculum included learning outcomes or assessment standards that did not correspond with any Montessori equipment or presentation in the pre-school. Provision for this has been made in the planning. An example that was given is:

> *You'll have your maths equipment that is teaching counting, sequencing, etc. but then it gets to doubling and halving. Now, in the pre-school classes we don't have the fraction material - it's in the 6 to 9 class – you may … go and borrow it, but in the grade R we have to introduce doubling and halving, so we will do it in a separate presentation by presenting it like in a traditional school, with an orange, chopping it up … broadening onto whatever the government curriculum has required …*

5.2.1.2 Curriculum arrangement using timelines in the Grades 1 to 3

The participant interviewed for the *foundation phase* class (Grades 1 to 3), explained that she uses the first three timelines as curriculum organisers, i.e. the timeline of Creation, the timeline of Life and the timeline of Man. At this level the timeline of Man includes literacy and numeracy (Quest Montessori School, 2005; Montessori, 1989: 5). These timelines are expansions on what was covered in the pre-school, with particular reference to the second and third timeline.

As in the pre-school, the first timeline is presented at the beginning of the year. The equipment for all three timelines is laid out on the shelf throughout the year. A pictorial representation of the timeline of life and the timeline of man are placed on the wall, as a reference for the children. The participant explained that she does not present the second and the third timelines as a formal story, as with the first timeline, but rather uses it to place new work into the perspective of the whole.

During the interview, the participant presented the following Grade 3 example of how a learner's interest is integrated into the timeline, linking to the explanation above:

> (When studying the longest rivers in the world) … *if I see a child loves animals and they have really focused on animals*, *because you follow the child and their interests, … they … go to the continent and find the longest river, but discover an animal, his biome, habitat, … that they find on the Nile*, *on*(to)

pottery … the decoration on the pottery, … that's where our integration comes in, in Grade 3. So it's a lovely closure with the work. [sic]

5.2.1.3 Curriculum arrangement using timelines in Grades 4 to 6

The participant from the *intermediate phase* class (Grades 4 to 6) explained that during this phase the cultural studies area is arranged according to all five timelines (Quest Montessori School, 2005; Montessori, 1989: 5). (See 3.4.2.2). These are presented each term, with the literacy and numeracy timelines presented together in the fourth term. These timelines are (Montessori Assessment and Learning, 2006; Quest Montessori School, 2005):

- Timeline of the Universe
- Timeline of Life on earth
- Timeline of Man
- Timeline of Literacy
- Timeline of Numeracy

5.2.1.4 Curriculum arrangement using timelines in Grades 7 to 9

The focus of this study, current curriculum arrangement in the *senior phase* (Grades 7 to 9), is described by the teacher in this environment as a combination of Montessori philosophy and OBE.

A combination of Montessori Philosophy and … traditional practices within the OBE… From the Montessori side, when one's in this age group, trying to deal with themes as opposed to timelines in the younger age groups … (The themes are) *based on the 5 timelines. It's nailing it down a little bit more so that you can follow a curriculum, to cover what you have to do for the curriculum. It's more specific, it's not as general as the general Montessori timelines and also because children who have been in a Montessori environment have heard and listened to these stories so often that one has to adapt it for this age group*.

She found that learners who had been in a Montessori environment prior to the senior phase are bored with the presentation of the timelines as introduction to specific themes. However, new intakes find it more interesting.

Although the Principal, like the previous participant, also indicated that the curriculum arrangement is a combination of Montessori philosophy and traditional education, she felt that the timelines still have a place within the Grade 7 to 9 class. She pointed out that the five main timelines should be used as an introduction to new work, as well as revision of prior knowledge; and teachers should then branch out into, what she termed, 'key timelines'. Once completed, the knowledge should be brought back into the perspective of the main timeline.

> … *under those timelines*, *extract key timelines … to suit the syllabus, so that the main timeline would introduce the topic and the key timelines would then cover and hone in onto the topic that you would like to expand on. But then at the end of it you need to take the knowledge learnt and feed it back to the main timeline, so that they see it in perspective. So you start with the broad picture, you delve into finer detail and then bring it back to the broad picture again*.

Both the Grade 7 to 9 teacher and the Principal agreed that the curriculum is currently more traditionally arranged according to the different learning areas, with little or no integration. Neither felt that this was ideal, which resulted in this research study being undertaken. According to the Principal, the ideal classroom for the Grades 7 to 9 should have two teachers, one specialising in English and being responsible for the cultural subjects, such as the social sciences, the other in mathematics being also responsible for such subjects as the natural sciences and technology. She stated further:

> *If you insist on only two teachers within a classroom of 30 or 35 children, they are forced to actually cover all subjects and that would immediately make them more aware of handling and using our form*.

The Grade 7 to 9 teacher spoke of using a timeline method aligned with Montessori timelines as her organiser of content within her subjects. An example she presented was the Grade 9 human and social sciences learning area content of World War II

and relating it to the genocide of the Jews. She used a 'key timeline' of wars as her organiser of the curriculum, indicating:

> *When we did the Second World War, although it wasn't on a timeline, we spoke generally of the timeline of war*(s), *which was my timeline. The children had to research a few wars. We went down the process of the timeline and then bring it back right at the end and talk about what causes wars. Then you bring the whole picture together. So it doesn't matter where the war happened; there are generally certain incidents that would cause war and so you try to bring it back to a central theme …* (of) *wars and then bring it back to the child and say well, would you have been here had the Second World War developed in any different manner, and where would you be placed if certain things had gone awry in the Second World War; and so you try to bring it back for the child to understand* …

The Principal presented the following example on the topic of wars through the ages:

> *You would give an overview of* (the numeracy and literacy) *timeline and the key timeline would be an extension of that timeline and … it would cover wars through the ages. The Grade 7s study in history the years from 1000 to 1300 … the slave trade and so on. The Grade 8s go from 1300 to 1600 and the Grade 9s then cover the latter years up until today … So your key lines are covering wars through the ages and the wars would then depict what the needs were during that time, what were the causes and effects of wars and then … bring it back in the end, what were all the causes and effects of wars throughout the ages and what have we learnt by that for the future.*

The Principal further suggested that a more subtle integration could take place within the Grade 7 to 9 classroom. She explained that:

> *For example, a child who is avoiding the maths area, but is intensely interested in some form of technology project that they are doing or geography project that they are doing, … you can go to that child and link what they're learning in maths … what they are interested in*.

The Principal felt that the timelines are important curriculum organisers within this age group. On the other hand, the teacher felt that using the timelines does not

necessarily need to be the main organiser of the curriculum, but could rather create opportunities where the learners can excel. The need arose at the Knysna Montessori School for an in-depth analysis of the learning areas, their learning outcomes and assessment standards, in order to determine the best manner of integration for the Grade 7 to 9 age group, which formed the focus of this study.

5.2.2 Theme 2: Integration of RNCS with *businesses* (Grades 7 to 9)

Only the senior phase (Grades 7 to 9) of the Knysna Montessori School are involved with the term-long businesses (see 3.4.1.5). Currently, the businesses running at the school are only integrated into the economic and management sciences and life orientation learning areas. The Principal pointed out that the preserves, gardening and maintenance businesses are integrated with the technology learning area, as they link to the practical application of some of the technology learning outcomes and assessment standards. Figure 5.1 shows some of the businesses at the Knysna Montessori School

Figure 5.1: Different businesses at the Knysna Montessori School

However, the Grade 7 to 9 teacher felt that more integration could be done, for example:

- *… from the marketing point of view, and the advertising – perhaps the English can come in there, and the Art, because they learn how to design posters or an advertisement …*
- *English … how to word thank-you letters, etc. to any customers they've been dealing with and also writing … a journal, say, for the term.*

- *And then one area that is really good – they learn to use the telephone properly.*
- *And then also more so on the EMS* (Economic and Management Science) *side, the invoicing and the actual paper work can be developed more and the legality of contracts* …
- *etiquette … is a huge area that could be touched on because … the business skills of approaching strangers or people who are not your friends, people within society – there's a manner in which you speak to them, and follow-up calls and courtesy calls*.

The teacher also pointed out that the businesses are essential, to the acquisition of life and entrepreneurial skills, and that many social problems occur and can be sorted out within the business groups.

> (Within the businesses the learners are) *… more natural and a little more comfortable, because there are only 4 or 5 or only a few of them on the occupation ... and they don't select their occupation 'per se' – they get to be put with children they aren't normally used to being with, not always, but sometimes that occurs and then they learn a whole different set of social skills, not just with their friends, and then obviously with that comes responsibility and reliability and leadership, it all comes through in the businesses* [sic].

The Principal pointed out that the businesses are essential, not only for entrepreneurial and financial skills, but also for team work, for handling disasters, dealing with labour laws, punctuality, follow through and completion of a project, time management, responsibility and lateral thinking in terms of possible business opportunities.

The concern the teacher foresaw with more integration of the businesses into the curriculum was the amount of planning needed.

5.2.3 Theme 3: Learning programmes

5.2.3.1 Learning programme for the pre-school

As indicated in Chapter 2 (see 2.7.2.6) a learning programme is the first and broadest level of planning for a particular phase (Department of Education, 2003a: 2). In the Knysna Montessori pre-school the learning programme is combined with the work schedule. The interviewee offered to share her work schedule (included in the audit trail), outlining the themes which are covered each week of the year. These are summarised in Table 5.2. From the summary it is clear that an overview of the first timeline is already being presented at the Knysna Montessori School Pre-school.

ERAS				
Azoic →	Proterzoic →	Mesozoic →	Cainozoic →	Neozoic
Planets Earth Volcanoes Mountains Land & Water Forms Time – Day/Night Seasons	Jellyfish Sponges First creatures Palaeozoic Era Fish Insects/Metamorphosis Amphibians/Life cycles	Reptiles Dinosaurs Birds/from egg to chicken Seeds Roots Plants Flowers	Mammals Pets & wild animals	Man My Body Hygiene Continents Countries Flags/S.A. flag Habitats Transport Road Safety Litter and environment Water Conservation

Table 5.2: Summary of Cultural Studies in the Knysna Montessori Pre-school

As Montessori children attend pre-school and stay in the same pre-school classroom for three years (from ages 3 to 6, including Grade R), the work schedule needs to be varied from year to year. Therefore, the entire work schedule is repeated each year, but with variations, as indicated in the interview.

> *If she* (the teacher) *does amphibians, she'll do frogs this year, but then she'll do another amphibian next year, so that in the 3 year*(s) *… they'll still do amphibians, but they will learn different amphibians. And this year they'll make them out of paper maché, next year they'll make a clay model … they vary it, but they're still covering the same amphibian in the 3-year cycle.*

The participant indicated that in order to ensure that the RNCS is covered in the Knysna Montessori Pre-school, the RNCS statements for Grade R have been written out and linked with the Montessori equipment and presentations.

> *What we've done with the equipment in our school and with the national curriculum … we've taken the national curriculum and written it out and then we've taken the presentations and the Montessori materials and paralleled them* [sic].

The learning programme used in the Knysna Montessori Pre-school is a combination and adaptation of different programmes received from Montessori training centres, from different teachers over the years, and parallels are drawn with the RNCS.

5.2.3.2 Learning programme for Grades 1 to 3

Although there is a general learning programme for this foundation phase, the participant pointed out that it is very flexible since the learners are very closely observed and the environment changes according to their interests. As in the pre-school, the foundation phase classroom combines Grades 1, 2 and 3 learners in one class for three years. Within this classroom set-up, learners are free to choose their own work, and one learner could be working on one theme, while others are busy with different themes. However, the participant indicated that through the use of tick-off lists, there is a loose structure that is followed to help guide learners in their choices.

The learning programme is repeated each year with natural progression from one grade to the next. The participant provided the following example of this natural progression when studying the different countries of the world.

… in the geography of all the puzzle maps of the world, of all the continents … I concentrate with my new intake (Grade 1) *on fine motor and going to fetch from the shelf and of course following the child which they really enjoy*.

When that same particular type of equipment gets used in group 2 (Grade 2), *I observed that they are now ready to start taking the flag … and they are basically able to now put it with the country, on which continent, and from there knowing which countries are around that particular flag or country, which are … bordering, … which is the closest ocean, so they're expanding in the equipment …*

When they get to group 3 (Grade 3) … *they will now get to more of an abstract basis, still using concrete, but they would use, for instance, a map of Africa, and then they would look at, say for instance, the Nile, the longest river – they will now … take a worksheet and find all the longest rivers of the world … and go and take a worksheet of the world and then … formulate their own project with a piece of equipment … they've gone to get an atlas and they're now applying what they've used in language on index and … how to look up a word in alphabetical order, … and they use co-ordinates, what they did in maths and their language skills and capital letters and … all … gets integrated in their research* [sic].

During the foundation phase, the learning programme is less prescriptive in terms of weekly work and pace, and the teacher follows the learner's interests, within parameters. The participant indicated that, for example, Grade 3 learners, who are working on continents, are free to select their own research topic around the theme of continents. The teacher would then have different options set out in the class, such as a list of longest rivers or highest mountains. Although learners are free to choose whether to research rivers, mountains, or both, they are required by the teacher to research at least three.

5.2.3.3 Learning programme for Grades 4 to 6

The learning programme for Grades 4 to 6 (*intermediate phase*) also spans three years. However, contrary to the foundation phase class, the intermediate phase runs in a three-year cycle where the themes are not repeated. Therefore, a three-year learning programme is set up and all three grades work on the same general key timelines at the same time, but with grade-specific expectations. This whole learning programme is repeated every three years. The teacher for this phase explained that:

> … *We focus on timelines where we work in a 3-year cycle, where every third year we try to steer the children in the direction where they are interested in, but we don't repeat the same areas of interest in the 3 years*.

As with the foundation phase, this learning programme is very flexible and the learner's interests are followed rather than the learning programme. For example, when studying the timeline of Life, animal and plant classification would be covered once in three years. Within the parameters of the study, the learners have to choose their own plants and animals they wish to research, determine the biomes, characteristics, Latin names and categorise these into the correct kingdom, phylum, class, order, family, genus and species. Their findings would then be presented to the class by means of a poster presentation, mind map, PowerPoint presentation, etc., together with an oral. Correct referencing is also considered a critical part of the projects.

The participant pointed out that there is no formal learning programme set up at present within the intermediary phase, and a three-year learning programme is very loosely determined by the teachers in the classroom.

In terms of checking the RNCS requirements, the interviewee indicated as follows:

> *Obviously we look at the statements and make sure that we know what is going on in the curriculum. Like I said, with the cultural it doesn't always validate us doing certain learning outcomes* [sic]. *It is mainly for that specific year we are not doing history and actually focus more on natural science or geography then, but in the three years the outcome would … be covered*.

5.2.3.4 Learning programme for Grades 7 to 9

Both participants in this phase who were interviewed pointed out that there is currently no formal Montessori-based learning programme for the Grade 7 to 9 class (senior phase), which was the original motivation for the undertaking of this research study.

Both the teacher and the Principal indicated that integration should not only be within one grade, but across all three grades, as natural leadership skills come to the fore, and the social interaction is more developed during this phase. They both felt that there is repetition of the different learning areas within the RNCS over the three grades. Therefore, integrating the different learning areas across the grades would eliminate boredom and allow for more expansion and in-depth research into themes:

> *Obviously to meet the needs of individual learners, because we are focused on the individual …*

The Principal expounded on this, indicating that the learning programme should be set up in such a manner that learners cover what is required by the RNCS learning outcomes and assessment standards within each grade. Her reasoning is that although the learners have to cover certain work within certain grades, projects should be set up as far as possible in such a way that groups can be formed to include learners of all three grades. Within each group, learners of each grade could then be responsible for different aspects of the project, related to their curriculum requirements.

5.2.4 Theme 4: Integration of *mathematics* and *language*

Mathematics and language have their own area in the Montessori classroom layout (see 3.4.2). However, there is always some degree of integration with mathematics and language within the cultural studies. Practical and applied mathematics could easily be integrated into the cultural studies and all research requires the use of mathematics together with language. Practical examples of such integration within the Knysna Montessori School are discussed below.

5.2.4.1 Integration of language and mathematics in the pre-school

Montessori pre-school children will often start writing before reading, and reading most commonly happens around ages four to five (Seldin & Epstein, 2006: 76). The participant emphasises that language within the pre-school is integrated throughout the year into all aspects of the classroom, including cultural studies:

> *Language is an integral part of the classroom every day, because this is the time for learning to speak. So firstly you have a morning ring* (register time) *every morning, where they're doing greeting songs, where they are singing songs, they are reciting rhymes, … they're saying days of the week, months of the year, the date – they do the weather board every morning*.

Furthermore, the participant provided another example of the use of language as:

> *Language would also be integrated into the classroom by putting up labels around the classroom, learning to recognise words in the classroom. Language can be with every piece of equipment in the classroom that is presented: This is a pink tower; I am going to present to you pouring from one jug* (in)*to another jug, so you're giving them constant language in presenting*.

An example given of the integration of language into cultural studies by the participant, using the land and water forms (see 3.4.2.1), are:

> *First we start off with cards that are on the shelf. So you'll do the big presentation and you'll discuss land and water forms in your whole story that you'll tell. When you get to land and water forms you'll obviously go to the library and get library books – the children can look at pictures*.
>
> *You'll then make a set of land and water forms* (made of paper maché, plaster of Paris or clay) *which remain on your shelf, which the children can then pour water into and pour water out of. They can see which one is the isthmus – the water goes in, where the gulf is, the island – they can experiment with them. Your cards will be on the shelf – they'll be learning to match the words on to the cards, the 3-part cards*.
>
> *On the back of those cards … higher learners … there's a little reading insert … that they can now go and research a little bit. Does the water flow into a*

gulf? – … they can read and experiment with it … Writing – once they've read the back of the cards, they can then go and write the sentence into their book – you can bring it into the writing area.

Mathematics is also integrated through the class. An example presented in the interview is:

Maths would be data collecting – go and fetch me the pink tower, only bring me 2 blocks … How many blocks are on the pink tower? Everything in the classroom is basically related to maths and language, the whole entire day in the classroom. Go and sit on the red chair ... The table with 6 red chairs, not the table with 8 red chairs. In the pre-school it's very language and mathematically oriented, (especially) *in your verbal instructions … in the things that you're doing and saying all day.*

5.2.4.2 Integration of language and mathematics in Grades 1 to 3

Mathematics and language are integrated into the cultural studies continuously. An example of this was given by the interviewee involving the study of different root systems. The children grow their own vegetables, such as carrots, onions, beans etc. They would measure the examples on the work cards in the class, and measure and compare the growth, weight, height, length of plants and roots of their own vegetables.

When they went into the garden we do the taproot or the adventitious root or whatever. When they did an onion they planted their own things … Although we've got cards and that, they do a lot of concrete … Then they would even measure, so sometimes they can't wait until 3 months are up … for a carrot to come up, and they'll say 'can I now measure it?' … Some of them do the beans – they grow the beans and I've got cards to go with every stage of the development of the root and then they measure with the millimetre. There's quite a few places where they bring in more on weight – the volume, the weight – more also on geometry - symmetry, but it is on an integrated geometry.

As the participant pointed out, language is integrated in all of the cultural studies, as reading and writing are necessary for all research.

5.2.4.3 Integration of language and mathematics in Grades 4 to 6

An example of how language and mathematics are integrated into the cultural studies was presented by the interviewee:

> *For instance, for the timeline of numeracy they would have to learn money, they would do a technology task where they would maybe out of clay come up with their own type of money and for EMS* (Economic and Management Sciences) *they would have to know how our money is put together, what the typical notes are … they will work with currency.*
>
> *They will start their own businesses which means they will have to do a business plan. English comes in there because they would need to know how to make an advertisement. Also, they will have to know how to do an index. Maths, also with money, working out percentages, working out finances. Also, food technology - they will have to know because they run a business where they sell food, … which is part of technology and a little bit of life skills, working sterile, having your hands clean, what's healthy, which then also brings in … Life Orientation* … [sic]

As each learner researches different aspects of the timeline, the sharing of information to the whole group becomes very important. This is done through oral presentations and question-and-answer sessions between the learners.

> *Oral presentation, question/answer sessions. What we find works quite well in this age group – because they are so critical, is they've got the opportunity to criticise and compliment each other's work and the question/answer is quite important and we have found in the past, especially when we do the universe*, *that the amount of information that they have gathered is enormous, and then* they can *also make it visual. They have always got an opportunity to go and look and explore what those learners have done. Its very hands-on* [sic].

5.2.4.4 Integration of language and mathematics in Grades 7 to 9

As there is currently no formal integrated learning programme for the senior phase, the teacher indicated that she has managed to integrate social sciences, English and art quite successfully and felt that there is great scope for more integration within the senior phase:

> *I have really integrated it a great deal this year … so when I had to do a protest speech on apartheid we covered it in social science, but I covered it as a prepared speech in English. That's one example, and it can cover both areas and then obviously essay topics in the history can be related and used as an English assessment too*.
>
> *We were doing the Second World War and particularly the holocaust and they had to develop war poetry for English as well, so they had to write their own poems about war, which was very successful*.
>
> *There are many times when I need them to do a protest poster or a poster on propaganda or something that … relates very easily to art*.

The Principal felt that more integration with mathematics and language could be done. However, she indicated that:

> *It takes a special teacher, a special person, that is prepared to be an ongoing learner and if that teacher is not prepared to be an ongoing learner they will not achieve this*. *They also need to be self-disciplined and ordered … it takes a lot of order to make sure that you are covering all aspects of the curriculum*.

5.2.5 Theme 5: *Assessment* in an integrated curriculum arrangement

5.2.5.1 Assessment in the pre-school

As Montessori pre-schools form part of formal education, with prepared activities and set targets for the 3 to 6 year-olds (see 3.4.2.1) (Seldin & Epstein, 2006: 32), formal assessment of the learners needs to be done.

> *If you've kept very good* (observation) *records you should know exactly where your child is at most of the time. But … at the end of three terms … when they*

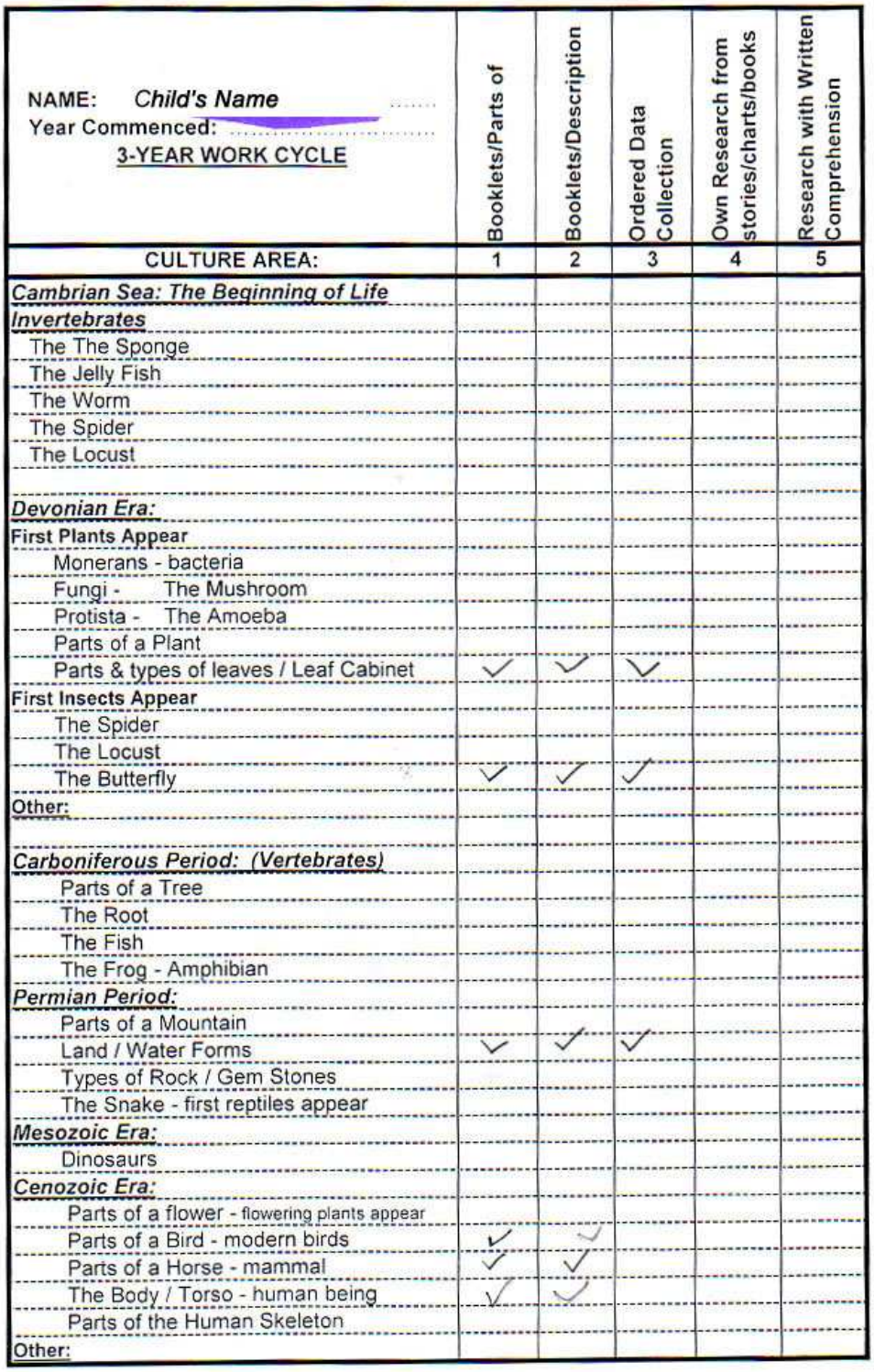
are writing reports, they have to do formal assessments (of) *the children. They will sit with the child and they will take out the box of numbers and ask them to recognise the numbers and then tick off - they recognize numbers 1 and 3. They sit with the box of colours and check whether they know every single colour. If they don't know a colour it's recorded in the record schedule. Same with the letters, same with the cutting with a pair of scissors, same with the drawings. You have to reassess, because the children also forget, so they might have known it last term, but this term we reinforce when we do a formal assessment.*

5.2.5.2 Assessment in Grades 1 to 3

The interviewed participant highlighted that the major portion of the assessment is done continuously through observation, as most of the learners' work is done in concrete form in the classroom (Mooney, 2000: 63; Lillard, 1972: 24, Piaget, 1963a: 123). The children use tick-off lists where they record the work they have done, which the participant offered to share with the researcher. The teacher has her own daily record-keeping sheets in which she records her observations and the work done by each learner on a particular day. Examples of these record sheets were received from the interviewee and included as Figure 5.2.

80% of your time is observation.

They all … do their own little tick off … I have my everyday observation sheet with exactly what they did yesterday, what they're doing today, and I record … every step of the observation.



NAME: *Child's Name* .....
Year Commenced: .....
3-YEAR WORK CYCLE

CULTURE AREA:	Booklets/Parts of 1	Booklets/Description 2	Ordered Data Collection 3	Own Research from stories/charts/books 4	Research with Written Comprehension 5
Cambrian Sea: The Beginning of Life					
Invertebrates					
The The Sponge					
The Jelly Fish					
The Worm					
The Spider					
The Locust					
Devonian Era:					
First Plants Appear					
Monerans - bacteria					
Fungi - The Mushroom					
Protista - The Amoeba					
Parts of a Plant					
Parts & types of leaves / Leaf Cabinet	✓	✓	✓		
First Insects Appear					
The Spider					
The Locust					
The Butterfly	✓	✓	✓		
Other:					
Carboniferous Period: (Vertebrates)					
Parts of a Tree					
The Root					
The Fish					
The Frog - Amphibian					
Permian Period:					
Parts of a Mountain					
Land / Water Forms	✓	✓	✓		
Types of Rock / Gem Stones					
The Snake - first reptiles appear					
Mesozoic Era:					
Dinosaurs					
Cenozoic Era:					
Parts of a flower - flowering plants appear					
Parts of a Bird - modern birds	✓	✓			
Parts of a Horse - mammal	✓	✓			
The Body / Torso - human being	✓	✓			
Parts of the Human Skeleton					
Other:					

Figure 5.2: Example of Grade 3 tick-off list

5.2.5.3 Assessment in Grades 4 to 6

According to this participant, assessment within the intermediary phase takes place continuously and is done in line with OBE methods, tools and techniques (Gauteng

Department of Education & Gauteng Institute for Curriculum Development, 2000). (See
Table **2.1**). The participant mentioned that assessment is done through:

> *Tests, a work task, practical sheets, example experiment sheets, self-assessment, peer assessment, also group assessment, external exams - Conquesta, AMESA – Maths Challenge – and IEB Core Skills for Grade 6.*

The oral presentations and question-and-answer sessions are also assessed by the teachers of this class.

5.2.5.4 Assessment in Grades 7 to 9

The participants pointed out that assessment in the Grade 7 to 9 class (senior phase) is currently done in line with OBE assessment methods, tools and techniques (Gauteng Department of Education & Gauteng Institute for Curriculum Development, 2000). Both the teacher and the Principal indicated that different methods of continuous assessment are used in this class. These include tests, exams, spot tests, games, quizzes, self-assessment and peer assessment. The teacher indicated that peer assessment is very important when group work is done, as it gives the learners the opportunity to assess each other's contributions. Summative assessment is administered through end-of-term tests and exams.

In order to ensure that all the learners cover what they need to cover, the teacher keeps meticulous records. In English, for example, the learners work through a series of grammar modules at their own pace. There are charts on the wall for the learners who place a sticker on the chart once they have completed a unit. In this way, both the teacher and the learners can see their progression. Once a unit has been marked by the teacher and corrected by the learner, a different colour sticker is placed on the chart. This information is then transferred to the teacher's mark book. The learners are responsible for keeping the wall chart up to date and the teacher double-checks this in her register. Figure 5.3 shows an example of the wall chart.

Completed module

Marked and corrected module

FIRM FOUNDATIONS BOOK 1: MODULES 1 - 7							
NAME	**MODULE 1**	**MODULE 2**	**MODULE 3**	**MODULE 4**	**MODULE 5**	**MODULE 6**	**MODULE 7**
Learner 1	● ●	● ●	● ●	● ●	● ●		
Learner 2	● ●	● ●	● ●	● ●	● ●	● ●	
Learner 3	● ●	● ●	● ●	● ●	●	●	●
Learner 4	● ●	● ●	● ●	● ●	● ●	● ●	● ●
Learner 5	● ●	● ●	● ●	● ●	● ●	● ●	● ●
Learner 6	● ●	● ●	● ●	● ●	● ●	● ●	●
Learner 7	● ●	● ●	● ●	● ●	● ●	● ●	● ●
Etc.							

Figure 5.3: Wall chart for learner progress

The teacher indicated that a lot of learning can be done verbally, such as play-acting and construction work, and through other more creative outlets, rather than presenting all work in the written form. Her feeling was that teachers and learners in this age group becomes too involved with written work, and tend to forget that this is the social age where interaction with peers is of paramount importance.

5.2.6 Theme 6: Advantages and disadvantages of integration

5.2.6.1 Advantages and disadvantages of integration in the pre-school

The interviewee indicated that the advantages of the integrated approach to curriculum arrangement, as done at the Knysna Montessori School, are as follows:

- *It makes more sense.*
- *The children can see where they're going and where they're coming from* [sic].
- *It is conceptual learning, so that they* (the children) *can conceptualise* (what they learn).
- *There's no sequence to the learning in the Revised National Curriculum. You just give them snippets of things. But now with the Montessori curriculum they've actually gone through the process*.

The participant did not see any disadvantages to the integrated curriculum approach, as she indicated:

> *I don't think there are any*.

5.2.6.2 Advantages and disadvantages of integration in Grades 1 to 3

Regarding the advantages of the integrated approach to curriculum arrangement, the Grade 1 to 3 interviewee indicated:

- *Assimilation.*
- *It brings them to the reality, which gives them confidence* (and) *stability*.
- *It's reality. In the now.*
- *It also gives them clarity, so there's no confusion.*
- *It's wonderful for community and society.*
- *It's also the spirit of a scientist, which is to explore and discover* [sic].

The interviewee admitted to being very *pro-Montessori* and did not see any disadvantages to the integrated approach.

5.2.6.3 Advantages and disadvantages of integration in Grades 4 to 6

The participant presented the following advantages of an integrated arrangement of the curriculum within the intermediary phase:

It gives the learners the opportunity to think outside the box, that learners also can see the thread being pulled through, which is why the timelines are working so well.

It makes your work as a teacher less, because more than one area can be assessed – more than one learning outcome can be assessed, and in our case, more than one skill can be assessed with one activity, which would be the diversity of the maths.

… a lot of research, a lot of hands-on experiments, field work, where they go and discover things themselves. They do a lot of work on the Internet, where they have to go and research.

The disadvantages of an integrated approach to curriculum arrangement were seen by the participant as:

You can get stuck in a (rut) … *that certain outcomes or assessment standards are not being assessed, because you tend to follow a pattern and things can be left undone without you realising it.*

5.2.6.4 Advantages and disadvantages of integration in Grade 7 to 9

The following advantages to the integration of learning areas were pointed out by the senior phase participants:

- *… it helps them absorb more information, because they're having to do it almost twice, but in a different sphere and approach.*
- *… more absorption of material. If they didn't get it the first time, hopefully by the second time it makes more sense, or the different approach might appeal to that child more … if you have a very verbal child who's good at Drama and not very good at application skills they'd have a wonderful time getting in front of the class and doing a protest speech and they'd score high marks, whereas if they'd only done the written work perhaps they wouldn't have.*
- *You get to see a broader side of the child, to see the bigger picture*.
- *More enthusiastic*.
- *They seemed to understand the point of what you were trying to get across.*

- *It becomes relevant*.
- *Debate*, *with that particular age group, wonderful debating skills are learnt and you can debate any topic - History is often debated, particularly the Apartheid themes and the Nazi policies themes – they love it and then the children who aren't as strong get to learn by their observation of those who are strong.*
- *I think it makes learning and being at school more enjoyable.*
- *They get to see the link and the connection between the subjects, instead of being taught something that's isolated and they don't understand where it fits into their lives.*
- *Better general knowledge.*
- *Linking of abstract, isolated thoughts … especially in this age group, … They're so egotistical and self-centred … they don't see other people's point of view and by … integration, they actually look at the whole situation … amongst the group they actually have a better open view on other people's opinions and other people's ideas.*

The teacher of the senior phase indicated that the planning for integration is the biggest disadvantage, as she indicated by stating:

> *The disadvantages being the huge planning and time that is needed in order to make a successful plan for the entire age group, integrating all subjects and it's the real brain-storm sessions, but I think we have to allow for that time* [sic].

The Principal felt that the biggest disadvantage of the integrated approach is that the teachers have to be very well-trained in order to make it work successfully.

Both the teacher and the Principal indicated that the teachers in this environment need to be open to the idea of the integration of learning areas and not possessive of their subjects. The teacher, furthermore, pointed out that teachers will have to work together on themes in order for them to be successful. Both the Principal and the teacher suggested that in the past another problem with an integrated curriculum arrangement in the senior phase had been the lack of planning, or that certain

teachers did not see the benefits of integration. This caused some projects to be unsuccessful, as the teacher explained:

> *We had tried to do a quarterly project that would cover most, if not all subjects, and to … ask all the teachers to say how they could add to this theme that we worked out, which was the timeline of wars … I got the feedback and then I typed the* (project) *brief which I then handed out to the children so that they know* [sic] *where the teachers are coming from, but it wasn't followed through on many fronts and … it becomes a frustration not only for the child, but also for obviously someone who's initiating it, because then you don't have a good feeling at the end*.

5.2.7 Theme 7: Skills gained through integration

5.2.7.1 Skills gained through integration in the pre-school

According to the pre-school interviewee, skills that are typically stressed in the integrated approach to curriculum arrangement are:

- *independence*
- *self-discipline*
- *time management*
- *general knowledge*
- *confidence*
- *being able to ask questions, being able to ask for help*

5.2.7.2 Skills gained through integration in Grades 1 to 3

The skills that are particularly stressed within this approach were given by the foundation phase participant as:

- *Order of the learners' minds and thoughts*
- *There is a natural repetition*
- *Concentration and focus*
- *Categorisation*
- *Respect for each other and the environment*

5.2.7.3 Skills gained through integration in Grades 4 to 6

The intermediary phase participant pointed out the following skills, which are typically stressed in the integrated approach to curriculum arrangement:

- *independence*
- *self-discipline*
- *planning*
- *creativity*
- *confidence*
- *research skills*
- *computer skills*
- *writing skills*

5.2.7.4 Skills gained through integration in Grades 7 to 9

The two participants from the senior phase pointed to the skills that are typically stressed in the integrated approach to curriculum as:

- *research skills*
- *questioning skills*
- *working in groups and pulling their weight*
- *sharing in the load of responsibility*
- *how to get on with others in difficult situations*
- *how to sort out problems*
- *how to take responsibility for what is expected of you*
- *reading and comprehension skills*

5.3 INTERVIEWS: DISCUSSION OF THE FINDINGS

5.3.1 Curriculum arrangement and organisation

At pre-school level, only the first timeline is used as a curriculum organiser. From Grade 1 to 3, the first three timelines are used and in Grades 4 to 6 all five main timelines are used as curriculum organisers. In the Grade 7 to 9 class, there have been various attempts to use timelines as curriculum organisers; however, the tendency is more to use key timelines within this age group, rather than the five main

timelines. It was indicated that the main timelines are used as an introduction and reference points for the key timelines.

5.3.2 Integration with languages and mathematics

In all age groups at the Knysna Montessori School the cultural studies are integrated into mathematics and languages. Language integrates naturally, as the language learning outcomes are inherent in research projects and presentations. The mathematics is not always easily integrated, but there was an indication throughout all the classes that mathematics is integrated into different cultural projects. In particular, the participant from the senior phase (Grade 7 to 9 class) found that language integrates well with different learning areas. No formal examples were presented by the senior phase participants for integration with mathematics, but they felt that integration should indeed be possible.

5.3.3 Integration with the businesses

The businesses are formally part of the curriculum at senior phase level (Grades 7 to 9). However, the Grade 4 to 6 teacher indicated that a market day is held at Grade 6 level, which incorporates Economics and Management Sciences. There were indications from the Grade 7 to 9 interviewees that the businesses are integrated into economics and management sciences and technology, but the feeling was that more integration could take place, especially with life orientation and languages. Both the Principal and the teacher of the Grade 7 to 9s see businesses as an essential part of this age group.

5.3.4 Assessment

Assessment is done mainly through observation at the pre-school and Grade 1 to 3 classes. In Grades 4 to 6 and 7 to 9 both continuous assessment and summative assessment take place. It is clear that throughout all the age groups meticulous record-keeping is essential in assessment. It is apparent that observation and record-keeping form a critical part of assessment throughout the Knysna Montessori School (Schmidt & Schmidt, 2009: 41; Seldin & Epstein, 2006: 51; Mooney, 2000: 35).

Within the senior phase, assessment becomes more formal in preparation for the learners' progression to the Further Education and Training band.

5.3.5 Advantages and disadvantages of integration

The general response from all the teachers interviewed was that the integration of the RNCS according to timelines has more advantages than disadvantages.

The biggest disadvantages presented, in particular by the Grade 7 to 9 participants, concerned the vast amount of planning needed for successful integration and some of the teachers' negative attitudes towards integration of the curriculum. It is thus the focus of this study to create the learning programme for the Grade 7 to 9 age group, in order for both teaching and learning to fall in line with Montessori's integrated and holistic curriculum arrangement.

5.3.6 Skills gained through integration

The main skills gained through integration which emerged from the interviews were

- Independence
- Self-discipline
- Time management
- Language skills
- Confidence
- Questioning skills
- Interpersonal skills

5.4 INTERVIEWS: CONCLUSION

From the interviews it became evident that timelines play a major role in curriculum arrangement at the Knysna Montessori School. Towards the Grade 7 to 9 level, attention is concentrated more on 'key timelines' than on the main timelines. Most teachers see curriculum integration through the timelines in a positive light. The main problems are the planning of integration and the willingness of the teachers to integrate, in particular at the Grade 7 to 9 level. It is hoped that with the development

of the learning programme for the senior phase of the Knysna Montessori School, integration will become more easily implemented.

The following section looks at the RNCS and the best way of arranging the curriculum for the Knysna Montessori Middle School.

5.5 DOCUMENTS: FINDINGS

Using the grounded theory paradigm (see 4.8.2), the researcher coded and re-coded the senior phase of the General Education and Training band of the RNCS documents (see 2.7.2.3), as well as Montessori's suggestion for curriculum arrangement within the middle school (see 3.5.3.4). The re-coding of the data finalised and refined the themes emerging from the data. Grounded in the data analysis, certain clear themes emerged.

The main themes which emerged from the document data analysis were:
Theme 1: Study of the earth and living things
Theme 2: Study of human progress and building-up of civilisation
Theme 3: Study of humanity as a whole
Theme 4: Moral education
Theme 5: Self-expression
Theme 6: Business simulation
Theme 7: Careers
Theme 8: Sport

Further sub-themes emerged and under each sub-theme certain content emerged from the coding of the RNCS. In line with the OBE focus, the learning outcomes guide the content that will best support the achievement of the outcomes and assessment standards (Killen, 2007: 55 – 56). Some of the learning areas are prescriptive in their content, such as the natural sciences and the social sciences, while other learning areas leave the selection of content to the teachers (Department of Education, 2003a: 7 – 8).
A discussion of each theme follows.

5.5.1 Theme 1: Study of the earth and living things

Montessori suggested that all the fields of study dealing with the study of nature should be grouped together under the heading “study of the earth and living things” (Kahn & Feldman, 2008a: 231; Ewert-Krocker, 2006c: 41). One of the critical outcomes in the RNCS is for learners to recognise the world as a set of related systems. This runs parallel to Montessori’s methodology (Department of Education, 2002a: 10).

Under this theme, three sub-themes emerged, viz.

- Study of the earth
- Study of living things
- Environmental study

In order to indicate more clearly the integration between the different learning areas and how they relate to the different themes and sub-themes, tables have been drawn up. These tables will provide the reader with more clarity on integration of learning outcomes and assessment standards within the different themes and sub-themes.

Table 5.3 presents an overview of the theme of Study of the earth and living things, followed by sub-themes and content, as well as which of the learning areas’ learning outcomes and assessment standards pertain to this theme and are integrated.

Key:

	AC	**Arts and Culture**
	EMS	**Economic and Management Science**
	LO	**Life Orientation**
	NS	**Natural Science**
	SS(H)	**Social Sciences (History)**
	SS(G)	**Social Sciences (Geography)**
	T	**Technology**

Theme 1	***Sub-themes***	***Content***	***Learning Areas Integrated***						
			AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Study of the earth and living things	Study of the earth	Space Gravity & magnetism Energy Atmosphere Lithosphere	✓		✓	✓		✓	✓
	Study of living things	Human body Plants Animals	✓		✓	✓		✓	✓
	Environmental studies	Renewable and non-renewable resources Waste reduction Water studies & conservation Environmental audits Fuel for cooking & alternatives	✓		✓	✓		✓	✓

Table 5.3: Overview of Theme 1: Study of the earth and living things

5.5.1.1 Study of the earth

The study of the earth includes the learning areas of arts and culture, life orientation, the natural sciences, the social sciences (geography) and technology. The main content stipulated by the different learning areas, in particular by the natural Sciences is:

- A study of space
- Gravity and magnetism
- Energy, in particular solar energy
- The earth's atmosphere
- The earth's lithosphere
- Raw materials and mining

5.5.1.2 Study of living things

The content for the study of living things is prescribed in the natural sciences' learning area. However, links are made to life orientation, especially in terms of the

study of the human body. The study of living things is divided into three areas of study and covers the learning outcomes and assessment standards of arts and culture, life orientation, the natural sciences, social sciences (geography), as well as technology. The three areas of study are

- Study of the human body
- Study of plants
- Study of animals

5.5.1.3 Environmental studies

A healthy environment is one of the underlying principles of the RNCS (Department of Education, 2002a: 10). Furthermore, respect and responsibility towards the environment are prescribed as one of the critical outcomes (Eastern Cape Department of Education and Media in Education Trust, 2003: 5 – 6; Department of Education, 2002a: 11). From the learning outcomes and assessment standards of arts and culture, life orientation, the natural sciences, the social sciences (geography) and technology, as well as the prescribed content of the natural sciences' learning area, the following studies and skills were highlighted:

- Renewable and non-renewable resources
- Waste reduction
- Water study and conservation
- Environmental audits and sustainable solutions
- Cooking fuel and alternative solutions

5.5.2 Theme 2: The study of human progress and the building-up of civilisation

The study of the manmade world is a specific focal point in the adolescent education, according to Montessori (Kahn & Feldman, 2008a: 231; Ewert-Krocker, 2006c: 41). Under this theme, the history of science and technology is studied. Within the critical outcomes of the RNCS, respect for the environment is pointed out (Eastern Cape Department of Education and Media in Education Trust, 2003: 5 – 6; Department of Education, 2002a: 11) and a focus on sustainable development is found throughout the different learning areas.

The study of human progress and the building-up of civilisation is divided into two sub-themes, namely:

- Scientific and technological discoveries
- Disasters over time

Table 5.4 presents an overview of Theme 2, indicating sub-themes, content and the integration of learning areas.

Theme 2	***Sub-themes***	***Content***	***Learning Areas Integrated***						
			AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Study of human progress and building up of civilisation	Study of scientific and technological discoveries	Mechanical systems Study of force Electrical circuits Use of energy Generation and impact of electricity	✓		✓	✓	✓	✓	✓
	Disasters over time	Man-made disasters Natural disasters	✓	✓	✓	✓	✓	✓	✓

Table 5.4: Overview of Theme 2: Study of human progress and the building-up of civilisation

5.5.2.1 Scientific and technological discoveries

The sub-theme of scientific and technological discoveries emerging from the data analysis matches particularly well with the learning areas of technology and the natural sciences. The sub-theme includes learning outcomes and the assessment of standards in arts and culture, life orientation, the natural sciences, the social sciences (history), social sciences (geography) and technology.

Particular focus is given to:

- Mechanical systems
- Study of force
- Electrical circuits
- Use of energy
- Generation of electricity and the impact thereof

5.5.2.2 Disasters over time

In order to integrate the studies of science and technology and their effect on humanity, a study of disasters is included. This study includes the learning outcomes and assessment standards of arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history), the social sciences (geography), as well as technology.

Two areas of focus emerge, namely:

- Man-made disasters
- Natural disasters

5.5.3 Theme 3: Study of humanity as a whole

Montessori places great emphasis on the history of humanity in all its aspects, in order for learners to understand their heritage and to learn from past human experiences (Kahn & Feldman, 2008a: 232; Ewert-Krocker, 2006c: 41). Within the RNCS, the focus is also placed on the study of humanity, in particular the focus on social justice, human rights and inclusivity (Department of Education, 2002a: 10). Furthermore, these principles are evident in most of the learning area statements.

The study of humanity as a whole is divided into three sub-themes:

- History of humanity
- Wars through the ages
- South African history

An overview of Theme 3 is presented in Table 5.5, indicating how the different learning areas could be integrated to cover the emergent theme and sub-themes.

Theme 3	Sub-themes	Content	Learning Areas Integrated						
			AC	EMS	LO	NS	SS(H)	SS(G)	T
Study of humanity as a whole	History of Humanity	Human evolution Ancient civilisations Settlements Middle ages Industrial revolution Colonialism Needs and wants of man History of money Religions of the world	✓	✓	✓		✓	✓	✓
	Wars through the ages	American revolution French revolution World war I & II Nuclear & cold war	✓	✓	✓		✓	✓	✓
	South African History	Early settlements Slave trade Migration - conflicts Gold & diamond discoveries South African wars Effect of world wars on SA Apartheid & its collapse Trade unions	✓	✓	✓		✓	✓	✓

Table 5.5: Overview of Theme 3: Study of humanity as a whole

5.5.3.1 History of humanity

The content for the study of the history of humanity, as proposed by Montessori, is mostly prescribed in the learning area of the social sciences (history) of the RNCS. However, arts and culture, economic and management sciences, life orientation, social sciences (geography), as well as technology would also link with this study.

Specific focus for this study is:

- Human evolution
- Study of specific eras in human history
    - Ancient civilisations
    - Middle ages
    - Industrial revolution

    - Colonialism
- Needs and wants of man
- History of money
- Religions of the world

5.5.3.2 Wars through the ages

While the learning area of the social sciences (history) is prescriptive in terms of content for the study of wars through the ages, particular focus should fall on human rights and social justice, whilst studying wars through the ages. Within the study of wars, the learning areas of arts and culture, economic and management sciences, life orientation, the social sciences (history), the social sciences (geography), as well as technology are integrated.

Specific content which should be highlighted within this historical study is:

- The French revolution
- The American revolution
- World War I
- World War II
- Nuclear warfare
- Cold war

5.5.3.3 South African history

Responsible citizenship - locally, nationally and globally, is highlighted as a developmental outcome in the RNCS (Department of Education, 2002a: 11). Learning outcomes and assessment standards from the learning areas of arts and culture, economic and management sciences, life orientation, the social sciences (history), the social sciences (geography), as well as technology are integrated within this sub-theme.

A particular focus that emerged from the learning outcomes and assessment standards are:

- Early settlements in South Africa

- The slave trade
- Migration and arising conflicts
- The discovery of gold and diamonds
- The South African wars
- The effect of the World Wars on South Africa
- Apartheid and its collapse
- Trade unions

5.5.4 Theme 4: Moral education

One of the sub-themes under Montessori's psychic development is the moral education of adolescents (Ewert-Krocker, 2006c: 43; Montessori, 1949: 65 – 67). Within the RNCS, the critical and developmental outcomes place great focus on problem-solving, teamwork, self-management, communication, study skills, and cultural sensitivity. Although these critical and developmental outcomes will naturally be developed within all areas of study, particular focus on some of the specific learning outcomes and assessment standards could be highlighted under Montessori's suggestion for Moral education. The learning areas that are integrated under moral education are life orientation and arts and culture.

Table 5.6 presents an overview of Theme 4, where the learning outcomes and assessment standards from arts and culture, as well as life orientation are mainly linked to Montessori's suggestion for senior phase education, viz. moral education.

Theme 4	***Sub-themes and content***	***Learning Areas Integrated***						
		AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Moral Education	Intrapersonal study Interpersonal relationships Goal-setting Study skills Mass-media Rights & responsibilities Volunteer Work	✓		✓				

Table 5.6: Overview of Theme 4: Moral education

Specific areas of moral development amongst adolescent learners are:

- Intrapersonal understanding
- Interpersonal relationships
- Goal-setting
- Study skills
- The mass media and their influence on learners
- Rights and responsibilities of self and others
- Volunteer work

5.5.5 Theme 5: Self-expression

According to Montessori, self-expression for adolescents is essential to their development (Ewert-Krocker, 2006c: 43; Montessori, 1949: 65 – 67). Through the analysis of the RNCS learning areas, two distinct sub-themes have emerged, namely:

- Music
- Arts

An overview of Theme 5, sub-themes and related content, as well as integration with the learning areas is presented in Table 5.7.

Theme 5	***Sub-themes***	***Content***	***Learning Areas Integrated***						
			AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Self expression	Music	Percussion and drumming Scales South African music Study of musical instruments	✓		✓		✓		✓
	Art and Drama	Expression though visual art Expression through drama Expression through dance Dramatic performance	✓		✓		✓		✓

Table 5.7: Overview of Theme 5: Self-expression

5.5.5.1 Music

The study of music received particular attention within the arts and culture learning area. However, life orientation, social sciences (history), as well as technology, are integrated into the study of music.

Four areas of focus emerged from the study of music:

- Percussion and drumming
- Scales
- South African music
- Study of musical instruments

5.5.5.2 Arts

The arts give the opportunity for adolescents to express themselves, both individually and collectively. Montessori (1949: 65 – 67) indicated that the arts should have their own focus of study in adolescent education. Within the arts and culture learning area particular emphasis is placed on various art forms. Although many of these artistic expressions are integrated within other studies, there should be opportunity for adolescents to express themselves through the arts. Life orientation also links particularly well within the sub-theme of the arts, as personal expression and collective expression. These issues will be evaluated and discussed within the group.

The study of structures in the technology learning area can be integrated in particular in stage setup. Lastly, for dramatic performance, design and architecture, the study of the history of art plays an important role in the study of the arts and understanding arts as a form of expression and a reflection of the time.

Specific art forms that are highlighted are:

- Expression though visual art
- Expression through drama
- Expression through dance
- Dramatic performance

5.5.6 Theme 6: Entrepreneurship

The next theme that emerged from the RNCS data-analysis was entrepreneurship. Entrepreneurship is one of the developmental outcomes in the RNCS (Department of Education, 2002a: 11). Business simulation and encouraging entrepreneurship also form integral parts of Montessori adolescent education (Beyleveld, 2009; Seldin & Epstein, 2006: 150 – 168; Seldin, 1998: 5).

From the data analysis two sub-themes emerged, namely:

- Business simulation
- New business ventures

Table 5.8 presents an overview of Theme 6. It is clear that the arts and culture, economic and management sciences, as well as life orientation learning areas have aspects within their learning outcomes and assessment standards which integrate well with Theme 6.

Theme 6	***Sub-themes***	***Content***	***Learning Areas Integrated***						
			AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Entrepreneurship	Business simulation	Entrepreneurship Wants & needs Demand & supply Flow of money Business functions Rights & responsibilities Trade unions Economic concepts Accounting	✓	✓	✓				
	New business venture	Identify need Idea generation Designing Making Evaluating Communicate 2D & 3D Marketing	✓	✓	✓				✓

Table 5.8: Overview of theme 6: Entrepreneurship

5.5.6.1 Business simulation

Although business simulation is a prerequisite of the economic and management learning area, arts and culture, as well as life orientation are also integrated and form part of business simulation.

Particular emphases that should be highlighted and integrated when simulating businesses are:

- Entrepreneurship
- Wants and needs
- Demand and supply
- Flow of money
- Business functions
- Rights and responsibilities
- Trade unions
- Economic concepts
- Accounting

5.5.6.2 New business ventures

Technology provides learning outcomes and assessment standards that are particularly conducive to the generation of a new business venture within the Knysna Montessori School. However, some of the learning outcomes and assessment standards of arts and culture, economic and management sciences, as well as life orientation are also integrated into this sub-theme.

Specific foci emerging from the learning outcomes and assessment standards are

- Indentifying a need
- Generating an idea to meet the need
- Designing the product
- Making the product
- Evaluating the product
- Communicating the solution and design process in 2D & 3D format
- Marketing the product

5.5.7 Theme 7: Careers

The exploration of possible careers and further education options are one of the RNCS's developmental outcomes (Department of Education, 2002a: 11). From the data analysis the study of career choices emerged from life orientation and arts and culture. As Grade 9 is an exit point of the General Education and Training band, special attention to career and education opportunities is necessary for learners to make informed decisions. Furthermore, subject choices for the Further Education and Training band are usually based on possible career choices and the requirements of higher institutions of education.

Furthermore, Montessori indicated that the senior phase (Grades 7 to 9) is an important time where early adolescents live within a simulated society, which includes career responsibilities, such as the businesses run at the Montessori school (Seldin & Epstein, 2006: 45; Montessori, 1948: 53). However, no formal study of personal skills and interests, or exploration of wider career fields, has been stipulated within Montessori's suggestion for the organisation of the curriculum. Therefore, a specific theme emerged during data-analysis, which included a study into possible career and further education opportunities.

An overview of Theme 7 is presented in Table 5.9, indicating that the study of careers integrates learning outcomes and assessment standards from the arts and culture, life orientation and technology learning areas.

Theme 7	***Sub-themes***	***Learning Areas Integrated***						
		AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Careers	Possible career choices Further Education and Training providers Possible sources of funding for further study Personal lifelong learning plan	✓		✓				✓

Table 5.9: Overview of Theme 7: Careers

The sub-themes that emerged from the data-analysis within Theme 7 included

- Possible career choices

- Further Education and Training providers
- Possible sources of funding for further study
- Personal lifelong learning plan

5.5.8 Theme 8: Sport

The final theme emerging from the data analysis is sport. Montessori's method of education is holistic in nature and therefore includes the physical development of the learner. However, Lillard (2005: 74) indicates that within Montessori schools sport and physical education are not forced activities, but rather choices the child makes. According to Montessori, physical development through movement, is an essential part of child development and is a fusion between mental and physical activity (Lubienski Wentworth, 1999: 33). As with all Montessori activities, physical education should aim at creating in the child a sense of perfection and mastery (Botsford, 1993: 2; Standing, 1957: 233).

On the other hand, within the RNCS, physical education and sport are compulsory components of life orientation, as well as arts and culture. Certain learning outcomes and assessment standards from technology are also integrated into this theme. An overview of theme 8 is presented in Table 5.10.

Theme 8	***Sub-themes***	***Learning Areas Integrated***						
		AC	***EMS***	***LO***	***NS***	***SS(H)***	***SS(G)***	***T***
Sport	Adventure programme Rotation, balance & elevation Fitness programme Goal setting in terms of sport and fitness Various sport games and strategies Certain aspects of dance, such as warm-up routines and safe dance practice	✓		✓				✓

Table 5.10: Overview of Theme 8: Sport

Although no definite content has been specified within the learning outcomes and assessment standards from the different learning areas of the RNCS under this theme, the following emerged as sub-themes under sport.

- Adventure programme
- Rotation, balance and elevation
- Fitness programme
- Goal-setting in terms of sport and fitness
- Various sporting games and strategies
- Certain aspects of dance, such as warm-up routines and safe dance practices

5.5.9 Documents: Discussion of findings

Grounded in the data analysis, the integration of different learning areas became clear. A learning programme emerged based largely on Montessori's suggestion of curriculum arrangement within the adolescent age group of Grades 7 to 9 (Ewert-Krocker, 2006c: 41; Montessori, 1949: 65 – 67). (See 3.5.3.4).

Furthermore, special attention is given to the moral development of the adolescent through moral education. Self-expression through the arts also receives particular emphasis within the adolescent learning programme (Ewert-Krocker, 2006c: 41; Montessori, 1949: 65 – 67). Entrepreneurship is developed through continuing with the existing businesses at the Knysna Montessori School, as well as the generation of new business ventures by the learners. Lastly, attention is given to sport and general fitness, as well as personal goal-setting within sport and fitness.

The next section will present the proposed integrated learning programme for the Knysna Montessori School.

5.6 LEARNING PROGRAMME OF CULTURAL STUDIES FOR THE KNYSNA MONTESSORI SCHOOL

When following the process in setting up a learning programme, as set out by the Department of Education (2003a: 10) (see 2.7.2.6), an integrated learning programme for the cultural studies of the senior phase of the GET band at the Knysna Montessori School emerged.

The learning programme is laid out according to a timeframe, indicating the main themes (now referred to as “organiser”) and sub-themes (now referred to as “areas of study”) which emerged from the document analysis. As suggested by the Department of Education (2003a: 10), each area of study within the learning programme gives consideration to a timeframe, as well as relevant resources. The learning programme is thus presented under four headings, namely:

- timeframe
- content/context
- resources
- learning outcomes and assessment standards

For the purpose of clarity, the context, learning outcomes and assessment standards are colour-coded, according to the different learning areas (see key below). The colours are consistent with the colours used in the tables under documents in the section on data analysis (see 5.5).

Key:

	Arts and Culture
	Economic and Management Science
	Life Orientation
	Natural Science
	Social Sciences (History)
	Social Sciences (Geography)
	Technology
	Suggested additions to RNCS content

For clarity on the implementation of the different learning areas within the Grade 7 to 9 classroom, a suggested timetable is attached (see Table 5.11). Work is usually set at the beginning of the week, with expectations of what needs to be completed by each Friday.

It is important to remember the three-period lesson and Montessori's auto-education and learning through discovery when examining this timetable (See Chapter 3). As with outcomes-based education, teachers within the Montessori school do not teach all the time, but set the learners on the path of discovery as a better way of learning. This assists learners in their time-management and pacing of their work. Teachers are directing the child's learning experiences rather than imparting knowledge. Therefore, although the timetable indicates that all three grades are busy with one learning area at the same time, the reader must bear in mind that learners are working on different aspects, as required in their particular grade, with guidance when necessary from the teacher.

As the need arises, the teacher will call a small group of learners for a demonstration of new work, after which the learners will be required to continue working on their own, with guidance from the teacher, as needed. Therefore, the teacher's time is not engaged in continuous teaching, but more time is spent on observation and guidance.

Monday - Thursday		8:00 – 8:05	8:05 – 9:00	9:00 – 12:00	12:00 – 13:00	13:00 – 15:00	15:00 – 16:00	
	Grade 9	Register	Businesses and New Business venture	/ English / Afrikaans	Lunch	Cultural Studies	Sport / MARS / Interact Club	
	Grade 8							
	Grade 7							

Friday		8:00 – 8:05	8:05 – 9:00	9:00 – 10:00	10:00 – 11:00	11:00 – 12:00	12:00 – 13:00	13:00 – 13:45	13:45 – 14:00
	Grade 9	Register	Businesses and New Business venture	/ English / Afrikaans / Cultural Studies (Completion of week's work)	Art	Music	Lunch	Council Meeting & Socratic dialogue	Final Sign out
	Grade 8				Music	Art			
	Grade 7								

Table 5.11: Suggested timetable for the Grade 7 to 9 class

An overview of the entire three-year learning programme for the senior phase of the GET band (grades 7 to 9) of the Knysna Montessori School is presented in Table 5.12.

Time & Organiser	*Year 1: Area of Study*		*Year 2: Area of Study*		*Year 3: Area of Study*	
Throughout the year	Entrepreneurship Self-expression Sport		Entrepreneurship Self-expression Sport		Entrepreneurship Self-expression Sport	
Term 1: Study of the earth and living things	Study of the earth: Space, gravity, magnetism & energy Study of living things: Human body		Study of the earth: Atmosphere Study of living things: Biomes		Study of the earth: Lithosphere Study of living things: Environmental study	
Term 2: Study of human progress and building up of civilisation	Study of scientific and technological discoveries Culmination of Research: Creating an imaginary planet		Study of scientific and technological discoveries Disasters over time		Study of scientific and technological discoveries Culmination project: Creating an imaginary island	
Term 3: Study of humanity as a whole	Timeline of humanity - Focus on civilisations & nation-building	History of humanity: Ancient civilisation (Grade 7) History of humanity: Middle ages to Industrialisation (Grade 8) History of humanity: Modern man (Grade 9)	Timeline of wars - Focus on different aspects of war	Wars through the ages: Ancient civilisations to Middle Ages (Grade 7) Wars through the ages: Middle Ages to Industrialisation (Grade 8) Wars through the ages: Modern Man, including World War I & II (Grade 9)	Timeline of humanity - Focus on medicine & technology	History of humanity: Ancient civilisation (Grade 7) History of humanity: Middle ages to Industrialisation (Grade 8) History of humanity: Modern man (Grade 9)
Term 4: South African History and Careers	South African history - focus on SA timeline	South African history: ±4mil years ago to late 1700 (Grade 7) South African history: Late 1700 - end of WWI, 1920's (Grade 8) South African history: 1920s to present (Grade 9)	South African history - focus on development over time	South African history: ±4mil years ago to late 1700 (Grade 7) South African history: Late 1700 - end of WWI, 1920's (Grade 8) South African history: 1920's to present (Grade 9)	South African history - focus on wars over time	South African history: ±4mil years ago to late 1700 (Grade 7) South African history: Late 1700 - end of WWI, 1920's (Grade 8) South African history: 1920's to present (Grade 9)
	Study of careers		Study of careers		Study of careers	

Table 5.12: Overview of cultural study learning programme of the senior phase of the General Education and Training band of the Knysna Montessori School

5.6.1 Organiser: Study of the earth and living things

5.6.1.1 Area of study: Study of the earth

(Learning areas: arts and culture, life orientation, natural sciences, social sciences [geography], technology)

The study of the earth is divided into three years. The learning outcomes and assessment standards covered in this area of study are mainly from the learning areas of the natural sciences and the social sciences (geography) of the RNCS. Some life orientation, technology and arts and culture assessment standards are also integrated into this area of study.

The first year's cultural studies for the first half of Term 1 focus on space, gravity and magnetism. More specific scientific discoveries are studies, such as chemistry, field forces, different forms of energy and energy conservation, as well as particle models. This knowledge is continuously referred back to the solar system and its influence on planets, stars, and other space bodies. The time, core content, resources covering this area of study are presented in Table 5.13. The learning outcomes and assessment standards are included in Appendix 6.

Time	Core content and context	Resources
Year 1: Term 1	The galaxy Heavenly bodies & motion Our solar system Space exploration Gravity in the solar system and on earth Magnetism Field forces - magnetic, electric & gravitational Particle model - physical changes of substances, such as melting, evaporation, condensation, solidification, diffusion & heating by conducting Acids & bases, neutralising to form salts, reactions with metals - oxides, hydroxides & carbonates Chemical reactions - giving off of energy Elements & compounds - energy release to form compounds & energy input to break down compounds Pure substances vs. mixtures & separation of mixtures through filtration , distillation, evaporation, chromatography & magnetism Potential energy Stored energy & kinetic energy possible systems of stored energy (incl. spring & friction, electrical, chemical, gravitational, nuclear, solar, biomass, optical (light), acoustical & thermal Light - absorb, refract & reflect Renewable & non-renewable energy sources	Work cards/Instruction cards, experiments guiding discovery and guided research; Internet resources and printed materials.

Table 5.13: Study of the earth, year 1

Cultural studies for the first half of term 1 of the second year focus on the atmosphere of the earth. More specifically, the layers and composition of the atmosphere, as well as the different cycles influenced by the sun as a source of energy, will be studied. An overview of the context and content, as well as the resources, is presented in Table 5.14.

Time	Core content and context	Resources
Year 2: Term 1	Layers of the atmosphere Gasses - characteristics of oxygen, hydrogen & carbon dioxide Energy transfer - thermal energy & dark-coloured vs. light coloured surface in heat absorption Heat transference with conduction, convection & radiation Sun as source of energy: • growth of plants • wind cycle • ocean currents • water cycle Climatic regions Atmospheric composition & properties at different elevations Influence & importance of the atmosphere Effect of natural and human activities on atmosphere	Work cards/Instruction cards, experiments guiding discovery and guided research; Internet resources and printed materials.

Table 5.14: Study of the earth, year 2

The first half of the third-year's first term of cultural studies entails a study of the earth's lithosphere. This includes plate tectonics, weathering, raw materials and natural resources, and mining. The core knowledge and content, as well as the resources for this area of study are presented in Table 5.15.

Time	Core content and context	Resources
Year 3: Term 1	Lithosphere – structure States of substances (e.g. crystalline structures, compressibility/incompressibility, tendency to diffuse) Plate tectonics • earthquakes • volcanic eruptions • mountain building Fossils Landforms: • constructive forces o volcanic eruption o crustal deformation o deposition of sediment • destructive forces o weathering o erosion Raw materials and mining - renewable & non-renewable Growing of raw materials into choice of arable and water catchments Fossil fuels Extraction of raw materials - chemical reactions & methods of separation Raw materials and mining - globally and in SA	Work cards/Instruction cards, experiments guiding discovery and guided research; Internet resources and printed materials.

Table 5.15: Study of the earth, year 3

The suggestion for the presentation of this section of study is to set up experiments on the classroom shelves with instructions guiding learners towards discovery. Blank experiment sheets will be laid out, which will include the different aspects of scientific investigations. The findings of each experiment should lead learners to conclude certain scientific facts, which they must relate back to the study of space, the atmosphere, or the lithosphere. Furthermore, certain research tasks should be given where learners research facts regarding different aspects of the study, for example space exploration.

However, the main aim should be for learners to practically discover, where possible, the content and context indicated in the area of study. Once learners have completed certain experiments or research tasks, their progress should be marked on a checklist on the wall, which the teacher corresponds with her register (see 5.2.5.4).

5.6.1.2 Area of study: the study of living things

(Learning areas: arts and culture, life orientation, the natural sciences, social sciences [geography], technology)

The study of living things is divided into three studies, namely:

- the study of the human body;
- the study of plants;
- the study of animals.

The foundation of this study of the human body, and plants and animals is formed by the learning outcomes and assessment standards of the natural sciences and the social sciences geography). However, technology, life orientation and arts and culture are also included. The full layout of the different learning outcomes and assessment standards for the study of the human body and plants and animals are presented in Appendix 7.

The second half of term for the first-year cultural studies course entails the study of the human body. Attention falls on different systems within the human body, as well as on human development and healthy living. The timeframe, core content and context and resources for the study of the human body are indicated in Table 5.16.

Time	Core content and context	Resources
Years 1: Term 1	Human evolution Human development & physical changes Human reproduction Conception & pregnancy S.T.D.s & HIV/AIDS Raising children & choices Population characteristics, feed, mate etc. Diet Digestive system Circulatory system Respiratory system Organs & role of water Viruses & disease Variation of species (offspring) Categorising of humans - social construct	Work cards/activity sheets and instruction cards guiding mini- research; Internet resources and printed materials.

Table 5.16: Study of living things: The human body, year 1

In the second year, the focus falls on the study of different biomes, which incorporate the plants and animals within these different biomes (ecosystems). The classification

of the plants and animals, as well as symbiosis and the web of life within each biome are all integral parts of the study. Furthermore, activity sheets could be set out to guide learners along the road to discovery on how plants and animals are classified. The timeframe, core content and context and resources for the study of the human body are indicated in Table 5.17.

Time	Core content and context	Resources
Years 2: Term 1	Photosynthesis Animal diet & digestive system Circulatory system Respiratory system Role of water in plants & animals Population characteristics, feed, mate, etc. Survival traits Ecosystem & food web South African ecosystems& biodiversity Sustainable development Viruses & diseases Variation of species (offspring) Natural selection Characterisation of animal groups Classification of animals Classification of plants Alien species - introduction & effects Extinctions Energy transfer within ecosystems Study of different cells	Work cards/activity sheets/ instruction cards guiding culmination research of different biomes and the web of life within these biomes; Internet resources and printed materials.

Table 5.17: Study of living things: Study of plants and animals, year 2

In the third year of cultural studies the second half of the first term entails an environmental project to be undertaken by the learners, which could be either school-based or community-based. This should be initiated by the learners and could include a water audit (determining the health risks and pollution of a local water source), waste reduction and management (encouraging recycling and devising sustainable waste management strategies), energy consumption and reduction thereof.

The learners are guided to write policy documents for the implementation of their project, as well as articles for the local papers. The success of the projects is evaluated according to their sustainability versus their charity factor.

The environmental project includes the integration of learning outcomes and assessment standards from the natural sciences, the social sciences (geography), technology, arts and culture, as well as life orientation (see Appendix 8). The core

content and context, as well as resources for the environmental study are presented in Table 5.18.

Time	Core content and context	Resources
Years 3: Term 1	Waste reduction Sustainable living Effect of development on the environment Fuel for cooking & alternatives Water use & waste Water audit & policy Waste management school policy Water audit in local community & newspaper	Water testing kit, newspapers, examples of school waste management policies, Work cards/activity sheets/ instruction cards guiding projects; Internet resources and printed materials.

Table 5.18: Study of living things: Environmental project, year 3

5.6.2 Organiser: Study of human progress and building up of civilisation

5.6.2.1 Area of study: Study of scientific and technological discoveries

[Learning areas: natural sciences, technology, arts and culture, life orientation, social sciences (history), the social sciences *(geography)]*

The first half of the second term covers the study of scientific and technological discoveries, with content specified from one grade to the next. The focus of this study is mechanical systems, electrical circuits, as well as electricity generation, consumption and conservation. This area should be studied through mini-research tasks, where learners research the history of different scientific and technological discoveries. Furthermore, experiments should be laid out for learners to discover in practice the different properties of mechanical systems and electrical circuits.

The natural sciences component of this study is not grade-specific and could be done over the three grades of the senior phase. Therefore, a checklist on the wall is suggested on which learners can track their own progress throughout the three years.

The learning outcomes and assessment standards included in this study are mainly drawn from technology and the natural sciences. However, arts and culture, life orientation, social sciences (geography) are also integrated. See Appendix 9 for the lay-out of the learning outcomes and assessment standards for the study of scientific and technological discoveries. The timeframe, core content and context, and the

resources for the study of scientific and technological discoveries are presented in Table 5.19.

Time	Core content and context		Resources
Years 1 - 3: Term 2	**Grade 7**	Mechanical systems (e.g. cams, pistons, pivot & slider, eccentric wheels Lever systems & value of force (e.g. linked lever systems, pneumatic or hydraulic systems) Electrical circuits	Work cards/instruction cards, experiments guiding discovery and guided mini-research tasks; Internet resources and printed materials.
	Grade 8	Mechanical systems (e.g. pneumatic or hydraulic, gears, belt drive, pulleys, linked lever) Conversion of motion and force to mechanical. Electrical circuits	
	Grade 9	Mechanical systems & sub-systems (e.g. gears, belt drive, multi pulleys, ratchet & pawl, cleats, pneumatic or hydraulic with restrictors, combination of above and/or electrical circuits) Electrical circuits	
	Over 3 years	Systems people use & waste of energy in form of heat Systems to deliver energy where needed and alleviate poverty Generation and supply of large scale electricity & environmental impact Small scale electricity supply, cost & impact on the environment Magnetism through electrical currents or friction resistors in electricity South African energy consumption - e.g. wood for cooking and heat	

Table 5.19: Study of scientific and technological discoveries, years 1 to 2

5.6.2.2 Culmination project: Settlement on a planet

(Learning areas: arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history), the social sciences (geography), technology)

During year 1, the study of the earth focuses mainly on space and different heavenly bodies. In order to integrate what was learnt through the study of the earth, as well as the study of the human body, a culmination project is done, where learners are given the task of creating a settlement on a planet in our solar system. Learners are expected to build a model of the civilisation they create, as well as present a brochure or report taking into consideration such aspects as:

- systems to sustain life
- geography

- topography
- climate
- transport
- government and constitution
- flag
- natural resources
- habitat, plant life, animal life
- land use
- waste
- energy sources
- economy
- trade
- culture
- tourist sites
- history

Such an integrated culmination project draws on the learning outcomes and assessment standards from all six learning areas, viz. arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history and geography), technology. This project will take several weeks to complete and teachers guide learners with critical thinking questions and problem scenarios as they work through the project.

Appendix 10 presents the learning outcomes and assessment standards covered through this study. Core content is not prescribed, as within this study learners will draw on content from the organiser: Study of the earth and living things.

5.6.2.3 Area of study: Disasters over time

(Learning areas: arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history and geography), technology)

During the second half of Term 2 in year 2, cultural studies focus on research into man-made and natural disasters. This study serves as a culmination study, drawing on knowledge from the study of the earth, the study of living things, environmental studies, as well as the study of scientific and technological discoveries. Furthermore, social sciences (history) will be included, as disaster over time involves a historical inquiry.

The study of disasters integrates learning outcomes and assessment standards from all six learning areas: arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history and geography), technology, as indicated in Appendix 11. The core content and context for the study of disasters draw from the social sciences (geography) and include life orientation and economic and management sciences. Table 5.20 gives the timeframe, core content and context (colour-coded according to the learning area), as well as the resources for this study.

Time	Core content and context	Resources
Years 2 - 3: Term 2	Natural Hazards (7) Man-made disasters such as oil spills, Chernobyl, etc. Natural disasters, such as volcanoes, landslides, extreme climatic conditions etc. Causes and effects of disasters Influence on population Early warning signs Safety procedures Disease Economic impact	Work cards/activity sheets/ instruction cards guiding culmination research of different one man-made and one natural disaster each year; Internet resources and printed materials.

Table 5.20: Study of disasters, years 2 and 3

5.6.2.4 Culmination project: Creating an imaginary island

(Learning areas: arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history and geography), technology)

As with the settlement on a planet in our solar system, the creation of an imaginary island is similar in structure and covers similar learning outcomes and assessment criteria (see Appendix 10). Learners are given the task of creating an island anywhere on the earth. Although the island is an imaginary island, it may not be a

fantasy island. With such a project, learners need to look at similar aspects mentioned, viz.

- geography
- topography
- climate
- transport
- government and constitution
- flag
- natural resources
- habitat, plant life, animal life
- land use
- waste
- energy sources
- economy
- trade
- culture
- tourist sites
- history

5.6.3 Organiser: Study of humanity as a whole

5.6.3.1 Area of study: Timeline of humanity: Focus on civilisation and nation-building

(Learning areas: arts and culture, economic and management sciences, life orientation, social sciences (history and geography), technology)

During term 3 in year 1, the cultural studies cover the timeline of the history of humanity. The study of humanity is divided into the three grades, each with their own focus as follows:

- Grade 7: History of humanity: ±4million years ago - late 1700
- Grade 8: History of humanity: 1700 - post WWI (1920s)
- Grade 9: History of humanity: 1920s - present

It is suggested that this area of study should use mini-research tasks on different aspects of humanity, and should not be limited to the core content and context listed in **Table 5.21**. In order to assist with the arrangement of content and help to narrow down this vast field, the suggestion is that the focus falls on civilisations and nation-building over time. The research projects should include the following aspects of the era being studied:

- mapwork
- population studies
- transport
- government
- reasons for rise and fall of civilisation (where applicable)
- success and failures of civilisation (where applicable)
- trade routes
- monetary systems
- religions
- art and culture, including drama, music and literature.

In order for the transfer of knowledge from one grade to the next, the projects should be organised in such a manner that all learners can share their information through orals, displays, quizzes, question-and-answer sessions, and suchlike. Furthermore, peer assessment will also assist in the transfer of knowledge from one grade to the next. The findings of the research should be related back onto the timeline in order for learners to gain the overall picture of the history of humanity over time.

The timeframe, core content and context, as well as resources are listed in **Table 5.21**. As indicated earlier, the core content and context specified in different learning areas are colour-coded in the table below. However, learning outcomes and assessment standards are integrated from the social sciences (history and geography), as well as arts and culture, economic and management sciences, life orientation and technology (see Appendix 12).

Time	Core content and context			Resources
Year 1: Term 3	Grade 7	±4mil years ago - late 1700	Human evolution Ancient civilisations - including Arabic Golden Age Early trading systems Moving frontiers (Great migration to America) Slave trade Population growth & change Population movement Needs & wants of man Religions of the world Middle Ages	Work cards/activity sheets/ instruction cards guiding research; Internet resources and printed materials.
	Grade 8	1700 - post WWI (1920's)	Industrial Revolution Industrialisation Colonialism Settlements History of Money Religions of the world Transportation	
	Grade 9	1920's – present	Development issues - Approaches to development Sustainability Anti-colonial struggles in Africa - Human rights Religions of the world	

Table 5.21: Study of humanity: Timeline of humanity, year 1

5.6.3.2 Area of study: Wars through the ages

(Arts and culture; economic and management sciences; life orientation; social sciences (history and geography), technology)

During term 3 in the 2nd year, cultural studies involve research into different wars over time. As with the study of the history of humanity, social sciences (history) prescribe that different grades focus on specific eras in human history, viz.

- Grade 7: Wars through the ages: Ancient civilisation to 1783
- Grade 8: Wars through the ages: 1783 - 1918
- Grade 9: Wars through the ages: 1918 - present

The study of wars through the ages integrates the social sciences (history and geography), as well as technology, arts and culture, economic and management sciences and life orientation. Appendix 13 provides the different learning outcomes and assessment standards for this area of study. Specific focus on different wars is prescribed by the social sciences (history) content, as indicated by the colour-coding

in **Table 5.22**. However, it is foreseen that the learners will study beyond what is prescribed and gain an overview of wars over time, the causes and effects of war, and lessons learnt from past experiences. The study of wars should be arranged as a timeline and placed back into timeline context once the research is completed. The timeframe, core content and context, as well as the resources are presented in **Table 5.22.**

Time	Core content and context				Resources
Year 2: Term 3	Grade 7	Ancient civilisations - late 1783	Ancient civilisations Middle ages American Revolution	(Timeline of wars not exclusive focus on core content and context, but should be expanded)	Work cards/instruction cards and mini research tasks.
	Grade 8	1783 – 1920	French Revolution World War I		
	Grade 9	1920 – present	World War II World War II - Human Rights Nuclear Age & Cold War Xenophobia & genocide		

Table 5.22: Study of wars through the ages, year 2

5.6.3.3 Area of study: Timeline of humanity: Focus on medicine and technology

(Learning areas: Arts and culture, economic and management sciences, life orientation, social sciences (history and geography), technology)

During term 3 in year 3, cultural studies again cover the timeline of the history of humanity, but unlike year 1, the focus of year 3 is on medicine and technology. The motivation for a different focus is to avoid the learners becoming bored with repetition of focus, as well as to allow learners to discover wider content and contexts. This study, as in the previous years, is divided into the three grades, each with its own time-focus as follows:

- Grade 7: History of humanity: ±4million years ago - late 1700
- Grade 8: History of humanity: 1700 - post WWI (1920s)
- Grade 9: History of humanity: 1920s - present

Learning outcomes and assessment standards are identical to the timeline of humanity: focus on civilisation and nation-building (see Appendix 13). This timeline integrates learning outcomes and assessment standards from the learning areas of arts and culture, economic and management sciences, life orientation, social sciences (history and geography), technology of the RNCS. Furthermore, the core content and context, as well as the resources are the same as those presented in **Table 5.21**.

5.6.4 Organiser: South African history

South African history plays an important role in the RNCS and assists learners with nation-building, understanding their heritage, rights and responsibilities. The study of South African history also helps learners to become responsible citizens of South Africa by learning through our past mistakes. It is with this in mind that the study of South African history is repeated every year, albeit from different perspectives over the course of the three years. The different approaches to South African history are as follows:

- Year 1, term 4: Study of South African history through a comprehensive *timeline* of all aspects of South Africa's past.
- Year 2, term 4: Study of South African history through the study of human *developments* over time.
- Year 3, term 4: Study of South African history through the study of South African *wars* and wars affecting South Africa.

The content that is specified by the social sciences (history) and social sciences (geography) remains the same throughout the three years. The approach and focus of the study is changed to stimulate and maintain learners' interest. The core content and context is laid out in **Table 5.23**, and is colour-coded to indicate the learning area from which this is drawn. Furthermore, the timeline of South African history integrates learning outcomes and assessment standards from the social sciences (history and geography), technology, arts and culture, economic and management sciences and life orientation of the RNCS (see Appendix 14).

Learners focus on specific times in South Africa's history within different grades, which means that over three years in the class, they cover the entire history of South Africa. These time focuses are:

- Grade 7: South African history: ±4million years ago to late 1700
- Grade 8: South African history: Late 1700 to the end of WWI (1920s)
- Grade 9: South African history: 1920s to the present

Furthermore, when researching South African history from different approaches, attention should be given to mapwork, population studies, human rights, government, transport, cause and effect, trade routes, monetary systems, religions, art, culture, drama, music and literature.

Time	Core content and context			Resources
Years 1 - 3	Grade 7	±4mil years ago - late 1700	Human evolution (Australopithecus) Dutch settlement SA Slave trade Moving frontiers - conflicts Population migration in SA	Work cards/instruction cards, and mini research task. .
	Grade 8	1700 - post WWI (1920's)	Industrialisation in SA - Diamonds & Gold Sugar & labour in Natal Early trade unions movements SA wars Colonialism Impact of WWI on SA Social inequalities in SA Natural resources	
	Grade 9	1920's – present	Human rights & anti-colonial struggles in Africa & SA Apartheid in SA Collapse of Apartheid Crimes against humanity Xenophobia & genocide Social & Environmental conflicts in SA	

Table 5.23: Study of South African history, years 1 to 3

5.6.5 Organiser: Careers

(Learning areas: Arts and culture, life orientation, technology)

Research into possible career opportunities is found in the developmental outcomes, as well as across different learning areas, in particular life orientation, arts and culture and technology of the RNCS. Appendix 15 presents the learning outcomes and

assessment standards for the study of careers. Table 5.24 gives an overview of the core knowledge and content, as well as the resources.

Time	*Core knowledge and content*	*Resources*
Once every year	Career Personal potential Workplace - needs of SA FET providers Life long learning – plan Decision making & goal-setting Careers in art and culture	PACE career guidance book; internet; printed materials; questionnaires

Table 5.24: Careers, years 1 to 3

The suggestion is that career research be done continuously, on a yearly basis, where learners explore different career and education opportunities. Learners can compare one year with the next to see how their interests have changed over time. A very good project is made available by the PACE Career Centre (2007), which guides learners through:

- the analysis of fields of interest
- possible career choices related to fields of interest
- working environment and requirements for selected careers
- possible education institutions
- subject choices for Further Education and Training
- sources of financial aid
- creating a curriculum vitae
- completing a job application
- setting up a programme for life-long learning

5.6.6 Organiser: Moral education

(Learning areas: Arts and culture, life orientation)

Table 5.25 arranged the core content and context drawn from the different learning areas of the RNCS (colour-coded) according to collective themes that should be covered within each grade. These themes could be used for discussion during Socratic dialogues with all three grades in the senior phase of the GET band. Moral education integrates learning outcomes and assessment standards from the arts and culture and life orientation learning areas of the RNCS (see Appendix 16).

Time	Core content and context		Resources
Throughout the three years, on a weekly basis	Intra-personal study	Personal expression (Grade 7) Self expression (Grade 9)	Personal diaries, collective art work, cards with specific issues for discussion at Socratic dialogue
		Self-image (Grade 7) Self-concept (Grade 8) Self-concept (Grade 9) Emotions - coping (Grade 7) Emotional challenges (Grade 8) Emotional challenges (Grade 9) Values & norms (Grade 8)	
	Interpersonal relationships	Personal interaction (Grade 9) Interpersonal relationships (Grade 8) Social relationships (Grade 9)	
		Social relationship - express in art (grade 9)	
		Interpersonal relationships - rights & responsibilities (Grade 9) Respect & constructive disagreements (Grade 7)	
		Tolerance, acceptance and empathy (Grade 9) Personal & social issues (Grade 7)	
		Sexuality (Grade 7) Health & safety - violence (Grade 8)	
	Personal skills	Problem solving - personal (Grade 8) Problem solving (Grade 9) Decision-making (Grade 7) Decision making & goal-setting (Grade 9) Study skills (Grade 7) Time management & accountability (Grade 7) Stress management (Grade 8)	
	influence of mass-media	Media - influence(7),	
		Mass media - hidden messages (Grade 8) Mass media (Grade 9) Mass media effect - drama (Grade 9) Pop culture & mass media (Grade 9)	
	Democracy	Democracy in action (Grade 8)	Ballot papers for annual voting for Head Boy and Head Girl, as well as democracy in class as seen fit, such as the voting for class monitors
	Volunteer work	Volunteer work (Grade 7)	Rotary Interact Club

Table 5.25: Moral education, years 1 to 3

Moral education is mainly done through weekly Socratic dialogue sessions. Socratic dialogue is defined as the mutual reflection between people to find underlying values, clarify essential concepts and investigate assumptions in order to reach consensus on any topic of discussion (Galea, 2004: 241). Socratic dialogue fosters the construction of knowledge through discussion based on personal experience, as well

as critical analysis of popular ideas (Remenyi & Griffiths, 2009: 155). Socratic dialogue is considered a useful tool in teaching ethics and is often used in business environments (Morrel, 2004: 383).

Within the Grade 7 to 9 classroom, time is set aside once a week on a Friday afternoon for Socratic dialogue between all three grades (see timetable in Table 5.11). Moral and ethical issues are raised and debated and learners are encouraged to share their opinions and personal experiences. Through these discussions and the sharing of experiences, learners' value systems are developed and a higher level of moral reasoning may be reached (see discussion of Kohlberg and Piaget's moral development of the adolescent under 3.2.3.3).

Within the learning outcomes and assessment standards, certain topics lend themselves to Socratic discussions, while others could be covered by encouraging learners to keep a personal diary with the focus on specific issues. Furthermore, role-play, dramatic expressions, as well as collective art should be used to build understanding on various topics.

Although the core content and context are grade specific, it is suggested that these topics be brought under discussion each year, regardless of the grade. This will assist the younger learners in gaining knowledge and insight from the older learners, and the older learners in playing the role of mentors to the younger learners.

5.6.7 Organiser: Self-expression

5.6.7.1 Area of study: Music

(Learning areas: Art and culture, life orientation, social sciences (history), Technology)

Within the early adolescent years there should be ample opportunity for learners to express themselves, especially through art and music. The RNCS lends itself to this expression through the learning areas of arts and culture, life orientation, social sciences (history), as well as technology (see Appendix 17).

Table 5.26 gives an overview of the timeframe, core content and context, as well as the resources required for music.

Time		Core content and context	Resources
Years 1 - 3	Grade 7	Music concepts Scales Drumming & rhythm Study of instruments Classification of African instruments SA music - instruments	Musical instruments, drums, multi-media players with relevant pieces of music for listening, work cards/ instruction cards, and mini research tasks
	Grade 8	SA music Music popular culture Copyright	
	Grade 9	Technology effect on music Marketing & fundraise music function Perform voice & percussion Music - response Music – different gender roles	

Table 5.26: Self expression: Music, years 1 to 3

Music plays a significant role in early adolescents' lives (Lerner, 1993: 535). The playing of and listening to music, especially the accompanying lyrics, assist early adolescents in finding their identity, and also to identify with their peers (Weiss & Muscari, 2008: 258; Lerner, 1993: 535). The practical expression and learning of instruments should be repeated throughout the three years, rather than being limited to certain grades, as this forms a critical part of young adolescents' ability to express themselves.

Furthermore, response to music, as well as roles within the music industry, should be studied throughout the three years and not restricted to specific grades.

5.6.7.2 Area of study: Art and drama

(Learning areas: Art and culture, life orientation, social sciences (history), technology)

The second part of self-expression is through art and drama. The RNCS makes provision for learners to express themselves through the visual arts, drama and dance in the learning area of art and culture. The learning outcomes and assessment standards from arts and culture, life orientation, social sciences (history), as well as technology are integrated into the study of arts and drama (see Appendix 18). The

timeframe, core content and context, as well as resources are presented in Table 5.27.

Time	Core content and context			Resources
Years 1 - 3	Art	Grade 7	Personal & collective expression Mount own art Personal expression	Art equipment and various media. Internet and printed media sources.
		Grade 8	Personal & collective expression Art over time Popular culture in art	
		Grade 9	New art expression Self expression New art expression	
	Drama	Grade 7	Choreography Choral verse/prose Understanding of structures - applied in stage setup	Props, costumes, computers to type scripts, internet and printed materials
		Grade 8	Drama popular culture Popular culture dance Understanding of structures - applied in stage setup	
		Grade 9	Performance event Marketing & fundraise drama Local drama - review Leadership in drama Design	

Table 5.27: Art and Drama, years 1 to 3

Young adolescents find their expression of emotions, as well as personal identity, through the visual arts (Miller, 2003: 155). Furthermore, dramatic expression provides young adolescents with the opportunity to experience different roles, and emotions which may not normally be considered appropriate (Malchiodi, 2003: 234; Miller, 2003: 155). Within art and drama, teamwork plays an important role, assisting adolescents in creating and maintaining social relationships (Webber, Haen, 2005: 249; Miller, 2003: 155).

It is therefore suggested that the core content and context should not be limited to different grades, but rather integrated throughout all three grades and repeated each year. A different dramatic production each year could be presented by the learners, with the assistance and guidance of the teachers, giving expression to a specific area of study in the classroom.

5.6.8 Organiser: Entrepreneurship

5.6.8.1 Area of study: Business simulation

(Learning areas: Economic and management sciences, arts and culture, life orientation, technology)

Within the Knysna Montessori School, businesses are run throughout the year on a quarterly basis (see 3.4.1.5). Table 5.28 presents the core content and context, as well as resources for the business simulation. This practice in a Montessori approach to education should continue as it involves integration between the learning outcomes and assessment standards of the learning areas of economic and management sciences, arts and culture, life orientation, as well as technology of the RNCS (see Appendix 19).

The core content and context are mostly based on economic and management sciences learning outcomes and assessment standards and are grade-specific. However, it is considered good practice to continue integrating learners from all three grades within one business. This promotes mentorship and a sense of community, and allows learners to repeat contextual knowledge over the three years.

Time	Core content and context		Resources
	Grade 7	Economy sectors Demand & supply Rights & responsibilities Investments Productivity Management & leadership Administration & technology Accounting Human resources Entrepreneurial characteristics Idea generation (business) Joint venture Marketing	Resources determined by business
	Grade 8	Economic cycle Economic systems Trade unions Inflation Investments Productivity & technology Financial concepts Management & leadership Accounting Computer skills Human resources Entrepreneurship - promoting Idea generation (business) Forms of ownership Business - financial viability	
	Grade 9	Economic cycle, including the foreign sector Demand & supply Trade unions - effects National budget Investments Productivity Accounting Public relations Computer skills Forms of credit purchase SWOT analysis Business plan Marketing Job creation	

Table 5.28: Business simulation, years 1 to 3

5.6.8.2 Area of study: New business venture

(Learning areas: Economic and management sciences, arts and culture, life orientation, technology)

Within the Knysna Montessori School, there is the opportunity for learners to create a new business venture. It is suggested that all learners create at least one new venture a year, which would involve three terms of work in the existing businesses at the Knysna Montessori School, and the challenge of generating a new business venture in the remaining term.

This business venture will cover many of the learning outcomes and assessment standards from the learning area of technology, as well as economic and management sciences of the RNCS (see Appendix 20). The core content and context for this area of study are the same as those of business simulation, but the focus will be more on the technology content and context, as described in Table 5.29.

Time	Core content and context	Resources
Years 1 - 3	Investigates a need Examines existing products Strategies for data collection Designs Determines product specifications Determines alternative solutions Chooses one solution Plans for making solution Makes product Uses appropriate tools Applies safe working practices Performs quality control Evaluates Suggests improvements Communicates with appropriate technology	Resources dependent on business venture

Table 5.29: New business venture, years 1 to 3

5.6.9 Organiser: Sport

(Learning areas: Life orientation, arts and culture)

The physical development of adolescents is of great importance and sport should run throughout the year. The RNCS makes provision for physical development through sport in the learning outcomes and assessment standards of life orientation and through dancing in arts and culture learning areas (see Appendix 21). The timeframe, core content and context and resources required for sport are presented in Table 5.30.

Time	*Core knowledge and content*	*Resources*
Throughout the year	Adventure programme Rotation, balance & elevation Fitness programme Goal setting in terms of sport and fitness Various sport games and strategies Certain aspects of dance, such as warm-up routines and safe dance practice	Resources determined by Adventure sport (MARS) swimming, netball, soccer and athletics

Table 5.30: Sport, throughout the year

The Knysna Montessori School has an active Adventure Racing division (Montessori Adventure Racing Sport - MARS), which is at present voluntary, and which incorporates multiple disciplines, such as cycling, canoeing, mountain-biking, rock climbing, running, swimming, quad-biking, parasailing, and suchlike. Within adventure racing, there are two teams, namely the racing team and the back-up team, who are responsible for transport, water points, checking of gear, and more.

It is the suggestion of this learning programme that MARS be broadened to include all learners from the senior phase (Grades 7 to 9), as the social and physical skills they learn will incorporate many of the life orientation learning outcomes and assessment standards. Should this suggestion be accepted, learning outcomes and assessment standards from technology and the social sciences (geography) will also be covered. However, this is not currently included in the curriculum at the Knysna Montessori School.

5.7 CONCLUSION

Through data-analysis, themes emerged from both interviews and document analysis. The interviews provided rich knowledge and understanding of the Knysna Montessori School's holistic and integrated method of teaching, in addition to more practical understanding of how such integration may be applied. The coding of the RNCS afforded the researcher a comprehensive knowledge of the requirements of the senior phase of the RNCS and the emergent themes were in line with Montessori's suggestions for curriculum arrangement.

From this, an integrated learning programme emerged, combining both Montessori's integrative principles, and the requirements of the RNCS. This was reported in Chapter Five through the timeframe, the core content and the context, leading up to the suggestions of possible resources. The learning outcomes and assessment standards from different RNCS learning areas will be covered by each area of study; they are presented in the appendices.

Chapter 6 will conclude the research through a summary of the research process, an overview of significant findings, and suggestions for further research.

CHAPTER SIX

CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY, AND RECOMMENDATIONS FOR FUTURE RESEARCH

6.1 INTRODUCTION

This research study focused on the integration of the RNCS with a Montessori approach within the 12 to 15 year-old age group (Grades 7 to 9) at the Knysna Montessori School. The Montessori approach to education is holistic and integrative in nature, thus calling for a more integrated curriculum arrangement. Furthermore, integration is central to outcomes-based education and the RNCS encourages integration between different learning areas in a learning programme (Department of Education, 2003a: 6). It is highlighted that integration within the RNCS should support conceptual growth in learners (Department of Education, 2003a: 6).

Within the Montessori approach, the curriculum is usually arranged according to three main areas:

- Languages
- Mathematics
- Cultural Studies

Although integration of the curriculum takes place throughout the younger classes at the Knysna Montessori School, no formal learning programme has been set up for the senior phase. Thus the need arose for an integrated learning programme to be created for this age group. Consequently, this study was concerned specifically with the cultural studies of the senior phase of the General Education and Training Band, namely the grade 7 to 9 group. Mathematics and languages still have their own area within the classroom environment. However, teachers are encouraged to integrate mathematical and language skills into the cultural studies area wherever and whenever they see fit.

This chapter provides the conclusions drawn from the qualitative data analysis. Qualitative data were gathered by means of one-on-one semi-structured interviews, as well as grounded theory document analysis and coding. Conclusions, implications and recommendations will be made to assist the Knysna Montessori School in the implementation of an integrated curriculum arrangement in line with the Montessori method of education for the Grade 7 to 9 class.

Limitations of the study, as perceived by the researcher, will be outlined and suggestions for further research will be given.

6.2 OVERVIEW

Data collection took place through the literature review, interviews and document analysis. The literature that was reviewed focused firstly on a theoretical reflection on outcomes-based education (OBE) in South Africa. The historical development of outcomes-based education within South Africa and the development of the RNCS were presented. From this literature review several criticisms regarding the implementation of the RNCS and outcomes-based education in South Africa emerged regarding:

- curriculum planning
- curriculum implementation, specifically in terms of
    - teacher training
    - curriculum support and monitoring
    - curriculum planning in the classroom
    - the application of OBE principles
    - overcrowded classrooms
    - hands-on discovery learning
    - availability of resources
    - assessment within the OBE paradigm

The second focus of the literature review was on the Montessori method of education. From the study, it emerged that Montessori, like Piaget, focused on the developmental stages of the learner and adapted her methods of education

accordingly. In particular, Montessori noted that each plane of development has specific sensitive periods around which the educational practice should be centred (Donnelley, 2008: 3; Feez, 2007: 243; Bee & Boyd, 2002: 13; Montessori, 1966: 38). In the conceptual framework a comparison between Montessori and Piaget was drawn, highlighting their similarities and differences.

Thirdly, a literature review was conducted to acquire a general understanding of adolescent development, in particular the physical, cognitive, moral, social and emotional development. From the literature review a deeper understanding of adolescent development emerged, in particular the role of hormonal and brain development.

Through the literature review the researcher aimed to gain a better understanding of the Montessori teacher and the Montessori environment in consideration of the development of a learning programme for the senior phase classroom. Thought was given to the layout of the different classrooms and early learning programmes at the Knysna Montessori School, in order to present a learning programme for the senior phase, which is congruent with the rest of the Knysna Montessori School's principles.

Finally, the literature review was conducted in order to present an overview of holistic and integrated curriculum arrangement. The multiple intelligences, fundamental to integrated and holistic curriculum arrangement, were also studied. Specific focus was given to curriculum arrangement within a Montessori school, in particular through the cultural studies. Cultural studies form part of the focus of the learning programme developed within this research project.

The last phase of research was the data-analysis of the interviews and the document analysis. This was done in order to develop an integrated learning programme for the senior phase of the Knysna Montessori School.

6.3 CONCLUSIONS AND IMPLICATIONS OF THE RESEARCH

6.3.1 Interviews

Interviews were conducted with staff from each classroom at the Knysna Montessori School in order to gain a deeper, more comprehensive understanding of the method of curriculum arrangement throughout the school. The interviews revealed that integration of the curriculum, according to timelines, is important in Montessori classrooms; that the businesses, mathematics and languages are also integrated into the curriculum; that learning programs vary for different classes; that assessment plays an important role in the Montessori classroom; that the approach has more benefits than disadvantages; and that learners gain specific skills through the integrated curriculum arrangement.

6.3.1.1 Global picture

Drawn from the results, the following global conclusions could be made:

i.) Curriculum arrangement at the Knysna Montessori School takes place through the use of *timelines* in most classes.

ii.) *Businesses* are integrated into the Grade 7 to 9 class.

iii.) Learning programmes *vary* between different classes at the Knysna Montessori School.

iv.) *Mathematics* and *languages* are integrated throughout the school into cultural studies.

v.) *Assessment* takes plays an important role throughout the Knysna Montessori School.

vi.) There are both *advantages* and *disadvantages* to an integrated curriculum arrangement.

vii.) Specific *skills* are gained through the use of an integrated curriculum arrangement.

6.3.1.2 Differentiated picture

When looking at each of the above themes individually, a differentiated picture emerges, as was indicated in Chapter Five. The following detailed conclusions were drawn.

i.) ***Timelines*** **are used as the main organiser for the arrangement of the curriculum.** The following points emerged in this regard:

- The creation timeline is used in *pre-school* as main organiser of the cultural subjects.
- The creation timeline, the timeline of life, as well as the timeline of man is used in the *Foundation Phase* of the General Education and Training Band (GET) (Grades 1 to 3).
- All five timelines are used in the *intermediate phase* of the GET band.
- The *senior phase* of the GET band uses key timelines based on the five timelines and has no formal learning programme for arranging the curriculum in an integrated manner.

ii.) ***Businesses*** **are integrated into the Grade 7 to 9 class**. The following came to light:

- Businesses are an important aspect of the *senior phase* of the GET band.
- *More integration* with the cultural subjects is possible.

iii.) **Learning programmes *vary* between different classes at the Knysna Montessori School**. This implies that:

- *different* learning programmes are used in the different classes;
- learning programmes are more *structured* in the preschool than in the foundation phase and the intermediate phase of the GET band;

- at the foundation and intermediate phase of the GET band, the learning programmes allow learners the *freedom* to research within certain parameters, rather than having to follow teacher-specified themes.

iv.) ***Mathematics* and *languages* are integrated throughout the school into cultural studies**. It emerged that:

- *Language* is a natural part of all research and is thus integrated into all aspects of cultural studies throughout the Knysna Montessori School;
- *Mathematics* is integrated into the cultural studies where possible, and when the topics being researched allow for such integration.

v.) ***Assessment* plays an important role throughout the Knysna Montessori School**. Assessment is:

- Done mainly through *observation* at pre-school and foundation phase level.
- more *structured* at the intermediate and senior phase level.
- *in line with OBE* assessment practices.

vi.) **There are both *advantages* and *disadvantages* to an integrated curriculum arrangement**. It was highlighted that:

- there are *more advantages* than disadvantages to an integrated curriculum arrangement.
- in the case of some teachers, no disadvantages were perceived.

vii.) **Specific *skills* are gained through the use of an integrated curriculum arrangement**. From this:

- a *variety of skills* are gained through integrated curriculum arrangement, including interpersonal, intrapersonal and mental skills.

6.3.2 Document analysis

6.3.2.1 Global picture

Through the coding of the RNCS and Montessori's suggestions for a learning programme at the senior phase of the General Education and Training Band, the following eight organisers became evident:

i.) The study of the *earth* and *living things*
ii.) The study of *human progress* and the building-up of *civilisation*
iii.) The study of *humanity* as a whole
iv.) *Moral* education
v.) Self-expression
vi.) Entrepreneurship
vii.) Careers
viii.) Sport

6.3.2.2 The differentiated picture

Through the study of each theme within the global picture, a more differentiated picture emerged. The following detailed conclusions were reached.

i.) **The study of the earth and living things.** Hence:

- Three *sub-themes* emerged, namely the *Study of the earth*, the study of *living things*, and *environmental* studies.
- The learning areas, which are integrated into all three sub-themes are arts and culture, life orientation, the natural science, the social sciences (geography) and technology.

ii.) **The study of human progress and the building-up of civilisation** Here:

- Two sub-themes emerged, namely *Scientific* and *technological discoveries* and *disasters over time*.
- The sub-theme of scientific and technological discoveries integrates arts and culture, life orientation, the natural sciences, the social sciences (geography) and technology.

- The sub-theme of disasters over time integrates all six learning areas, namely arts and culture, economic and management sciences, life orientation, the natural sciences, the social sciences (history), the social sciences (geography), as well as technology.

iii.) **The study of humanity as a whole**

- Three sub-themes emerged, namely: the *history of humanity*; *wars* through the ages; and *South African* history.
- Within this theme, all six learning areas are integrated, viz. arts and culture, economic and management sciences, life orientation, the social sciences (history and geography) and technology.

iv.) **Moral Education**. Moral education entails:

- *Intrapersonal* and *interpersonal* relationships, *goal-setting* and *study skills*, the influence of the *mass media*, *rights* and *responsibilities*, as well as *volunteer* work.
- The learning areas of arts and culture and life orientation are integrated into moral education.

v.) **Self-expression.** This indicated that:

- *Music* and *art* form the main topics of this theme.
- Aspects from the learning areas of arts and culture, life orientation, social sciences (history) and technology are integrated.

vi.) **Entrepreneurship.** This entails:

- Two sub-themes, namely *business simulation* and *new business ventures*.

- The learning areas of arts and culture, economic and management sciences, life orientation, as well as technology are integrated into both sub-themes.

vii.) **Careers**

- Career education is imperative within the RNCS.
- Career preparation is also considered essential in Montessori education, in particular during the Grade 7 to 9 years.
- This theme integrates the arts and culture, life orientation and technology learning areas.

viii.) **Sport**

- Sport and physical development are considered to be crucial in a holistic educational approach.
- Sport education is compulsory within the RNCS.
- The arts and culture, life orientation and technology learning areas are integrated into this theme.

6.3.3 Integrated learning programme

From the data findings an integrated learning programme emerged for the senior phase of the General Education and Training Band of the Knysna Montessori School. This learning programme integrates learning outcomes and assessment standards from the RNCS' six learning areas, known in Montessori education as cultural studies. The learning programme for the senior phase of the GET band is a three-year programme.

The content and outcomes are arranged over the entire phase and are repeated every three years. The first term of each year focuses on the study of the earth and living things; the second term focuses on the study of scientific and technological discoveries; the third term is aimed at the history of humanity, while the fourth term emphasises South African history. Each year focuses on different aspects of each

study, or approaches a specific study from a different angle to stimulate and maintain interest amongst the learners.

6.4 THE IMPLICATIONS OF THE STUDY

The creation of an integrated learning programme for the senior phase of the General Education and Training Band (Grades 7 to 9) of the Knysna Montessori School has certain implications. These are:

- The RNCS is arranged in an integrated manner throughout the Knysna Montessori School, using *timelines* up to Grade 6 level. Presently, the senior phase is more traditionally arranged according to the different learning areas. This is not in line with Montessori's suggestions for curriculum arrangement at this level and not consistent with the ethos of the Knysna Montessori School. If this does not change it will result in a loss of Montessori principles and practices and learners will not gain the full benefits of Montessori schooling.

- *Businesses* are seen as an important aspect in the senior phase learning. Presently, the businesses are not fully integrated and are more or less viewed as an addition to the curriculum and not as an integral part of learner development. This area has the potential to help learners in their careers and world of work later in life and if not fully integrated into the learning programme, learners may never reach the full potential and possibilities the businesses offer. It thus implies that these should be integrated with not only life orientation and economic and management sciences, but also used as a launching pad for teaching the practical application of a wider variety of skills, such as telephone skills, etiquette, marketing and formal business letters, labour laws and the management of time.

- A massive amount of planning is needed for setting up an *integrated learning programme* for the senior phase, as was done in this study. Should this learning programme not be implemented and improved upon, the Montessori

principles will not be upheld and learners will not gain the full benefits that Montessori schooling could provide.

- The *variety* of different learning programmes between all the classes at the Knysna Montessori School carries with it the implication of a lack of continuity between progressions from one phase of the GET band to the next.

- The senior phase of the General Education and Training Band will further need to be restructured from its present non-integrated approach to include a fully integrated holistic approach to education.

- Furthermore, the timetable will need to be arranged in such a manner as to allow for at least one three-hour uninterrupted working period in the morning and one two-hour working period in the afternoon. This is in line with Montessori practice and will aid learners in developing focus and concentration.

- *Mathematics* and *languages* are naturally integrated into the cultural studies from pre-school to Grade 6. For continuity, and to keep in line with the Montessori culture, mathematics and languages' integration should also be planned for the senior phase of the GET band. It has been pointed out that Grade 7 to 9 learners continue to learn in the concrete, before moving to the abstract. Should the integration of mathematics and language not take place within cultural studies, valuable opportunities for learners to apply theoretical mathematical and language concepts in practice will not be fully extended.

- *Assessment* in the Montessori environment is a combination of teacher observation and OBE assessment practices. Currently, the senior phase of the Knysna Montessori School applies assessment strategies that are in line with OBE methods, tools and techniques. However, should this practice not continue, learners will be at a disadvantage, particularly where peer assessment and self-assessment are involved. Through peer assessment and

self-assessment, learners develop valuable social skills and self-evaluation. These skills will serve them well in later life.

- The focus of the learning programme should be on the many *advantages* revealed in this study. However, the *disadvantage* of the massive amount of *planning* needed implies that these many advantages are not fully achieved. Furthermore, without sufficient and thorough planning, not all the learning outcomes and assessment standards of the different learning areas of the RNCS will be covered, causing learners to lack the prior knowledge necessary for the Further Education and Training Band.

- Another *disadvantage* was the *teachers* within the Grade 7 to 9 class who did not see the sense of integration. Without good teamwork and teachers in the class who are 'pro-integration', the successful implementation of an integrated learning programme cannot be realised. Furthermore, should the current teachers remain within this class, a fully integrated programme will not be successful and learners will not gain the full benefits of an integrated learning programme.

- The *skills* gained by learners, as highlighted in the findings, should be integrated into learning and teaching activities and linked to the assessment standards from the different learning areas, where possible. Should the focus be solely on content and not on skills, the essence of both outcomes-based and Montessori education will be lost. It also implies that there will be a loss of continuity from lower to higher classes and learners will not be able to build on valuable skills they have gained thus far at the Knysna Montessori School.

6.5 RECOMMENDATIONS OF THE STUDY

From the implications above, the following recommendations are made:

- It is suggested that the senior phase of the GET band use *timelines* as an introduction and a reference point for learning and focus on 'key timelines',

rather than the five main timelines used in the lower grades. The reasoning behind this is that learners have very specific areas of study to cover during the Grade 7 to 9 years in preparation for the Further Education and Training Band. Furthermore, in order for the Knysna Montessori School to continue setting the standards and being an example within adolescent Montessori education in South Africa, it is vital that the integrated learning programme for the senior phase of the GET band be implemented.

- More mentorship is needed with the different *businesses* in order to assist learners in gaining valuable social and economic skills. These will be used in later life.

- For the sake of continuity, standardised learning programmes should be set up for the different classes at the Knysna Montessori School. These will eliminate the *variety* in the present learning programmes. It is therefore suggested that teachers have a workshop at the beginning of the year during which the RNCS is compared with Montessori, for integrated curriculum arrangement in the pre-school, foundation phase and intermediate phase, and also that teachers draw up a phase-long learning programme for cultural studies in each area. Such an extensive integrated arrangement of the National Curriculum Statement Grades 10 – 12 (General) for the Further Education and Training Band will not be possible, as learners have different subject choices and are preparing for traditional exit examinations in Grade 12.

- It is suggested that *mathematics* and *language* teachers plan for integration into cultural studies and the businesses. Planning will be needed, not only in terms of the work schedule, but also to arrange activities in such a manner as to allow for mathematics and language integration, as well as assessment activities in line with OBE practices.

- Careful consideration of the *assessment* tasks must be given in order to ensure that the learning outcomes and assessment standards prescribed in the RNCS are covered in each learning area equally. Furthermore, careful record-keeping by the teachers will be required. It is also recommended that

when learners work on integrated projects, the teachers within the senior phase classroom should be given assistance with the assessment of learning outcomes and assessment standards.

- It is recommended that the *disadvantage* of the massive amount of *planning* needed, be reduced by team work and support between teachers in the implementation of the integrated learning programme. To facilitate the implementation of the integrated learning programme, it is recommended that the teachers in the senior phase draw up a work schedule with specific activities, research tasks and themes to be covered throughout the year, based on the learning programme. This will require a great deal of planning and arrangement of activities.

  In order to overcome time constraints, a planning workshop should be held at the beginning of the year, over two or three days, which will allow teachers to be able to fully plan their work schedule. Furthermore, at the end of each term, a brainstorming session should be held in which teachers can critically assess the successful and unsuccessful aspects of the previous term's work, in order to ensure future improvement. A quarterly workshop should also be scheduled for the end of each term, in which planning and preparation for teaching and learning in the coming term can take place.

- To overcome the *disadvantage* of *teachers* who do not see the sense in an integrated learning programme, it is recommended that a restructuring of staff in the senior phase staff takes place. The recommendation is that three teachers will be needed permanently in the classroom, one focusing on languages and the other on mathematics. Two teachers will be responsible for the cultural studies, dividing up the responsibility of the different projects equally. The third teacher will assist the first two. For example, should two teachers be busy with demonstrations of new work, the third teacher will be available to redirect learners, when necessary, within the environment. This is in line with Montessori practices in the lower grades and has proved successful globally throughout Montessori schools.

Furthermore, in order for the self-expression component to be fully explored, the present Further Education and Training Band (FET) art and music teacher should be retained and used within the timetable. Sport should be the responsibility of all three teachers within this age group rather than the current external coaches, in order for mentorship during sport lessons to continue by teachers who know the learners well.

In addition, teachers who will be working within the senior phase will need guidance and weekly team meetings to assist them in mentorship skills of early adolescents. This restructuring implies that some of the teachers currently teaching in the Grade 7 to 9 classroom will have to be offered other positions within the Knysna Montessori School. Decisions will have to be made as to who is best suited for this environment and who is better suited for the Further Education and Training Band.

- It is recommended that the gaining of *skills* should be not only encouraged, but also included in assessment strategies.

Further recommendations are made as follows:

- In-house *training* by experienced teachers will be needed in order to assist the teachers within the Grade 7 to 9 classroom on how to apply an integrated arrangement of the RNCS. This will be done through observations of the teachers within the senior phase environment and the provision of guidance through mini-workshops and positive criticism. Furthermore, these teachers should be required to research adolescent education in general, as well as Montessori education in particular, in order to be well-versed in their field and to continuously keep abreast of all current global practices.

6.6 THE LIMITATIONS OF THE STUDY

Although earnest steps were taken to ensure a detailed, trustworthy study, the following limitations were identified by the researcher:

- The research is limited to one Montessori school in South Africa only and has limited application to other Montessori schools. However, as there are presently no other Montessori schools with a senior phase in South Africa, these schools might be interested in the proposed designed learning programme.

- The study is limited to South Africa, as it studied the South African RNCS within a Montessori environment. Therefore global application is further limited.

- Interviews were conducted only at the Knysna Montessori School, and although it presented an overview of the application of the Montessori method at the Knysna Montessori School, they are obviously limited in their perception of other Montessori schools in South Africa.

- Data were collected through interviews only. However, classroom observations could also have been used.

6.7 RECOMMENDATIONS FOR FURTHER RESEARCH

This study focused specifically on the Grade 7 to 9 year-class of the Knysna Montessori School. Further research could be conducted in the following areas:

- Wider understanding of the application of the Montessori's integrative curriculum arrangement in South Africa could be accomplished through interviews and observations at different Montessori schools in South Africa.

- A more global perspective could be gained through research on the integration of curricula within Montessori schools internationally.

- The application of an integrated curriculum arrangement at the Knysna Montessori School and possible difficulties which arise from its implementation could be researched in order for improvements to the suggested learning programme to be made.

- A study of learners' perceptions of an integrated curriculum arrangement, as opposed to less integration between different learning areas could be made.

- A longitudinal study could be done on Montessori learners who have followed an integrated curriculum arrangement during their adolescent years and their resultant perceptions in regard to life-long learning.

6.8 CONCLUSION

This study focused on the senior phase of the Knysna Montessori School and aimed at presenting an integrated learning programme, combining the RNCS with Montessori's integrated and holistic educational approach. This research study has afforded the researcher the opportunity to explore the RNCS, as well as Montessori's holistic and integrated method of curriculum arrangement.

The use of interviews provided valuable insight into the application of an integrated curriculum arrangement at the Knysna Montessori School from pre-school to grade 9. Furthermore, through document analysis within the grounded theory paradigm, an integrated learning programme for the senior phase of the GET band, based on the RNCS, emerged. The findings suggested that an integrated learning programme, combining the RNCS and Montessori's integrated and holistic education method, is attainable and possible in practice. The implications of the development of an integrated learning programme were highlighted, recommendations were made and suggestions for further research were outlined.

This study is imperative for the Knysna Montessori School, as the current Grade 7 to 9 class is not operating in a truly Montessori manner, and thus an integrated learning programme is called for. The researcher presented the Knysna Montessori School with the integrated learning programme in order to assist teachers in the senior phase with better application of the Montessori methodology.

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APPENDIX 1: ETHICAL CLEARANCE

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Nelson Mandela Metropolitan University

for tomorrow

FACULTY OF EDUCATION

Tel . +27 (0)41 504 4310 Fax. +27 (0)504 1610

Ref: [H08-EDU-ASE -027/Approval]

Contact person: Carol Poisat

7 November 2008

Ms A Nel
Education Faculty
NMMU

Dear Ms Nel

AN INTEGRATED LEARNING PROGRAMME FOR THE KNYSNA MONTESSORI SCHOOL

Your above-entitled application for ethics approval served at the **October 2008** meeting of the Faculty Research, Technology and Innovation Committee (Education).

We take pleasure in informing you that the application was approved by the Committee.

The ethics clearance reference number is **H08-EDU-ASE-027**.

We wish you well with the project. Please inform your co-investigators of the outcome, and convey our best wishes.

Yours sincerely

Prof M M Botha
Chairperson: ERTIC

APPENDIX 2: OPEN-ENDED INTERVIEW SHEETS: STAFF

Interview sheet for staff interviews at the Knysna Montessori School

Name of moderator:	
Position of interviewee:	
Name of observer (independent person doing the field notes):	
Date:	
Time:	

Questions:

1. What teaching qualifications do you have?

---

2. How long have you been teaching?

---

3. How long have you been teaching at the Knysna Montessori School?

---

4. Which age groups have you taught before?

---

5. Which age group are you currently teaching?

---

6. Which learning area in the class do you currently teach?

7.

8. How would you describe the method of teaching at the Knysna Montessori School?

---

9. Please explain your answer?

---

10. Can you please explain how the different subjects of the RNCS are presented in your age group?

---

11. At which stage of your planning do you refer to the RNCS?

---

12. How do you make sure you cover what the RNCS prescribe?

---

13. Is there a set learning programme for your environment, and if so, who drew up this learning programme?

---

14. If no to question 12: How do you go about setting up your year and term planner?

---

15. Do you use the five timelines as the main organiser of content within your age group?

---

16. Will you please give me the different timelines and, in brief, what each covers.

---

17. Can you please give me an example of a typical activity/theme in your environment that uses the integrated approach to cover different learning areas?

---

18. How do you think the RNCS should best be arranged within your age group?

---

19. Do you integrate Languages and Mathematics into your planning and activities?

---

20. If yes, can you please give me an example of how you would integrate Languages and Mathematics? If no, please explain.

---

21. What do you see as the advantages of the integrated approach to the different Learning Areas?

---

22. What do you see as the disadvantages of the integrated approach to the different learning areas?

---

23. How do you make sure that the learners all cover the necessary work within this approach?

---

24. What skills are typically stressed within this approach to teaching?

25. What different methods of assessment do you use within this age group?

26. When do you assess whether learners are achieving the outcomes, as stated in the RNCS?

27. Extra questions:

APPENDIX 3: OPEN-ENDED INTERVIEW SHEETS: SENIOR PHASE

Interview sheet for interview of the senior phase teacher at the Knysna Montessori School

Name of moderator:
Position of interviewee:
Name of observer (independent person doing the
field notes):
Date:
Time:

Questions:

1. What teaching qualifications do you have?

---

2. How long have you been teaching?

---

3. When did you start at the Knysna Montessori School?

---

4. Which age groups have you taught before?

---

5. Which age group are you currently teaching?

---

6. Which learning area in the class do you currently teach?

---

7. How would you describe the method of teaching at the Knysna Montessori School?

---

8. Please explain your answer?

---

9. Can you please explain how the different learning areas of the RNCS are presented in your age group?

---

10. At which stage of your planning do you refer to the RNCS?

---

11. How do you make sure you cover what the RNCS prescribe?

---

12. Is there a set learning programme for your environment, and if so, who drew up this learning programme?

---

13. If no to question 12: How do you go about setting up your year and term planner?

14. Will you please give me the different timelines and, in brief, what each covers.

15. Do you use the five timelines as the main organiser of content within your age group, and if yes, how? If no, why not?

16. How do you think the RNCS should best be arranged within your age group?

17. Have you tried different approaches to integration in the past?

---

18. Can you please give me an example of a typical activity/theme in your environment that uses the integrated approach to cover different learning areas?

---

19. Do you integrate Languages and Mathematics into your planning and activities?

---

20. If yes, can you please give me an example of how you would integrate Languages and Mathematics? If not, please explain.

---

21. What were the success factors of such an integrated theme in the adolescent age group?

---

22. What factors did not work?

---

23. What do you see as the advantages of the integrated approach to the different Learning Areas?

24. What do you see as the disadvantages of the integrated approach to the different learning areas?

25. How do you make sure that the learners all cover the necessary work within this approach?

26. What skills are typically stressed within this approach to teaching?

27. What different methods of assessment do you use within this age group?

28. When do you assess whether learners are achieving the outcomes stated in the RNCS?

---

29. You run businesses with this age group. What businesses are presently run by the young adolescents?

---

30. Do you see these businesses as important? Please explain.

---

31. Are the businesses currently integrated into the curriculum? If so, how?

---

32. If not, should they be integrated and how could they be integrated?

---

33. Extra questions:

APPENDIX 4: OPEN-ENDED INTERVIEW SHEETS: PRINCIPAL

Interview sheet for interview of the Principal at the Knysna Montessori School

Name of moderator:
Position of interviewee:
Name of observer (independent person doing the
field notes):
Date:
Time:

Questions:

1. What teaching qualifications do you have?

---

2. How long have you been teaching?

---

3. When did you open the Knysna Montessori School?

---

4. Could you please give me a brief history of the development of the Knysna Montessori School over the years?

---

5. Which age group are you currently teaching?

---

6. Which learning area in the class do you currently teach?

---

7. Briefly, how would you describe the method of teaching at the Knysna Montessori School?

---

8. Please explain your answer?

---

9. Can you please explain how the different learning areas of the RNCS are presented in your age group?

---

10. At which stage of your planning do you refer to the RNCS?

---

11. How do you make sure you cover what the RNCS prescribe?

---

12. Is there a set learning programme for your environment, and if so, who drew up this learning programme?

13. If no to question 12: How do you go about setting up your year and term planner?

14. Will you please give me the different timelines and, in brief, what each covers.

15. Do you use the five timelines as the main organiser of content within your age group, and if yes, how? If no, why not?

16. Would you please explain the "*hour glass"* metaphor you use when describing the integrated subjects.

17. How do you think the RNCS should best be arranged within your age group?

18. Have you tried different integration approaches of the learning areas in the past?

19. Can you please give me an example of a typical activity/theme in your environment that uses the integrated approach to cover different learning areas?

20. Do you integrate Languages and Mathematics into your planning and activities?

21. If yes, can you please give me an example of how you would integrate Languages and Mathematics? If no, please explain.

---

22. What were the success factors of such an integrated theme in the adolescent age group?

---

23. What factors did not work?

---

24. What do you see as the advantages of the integrated approach to the different Learning Areas?

---

25. What do you see as the disadvantages of the integrated approach to the different learning areas?

---

26. How do you make sure that the learners all cover the necessary work within this approach?

27. What skills are typically stressed within this approach to teaching?

28. What different methods of assessment do you use within this age group?

29. When do you assess whether learners are achieving the outcomes stated in the RNCS?

30. You run businesses with this age group. What businesses are presently run by the young adolescents?

31. Do you see these businesses as important? Please explain.

32. Are the businesses currently integrated into the curriculum? If so, how?

33. If not, should they be integrated and how could they be integrated?

34. Extra questions:

APPENDIX 5: TRANSCRIPTION: PRINCIPAL

INTERVIEW OF THE PRINCIPAL
AT THE KNYSNA MONTESSORI SCHOOL
11JUNE 2009: 15H00

Moderator: First of all I just want to remind you of that letter - it's anonymous, I won't refer to your name.

Position of Interviewee: Principal: Knysna Montessori School.

What teaching qualifications do you have?
NTSD plus Modern Montessori Diploma and Mercy Montessori Diploma.

For which age groups are these diplomas?
3-12 years.

How long you have you been teaching?
30 years.

When did you open the Knysna Montessori School?
Officially in 1997, but we had been practising before then but it was called Tootle Town.

When did you start Tootle Town?
1990.

Could you please give me a brief history of the development of the Knysna Montessori School over the years? So you opened up in 1997. With what classes?
The first year was Grade 1. We had Pre-School until then, a Toddler class and a Pre-School class and then our first 6-9 class.

So 1997 was Grade 1?
No, 1997 was Grade 1. 1998 was Grade 2-3 as well. The 9-12 class – Dana joined us in the half year when I'd already run the class for 6 months, the 9-12 class.

I came in 2002; I think that she was the year before me.

I think it was 2000. **When did we open the Middle School?** In 2004. In 2003 we carried our Grade 7 and then in 2004 we opened up the hostel.

And then our high school?
And our first matrics in 2008.

Which age group are you currently teaching?
12-15's. Grade 9.

Which learning area in the class do you currently teach?
Mathematics.

How would you describe the method of teaching at the Knysna Montessori School? I would say group work – individual or group – because we often do individual work as well.

Do you want to explain or expand on this, please?
That the child learns that you have – you are able to teach the child more easily when they are in a small group because you can see the progress of each individual child, instead of missing some of the children where you have an open classroom with students and teaching – it's more directing each child's work than teaching.

Can you please explain how the different learning areas of the RNCS are presented in your age group?
Well, Maths and English are presented in small groups, but very much on the lines of traditional teaching. However, we try to link all the other subjects under a theme or key timelines for the term. This often includes English and Maths work.

At which stage of your planning do you refer to the RNCS?
Right in the beginning, when you do planning for the term or for the year.

How do you make sure you cover what the RNCS prescribe?
Through assessing and having a schedule of assessment, that you plan to assess certain areas, and through tests in those areas that you're working on.

Is there a set learning programme for your environment, and if so, who drew up this learning programme?
No. We're working towards the curriculum statements.

If no to the previous one then how do you go about setting up your year and term planner?
By looking at what is in the WCED, looking for text books that are available covering the syllabus and using different text books for assessment purposes.

Will you please give me the different timelines and, in brief, what each covers.
First – Creation timeline, which covers from the Big Bang to Man, It is the Geography, Science, and Geology timeline. Second – Timeline of Life – which is very much Biology timeline from the first living cells, organisms, until man. The Third timeline, I'm going to put in as the River of Life – which is the timeline that covers the flow of the blood through the organs of the body and it's the study of the human organs, and structure, bone structure.

Why doesn't it fall into the line of life?
It does. It's the extension timeline. It's actually called a key timeline – there are 5 main timelines and that's one of the main key timelines.

A key timeline is a main timeline, hey?
No, it's not. There are 5 - the key timeline is a sub timeline. The fourth, or actually the third, because that's the key timeline under that second timeline. The third timeline is the timeline of Man, which is the technology and historical timeline covering the needs of man through the ages and the development of man through the ages, and the fourth timeline is the numeracy time which covers Science and Maths development through the ages. And the fifth is the literacy timeline which covers writing and reading and the development of technology from printing presses to computers to whatever.

Would the numeracy come before literacy or are they interchangeable?
Numeracy comes first because although it covers the Maths and Science timeline it also covers the ancient civilisations when most of our basic Maths concepts were formed – Pythagoras' theorems and all of the early Maths was developed during the early civilisation so it does cover the early civilisations.

Do you use the five timelines as the main organiser of content within your age group and if yes, how? If no, why not?
Yes, we do. I would really like it to be done more, but yes. You can take under those timelines, extract key timelines from that to suit the syllabus so that the main timeline would introduce the topic and the key timelines would then cover and hone in on to the topic that you would like to expand on but then at the end of it you need to take the knowledge learnt and feed it back to the main timeline, so that they see it in perspective. So you start with the broad picture, you delve

into finer details and then bring it back to the broad picture again and how this, whatever happens, has affected the development.

So now, you said that you are doing that, to what extent are you doing it?
Well, seeing as those are not my subjects, I do firstly insist one term where I take over and help those staff to do it and then I advise them on doing it but not all the staff are trained enough to deal with this effectively and I would like to see the 12-15 class with 30-35 children in a class with two teachers, a Maths/Science teacher and an English/Cultural teacher so that the subjects are linked more carefully. It will be done very easily.

Would you please explain the "hour glass" metaphor you use when describing the integration of subjects.
That is going from the broad picture, narrowing it down into detail and then bringing it back to the broad again. Do you want an example?

Yes, that would be nice, thank you.
for example your timeline is the timeline of numeracy. You would give an overview of that timeline and the key timeline would be an extension of that timeline and because it suits the 12-15 age group syllabus or proposed OBE syllabus it would cover wars through the ages. The Grade 7's study in History the years from 1000 to 1300 basically - the slave trade and so on. The Grade 8's do from 1300 to 1600 and the Grade 9's then cover the latter years up until today, so the timeline could be covered with all three classes. So your key lines are covering wars through the ages and the wars would then depict what the needs were during that time, what were the causes and effects of wars and then when you bring it back in the end, what were all the causes and effects of wars throughout the ages and what have we learnt by that for the future – what it is we as adults need to understand so that if there are wars that appear that we understand what causes them.

Why the timeline of numeracy?
It falls under numeracy because it goes back to the ancient civilizations. It is a historical timeline. It's on the history. So you're doing development – yes it is, but it falls under the ancient civilizations and that spans until about 500 AD and then from there it's your Grade 7 syllabus until about 1300. You have the thousand years Dark Ages when practically nothing happened except religion and the development of religion and then from there onwards the slavery, but slavery links to the ancient civilizations – it was slavery. So that carries right through. From there you've got a starting point and the causes of wars at that time is already there – the Roman Empire falls – why? So you've already looked at causes and effects during <u>that</u> timeline and then you take it into your own key timeline and say alright, now let's have a look at the wars during these years

and what was the influence on slavery and abolishing slavery and then the next is the Industrial Revolution, the French Revolution, those historical periods and then finally the 1st World War, 2nd World War, and Cold War and so on in the Grade 9 syllabus – so it's all links. And those causes and effects are similar.

But why numeracy?

Because numbers started in the ancient civilizations – its numbers and numbers played such an important part with money because money is the crux of all war. So you see. And numbers – you get over populated and what happens? You have a war to get rid of all the numbers.

How do you think the RNCS should best be arranged within your age group, ideally?

I think it's too biased, it's too restricted. It doesn't allow for enough exploration of more facts. It concentrates too much on spitty little facts and I feel that although those are important we don't allow the child to expand the knowledge further and take it further which, if you do it on a big scale, it can be. You also need to allow children to take what they've learnt and put it into a different perspective, for example the imaginary island project, which then takes prior knowledge which is ideally done at the end of the year as an extra project and that would take all learning that has taken place during the year to be culminated in an imaginary island where all the facts that they have learnt about economics, about technology, about history, geography – everything comes back into one and that again is the holistic "hour glass" approach – whatever the child has learnt is put into a project, like imaginary island.

Yes, that will bring it together at the end, and during the rest of the year? You said earlier that you would like to see them 30-35 with Maths and science, English and Culture – how do you see that linking happening?

That linking of the two sections of the classroom – well with Maths and Science –would go the first timeline and the numeracy timeline – the Creation timeline, and the numeracy timeline. So, although it covers a lot of history you also... So your Maths includes Science and History and Maths. Your English includes Technology, Biology, Geography and some of the Natural Sciences – the Biology of the Natural Sciences – you split the subjects on two fields - so you're interlinking but on all of those the 2 teachers work together so that English is included with the one timeline you would decide to do a... for example, the Creation timeline and another timeline during that term -2 timelines are going at the same time and in both of them they can choose whether they want to do a poem on wars or do they want to do a poem on Technology or Geography or whatever - Biology. So you can link your English to both topics – you can link Maths to both – it might be information that they've collected about the weather in geography which can be put into graphs then for Maths.

Have you tried different integration approaches in the different learning areas for this age group?
Yes.

Can you please give me an example of a typical activity/theme?
Not necessarily a theme. The thing is to be aware that a child who is not interested in a subject can be made interested in that subject if it is approached from a different angle. Say for example, a child who is avoiding the Maths area but is intensely interested in some form of technology project that they are doing or geography project that they are doing, that you can go to that child and link what they're learning in Maths and what they are interested in. To me that is more the integration that I'm looking for than actually trying to cross over the subjects all the time. It is a subtle linking of subjects, not a pre-planned. The pre-planning is done by the staff but the child, to approach the child, to get him interested in what he is interested in but bringing in the subject you want him to do. So that's more important to me, integration.
Do you integrate Languages and Mathematics in your planning and activities?
Yes, in all of them.

Can you please give me an example of how you would integrate Languages and Mathematics?
OK. I've just told you, integrating geography. How else?

No. That's fine. We've got that weather example.
What were the success factors of such an integrated theme in the adolescent age group? You did, for instance, an imaginary planet and the Nekkies project. What would you say were the success factors of such themes in the adolescent age group, in particular? First of all, you create an interest in learning. Secondly, because suddenly it's not a typical classroom subject... situation where you're receiving information. They're researching the information; they're getting out there and finding information for themselves. They explore and find far more information than you could ever imagine. They come up with... if you look at for example the Nekkies project, they had to find ways and means of generating electricity, water etc. for that community project and they came up with tidal wave power, and wind power and tidal power and wave power – so it's two of them. They also came up with hydro-electric power. The go into so much detail – I didn't expect them to go into so much detail. They go into so much more detail than I anticipated. Their house planning, their insight - by visiting the township - into how people lived, with a water point with so many houses to share. It horrified them and it was a very good eye opener to our children, so they learnt a lot more than they would in the classroom situation.

What factors did not work?

I wouldn't say did not work. They found difficulty in group work and time management and fairly sharing the work load but that's a learning curve.

Ja, that's not the approach basically.

It was the skills that they had to develop and it delayed the project where it could have been done far more quickly had they had those skills. They didn't have those skills.

It could be age related too, because at that age you don't manage time very well, do you?

No. It is age related but I wouldn't say there was anything else was negative about the project, I think all round it was a very positive result.

What do you see as the advantages of the integrated approach to the different Learning Areas?

You give them a far broader general knowledge and it helps them to link abstract, isolated thoughts – when they're just taught geography, that's geography and this is history and this is technology and they don't see that bigger picture and how they are all important to one another. If you can integrate them under themes like this, they actually see where the history falls in line with the technology and where the technology falls in line with the science and how the one is important to the other.

Why is that important, to think like that?

To see things as a whole and not to isolate thoughts particularly as teenagers, they need to see the big picture. They're so egotistical and self centred that they don't see other people's point of view and by doing this, this integration, they actually look at the whole situation that arise, amongst the group they actually have a better open view on other people's opinions and other people's ideas - the skill that helps to develop them themselves as human beings.

What do you see as the disadvantages of the integrated approach to the different learning areas?

I feel that the staff need to be exceptionally well trained and in the method of applying integration that they need to learn that they don't need to know everything that they impart. They're not there to impart knowledge, that they're there to direct children to discover knowledge, and to accept that they don't have to know everything. All they need to do is to show the way of how to find more information and until a staff member can let go of that 'I am the teacher who knows everything and the child that knows nothing', integration like that does not take place.

How do you make sure that the learners all cover the necessary work within this approach?

I have found with this integrated approach which usually ends in a demonstration of each group demonstrating what they have researched and then we organise a quiz and through the quiz, even though they put less work in than the others, they pick up far more knowledge than they would ever have learnt had the teacher driven the class and taught them a few things and made them the notes.

This is what you discovered when you did the quiz, that those who didn't think they were going to know things they didn't know?

Absolutely new. They came up with answers that I didn't expect them to have remember or have even thought about.

What skills are typically stressed within this approach to teaching?

The skills that you're teaching is research skills, questioning skills, because even the children learn how to question, to work in groups and pull their weight , share in the load of responsibility, how to get on with others in difficult situations, how to sort out problems, how to take responsibility for what is expected of you.

What different methods of assessment do you use within this age group?

Peer assessment, group assessment, individual testing and marking, exams.

When do you assess whether learners are achieving the outcomes stated in the RNCS?

On an on going basis.

You run businesses within this age group. What businesses are presently run by the young adolescents?

Chickens, garden, hot house, – well egg production with the chickens, car wash, catering - breakfast and suppers for the hostel as well as baking, that's one occupation, preserves, wood chopping, maintenance and crafts, magazine, banking, and tuck shop. There are 10.

Do you see these businesses as important? Please explain.

Very. Let's just say first of all it is teaching them entrepreneurship skills but that is only one aspect of it, it does give hands-on practical experience, entrepreneurship skills, including working with a group, financial difficulties, dealing with disaster, dealing with labour laws but it also teaches them to be punctual, to follow through what they started, to time manage their time, how to manage their time. It teaches them other people depend on them so they have to be responsible. It teaches them to think laterally.

I**n what sense?**

To explore other options of creating business, how could we get rid of... what else could we do to improve the business. So lateral thinking comes into it. It also teaches them how important marketing is. It's all very well to start a business and know how to run a business but if you can't market it, you lose it. Social skills, ja, it gives them social skills.

Are the businesses currently integrated into the curriculum? If so, how?

Into EMS, yes, and into technology, because technology is preserves. They also deal with construction of structures and so on, so it is integrated with Technology and EMS.

Which business does the structures?

The maintenance. But you also get it in the gardening – where they erect fencing for climbers that the poles that they plant like this won't work, if you strap them like this, it actually supports the plants much better, if you put a stake in behind it works better... – it's all structures.

A couple of extra questions:

If we had to integrate some of the subjects, not the Maths, but the other subjects would you then perhaps need to look at restructuring your current staff and do you think it is possible with the current staff you've got can do it?

Some, some not.

Any suggestions of how to overcome that? So you don't think training would necessarily help?

It takes a special teacher, a special person, that is prepared to be an on-going learner and if that teacher is not prepared to be an on-going learner they will not achieve this. They also need to be self disciplined and ordered.

Why is the order so important?

Because if you want to teach children order you have to be ordered yourself, besides that, it takes a lot of order to make sure that you are covering all aspects of the curriculum within what you're doing and not just because you like history, punting the history and forgetting about the rest.

As you know, I've been trying to set up a learning programme for us to integrate the learning subjects, not the Maths and English because I think that will come naturally, but the other ones. Would it be helpful, then, for us to have almost like a framework to work from in the school as it is now and then refine it from there, in practice?

Yes, it would. I definitely think a framework would be very important. For staff, for a start, to be able to say well this is what you've got to do – that this is your timeline - these are the options that

you can do. I also feel if you limited the number of staff that are coping with that, you could actually force those staff members to take on the role of covering all those subjects, whereas if you're still leaving them with this is your subject, they are going to forget about the others and not incorporate them, but you're isolated them, this is your subject, so why must they bother about others, whereas if you insist on only 2 teachers within a classroom of 30 or 35 children they are forced to actually cover all subjects and that would immediately make them more aware of handling and using our form. At the moment we're still too traditional, we're still sitting with teachers that are teaching a subject. It is financial to a certain extent because we have to carry those teachers for the high school, so we haven't got certain times for them to come in to other classes, so financially it wouldn't warrant it at this point – we haven't got enough children in the high school to carry the load of all their staff, so financially it's part of the reason why it's not working, but I would like to work towards that so that we do have only 2 teachers in the classroom for 30 children, 30 to 35 max.

My other question then is in terms of your time table, when we do grow more integrated, would you then see that class working in a 3 hour period?

Yes, they would do occupation for an hour and then go into a 3 hour working cycle and the afternoon would then be again be a 2 hour working cycle.

It should be interesting to see if it can work.

It will work. You just have to have the right teachers.

Currently, how many children are there in the middle school? So if you were to aim for your 30 to 35 would you do it with this group?

If the (Head teacher of the middle school) and I were in that classroom alone we could handle the whole class and cover all the subject. It wouldn't be a problem.

With an assistant?

Not necessarily, no, although it would be nice to have an assistant to do the signing out, when someone goes out of a class, to keep control while teachers are teaching. That could be a high school teacher who's not teaching in that group but acting as assistant within that classroom but you allocate that teacher all their free periods, to that classroom.

So it would need to be a strongly disciplined teacher.

Yes

Then in terms of assessment because obviously the Grade 9's have got different criteria for the IEB. How would you see to bridge that?

I don't see it as a problem at all. You're still – we're doing it at the moment. When we did projects – when we did the Nekkies we used that same project for Maths, for Technology, for History, EMS – we used every single subject within that project.

So it actually saves the children on work, doesn't it, because they do one project for many subjects.

Yes, it gives them more time to delve in deeper into the topic that they're interested in, than it does when you compartmentalising the subjects.

Your integration – do you still see it as timelines or - look Montessori suggested different ways of doing the High school and Middle School in particular and when I had my interview with Middle School teacher on Tuesday she said she finds that they're a little bit beyond the timelines, they're getting bored, they've been there, done that and just doing it in different ways.

No. I don't agree. It is approach of the timelines that makes them boring. The timeline is an introduction, merely an introduction and a revision of what they already know. Just as you would revise what you've done before, before you started a Maths exercise, so you would revise a timeline before you go into it – one period.

So you wouldn't go and tell the story of God with No Hands again?

No - just a revision of it and then you go into the key timeline that you're dealing with. They're not developing enough key timelines and those key timelines re-link back with the hour glass system – so you go back to it and see where it fits in. What I do feel though is actually, what does the 9-12 cover must be systemised within their timelines, so actually this is what you cover and in the 12-15 this is what you're covering in your timeline because the government syllabus repeats again, the three years, the Grade 4, 5 & 6, the syllabus is almost identically repeated more detail but the content is still basically the same, you're still doing slavery - for goodness sake, they'd be bored stiff with that by the time they finish grade 9 - I don't blame them but why do they do it? All they've done in the Pre-School and the 6-9 is expose the child to all this multitude of what there is to discover, they haven't done research on it, little elements of research, those 6 – 9's when you work with them, they can't concentrate on more the one day so then they've had enough of it, then they try something different. When they get to the 9-12's it's more working on a project and laying out a project so when you're doing, for example the geography section, you could one year – and you need to work on a 3 yr rotation system – so you're looking at biomes one year when you're doing the biology timeline. The second time that you look at that timeline, you're not going to do biomes, you're going to take that timeline and you're going to research a second aspect of it, you're going to look at for example extinct animals or animals that are becoming extinct and the third time you're going to look at, within that same timeline, you're going to look at something

different other than biomes in that same timeline, something different , for example you could do pond life which is different, there are ponds in all different biomes but basically pond life is different, it's similar, so you could then delve into that and perhaps you can link it with geography and land forms and so on, so you could take 3 different aspects of every timeline and circulate them but they're not going to be what is covered in the 12 -15.

But for – according to the curriculum there are certain things that will be repeated so you actually have to cover that in 9 -12.

They are covering such an elementary section of it that you can put it in – and it doesn't - you can still link it but in such a mediocre way that they're hardly even – but you're expanding what they have to do into so much more. They have got to do classification of animals in that timeline. That is what they have to do. Well, you're classifying animals in the biomes. You're still going to do classification of animals but in the biomes - you're classifying animals when you do pond life. You're again classifying animals, they're asking for classification, so you're expanding on each section - so take what they want you to do but it's just a tiny little bit of what you can give the child, when all they have to do is classification. So expand it, open it up.

And then in your age group? Is it a similar thing again?

Again - the same thing again.

My next question, would you keep the Grades 7, 8 and 9 separate and you have a 3 year cycle or would you do slavery one year and then all 3 grades do it and in 3 years time again we only repeat it?

I'd do it like that -it's much easier to work on a 3 year cycle. However, your Grade 9's have got to cover certain topics which might make it difficult, so you might in the 12-15 because of the IEB we might have to stick to it but in your timeline you can actually branch them out to different ages. You know, as I said the history syllabus is actually divided into time periods and the music is divided into time periods so you can do it and even with ... they do chemistry – you can do a timeline that incorporates chemistry but your Grade 7's you only expect to do that much and the Grade 8's are expected to do that much and the Grade 9's are expected to do more but it's all on chemistry.

So it's almost a sub timeline off your key timeline, can I say, for your Grades.

Yes. So you say to them this is your timeline, that's one lesson. The second is taking the key timeline and saying this is what we're studying. Grade 7, here's your sheet; this is what you'll be researching. Grade 8, this is what you'll be researching, or link it and the groups have all got 7, 8 and 9's in them, and you see that you've got all three, then say to them within the group, this is for

the Grade 7's in your group, this is for the Grade 8 so you actually specify within your topic that you're going to give out to them.

Ja, that could also be interesting. Do you think it's necessary for them to work with different age groups in a group?

Much better. Far better. They actually learn from each other and I would set on each direction for the study of the key timeline, I would say this is your group - you're studying this and for the Grade 7, this is for the Grade 8, within your group you need to do that task, this is for the grade 8's in your group, and then they culminate it all together.

Fantastic piece of planning, to get that sorted out. That sounds like it can work. The other question, if you do a 3 year cycle though, what about the cognitive development of those teenagers, because your youngsters might not be capable of grasping the same thing that the grade 9's can.

Well, this is what I say. In the 12 – 15 I wouldn't do the 3 yr cycle. The 9-12 I would do a 3 year cycle because it's more flexible and the elements that you're teaching them they will learn within those 3 years and you're not examining them each term, that they have an exam to write on each topic – you're just giving them tests, general knowledge tests, that kind of thing as your assessment and you're also observing and assessing them for skills more, because this is OBE this is outcome based curriculum, what is your outcome or skills, not content, so you're looking for skills that you're developing rather and to me the most important is to specify the skills that need to be developed within the 9-12 and the 12-15 not necessarily the content of information that you're giving them. But the skills are more important and to me more emphasis should be placed on the skills rather the emphasis on content, of knowledge. They must be in the 3 year age group but your timeline would not be repeated on a 3 year cycle, you wouldn't have certain topics that you get or key timelines repeat on a 3 year cycle. Theirs would have to be on a yearly cycle. So just that you would allocate certain work within that key line according to the Grade.

So it's different every year. They might not do the same key timeline but actually go to different details to keep them interested.

Ja.

You signed a form to say that you would be anonymous and that you would not be mentioned. I would like permission now to quote you on certain things throughout this thesis.

Ja, sure.

Thank you very much.

APPENDIX 6: STUDY OF THE EARTH

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
NS7.1.1 Plans investigations: Plans simple tests and comparisons, and considers how to make them fair.	NS8.1.1 Plans investigations: Identifies factors to be considered in investigations and plans ways to collect data on them, across a range of values.	NS9.1.1 Plans investigations: Plans a procedure to test predictions or hypotheses, with control of an interfering variable.
NS7.1.2 Conducts investigations and collects data: Organises and uses equipment or sources to gather and record information.	NS8.1.2 Conducts investigations and collects data: Collects and records information as accurately as equipment permits and investigation purposes require.	NS9.1.2 Conducts investigations and collects data: Contributes to systematic data collection, with regard to accuracy, reliability and the need to control a variable.
NS7.1.3 Evaluates data and communicates findings: Generalises in terms of a relevant aspect and describes how the data supports the generalisation.	NS8.1.3 Evaluates data and communicates findings: Considers the extent to which the conclusions reached are reasonable answers to the focus question of the investigation.	NS9.1.3 Evaluates data and communicates findings: Seeks patterns and trends in the data collected and generalises in terms of simple principles.
NS7.3.1 Understands science as a human endeavour: Compares differing interpretations of events.	NS8.3.1 Understands science as a human endeavour: Identifies ways in which people build confidence in their knowledge systems.	NS9.3.1 Understands science as a human endeavour: Recognises differences in explanations offered by the Natural Sciences Learning Area and other systems of explanation.
NS7.2.1 Recalls meaningful information: At the minimum, recalls definitions and complex facts.	NS8.2.1 Recalls meaningful information: At the minimum, recalls procedures, processes and complex facts.	NS9.2.1 Recalls meaningful information: At the minimum, recalls principles, processes and models.
NS7.2.2 Categorises information: Compares features of different categories of objects, organisms and events.	NS8.2.2 Categorises information: Applies classification systems to familiar an unfamiliar objects, events, organisms and materials.	NS9.2.2 Categorises information: Applies multiple classifications to familiar and unfamiliar objects, events, organisms and materials.

NS7.2.3 Interprets information: Interprets information by identifying key ideas in text, finding patterns in recorded data, and making inferences from information in various forms (e.g. pictures, diagrams, text).	NS8.2.3 Interprets information: Interprets information by translating tabulated data into graphs, by reading data off graphs, and by making predictions from patterns.	NS9.2.3 Interprets information: Interprets information by translating line graphs into text descriptions and vice versa, by extrapolating from patterns in tables and graphs to predict how one variable will change, by identifying relationships between variables from tables and graphs of data, and by hypothesizing possible relationships between variables.
NS7.2.4 Applies knowledge: Applies conceptual knowledge by linking a taught concept to a variation of a familiar situation.	NS8.2.4 Applies knowledge: Applies conceptual knowledge to somewhat unfamiliar situations by referring to appropriate concepts and processes.	NS9.2.4 Applies knowledge: Applies principles and links relevant concepts to generate solutions to somewhat unfamiliar problems.
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].
GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field

GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].
T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: · identifying technologies and methods; · considering the source, resources and copyright laws; · uses search techniques; · extracts relevant data for specific purposes; · produces meaningful summaries.	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
LO7.3.5 Demonstrates and reflects on decision-making skills.	T8.1.1.4 Uses appropriate technologies and methods to: · collect relevant data from different sources or resources; · extract relevant data; · make meaningful summaries; use information to justify and support decisions and ideas.	T9.1.1.4 Uses a variety of available technologies and methods to: · locate (e.g. use library referencing system, database searches, indexes); · collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); · compare; · sort; · verify, · evaluate (e.g. cross-checking different sources or resources); · store information (e.g. filing systems, indexes).
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	LO9.3.5 Applies goal-setting and decision-making strategies.
	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	
	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	

APPENDIX 7: STUDY OF LIVING THINGS: HUMAN BODY AND PLANTS AND ANIMALS

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
NS7.2.1 Recalls meaningful information: At the minimum, recalls definitions and complex facts.	NS8.2.1 Recalls meaningful information: At the minimum, recalls procedures, processes and complex facts.	NS9.2.1 Recalls meaningful information: At the minimum, recalls principles, processes and models.
NS7.2.2 Categorises information: Compares features of different categories of objects, organisms and events.	NS8.2.2 Categorises information: Applies classification systems to familiar an unfamiliar objects, events, organisms and materials.	NS9.2.2 Categorises information: Applies multiple classifications to familiar and unfamiliar objects, events, organisms and materials.
NS7.2.3 Interprets information: Interprets information by identifying key ideas in text, finding patterns in recorded data, and making inferences from information in various forms (e.g. pictures, diagrams, text).	NS8.2.3 Interprets information: Interprets information by translating tabulated data into graphs, by reading data off graphs, and by making predictions from patterns.	NS9.2.3 Interprets information: Interprets information by translating line graphs into text descriptions and vice versa, by extrapolating from patterns in tables and graphs to predict how one variable will change, by identifying relationships between variables from tables and graphs of data, and by hypothesizing possible relationships between variables.
NS7.2.4 Applies knowledge: Applies conceptual knowledge by linking a taught concept to a variation of a familiar situation.	NS8.2.4 Applies knowledge: Applies conceptual knowledge to somewhat unfamiliar situations by referring to appropriate concepts and processes.	NS9.2.4 Applies knowledge: Applies principles and links relevant concepts to generate solutions to somewhat unfamiliar problems.
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	GS9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].

GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].
LO7.1.1 Proposes ways to improve the nutritional value of own personal diet.	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
LO8.1.7 Describes what a healthy lifestyle is in own personal situation, as a way to prevent disease.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.3.5 Applies goal-setting and decision-making strategies.

LO7.3.5 Demonstrates and reflects on decision-making skills.	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries; use information to justify and support decisions and ideas.	LO9.1.1 Illustrates and evaluates the influence of ecological, social, economic, cultural and political factors on own personal choice of diet.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.		LO9.1.3 Investigates personal and social factors that contribute to substance abuse and suggests appropriate responses and rehabilitation options.
T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	

APPENDIX 8: STUDY OF LIVING THINGS: ENVIRONMENTAL PROJECT

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
NS7.3.2 Understands sustainable use of the earth's resources: Analyses information about sustainable and unsustainable use of resources.	NS8.3.2 Understands sustainable use of the earth's resources: Identifies information required to make a judgement about resource use.	NS9.3.2 Understands sustainable use of the earth's resources: Responds appropriately to knowledge about the use of resources and environmental impacts.
NS7.1.1 Plans investigations: Plans simple tests and comparisons, and considers how to make them fair.	NS8.1.1 Plans investigations: Identifies factors to be considered in investigations and plans ways to collect data on them, across a range of values.	NS9.1.1 Plans investigations: Plans a procedure to test predictions or hypotheses, with control of an interfering variable.
NS7.1.2 Conducts investigations and collects data: Organises and uses equipment or sources to gather and record information.	NS8.1.2 Conducts investigations and collects data: Collects and records information as accurately as equipment permits and investigation purposes require.	NS9.1.2 Conducts investigations and collects data: Contributes to systematic data collection, with regard to accuracy, reliability and the need to control a variable.
NS7.1.3 Evaluates data and communicates findings: Generalises in terms of a relevant aspect and describes how the data supports the generalisation.	NS8.1.3 Evaluates data and communicates findings: Considers the extent to which the conclusions reached are reasonable answers to the focus question of the investigation.	NS9.1.3 Evaluates data and communicates findings: Seeks patterns and trends in the data collected and generalises in terms of simple principles.
NS7.3.1 Understands science as a human endeavour: Compares differing interpretations of events.	NS8.3.1 Understands science as a human endeavour: Identifies ways in which people build confidence in their knowledge systems.	NS9.3.1 Understands science as a human endeavour: Recognises differences in explanations offered by the Natural Sciences Learning Area and other systems of explanation.

T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	GSGS8.3.3 Investigates possible ways of reducing resource consumption [makes choices].	GS9.2.3 Explains how sustainable development could impact positively on people, places and environments [people and the environment].
	GS8.3.4 Makes suggestions to guide sustainable living practices in a particular context [makes choices].	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries • use information to justify and support decisions and ideas.;	
LO7.3.5 Demonstrates and reflects on decision-making skills.	AC8.2.1.3 Uses the Arts to demonstrate an awareness of environmental concerns.	LO9.3.5 Applies goal-setting and decision-making strategies.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	
	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	
	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	

APPENDIX 9: STUDY OF SCIENTIFIC AND TECHNOLOGICAL DISCOVERIES

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
T7.1.1.3 Investigates by performing simple practical tests relating to aspects of the technological knowledge areas (Structures, Processing, and Systems and Control).	T8.1.1.3 Develops and performs practical tests in the technological knowledge areas (Structures, Processing, and Systems and Control).	T9.1.1.3 Develops and performs practical testing procedures to determine or compare the suitability or fitness for purpose of relevant properties of materials, electrical or mechanical systems, structures, processes or finished products.
T7.2.1 Structures T7.2.1.1 Demonstrates knowledge and understanding of structures in terms of: • specific properties and use of materials (e.g. water resistance, thermal insulation, fire resistance); • stability (e.g. base size, centre of gravity); • strengthening (e.g. corrugation, laminating, reinforcing); • joining techniques.	**T8.2.1 Structures** T8.2.1.1 Demonstrates knowledge and understanding of frame structures: • the use and application of basic structural components (e.g. columns, beams, arches, buttresses, struts, stays, guys, ties); • reinforcing techniques for frame structures (e.g. triangulation, webs and fillets, orientation and cross-sectional area of members); • how frame structures can be made strong (e.g. relationship between the size and shape of the base, the centre of gravity and stability).	**T9.2.1 Structures** T9.2.1.1 Demonstrates knowledge and understanding of structures: • properties of materials that affect their performance in structures (e.g. mass, hardness, stiffness, flexibility, corrosion resistance, strength in tension, compression, shearing); • analysis (no calculations) of the effects of different loads (even/uneven, static/dynamic).

T7.2.2 Processing T7.2.2.1 Demonstrates knowledge and understanding of how materials can be processed to change or improve properties (e.g. strength, fire resistance, waterproofing, taste, volume, texture).	**T8.2.2 Processing** T8.2.2.1 Demonstrates knowledge and understanding of how materials can be processed to change or improve their properties by adapting them to suit particular purposes: • to withstand forces (e.g. tension, compression, bending, torsion, shear); • to increase strength or life-span; • how specific properties suitable for packaging can be achieved.	**T9.2.2 Processing** T9.2.2.1 Demonstrates knowledge and understanding of how materials can be processed (e.g. galvanised, frozen, dried, painted, varnished, electroplated) to change or improve properties (life-span), and how recyclable materials can be re-manufactured.
T7.2.3 Systems and Control T7.2.3.1 Demonstrates knowledge and understanding of mechanical systems that change a direction of movement using components (e.g. cams, pistons, pivot and slider, eccentric wheels), and/or the value of force in systems (e.g. lever systems, linked lever systems, pneumatic or hydraulic systems), and represents them using systems diagrams.	**T8.2.3 Systems and Control** T8.2.3.1 Demonstrates knowledge and understanding of how mechanical systems (e.g. pneumatic or hydraulic systems, gears, belt drive systems, pulley systems, linked lever systems) convert motion and force to give mechanical advantage, and represents them using systems diagrams.	**T9.2.3 Systems and Control** T9.2.3.1 Demonstrates knowledge and understanding of interacting mechanical systems and sub-systems by practical analysis and represents them using systems diagrams: • gear systems • belt drive or pulley systems with more than one stage; • mechanical control mechanisms (e.g. ratchet and pawl, cleats); • pneumatic or hydraulic systems that use restrictors; • one-way valves; • systems where mechanical, electrical, or pneumatic or hydraulic systems are combined.
T7.2.3.2 Demonstrates knowledge and understanding of electrical circuits with more than one output device in the circuit (series and parallel), and represents them using systems diagrams.	T8.2.3.2 Demonstrates knowledge and understanding of how electrical circuits with more than one input or control device will work based on different logic conditions ('AND' and 'OR' logic), and represents them using circuit diagrams, systems diagrams and truth tables.	T9.2.3.2 Demonstrates knowledge and understanding of how simple electronic circuits and devices are used to make an output respond to an input signal (e.g. resistors, light-emitting diodes, transistors, push or magnetic switches, thermistors, light-dependent resistors).

T7.3.3 Bias in Technology T7.3.3.1 Expresses an opinion that explains how certain groups of society might be favoured or disadvantaged by given products of technology.	**T8.3.3 Bias in Technology** T8.3.3.1 Produces evidence that details opinions, backed up by factual evidence, about the effect of technological solutions on human rights issues (e.g. age, disability).	T9.3.1.1 Indigenous Technology and Culture Explores, compares and explains how different cultures in different parts of the world have effectively adapted technological solutions for optimum usefulness.
T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods • considering the source, resources and copyright laws • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources • extract relevant data • make meaningful summaries • use information to justify and support decisions and ideas	**T9.3.3 Bias in Technology** T9.3.3.1 Produces evidence that details opinions, backed up by factual evidence, about bias (e.g. gender, age, access) in making technological decisions, and suggests strategies for redress.
T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: · identifying technologies and methods; · considering the source, resources and copyright laws; · uses search techniques; · extracts relevant data for specific purposes; · produces meaningful summaries.	T8.1.1.4 Uses appropriate technologies and methods to: · collect relevant data from different sources or resources; · extract relevant data; · make meaningful summaries; use information to justify and support decisions and ideas. .	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; sort; verify; evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].

HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].
HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].

HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation].
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].
HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
NS7.1.1 Plans investigations: Plans simple tests and comparisons, and considers how to make them fair.	NS8.1.1 Plans investigations: Identifies factors to be considered in investigations and plans ways to collect data on them, across a range of values.	NS9.1.1 Plans investigations: Plans a procedure to test predictions or hypotheses, with control of an interfering variable.
NS7.1.2 Conducts investigations and collects data: Organises and uses equipment or sources to gather and record information.	NS8.1.2 Conducts investigations and collects data: Collects and records information as accurately as equipment permits and investigation purposes require.	NS9.1.2 Conducts investigations and collects data: Contributes to systematic data collection, with regard to accuracy, reliability and the need to control a variable.
NS7.1.3 Evaluates data and communicates findings: Generalises in terms of a relevant aspect and describes how the data supports the generalisation.	NS8.1.3 Evaluates data and communicates findings: Considers the extent to which the conclusions reached are reasonable answers to the focus question of the investigation.	NS9.1.3 Evaluates data and communicates findings: Seeks patterns and trends in the data collected and generalises in terms of simple principles.

NS7.3.1 Understands science as a human endeavour: Compares differing interpretations of events.	NS8.3.1 Understands science as a human endeavour: Identifies ways in which people build confidence in their knowledge systems.	NS9.3.1 Understands science as a human endeavour: Recognises differences in explanations offered by the Natural Sciences Learning Area and other systems of explanation.
NS7.2.1 Recalls meaningful information: At the minimum, recalls definitions and complex facts.	NS8.2.1 Recalls meaningful information: At the minimum, recalls procedures, processes and complex facts.	NS9.2.1 Recalls meaningful information: At the minimum, recalls principles, processes and models.
NS7.2.2 Categorises information: Compares features of different categories of objects, organisms and events.	NS8.2.2 Categorises information: Applies classification systems to familiar an unfamiliar objects, events, organisms and materials.	NS9.2.2 Categorises information: Applies multiple classifications to familiar and unfamiliar objects, events, organisms and materials.
NS7.2.3 Interprets information: Interprets information by identifying key ideas in text, finding patterns in recorded data, and making inferences from information in various forms (e.g. pictures, diagrams, text).	NS8.2.3 Interprets information: Interprets information by translating tabulated data into graphs, by reading data off graphs, and by making predictions from patterns.	NS9.2.3 Interprets information: Interprets information by translating line graphs into text descriptions and vice versa, by extrapolating from patterns in tables and graphs to predict how one variable will change, by identifying relationships between variables from tables and graphs of data, and by hypothesizing possible relationships between variables.
NS7.2.4 Applies knowledge: Applies conceptual knowledge by linking a taught concept to a variation of a familiar situation.	NS8.2.4 Applies knowledge: Applies conceptual knowledge to somewhat unfamiliar situations by referring to appropriate concepts and processes.	NS9.2.4 Applies knowledge: Applies principles and links relevant concepts to generate solutions to somewhat unfamiliar problems.
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].

GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].
LO7.3.5 Demonstrates and reflects on decision-making skills.	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	AC9.2.1.4 Discusses the role of technology over time in shaping processes and products in drama, dance, music and art.
	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	LO9.3.5 Applies goal-setting and decision-making strategies.
	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	

APPENDIX 10: IMAGINARY PROJECT: SETTLEMENT ON A PLANET AND IMAGINARY PLANET

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation].
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].
GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].

GS7.2.1 Describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and their impact on human lives and socio-economic activities [people and places].	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
GS7.2.2 Investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources].	NS8.2.3 Interprets information: Interprets information by translating tabulated data into graphs, by reading data off graphs, and by making predictions from patterns.	GS9.2.2 Identifies ways in which science and technology have contributed positively and negatively to development [people and resources].
GS7.2.3 Identifies how risks and hazards can be managed	NS8.3.2 Understands sustainable use of the earth's resources: Identifies information required to make a judgement about resource use.	NS9.2.3 Interprets information: Interprets information by translating line graphs into text descriptions and vice versa, by extrapolating from patterns in tables and graphs to predict how one variable will change, by identifying relationships between variables from tables and graphs of data, and by hypothesizing possible relationships between variables.
GS7.3.1 Identifies challenges to societies and settlements, with a focus on population growth and change [identifies the issue].	NS8.2.4 Applies knowledge: Applies conceptual knowledge to somewhat unfamiliar situations by referring to appropriate concepts and processes.	NS9.3.2 Understands sustainable use of the earth's resources: Responds appropriately to knowledge about the use of resources and environmental impacts.
GS7.3.2 Identifies the factors that contribute to population growth and change [factors affecting the issue].	LO8.1.2 Critically analyses the causes of common diseases in relation to socio-economic and environmental factors.	NS9.2.4 Applies knowledge: Applies principles and links relevant concepts to generate solutions to somewhat unfamiliar problems.
GS7.3.3 Identifies processes that affect population growth and change in various places [factors affecting the issue].	LO8.1.6 Plans an action in which laws and/or policies for protecting environmental health are applied to address an environmental health issue.	LO9.1.4 Develops and implements an environmental health programme.

GS7.3.4 Suggests ways of responding to issues associated with population growth and change in a particular context [makes choices].	LO8.1.8 Demonstrates informed, responsible decision-making about health and safety.	LO9.1.5 Discusses ways to apply insights gained from participating in an activity related to national health or a safety promotion programme
NS7.3.2 Understands sustainable use of the earth's resources: Analyses information about sustainable and unsustainable use of resources.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.3.5 Applies goal-setting and decision-making strategies.
NS7.2.4 Applies knowledge: Applies conceptual knowledge by linking a taught concept to a variation of a familiar situation.	EMS8.1.1 Describes the historical development of money and its role in societies and their economies.	EMS9.2.1 Discusses how the national budget, regional and international agreements can be used to facilitate sustainable growth and development.
LO7.1.2 Evaluates actions to address an environmental health problem.	EMS8.3.4 Uses keyboard skills and function keys in developing, storing and retrieving basic information.	EMS9.3.1 Completes a basic income statement and balance sheet for a service and retail business.
LO7.1.3 Describes strategies for living with diseases, including HIV/AIDS.	EMS8.3.5 Explains the concept and analyses a statement of net worth.	EMS9.3.4 Uses keyboard skills and function keys in developing, storing, retrieving and editing business documentation.
LO7.3.5 Demonstrates and reflects on decision-making skills.	T8.3.2 Impact of Technology Expresses and details opinions about the positive and negative impacts of products of technology on the quality of people's lives and the environment in which they live.	EMS9.3.5 Analyses financial statements for decision-making at a basic level.

LO7.5.5

Demonstrates time management skills and accountability in carrying out responsibilities.

EMS7.1.1

Explains needs and wants and how the differences between them impact on communities and the environment.

EMS7.3.5

Draws up an elementary statement of net worth, using personal records.

T7.3.2 Impact of Technology

Expresses some reasons why products of technology affect the quality of people's lives positively and negatively.

T7.1.1.4

During investigations, plans a strategy for collecting data and information that includes:

- identifying technologies and methods;
- considering the source, resources and copyright laws;
- uses search techniques;
- extracts relevant data for specific purposes;
- produces meaningful summaries.

AC7.2.3.1

Recognises and identifies elements of drama (e.g. processions, chants) in forms of cultural and social expression over time (e.g. opening ceremonies, rock concerts, gladiators, state events, sport).

T8.1.1.4

Uses appropriate technologies and methods to:

- collect relevant data from different sources or resources;
- extract relevant data;
- make meaningful summaries;
- use information to justify and support decisions and ideas.

AC8.2.1.1

Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.

AC8.3.1.2

Adheres to deadlines through time management and self-discipline.

T9.3.2 Impact of Technology

Recognises and identifies the impact of technological developments on the quality of people's lives and on the environment in which they live, and suggests strategies for reducing any undesirable effects.

T9.1.1.4

Uses a variety of available technologies and methods to:

- locate (e.g. use library referencing system, database searches, indexes);
- collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys);
- compare;
- sort;
- verify;
- evaluate (e.g. cross-checking different sources or resources);
- store information (e.g. filing systems, indexes).

APPENDIX 11: STUDY OF DISASTERS

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation]
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].
GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].

GS7.2.1 Describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and their impact on human lives and socio-economic activities [people and places].	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
GS7.2.2 Investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources].	NS8.2.3 Interprets information: Interprets information by translating tabulated data into graphs, by reading data off graphs, and by making predictions from patterns.	GS9.2.2 Identifies ways in which science and technology have contributed positively and negatively to development [people and resources].
GS7.2.3 Identifies how risks and hazards can be managed	LO8.1.2 Critically analyses the causes of common diseases in relation to socio-economic and environmental factors.	NS9.2.3 Interprets information: Interprets information by translating line graphs into text descriptions and vice versa, by extrapolating from patterns in tables and graphs to predict how one variable will change, by identifying relationships between variables from tables and graphs of data, and by hypothesizing possible relationships between variables.
GS7.3.1 Identifies challenges to societies and settlements, with a focus on population growth and change [identifies the issue].	LO8.1.6 Plans an action in which laws and/or policies for protecting environmental health are applied to address an environmental health issue.	LO9.1.2 Critically evaluates resources on health information, health services and a range of treatment options, including HIV/AIDS.
GS7.3.2 Identifies the factors that contribute to population growth and change [factors affecting the issue].	LO8.1.8 Demonstrates informed, responsible decision-making about health and safety.	LO9.1.4 Develops and implements an environmental health programme.
GS7.3.3 Identifies processes that affect population growth and change in various places [factors affecting the issue].	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.1.5 Discusses ways to apply insights gained from participating in an activity related to national health or a safety promotion programme

GS7.3.4 Suggests ways of responding to issues associated with population growth and change in a particular context [makes choices].	T8.3.2 Impact of Technology Expresses and details opinions about the positive and negative impacts of products of technology on the quality of people's lives and the environment in which they live.	LO9.3.5 Applies goal-setting and decision-making strategies.
LO7.1.2 Evaluates actions to address an environmental health problem.	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries; • use information to justify and support decisions and ideas.	EMS9.2.1 Discusses how the national budget, regional and international agreements can be used to facilitate sustainable growth and development.
LO7.1.3 Describes strategies for living with diseases, including HIV/AIDS.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	T9.3.2 Impact of Technology Recognises and identifies the impact of technological developments on the quality of people's lives and on the environment in which they live, and suggests strategies for reducing any undesirable effects.

LO7.3.5 Demonstrates and reflects on decision-making skills.	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.		
T7.3.2 Impact of Technology Expresses some reasons why products of technology affect the quality of people's lives positively and negatively.		
T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.		

APPENDIX 12: TIMELINE OF HUMANITY

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation]
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	GS9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].
GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].

LO7.2.4 Explains the role of oral traditions and scriptures in a range of the world's religions.	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
LO7.3.5 Demonstrates and reflects on decision-making skills.	GS8.2.1 Identifies and compares different types of settlement patterns [people and places].	GS9.2.1 Provides a reasoned explanation of some approaches to development [people and places].
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	GS8.2.2 Identifies factors that influence the formation of settlement patterns (natural, economic, social/ political) [people and resources]	LO9.2.4 Reflects on and discusses the contributions of various religions in promoting peace.
AC7.2.3.1 Recognises and identifies elements of drama (e.g. processions, chants) in forms of cultural and social expression over time (e.g. opening ceremonies, rock concerts, gladiators, state events, sport).	GS8.2.3 Identifies critical factors that have led to changes in settlement patterns in South Africa, Africa and elsewhere [people and the environment].	LO9.3.5 Applies goal-setting and decision-making strategies.
EMS7.1.1 Explains needs and wants and how the differences between them impact on communities and the environment.	LO8.2.4 Discusses the contributions of organisations from various religions to social development.	AC9.2.2.1 Reflects on and compares how social dances reflect their time.
T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	AC9.4.1.1 Explains how dance is shaped by and reflects the values of the times and is influenced by music, place, fashion and technology.

AC8.2.1.2

Discusses how the Arts have contributed and can contribute towards social and cultural change (e.g. as a mirror, in documentaries, as suggestions, commentaries, predictions).

AC8.2.5.2

Comments on composition, style and subject matter in artworks (e.g. landscape, portraits, still-life, public art, or resistance art) over time.

AC8.2.1.1

Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.

AC8.3.1.2

Adheres to deadlines through time management and self-discipline.

EMS8.1.1

Describes the historical development of money and its role in societies and their economies.

T8.1.1.4

Uses appropriate technologies and methods to:

- collect relevant data from different sources or resources;
- extract relevant data;
- make meaningful summaries;
- use information to justify and support decisions and ideas.

T9.1.1.4

Uses a variety of available technologies and methods to:

- locate (e.g. use library referencing system, database searches, indexes);
- collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys);
- compare;
- sort;
- verify;
- evaluate (e.g. cross-checking different sources or resources);
- store information (e.g. filing systems, indexes).

APPENDIX 13: WARS THROUGH THE AGES

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation].
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].
GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].

T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; · produces meaningful summaries.	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
	GS8.3.1 Identifies challenges to societies and settlements associated with the use and abuse of people and natural resources [identifies the issue].	GS9.3.2 Identifies factors affecting selected social and environmental disputes including rights, gender, social, economic and political demands in a particular context [factors affecting the issue].
	GS8.3.2 Examines the unequal distribution of, and access to, resources in different contexts [factors affecting the issue].	GS9.3.4 Makes informed decisions about various solutions to social and environmental conflicts [makes choices].
LO7.3.5 Demonstrates and reflects on decision-making skills.	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries; • use information to justify and support decisions and ideas.	GS9.3.3 Analyses the causes of disputes or conflicts [makes choices].
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.		T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
EMS7.1.1 Explains needs and wants and how the differences between them impact on communities and the environment.		
	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	
	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	

LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.3.5 Applies goal-setting and decision-making strategies.
EMS8.1.1 Describes the historical development of money and its role in societies and their economies.	

APPENDIX 14: SOUTH AFRICAN HISTORY

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation].
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
GS7.1.1 Identifies a variety of geographical and environmental sources relevant to an enquiry [finds sources].	HS8.3.6 Explains the importance of conserving our natural and cultural heritage (e.g. objects, buildings, heritage sites) [representation of the past].	GS9.1.1 Carries out independent enquiries about aspects of the interrelationships between people, places and the environment (uses fieldwork)
GS7.1.2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources [works with sources].	HS8.3.7 explains how and why people's memories of the past might differ [representation of the past].	GS9.1.2 Asks significant questions to evaluate sources, for example, to identify bias and stereotypes, omissions and gaps [works with sources].
GS7.1.3 Measures distances on globes, atlases and maps using line scales [works with sources].	GS8.1.1 Identifies and selects a variety of geographical and environmental sources relevant to an enquiry (uses fieldwork and other enquiry methods) [finds sources].	GS9.1.3 Analyses and reaches conclusions about information from sources such as photos, maps and atlases, graphs and statistics [works with sources].
GS7.1.4 Uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources].	GS8.1.2 Interprets maps and atlas information, graphical and statistical sources [works with sources].	GS9.1.4 Correlates information from various sources with information from maps, atlases, satellite images or orthophotos [works with sources].
GS7.1.5 Uses information to suggest answers, propose alternatives and possible solutions [answers the question].	GS8.1.3 Measures distances on orthophoto maps and/or maps of local and other areas and compares map distances with distances in reality [works with sources].	GS9.1.5 Observes and records information in the field
GS7.1.6 Reports on the enquiry using evidence from the sources including maps, diagrams and graphics; where possible, uses computers in the presentation [communicates the answer].	GS8.1.4 Identifies some physical and constructed features from aerial and/or orthophoto maps of local and other areas [works with sources].	GS9.1.6 Uses the Assessment Standards above to justify the answer, decision or solution relating to the enquiry [answers the question].

AC7.4.1.1 Investigates and presents the purpose and function of different forms of traditional, classical and indigenous dance available in South Africa that reflect aspects of national heritage.	GS8.1.5 Observes and records information in the field [works with sources].	GS9.1.7 Reports on the knowledge gained in the enquiry by constructing an interpretation and argument based on sources of information; uses maps, diagrams and graphics; where possible uses computers in the presentation
AC7.4.2.1 Drama Researches and presents an example of indigenous performance, such as praise poetry or folk tales.	GS8.1.6 Presents an original idea as part of an answer to the questions posed in the enquiry [answers the question].	GS9.3.1 Identifies social and environmental conflicts in South Africa and compares with other contexts [identifies the issue].
AC7.4.4.1 Visual Arts Investigates and presents the origins, purpose and role of signs, national or traditional symbols, statues, heritage sites, body adornment, artworks, dress or architecture.	GS8.1.7 Reports on the knowledge gained in the enquiry by constructing an argument based on sources of information, in a variety of ways; uses maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].	GS9.3.2 Identifies factors affecting selected social and environmental disputes including rights, gender, social, economic and political demands in a particular context [factors affecting the issue].
AC7.2.1.1 Finds out about a South African artist of the past or present, from any art form, and reports to the class.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	GS9.3.3 Analyses the causes of disputes or conflicts [makes choices].
AC7.2.1.2 Explains the need for conservation of a country's indigenous knowledge systems, heritage artefacts in museums, galleries, theatres, cultural sites and natural heritage sites.	AC8.2.2.1 Discusses dances in own social, cultural and historical contexts, focusing on gender, disability and power.	AC9.2.1.1 Identifies the constituent parts of an integrated African art form.
AC7.2.2.1 Dance Researches a traditional dance in the community from people, books or videos and presents it to the class.	AC8.2.3.1 Drama Researches human rights and environmental issues and interprets these in small group role-plays.	AC9.2.1.2 Analyses the interplay between global and local culture.
AC7.2.2.2 Dance Displays observation skills by describing components of dances seen in South Africa, their similarities and differences in terms of movement style, purpose, and use of dancers, costumes and music.	AC8.2.5.1 Visual Arts Identifies and explains how photography, filmmaking, sculpture and printmaking can document human rights abuses.	AC9.2.1.3 Analyses how cultures affect one another and undergo change.

AC7.2.5.1 Visual Arts Gathers information from field trips, excursions, interviews or other sources to analyse the contribution of art, craft and design to everyday life and to South Africa's heritage.	AC8.4.1.1 Understands and speaks about differently-abled people and inclusivity in dance.	AC9.2.1.6 Identifies sources of cultural information such as elders, scholars and artists from the communities, libraries, museums, heritage sites or the Internet to investigate a significant composer, musician, artist or performer in the history of music, dance, visual arts or drama.
AC7.1.3.2 - drama Uses exploration of human rights issues in South Africa as a basis for group improvisations that: · show understanding of basic dramatic structure (who, what, where, when); · show characters drawn from observation, imitation and imagination; · incorporate some dramatic elements such as grouping, shape and climax to communicate meaning and feeling.	AC8.4.1.2 Debates the roles traditionally assigned to different genders in dance by recognising and expressing different points of view.	AC9.2.5.1 - visual art Investigates and explains the influences and circumstances shaping the development of a South African, African or international artist, past or present.
AC7.1. - visual art Creates art, craft or design works commenting on human rights issues, and which demonstrate: · an ability to experiment at an elementary level with a wide range of materials, techniques, tools and skills; · the ability to identify and use symbols and patterns.	AC8.4.2.1 Identifies age, gender, class and cultural stereotyping in stories, theatre, film, television or radio over time and in the present.	AC9.4.4.1 - visual art Explains how art reflects and affects cultures, lifestyles, beliefs and fashion.
AC7.1.5.4 Composes music, songs or jingles about human rights issues or to accompany a performance or presentation about human rights.	AC8.4.2.2 Develops a short skit or scenario to highlight problems of stereotyping, discrimination, and prejudice in school or the local community.	LO9.2.3 Critically investigates issues of diversity in South Africa and ways in which to promote understanding of diverse cultures.
AC7.1.1.3 Creates and presents dance sequences that focus on and challenge, amongst others, human rights issues such as social and cultural attitudes towards dance, and attitudes towards gender and disability in dance.	AC8.4.3.1 Identifies and explains gender and/or cultural stereotyping in lyrics and in the use of instruments over time and in the present.	LO9.2.5 Reports on participation in or planning of the local celebration of a national day.

AC7.3.5.1 Discusses, plans and shares resources with others in producing a collective artwork or presentation to promote nation-building in South Africa.	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	LO9.2.1 Debates issues with regard to citizens' rights and personal choices.
LO7.2.1 Discusses the application of human rights as stated in the South African Constitution.	AC8.1.7.1 Creates and presents an artefact using ideas from popular culture or the mass media.	LO9.3.5 Applies goal-setting and decision-making strategies.
LO7.2.2 Explains how to counter gender stereotyping and sexism.	LO8.2.1 Discusses violations of human rights and plans counter-strategies.	EMS9.2.2 Investigates and debates the successes and shortcomings of the RDP.
LO7.2.3 Explains how recognition of diverse cultures can enrich South African society.	LO8.2.6 Discusses how the learner would promote nation-building in different contexts.	EMS9.3.7 Researches the laws affecting basic conditions of employment and non-discrimination in the workplace.
LO7.3.5 Demonstrates and reflects on decision-making skills.	LO8.2.7 Explains how to use democratic processes to address a local problem.	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	
EMS7.2.1 Collects information on the influence of apartheid economic policies on ownership, poverty, wealth and quality.	EMS8.2.1 Investigates and describes how the national budget is used to influence growth and redress economic inequalities.	
EMS7.2.2 Identifies steps required to redress socio-economic imbalances and poverty.	EMS8.2.2 Investigates how the RDP could have been used to stimulate economic growth and restructuring (e.g. capacity building, jobs).	

T7.3.1 Indigenous Technology and Culture Explains how indigenous cultures in South African history have used specific materials to satisfy needs and the main reasons for the differences.	T8.3.1.1 Indigenous Technology and Culture Compares how different cultures have solved similar problems and relates the differences to the culture and values of their societies.
T7.1.1.4	T8.1.1.4
During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries; • use information to justify and support decisions and ideas.

APPENDIX 15: CAREERS

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
LO7.5.1 Discusses interests and abilities related to career and study opportunities.	LO8.5.1 Investigates career and study opportunities related to own interests and abilities.	LO9.5.2 Motivates own career and study choices.
LO7.5.2 Explains the value and importance of work in fulfilling personal potential.	LO8.5.2 Evaluates own abilities and interests related to careers and study choices.	LO9.5.8 Researches study and career funding providers.
LO7.5.3 Identifies services and sources for career and study information.	LO8.5.3 Identifies and discusses career and study choices and their corresponding requirements.	LO9.5.9 Critically reflects and reports on opportunities in the workplace.
LO7.3.5 Demonstrates and reflects on decision-making skills.	LO8.5.6 Discusses the role of work in relation to needs in South Africa.	LO9.5.11 Outlines a plan for own lifelong learning.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	LO8.5.7 Critically evaluates a range of Further Education and Training providers.	LO9.3.5 Applies goal-setting and decision-making strategies.

T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress. AC8.3.1.3 Explores and discusses training and careers in Arts and Culture fields, based on research and on-site visits. AC8.3.2.1 Researches and shares information about training and careers in dance, and explains: • the kinds of dance-linked careers there are; • the kind of attributes needed; • the kind of training required. AC8.3.3 Drama Identifies careers available in the formal theatre and mass media industries, and explores possible opportunities for development in the informal drama and drama-linked sectors.	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).

AC8.3.4.1 - MUSIC

Researches and shares information about music and music-related careers and training.

AC8.3.5.1 Visual Arts

Researches and shares information about art, craft, architecture, design and related careers and training.

AC8.2.1.1

Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.

AC8.3.1.2

Adheres to deadlines through time management and self-discipline.

T8.1.1.4

Uses appropriate technologies and methods to:

- collect relevant data from different sources or resources;
- extract relevant data;
- make meaningful summaries;

use information to justify and support decisions and ideas.

APPENDIX 16: MORAL EDUCATION

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
AC7.3.1.1 Transforms personal experiences into forms of expression.	AC8.4.4.1 Views and analyses communication within various forms of mass media and identifies obvious or hidden messages, bias, stereotyping or propaganda.	AC9.3.1.1 Shows concern for and sensitivity to the feelings, values and attitudes of others in solving problems that arise in art activities.
AC7.3.3.1 Works sensitively in a group to explore and develop scenes around personal and social issues, experimenting with alternative solutions to problems.	LO8.1.5 Examines a health and safety issue related to violence, and proposes alternatives to violence as well as counter-strategies.	AC9.3.1.2 Shows willingness to explore new cultural ideas and an ability to reconsider stereotypes.
LO7.1.4 Discusses the personal feelings, community norms, values and social pressures associated with sexuality.	LO8.2.3 Critically evaluates changes in cultural norms and values in relation to personal and community issues.	AC9.3.1.3 Acknowledges individual, group and changing identities, including national, ethnic, gender and language group, etc.
LO7.3.1 Reports on the implementation of strategies to enhance own and others' self-image through positive actions.	LO8.2.7 Explains how to use democratic processes to address a local problem.	AC9.3.1.4 Expresses own sense of identity and uniqueness in any art form.
LO7.3.2 Evaluates media and other influences on personal lifestyle choices and proposes appropriate responses.	LO8.3.1 Analyses and discusses factors which influence self-concept formation and self-motivation.	AC9.3.5.1 Transforms sensory experiences and perceptions of power in social relationships into visual artworks.
LO7.3.3 Explains and evaluates own coping with emotions and own response to change.	LO8.3.3 Explains how self will cope with depression, crisis and trauma.	AC9.4.2.1 Uses a drama presentation to critique the impact of soap operas, radio shows or other available forms of performance media on people's values and behaviour.

LO7.3.4 Shows evidence of respect for others and the ability to disagree in constructive ways.	LO8.3.8 Draws up an action plan to apply problem-solving skills in a personal context.	AC9.2.1.5 Discusses and interprets concepts of power, control and dominance in mass media and popular culture.
LO7.3.6 Critically evaluates own study skill strategies.	LO8.3.9 Discusses appropriate ways to initiate, sustain and end relationships.	AC9.2.3.1 Analyses the positive and negative effects of television, radio, documentaries or films on our lives.
LO7.2.5 Discusses the significance of volunteer organizations.	LO8.3.10 Reflects on appropriate behaviour in different kinds of interpersonal relationships.	LO9.2.8 Critically discusses social relationships in a variety of situations.
LO7.3.5 Demonstrates and reflects on decision-making skills.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.3.1 Analyses and reflects on positive personal qualities in a range of contexts.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.		LO9.3.3 Responds appropriately to emotions in challenging situations.
		LO9.3.4 Explains what has been learned from a challenging personal interaction by critically reflecting on own behaviour.
		LO9.3.8 Critically evaluates own application of problem-solving skills in a challenging situation.
		LO9.3.9 Critically discusses own rights and responsibilities in interpersonal relationships.
		LO9.3.5 Applies goal-setting and decision-making strategies.

APPENDIX 17: SELF EXPRESSION: MUSIC

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation]
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
AC7.1.5.1 Forms rhythmic sentences combining and mixing different drumming techniques and percussion patterns.	AC8.1.5 1 Learns and performs songs or music from popular or local culture.	AC9.1.5.1 Makes music using voice and available percussion or melodic instruments for performance in 5/4, 7/4, 12/8 and 4/4 meters.
AC7.1.5.2 Improvises and creates music phrases using concepts such as mood, form and contrast.	AC8.2.4.1 Listens to and demonstrates how the use of polyphony in African music accords participants equitable space in the making of music.	AC9.1.5.2 Organises and markets a musical performance with regard to planning, advertising, fund-raising and producing.
AC7.1.5.3 Reads and sings or plays the scales and simple melodies in G Major.	AC8.2.1.1 Explains the importance of ownership of work and artists' copyright in oral art forms and written compositions.	AC9.2.4.1 Analyses how music is used in songs, rituals, public events, movies, opera or advertisements to evoke response.
AC7.2.4.1 Classifies African instruments in terms of ideophones, chordophones, membranophones, aerophones, and Western instruments according to strings, woodwinds, brass and percussion.	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	AC9.3.4.1 Takes on the roles of conductor, singer, musician, manager or accompanist in ensemble music activities.

AC7.2.4.2 Discusses any of the following types of instrument in terms of the shape, materials used, type of sound, how it is played, what makes the sound: • drums - made of wood, gourds or clay - to show the different membranes that are made of cow, goat or donkey hides; • percussion instruments - rattles, bells, clap stick, slit gongs, mbira, xylophones, kalimba, likembe, lamallaphone; • stringed instruments - musical bows, lutes, lyres, harps, zithers, kora, xalam; • wind instruments - flutes made from bamboo, reeds, wood, clay and bones; • trumpets made of animal horns and wood; • clarinets from the Savannah region made of guinea-corn or sorghum stems; • flugelhorn, saxophones and guitars.	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries; • use information to justify and support decisions and ideas.	AC9.4.3.1 Explains how technology has influenced music over time.
AC7.3.4.1 Sings and/or plays South African songs from various cultures with appropriate rhythm, tempo and dynamics.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
AC7.3.4.2 Creates suitable melodic or non-melodic accompaniment for any South African folk song, anthem or melody.		LO9.3.5 Applies goal-setting and decision-making strategies.
AC7.4.3.1 Music Investigates and explains the purpose, function and role of different instruments used in indigenous, traditional or Western forms of music in South Africa.		

T7.1.1.4
During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.
LO7.3.5 Demonstrates and reflects on decision-making skills.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.

APPENDIX 18: SELF EXPRESSION: ART AND DRAMA

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
HS7.1.1 Identifies and selects a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS8.1.1 Continues to identify and select a variety of historical and archaeological sources relevant to an inquiry [finds sources].	HS9.1.1 Investigates a topic by asking key questions and identifies a variety of relevant sources to explore this topic [finds sources].
HS7.1.2 Compiles and organises information from a number of sources to obtain evidence about aspects of the past [works with sources].	HS8.1.2 Evaluates the sources used (e.g. 'Who created the source?', 'Is it reliable?', 'How useful is the information?') [works with sources].	HS9.1.2 Asks significant questions to evaluate the sources (e.g. to identify bias and stereotypes, omissions and gaps) [works with sources].
HS7.1.3 Interprets and finds information from simple graphical and statistical sources (e.g. graphs, population figures, census returns and tables) [works with sources]	HS8.1.3 Interprets graphical and statistical sources [works with sources].	HS9.1.3 Analyses the information in the sources [works with sources].
HS7.1.4 Uses the information from the sources to present well-thought-out answers to questions [answers the question].	HS8.1.4 Presents an original idea as part of an answer to questions posed [answers the question].	HS9.1.4 Presents an independent line of argument in answering questions posed, and justifies (using evidence) the conclusions reached [answers the question].
HS7.1.5 Communicates knowledge and understanding by formulating arguments based on evidence from the sources either in a debate, by producing longer pieces of historical writing, through artwork, graphics and drama; uses information technology where available and appropriate [communicates the answer].	HS8.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].	HS9.1.5 Communicates knowledge and understanding by constructing own interpretation and argument based on the historical sources (including extended writing, artwork, graphics and drama); uses information technology where available and appropriate [communicates the answer].

HS7.2.1 Develops timelines and creates diagrams to illustrate periods and events in the past [chronology and time].	HS8.2.1 Begins to make links between historical events and processes in different contexts in the same period [chronology and time].	HS9.2.1 Places events, people and changes in the periods of history studied within a chronological frame-work [chronology and time].
HS7.2.2 Describes and makes links between reasons for and results of key events and changes [cause and effect].	HS8.2.2 Recognises that causes and effects of events vary in importance [cause and effect].	HS9.2.2 Identifies categories of causes and effects (e.g. immediate and long-term, direct and indirect) [cause and effect].
HS7.2.3 Explains why certain aspects of society in different contexts have or have not changed over time [change and continuity].	HS8.2.3 Explains changes in a wider historical and environmental context [change and continuity].	HS9.2.3 Explains and analyses the reasons for and results of events in history [cause and effect].
HS7.3.1 Understands how and why some events in the past have been interpreted differently [source interpretation].	HS8.3.1 Examines historical interpretation by asking relevant questions about the author of an historical source [source interpretation].	HS9.2.4 Recognises that change and development does not always mean progress [change and continuity].
HS7.3.2 Recognises that accounts written some time after the event may differ from contemporary accounts [source interpretation].	HS8.3.2 Identifies and gives reasons for the different ways that the past is represented and interpreted [source interpretation].	HS9.3.1 Understands the contested nature of content, and that historians construct histories when writing about events from the past [source interpretation].
HS7.3.3 Recognises that different value systems and traditions may influence the way events in the past are interpreted [influences on interpretation].	HS8.3.3 Explains why history is not objective or neutral [source interpretation].	HS9.3.2 Constructs an interpretation based on sources, giving reasons for own interpretation [source interpretation]
HS7.3.4 Describes how archaeologists work with material remains of the past, and makes deductions from selected material remains of the past [representation of the past].	HS8.3.4 Recognises that sense of identity may influence the way events in the past are interpreted [influences on interpretation].	HS9.3.43 Analyses issues which influence the way history has been written [influences on interpretation].

HS7.3.5 Explains the ways in which people remember events in the past [representation of the past].	HS8.3.5 Describes main features and uses of material remains of the past in a given context [representation of the past].	HS9.3.5 Explains the ways in which symbols are used to remember events and people from the past, and how oral histories can contribute to our understanding of the symbols [representation of the past].
AC7.1.1.2 Improvises to explore choreographic design concepts: · space - direction, levels, symmetry, asymmetry; · time - duration, pace, pulse, phrasing; · force - yielding to and resisting gravity, active and passive movement.	AC8.1.1.1 Learns and performs steps from dances of popular cultures.	AC9.1.1.1 Participates in the choreography and presentation of a short dance for a performance or cultural event.
AC7.1.AC7.2 With guidance, selects, prepares and mounts own art-works from their individual portfolio for class presentation.	AC8.1.3.2 With teacher direction, participates in creating and presenting a written sketch or polished improvisation based on popular culture. This item should: · show knowledge of target audience; · use resources that enhance the piece; · make use of appropriate dramatic elements; · incorporate other art forms.	AC9.1.3.2 Participates in an aspect of planning, organising, advertising, marketing, fund-raising or producing a dramatic item for an audience.
AC7.3.1.2 Uses art activities to express individual and collective identities.	**T8.2.1 Structures** T8.2.1.1 Demonstrates knowledge and understanding of frame structures: • the use and application of basic structural components (e.g. columns, beams, arches, buttresses, struts, stays, guys, ties); • reinforcing techniques for frame structures (e.g. triangulation, webs and fillets, orientation and cross-sectional area of members); • how frame structures can be made strong (e.g. relationship between the size and shape of the base, the centre of gravity and stability).	AC9.2.3.2 Writes a review of a local or other drama production, referring to conventions of staging and elements of drama.
AC7.3.3.2 Demonstrates ability to listen attentively, respond to cues, speak and move in harmony in a group dramatised choral verse or dramatised prose item.		AC9.3.3.1 Assumes leadership role in small group dramatic exercises and role-plays, showing awareness of need for co-operation, sharing of responsibilities and the effects of domination on the group.
AC7.3.1.1 Transforms personal experiences into forms of expression.		AC9.4.5.1 Combines individual art forms to create a new form of artistic expression.

AC7.3.1.2 Uses art activities to express individual and collective identities.	LO8.3.1 Analyses and discusses factors which influence self-concept formation and self-motivation.	AC9.1.7.1 Creates art, craft or design works that: • translate ideas or concepts into a visual form; demonstrate the confident • use of elements and principles of design.
T7.2.1 Structures T7.2.1.1 Demonstrates knowledge and understanding of structures in terms of: • specific properties and use of materials (e.g. water resistance, thermal insulation, fire resistance); • stability (e.g. base size, centre of gravity); • strengthening (e.g. corrugation, laminating, reinforcing);	LO8.3.8 Draws up an action plan to apply problem-solving skills in a personal context.	
	LO8.3.10 Reflects on appropriate behaviour in different kinds of interpersonal relationships.	AC9.3.1.4 Expresses own sense of identity and uniqueness in any art form.
		AC9.4.5.1 Combines individual art forms to create a new form of artistic expression.
LO7.3.2 Evaluates media and other influences on personal lifestyle choices and proposes appropriate responses.		**T9.2.1 Structures**
LO7.3.4 Shows evidence of respect for others and the ability to disagree in constructive ways.		T9.2.1.1 Demonstrates knowledge and understanding of structures: • properties of materials that affect their performance in structures (e.g. mass, hardness, stiffness, flexibility, corrosion resistance, strength in tension, compression, shearing); • analysis (no calculations) of the effects of different loads (even/uneven, static/dynamic).
LO7.3.5 Demonstrates and reflects on decision-making skills.		LO9.3.1 Analyses and reflects on positive personal qualities in a range of contexts.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.		LO9.3.3 Responds appropriately to emotions in challenging situations.

LO9.3.4 Explains what has been learned from a challenging personal interaction by critically reflecting on own behaviour.
LO9.3.8 Critically evaluates own application of problem-solving skills in a challenging situation.
LO9.3.9 Critically discusses own rights and responsibilities in interpersonal relationships.

APPENDIX 19: BUSINESS SIMULATION

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
EMS7.1.2 Describes the different types of businesses and activities within the primary, secondary and tertiary sectors.	EMS8.1.2 Discusses how trade (import and export) addresses the economic problem (choice and opportunity cost), and the role of banks in investing in the economy.	EMS9.1.1 Explains the different flows of money, factors of production, goods and services in the economic cycle within the South African economy.
EMS7.1.3 Explains the concepts 'free' and 'economic' (scarce) goods, and the influence of demand and supply on market prices.	EMS8.1.3 Explains how different economic systems address the economic problem (e.g. planned, market and mixed economies).	EMS9.1.2 Discusses the role of the foreign sector in the economic cycle.
EMS7.1.4 Describes and debates the power relationships, economic rights and responsibilities between: · consumer and producer; · employer and employee; · government and business.	EMS8.1.4 Discusses the role, rights and responsibilities of trade unions.	EMS9.1.3 Illustrates by means of a graph and discusses how demand and supply influence prices.
EMS7.2.3 Compares and discusses the difference between savings and investments.	EMS8.1.5 Explains what inflation is and discusses reasons for changes in inflation rates.	EMS9.1.4 Critically assesses the influence and actions (strikes and stay aways) of trade unions in general and during the apartheid era on: • the South African economy; • political, economic and social transformation; • labour issues.
EMS7.2.4 Discusses the meaning of productivity.	EMS8.2.3 Discusses the importance of savings for investments.	EMS9.1.5 Discusses the effect of the national budget on the economy (e.g. taxation and expenditure on education, social welfare, health and security).
EMS7.3.1 Explains the role of planning, organising, leading and controlling (e.g. financial and procedural controls) in a business.	EMS8.2.4 Investigates and reports on how technology can improve productivity, economic growth, living standards, etc.	EMS9.2.3 Explains the role of savings and investments in economic prosperity and growth.

EMS7.3.2 Discusses different approaches to leadership and management.	EMS8.3.1 Differentiates between financial concepts used in business (e.g. fixed assets, current assets, liabilities, owner's equity).	EMS9.2.4 Discusses productivity and its effects on economic prosperity, growth and global competition.
EMS7.3.3 Describes the importance of administration in managing a business (record keeping, storing documentation).	EMS8.3.2 Develops leadership and management strategies that will ensure a return on investments.	EMS9.3.1 Completes a basic income statement and balance sheet for a service and retail business.
EMS7.3.4 Discusses the use of technology in telecommunication services (e.g. cell phones) and financial transactions (e.g. ATM, Internet) in improving administration, communication and access to information.	EMS8.3.3 Completes source documents (e.g. receipts, deposit slips, cheques) and records elementary cash transactions in a statement of receipts and payments.	EMS9.3.2 I Investigates the public relations, social responsibility and environmental responsibility strategies and actions of different businesses and organisations.
EMS7.3.5 Draws up an elementary statement of net worth, using personal records.	EMS8.3.4 Uses keyboard skills and function keys in developing, storing and retrieving basic information.	EMS9.3.3 Completes cash and credit transactions in the books of service and retail businesses: · uses a cash receipts and payment journal, and a debtors' and creditors' journal; · posts journals to the general ledger and draws up a trial balance.
EMS7.3.7 Explains the different processes of human resource management.	EMS8.3.5 Explains the concept and analyses a statement of net worth.	EMS9.3.4 Uses keyboard skills and function keys in developing, storing, retrieving and editing business documentation.
EMS7.4.1 Compares essential characteristics and skills needed to be entrepreneurial from two different simple case studies of practicing entrepreneurs in own community.	EMS8.3.6 Investigates the various methods of savings and investments (e.g. savings accounts, fixed deposits, shares, unit trusts), and calculates returns on a variety of investments.	EMS9.3.5 Analyses financial statements for decision-making at a basic level.

EMS7.4.2 Uses idea generation techniques to make recommendations on using community resources to generate income in a responsible way.	EMS8.3.7 Describes the levels, categories, remuneration and responsibilities of jobs.	EMS9.3.6 Differentiates between the forms of credit purchases (e.g. open accounts, instalment sales, credit card), and explains and assesses: · the use of different means of payment in the economy (e.g. cash, cheques, postal orders, credit cards, debit cards, smart cards, travellers cheques); · the advantages of cash purchases.
EMS7.4.3 Participates in a joint venture between the school and the community/parents by taking ownership of producing a product or service.	EMS8.4.1 Identifies financial institutions and organisations promoting entrepreneurship.	EMS9.4.1 Generates, through SWOT analysis, possible business ideas to meet the need for manufactured goods or services.
EMS7.4.4 Runs a business event using one or two of the ideas or opportunities identified in a questionnaire that had been designed.	EMS8.4.2 Discusses different ideas for starting a business (including ideas to attract tourists, franchising).	EMS9.4.2 Develops a business plan (including a budget) for a manufacturing, service or tourism enterprise based on the best business opportunity from the ideas generated.
EMS7.4.5 Designs posters or other materials to advertise own business venture.	EMS8.4.3 Engages in a business activity that involves purchasing, production and marketing (should involve financing of business with own or borrowed capital - e.g. bank overdraft).	EMS9.4.3 Engages in the business activity planned and discusses the reasons for choosing a particular form of ownership.
LO7.5.4 Reports on an initiated or simulated career-related activity.	EMS8.4.4 Differentiates between the forms of ownership in the informal and formal sectors (sole proprietor, partnership, close corporation).	EMS9.4.4 Conducts a marketing campaign to promote a product and discusses the self-selected advertising media.
LO7.3.5 Demonstrates and reflects on decision-making skills.	EMS8.4.5 Evaluates the financial viability of a business (e.g. start-up costs, production costs, sales, profit).	EMS9.4.5 Researches the role of small, medium and micro enterprises in wealth and job creation processes.

LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	AC8.3.1.1 Practices entrepreneurial skills collaboratively in marketing artworks.	AC9.4.4.2 Applies skills of media production, while considering target group, purpose and design elements (e.g. create an advertisement, class newsletter, poster, T-shirt, logo or jingle).
	AC8.3.1.4 Collaborates to: · organise interdisciplinary presentations, demonstrating effective organisational ability and skills in planning, management and marketing; · effectively share tasks and responsibilities, such as taking on different roles in group projects.	AC9.1.AC7.2 Develops entrepreneurial awareness of how to market art products in terms of target market, packaging, locale, pricing, advertising, customer relations and awareness of tourism.
	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	AC9.1.AC7.1 Creates art, craft or design works that: · translate ideas or concepts into a visual form; demonstrate the confident · use of elements and principles of design.
	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.5.10 Discusses rights and responsibilities in the workplace.
		LO9.3.5 Applies goal-setting and decision-making strategies.

APPENDIX 20: NEW BUSINESS VENTURE

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
T7.1.1 Investigates T7.1.1.1 Investigates the background context, the nature of the need, the environmental situation, and the people concerned when given a problem, need or opportunity set in a local context. T7.1.2 Examines existing products relevant to a problem, situation or need based on the following key aspects of design: • people; • purpose; • appearance; • environment; • safety; • cost.	**T8.1.1 Investigates** T8.1.1.1 Investigates the background context, the nature of the need, the environmental situation, and the people concerned when given a problem, need or opportunity set in a national relevant context. T8.1.1.2 Compares existing products relevant to the problem situation based on: • safety; • suitability of materials; • fitness for purpose; • cost.	**T9.1.1 Investigates** T9.1.1.1 Identifies and explains a problem, need or opportunity from a given real-life context, and investigates the context, the nature of the need, the environmental situation, and the people concerned. T9.1.1.2 Analyses existing products relevant to an identified problem, need or opportunity based on: • safety; • suitability of materials; • fitness for purpose; • cost; • manufacturing method.

T7.1.1.4 During investigations, plans a strategy for collecting data and information that includes: • identifying technologies and methods; • considering the source, resources and copyright laws; • uses search techniques; • extracts relevant data for specific purposes; • produces meaningful summaries.	T8.1.1.4 Uses appropriate technologies and methods to: • collect relevant data from different sources or resources; • extract relevant data; • make meaningful summaries; use information to justify and support decisions and ideas.	T9.1.1.4 Uses a variety of available technologies and methods to: • locate (e.g. use library referencing system, database searches, indexes); • collect (e.g. questionnaires, data collection forms, requests for information, information, searches, literature surveys); • compare; • sort; • verify; • evaluate (e.g. cross-checking different sources or resources); • store information (e.g. filing systems, indexes).
T7.1.2 Designs T7.1.2.1 Writes or communicates a short and clear statement design brief for the development of a product or system related to a given problem, need or opportunity.	**T8.1.2 Designs** T8.1.2.1 Writes or communicates a short and clear statement or a design brief in response to a given or identified situation for the development of a product or system.	**T9.1.2 Designs** T9.1.2.1 Writes or communicates a short and clear statement or a design brief for the development of a product or system related to a context, problem, need or opportunity that has been identified by self.

T7.1.2.2 Lists product and design specifications and constraints for a solution to a given problem, need or opportunity based on some of the design key words: • people: age, target market, human rights, access; • purpose: function, what the product will do; • appearance: colour, shape; • environment: where the product will be used or made, impact on the environment; • safety: for users and manufacturers; • cost: cost of materials, wastage, cost of manufacture, maximum selling price.	T8.1.2.2 Lists product and design specifications and constraints for a solution to an identified or given problem, need or opportunity based on most of the design key words listed below: • people: age, target market, human rights, access; • purpose: function, what product will do; • appearance: colour, shape; • environment: where the product will be used or made, impact on the environment; • safety: for users and manufacturers; • cost: cost of materials, wastage, cost of manufacture, maximum selling price.	T9.1.2.2 Lists product and design specifications and constraints for a solution to an identified problem, need or opportunity based on all of the design key words listed below: • people: age, target market, human rights, access; • purpose: function, what product will do; appearance and aesthetics: form, colour, shape, feel; • environment: where product will be used or made, impact on the environment in the long and short term; • safety: for users and manufacturers; cost: cost of materials, wastage, cost of manufacture, maximum selling price; • ergonomics; • quality; • production: mass production, batch production, one-off production.
T7.1.2.3 Generates at least two alternative solutions and annotates the ideas.	T8.1.2.3 Generates several alternative solutions and writes notes, ideas that show some links to the design brief, specifications and constraints.	T9.1.2.3 Generates a range of possible solutions that are significantly different from each other, and that show clear links to the design brief and the specifications and constraints.

T7.1.2.4 Chooses possible solutions, gives sensible reasons for choice, and develops a chosen idea using graphics or modelling techniques.	T8.1.2.4 Chooses possible solutions based on well-reasoned argument and develops the chosen idea to include more specific details using graphic and/or modelling techniques.	T9.1.2.4 Chooses possible solutions based on well-reasoned argument related to the specifications and personal opinions, and develops a chosen idea using graphics.
T7.1.3 Makes	**T8.1.3 Makes**	**T9.1.3 Makes**
T7.1.3.1 Develops a plan for making that details all of the following: • resources needed (e.g. materials lists, tools, people, costs); • dimensions (e.g. lengths, breadths, depths, widths); • steps for making the product (e.g. annotations, simple flow diagrams).	T8.1.3.1 Develops a plan for making that outlines all of the following: • resources needed (e.g. materials lists, tools, people, costs); • sketches showing the necessary dimensions or quantities; • all the steps necessary to making the product.	T9.1.3.1 Develops plans for making that include all of the following: • resource lists (e.g. materials lists, tools, people, costs); • formal drawings showing dimensions or quantities (e.g. orthographic, oblique or isometric views, sequence drawings, exploded views); • manufacturing sequence (e.g. flow diagrams, flow charts).
T7.1.3.2 Chooses and uses appropriate tools and materials to make products by measuring, marking, cutting or separating, shaping or forming, joining or combining, and finishing different materials with some accuracy.	T8.1.3.2 Chooses and uses appropriate tools and materials to make products by measuring, marking, cutting or separating, shaping or forming, joining or combining, and finishing different materials accurately using appropriate techniques.	T9.1.3.2 Chooses and uses appropriate tools and materials to make designed products with precision and control by measuring, marking, cutting or separating, shaping or forming, joining or combining, and finishing a range of materials accurately and efficiently.
T7.1.3.3 Uses safe working practices and shows awareness of efficient ways of using materials and tools.	T8.1.3.3 Uses safe working practices and shows awareness of efficient ways of using materials and tools.	T9.1.3.3 Demonstrates knowledge and understanding of safe working practices and efficient use of materials and tools.

	T8.1.3.4 Changes and adapts designs in response to checks in order to improve the quality of the finished product.	T9.1.3.4 Uses measuring and checking procedures while making to monitor quality and changes, and adapts designs in response to practical difficulties encountered when making the products.
T7.1.4 Evaluates T7.1.4.1 Evaluates the product or system based on criteria linked directly to the design brief and some of the specifications and constraints, and suggests improvements or modifications.	**T8.1.4 Evaluates** T8.1.4.1 Tests and evaluates the products or system with some objectivity, based on objective criteria linked to the design brief, specifications and constraints, and suggests sensible improvements or modifications.	**T9.1.4 Evaluates** T9.1.4.1 Evaluates the product or system based on self-generated objective criteria linked directly to the design brief, specifications and constraints using self-designed procedures (e.g. surveys, questionnaires, testing procedures) for self-testing, and suggests sensible improvements or modifications that would clearly result in a more effective or higher-quality end product.
T7.1.4.2 Evaluates the efficiency of the plan of action followed and suggests improving future plans.	T8.1.4.2 Evaluates the efficiency of the plan of action followed with some objectivity, identifies areas of strength and weakness, and suggests sensible ways of improving personal performance.	T9.1.4.2 Evaluates the efficiency of the plan of action followed, objectively demonstrates insight into the consequences of key decisions, and suggests sensible improvements.

T7.1.5 Communicates T7.1.5.1 Presents ideas (in a project portfolio) using two-dimensional or three-dimensional sketches, circuit diagrams or systems diagrams that include most of the following features: • notes to communicate design reasoning; dimensions; • quantities; enhancements of significant sketches (e.g. colour, texture, shade, thick and thin lines, shadow).	**T8.1.5 Communicates** T8.1.5.1 Presents ideas (in a project portfolio) using two-dimensional or three-dimensional sketches, circuit diagrams or systems diagrams that include all of the following features: • use of South African drawing conventions (e.g. dimension lines, labelling, line types, symbols); notes to clarify and communicate design features and reasoning; enhancement of significant sketches like final solution drawings (e.g. colour, shade, texture, shadows, thick and thin lines).	**T9.1.5 Communicates** T9.1.5.1 Presents ideas (in a project portfolio) using formal drawing techniques, in two-dimensional or three-dimensional sketches, circuit diagrams or systems diagrams that include all of the following features: • use of South African conventional drawing standards (e.g. scale, outlines, dimension lines, first and third angle projection); • notes that clarify design reasoning and key choices; • impressive enhancements of significant sketches (e.g. colour, texture, shade, thick and thin lines, shadow).
T7.1.5.2 Chooses and uses appropriate technologies (e.g. computers, photocopiers, stencils, audio-visual recordings) to present a combination of graphics and text in order to record and communicate progress.	T8.1.5.2 Chooses and uses appropriate technologies to produce project portfolios, poster presentations or reports that present graphical and written information clearly in a form mostly suitable for the target audience.	T9.1.5.2 Chooses and uses appropriate technologies to combine and organise graphics and text effectively to produce project portfolios, poster presentations, case study reports, and so on, that have a formal organised structure appropriate for the target audience.
EMS7.1.2 Describes the different types of businesses and activities within the primary, secondary and tertiary sectors.	EMS8.1.2 Discusses how trade (import and export) addresses the economic problem (choice and opportunity cost), and the role of banks in investing in the economy.	EMS9.1.1 Explains the different flows of money, factors of production, goods and services in the economic cycle within the South African economy.
EMS7.1.3 Explains the concepts ‘free’ and ‘economic’ (scarce) goods, and the influence of demand and supply on market prices.	EMS8.1.3 Explains how different economic systems address the economic problem (e.g. planned, market and mixed economies).	EMS9.1.2 Discusses the role of the foreign sector in the economic cycle.

EMS7.1.4 Describes and debates the power relationships, economic rights and responsibilities between: · consumer and producer; · employer and employee; · government and business.	EMS8.1.4 Discusses the role, rights and responsibilities of trade unions.	EMS9.1.3 Illustrates by means of a graph and discusses how demand and supply influence prices.
EMS7.2.3 Compares and discusses the difference between savings and investments.	EMS8.1.5 Explains what inflation is and discusses reasons for changes in inflation rates.	EMS9.1.4 Critically assesses the influence and actions (strikes and stay aways) of trade unions in general and during the apartheid era on: • the South African economy; • political, economic and social transformation; • labour issues.
EMS7.2.4 Discusses the meaning of productivity.	EMS8.2.3 Discusses the importance of savings for investments.	EMS9.1.5 Discusses the effect of the national budget on the economy (e.g. taxation and expenditure on education, social welfare, health and security).
EMS7.3.1 Explains the role of planning, organising, leading and controlling (e.g. financial and procedural controls) in a business.	EMS8.2.4 Investigates and reports on how technology can improve productivity, economic growth, living standards, etc.	EMS9.2.3 Explains the role of savings and investments in economic prosperity and growth.
EMS7.3.2 Discusses different approaches to leadership and management.	EMS8.3.1 Differentiates between financial concepts used in business (e.g. fixed assets, current assets, liabilities, owner's equity).	EMS9.2.4 Discusses productivity and its effects on economic prosperity, growth and global competition.
EMS7.3.3 Describes the importance of administration in managing a business (record keeping, storing documentation).	EMS8.3.2 Develops leadership and management strategies that will ensure a return on investments.	EMS9.3.1 Completes a basic income statement and balance sheet for a service and retail business.

EMS7.3.4 Discusses the use of technology in telecommunication services (e.g. cell phones) and financial transactions (e.g. ATM, Internet) in improving administration, communication and access to information.	EMS8.3.3 Completes source documents (e.g. receipts, deposit slips, cheques) and records elementary cash transactions in a statement of receipts and payments.	EMS9.3.2 I Investigates the public relations, social responsibility and environmental responsibility strategies and actions of different businesses and organisations.
EMS7.3.5 Draws up an elementary statement of net worth, using personal records.	EMS8.3.4 Uses keyboard skills and function keys in developing, storing and retrieving basic information.	EMS9.3.3 Completes cash and credit transactions in the books of service and retail businesses: · uses a cash receipts and payment journal, and a debtors' and creditors' journal; · posts journals to the general ledger and draws up a trial balance.
EMS7.3.7 Explains the different processes of human resource management.	EMS8.3.5 Explains the concept and analyses a statement of net worth.	EMS9.3.4 Uses keyboard skills and function keys in developing, storing, retrieving and editing business documentation.
EMS7.4.1 Compares essential characteristics and skills needed to be entrepreneurial from two different simple case studies of practicing entrepreneurs in own community.	EMS8.3.6 Investigates the various methods of savings and investments (e.g. savings accounts, fixed deposits, shares, unit trusts), and calculates returns on a variety of investments.	EMS9.3.5 Analyses financial statements for decision-making at a basic level.
EMS7.4.2 Uses idea generation techniques to make recommendations on using community resources to generate income in a responsible way.	EMS8.3.7 Describes the levels, categories, remuneration and responsibilities of jobs.	EMS9.3.6 Differentiates between the forms of credit purchases (e.g. open accounts, instalment sales, credit card), and explains and assesses: · the use of different means of payment in the economy (e.g. cash, cheques, postal orders, credit cards, debit cards, smart cards, travelers cheques); · the advantages of cash purchases.
EMS7.4.3 Participates in a joint venture between the school and the community/parents by taking ownership of producing a product or service.	EMS8.4.1 Identifies financial institutions and organisations promoting entrepreneurship.	EMS9.4.1 Generates, through SWOT analysis, possible business ideas to meet the need for manufactured goods or services.

EMS7.4.4 Runs a business event using one or two of the ideas or opportunities identified in a questionnaire that had been designed.	EMS8.4.2 Discusses different ideas for starting a business (including ideas to attract tourists, franchising).	EMS9.4.2 Develops a business plan (including a budget) for a manufacturing, service or tourism enterprise based on the best business opportunity from the ideas generated.
EMS7.4.5 Designs posters or other materials to advertise own business venture.	EMS8.4.3 Engages in a business activity that involves purchasing, production and marketing (should involve financing of business with own or borrowed capital - e.g. bank overdraft).	EMS9.4.3 Engages in the business activity planned and discusses the reasons for choosing a particular form of ownership.
LO7.5.4 Reports on an initiated or simulated career-related activity.	EMS8.4.4 Differentiates between the forms of ownership in the informal and formal sectors (sole proprietor, partnership, close corporation).	EMS9.4.4 Conducts a marketing campaign to promote a product and discusses the self-selected advertising media.
LO7.3.5 Demonstrates and reflects on decision-making skills.	EMS8.4.5 Evaluates the financial viability of a business (e.g. start-up costs, production costs, sales, profit).	EMS9.4.5 Researches the role of small, medium and micro enterprises in wealth and job creation processes.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.3.5 Applies goal-setting and decision-making strategies.
	AC8.3.1.1 Practices entrepreneurial skills collaboratively in marketing artworks.	LO9.5.10 Discusses rights and responsibilities in the workplace.
	AC8.3.1.4 Collaborates to: · organise interdisciplinary presentations, demonstrating effective organisational ability and skills in planning, management and marketing; · effectively share tasks and responsibilities, such as taking on different roles in group projects.	AC9.4.4.2 Applies skills of media production, while considering target group, purpose and design elements (e.g. create an advertisement, class newsletter, poster, T-shirt, logo or jingle).

AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	AC9.1.AC7.2 Develops entrepreneurial awareness of how to market art products in terms of target market, packaging, locale, pricing, advertising, customer relations and awareness of tourism.
	AC9.1.AC7.1 Creates art, craft or design works that: · translate ideas or concepts into a visual form; demonstrate the confident · use of elements and principles of design.

APPENDIX 21: SPORT

Learning Outcomes and Assessment Standards

Grade 7	Grade 8	Grade 9
LO7.4.1 Participates in an outdoor adventure programme through orienteering in different environments.	LO8.4.1 Plans and participates in an adventurous recreational outdoor activity.	LO9.4.1 Participates in and evaluates own performance in an adventurous recreational outdoor activity.
LO7.4.2 Performs a sequence of physical activities including rotation, elevation and balance movements.	LO8.4.2 Plans and implements a programme to improve techniques of rotation, balance and elevation.	LO9.4.2 Refines and evaluates own and peer movement performance including rotation, balance and elevation.
LO7.4.3 Participates in and reports on a fitness programme.	LO8.4.3 Participates in fitness programmes and records progress.	LO9.4.3 Assesses own physical wellness level and sets personal goals for improvement.
LO7.4.4 Designs and plays a game that includes the concept of invasion.	LO8.4.4 Designs and plays target games.	LO9.4.4 Critically evaluates and executes a game plan for individual or team sport.
LO7.4.5 Investigates fair play in a variety of athletic and sport activities.	LO8.4.5 Investigates and reports on gender equity issues in a variety of athletic and sport activities.	LO9.4.5 Reports on and discusses sport ethics.
LO7.3.5 Demonstrates and reflects on decision-making skills.	LO8.3.7 Designs and implements a personal plan for preventing and managing stress.	LO9.3.5 Applies goal-setting and decision-making strategies.
LO7.5.5 Demonstrates time management skills and accountability in carrying out responsibilities.	AC8.1.3.1 Devises a simple warm-up routine, based on teacher's exercises, to share with the class.	AC9.1.3.1 Conducts a simple warm-up routine with class.

AC7.1.1.1 In preparing the body, applies safe dance practice and healthy use of the body, for example: · warming up and cooling down; · good postural and joint alignment; · released/soft use of joints; · safe landing from elevation (jumping); · stretching with safety.	AC8.3.1.2 Adheres to deadlines through time management and self-discipline.	AC9.3.2.1 Participates responsibly in trust exercises, using eye contact, the giving and receiving of weight (contact improvisation), and exploring active and passive roles.
AC7.1.3.1 Follows a teacher-directed warm-up routine.		
AC7.3.2.1 Demonstrates trust-building partner skills through activities such as: • creating visually effective contrasting and complimentary shapes; • inventing ways to counterbalance weight with a partner.		