INVESTIGATING NATIONAL CURRICULUM IMPLEMENTATION IN PAPUA NEW GUINEA (PNG)

A thesis

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Doctor of Philosophy

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by

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DECLARATION

I, Joseph Lingawa Kekeya, solemnly declare that the PhD thesis entitled: *Investigating National Curriculum Implementation in Papua New Guinea*, *is* my own work, and that the work of others used in the thesis has been fully acknowledged and referenced, and permissions were sought to use the diagrams. This thesis does not contain any material, which has been submitted previously in part or in whole for the award of any other academic diploma or degree. This thesis contains no more than 100,000 words, exclusive of references and appendices.

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ABSTRACT

There is a national concern in Papua New Guinea (PNG) about re-construction of social systems because the education offered was irrelevant to the needs of the PNG society. The Government of PNG reformed its national education system and developed and implemented a new national curriculum for human and societal development for elementary, primary and secondary education sectors. The purpose of this study was to investigate some PNG teachers' pedagogical decisions and actions and the nature of student learning and development in the implementation of this new national curriculum in contemporary classroom contexts. The study was carried out in two PNG schools - one an urban church school and the other a rural government school. The understanding, perceptions and 'lived-experiences' were explored in the implementation of the new national PNG curriculum of twelve teachers and forty-eight students (six teachers and twenty-four students in each school). Within an interpretive research paradigm, a qualitative case study approach was employed to generate data, using interviews, video observations and documentary analysis as data gathering tools. The data were analysed inductively and grouped into themes around the key research questions. The findings of the study were underpinned by theoretical frameworks of behaviourist and constructivist pedagogies of curriculum development and delivery. The study found that the PNG teachers adapted the new national curriculum by applying iterative interpretation processes to construct their own interpretation. The teachers identified and selected appropriate international knowledge and integrated this with suitable and relevant PNG indigenous knowledge. This integration is the basis on which the teachers constructed new knowledge or realities, which they delivered to the students using both

constructivist teaching approaches and traditional behaviourist teaching approaches. Although the teachers' constructed realities or knowledge appeared to be superficial rather than deep and problem solving in nature, the PNG students mediated on the teachers' realities, and constructed their own individual and shared realities. The student learning is being described in this thesis as the long-term learning that results from micro-curriculum implementation.

DEDICATION

In loving memory of my beloved father - Kekeya Enga, who was a paramount chief of an Aika tribe, who passed away when I was only 2 years old. I cannot remember you well now or even recall your face clearly. The missing realities from you, in my life, are your great wisdom and knowledge. You left me without a word. I wish you could still be around, so that we together could celebrate this special achievement in this chapter of my life. If you were around, I would imagine you could say: "Well done my son." In your absence, I have come this far. May you rest in eternal peace – Kekeya Enga.

This thesis is also dedicated to my beloved mother – Tangarai Enga Melpa. Indeed, you remain a widow and wear two caps to raise me: one as a father and one as a mother. As a father, your wisdom, knowledge and skills about life are superb. You instilled me with appropriate discipline to craft my own future through hard work and perseverance. As a mother, your comfort, guidance and support throughout my life are unforgettable. You are a star in my early education to have a better life now. Thank you so mummy.

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Before singling out each individual and organisation, I would like to take this opportunity to acknowledge God Three-in-One – God the Father, God the Son-Jesus Christ, and God the Holy Ghost, for strengthening and sustaining me throughout this doctorate study journey. Let Divine God's Highness and Name be exalted.

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ACRONYMS USED IN THE THESIS

AUSAID - Australian Assistance International Development
CGA - Cooperative Group Activity
CM - Cultural Mathematics
CDD - Curriculum Development Division
CRIP - Curriculum Reform Implementation Program
DEL - District Education Level
EPDP - External Professional Development Practice

FOADE - Flexible, Open and Distance Education
FM - French Missionaries
GoPNG - Government of Papua New Guinea
IPDP - Internal Professional Development Practice
LLG - Local Level Government
LNMPS - Local National Member of Parliaments
LMS - London Missionary Society
LM - Lutheran Mission
MSU - Measurement Services Unit
MP - Member of Parliament
MMS- Methodist Missionary Society
MoE - Ministry of Education
NED - National Education Department
NEDO - National Education Department Officers
NSO - National Standard Officers
NTI - National Teacher In-services
NZNC - New Zealand National Curriculum
NGOs - Non-Government Organisations
OBE - Outcome-Based Education
PNG - Papua New Guinea
P & CM - Parents and Citizens' Meetings
PPTC- Pre-Service Primary Teachers' Collage
PDP - Professional Development Practice
PEB - Provincial Education Board
PED - Provincial Education Division
PEP - Provincial Education Personnel
PG - Provincial Government
SBoG - School's Board of Governors
SM - School Mathematics
SPDC - School's Professional Development Committee
SAPS - Subject Assessment Period Sheet
TTI - Teacher Training Institutions
TSC - Teaching Service Commission
TVC - Technical Vocational Centre
TVET - Technical Vocational Education Training
UNESCO - United Nations Education Socio-economic Project
UNDP- United Nations Development Program
USA - United States of America
VSO - Voluntary Service Organisations

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The changing global environments in education, economics, politics, technology and ideological shifts that called for a re-construction of social systems during the 1980s and 1990s had an impact on Papua New Guinea (PNG) as a nation (Fagerlind & Saha, 1989; Schiro, 2008; Slattery, 1995). In 1993, the Government of PNG reformed its national education system, and developed a national curriculum in 2004 for human and societal development (Papua New Guinea Department of Education, 2003a). The PNG national curriculum was implemented in the elementary, primary and secondary sectors of education. The intent of this study was to explore the PNG teachers' implementation of their national curriculum and the nature of student learning or experience in contemporary school and classroom contexts.

This chapter describes the background context to the study and the state of national curriculum development and implementation in PNG education system. The thesis begins by describing the researcher's personal involvement in the past and present national curriculum development in PNG. Then the people, government, and history of education developments in PNG that have had a significant bearing on the development of the PNG national curriculum are examined to provide a background context to the study. Finally, the issues and purpose of the study, the research questions and the structure of the thesis are described.

1.2 Researcher's personal contextual information and involvement

For the last 13 years, I have been personally involved in many aspects of curriculum development, writing, and implementing at primary and tertiary levels of education in Papua New Guinea (PNG). My role as a primary teacher in the primary sector of education was to interpret, plan, and implement the national primary curriculum in classrooms. As a teacher educator at the Pre-service Primary Teachers' College (PPTC), I was involved in planning, writing, revising, and evaluating student teachers' course handbooks, course overviews and assessment tasks across different departments. Other curriculum related activities that I undertook included the organisation and coordination of the students' teaching practice. As a member of the National Gender in Education Committee, I contributed to the development of Gender Equity in Education Policy in PNG (Papua New Guinea Department of Education, 2005).

Since 2006, I have been teaching at the Divine Word University, in Madang Province, PNG, attached to the Undergraduate Department of the Faculty of Flexible Learning. My work involves the writing and revising of student unit books and coordinating curriculum development at department and faculty levels. My professional involvement included the coordination of the Diploma in Management, the Diploma in Human Resource Development, the Bachelor of Management, the Bachelor of Education Primary In-service Program, the Diploma in School Leadership and Management Program, and Teacher Qualification Upgrading Program (Divine Word University, 2008).

In the teacher education programmes, I have been delivering teaching and learning approaches, assessment and reporting, and curriculum studies units to in-service primary and secondary teachers throughout PNG. I was also able to publish two primary textbooks for grades six, seven and eight, with the Oxford Press in 2007. These publications are now being used in primary schools to support the implementation of the new national primary curriculum, which was introduced as an outcome-based curriculum in 2008. Additionally, I have become aware of my own limited knowledge of the ideas, theories and concepts underpinning the new curriculum, despite having formal qualifications, being a writer of primary curriculum materials, and a teacher educator in curriculum studies. On the basis of these experiences, I began to develop a deep interest in undertaking a doctoral study and then decided to take on the challenge in 2009 beginning a doctoral study to investigate the PNG national curriculum development and implementation in contemporary primary schools.

1.3 Background context of the study

Papua New Guinea (PNG) is a Pacific Island nation, and has a total land-mass of 463,000 square kilometres (Kulwaum, 1999; Papua New Guinea Department of Education, 1999). It is located north of Australia between Indonesia and the Solomon Islands, in the Pacific Ocean (Kulwaum, 1999). PNG has four major regions - the Highlands, the Momase region, Southern and the New Guinea Islands. The Highlands, New Guinea Islands and Southern regions are each sub-divided into five provinces, while the Momase region contains four provinces (Appendix ZU).

PNG has an estimated total population of six and a half million people. The first European contact was with a Portuguese explorer, Jorge de Meneses, who arrived in 1526 (Rannells & Matatier, 2005; Sinclair, 2005). Today the PNG indigenous people speak more than 800 different local languages, each embedded within unique cultures, traditions, initiations, customs, values and belief systems (Geissinger, 1997; Kulwaum, 1999; Papua New Guinea Department of Education, 1996; Rannells & Matatier, 2005). English is the official language of business, apart from the Motu and Tok Pidgin languages that are also being used in PNG (Kulwaum, 1999; Rannells & Matatier, 2005). Motu is the name of a local language, mostly spoken in the Southern region. Although Tok Pidgin is not an indigenous language in PNG, it is "PNG's lingua franca" (McLaughlin & O'Donoghue, 1996, p. 25), or what we called 'Pidgin-English,' which is widely spoken in all parts of PNG.

PNG was colonised by Britain, Germany and Australia for nearly a century from 1884 - 1974. The Southern region was called Papua, while Momase, Highlands and New Guinea Islands regions made up New Guinea (Sinclair, 2005). Britain colonised the Papua region in 1884 until 1906, when it then became an Australian territory. Germany controlled the northern half of the country (Momase and New Guinea Island regions) from 1884 to 1913 (Sinclair, 2005). From 1918 onwards, the northern half of the country (New Guinea), the southern region (Papua) and the highlands region were administered by Australia, until 1975, when PNG achieved Independence from Australia (Rannells & Matatier, 2005; Reiner, 1986; Sinclair, 2005).

PNG is a member nation of the Commonwealth of Nations, where the Governor General of PNG represents Queen Elizabeth II as head of state in the country. The Governor General is voted for by the 111 elected members of the parliament (Papua New Guinea Department of Education, 1996; Rannells & Matatier, 2005). The Prime Minister of PNG is elected by Members of Parliament (MP) every five years (Papua New Guinea Department of Education, 1996; Rannells & Matatier, 2005). The education department comes under the executive arm of the government, and comprises elementary, primary, secondary and tertiary sectors. The elementary, primary and secondary sectors are managed and coordinated by the provincial governments, while in the tertiary sector of the education, the curriculum designing and development, and the national examinations for grades eight, ten and twelve are centrally managed and coordinated by the National Education Department (NED) (Papua New Guinea Department of Education, 1996, 1999).

PNG has both traditional and western systems of education. Traditional education in PNG is for survival and is underpinned by belief systems, rituals and initiations of the indigenous people (Ford, 1973; Matane, 1986; Ryan, 2008). The elders, who have the knowledge and experiences of the society, impart this to the next generation in the form of storytelling, legends, demonstration and modelling of manual work, and other forms of cultural activities. Traditional education is conducted seasonally all year around in PNG, and the learners (next generation) acquire the knowledge and experiences of the elders by listening, observing, and being involved in undertaking the manual tasks (Ryan, 2008).

The Western education system in PNG was introduced in the late 1800s by the early Christian Missionaries and different colonial governments. These two groups have had the most influence on the history of formal education developments in PNG (Primary and Secondary Teacher Education Project, 2002; Rannells & Matatier, 2005; Reiner, 1986; Sinclair, 2005). Early Christian missionaries were the Methodist Missionary Society (MMS), the Lutheran Mission (LM), the London Missionary Society (LMS), Catholic Mission, and the French Missionaries (FM). These missionaries established formal education primarily to evangelise the indigenous people (Geissinger, 1997; Kulwaum, 1999; Primary and Secondary Teacher Education Project, 2002; Sinclair, 2005). In the late 1800s, the curriculum was the Bible, which was translated and re-written in the indigenous languages in the form of booklets and pamphlets for people to comprehend and understand easily (Primary and Secondary Teacher Education Project, 2002). Today, PNG has many more church run schools than government schools (Papua New Guinea Department of Education, 1996).

Each colonising country (Britain, Germany and Australia) had its own ways of administering education in PNG. In 1913 the British-Australia collaboration established schools, which were for their interests rather to serve the needs of the indigenous people (Primary and Secondary Teacher Education Project, 2002). In the same year, the schools in German territories used German as the official language of instruction and eliminated the use of the local languages and Tok Pidgin (Pidgin-English oriented language). In 1916, the Australian Government introduced an agricultural school in the Papuan region and trained the indigenous people with agricultural skills, who were then employed as cheap labourers. In those early days, there was no unified curriculum used in PNG schools. It was up

to the missions or the successive governments to decide what they wanted to teach to pursue their goals.

In the 1920s, the Australian Government took over the German mandated territories, and a policy called the 'Education Ordinance' was issued to give power to the Australian administration to subsidise fees to mission schools, set standards and nominate an official language of instruction for schools (Primary and Secondary Teacher Education Project, 2002; Reiner, 1986; Sinclair, 2005). In 1923, a technical school was established by the Australian government in the East New Britain Province, with the intention of employing the indigenous people to work for the colonial administrators (Primary and Secondary Teacher Education Project, 2002). In the 1940s, the curriculum from Australia was introduced to primary schools. However, there was no coordination or links between the missions and the government schools (Primary and Secondary Teacher Education Project, 2002; Ryan, 2008). Although the Department of Education was established in 1946, there were not many new schools established in the country until in 1962 the United Nations report titled the 'Foot Report' exerted pressure on Australia to establish more schools. Thereafter, secondary education was established in 1966, and the curriculum for Years 7-10 was introduced (Primary and Secondary Teacher Education Project, 2002; Ryan, 2008). The students who completed community schools were either employed or recruited to train as public servants - teachers, police officers, patrol officers, defence personnel and nurses. Community school is the first six years of education.

In 1970, an education policy called 'Education Ordinance' was established to produce a unified education system, which brought both mission and government

schools under a single umbrella (Primary and Secondary Teacher Education Project, 2002). The Education Acts and policy guidelines were developed, and an educational structure established, which consisted of preparatory, community, high school, national high school and tertiary sectors. After PNG gained Independence in 1975 from Australia, the education system was re-organised into four sectors known as – community, provincial high schools, national high schools and tertiary and university (Papua New Guinea Department of Education, 2002). Figure 1 below shows this 1975 education structure. Subsequent paragraphs briefly describe each sector of education (Papua New Guinea Department of Education, 1995).

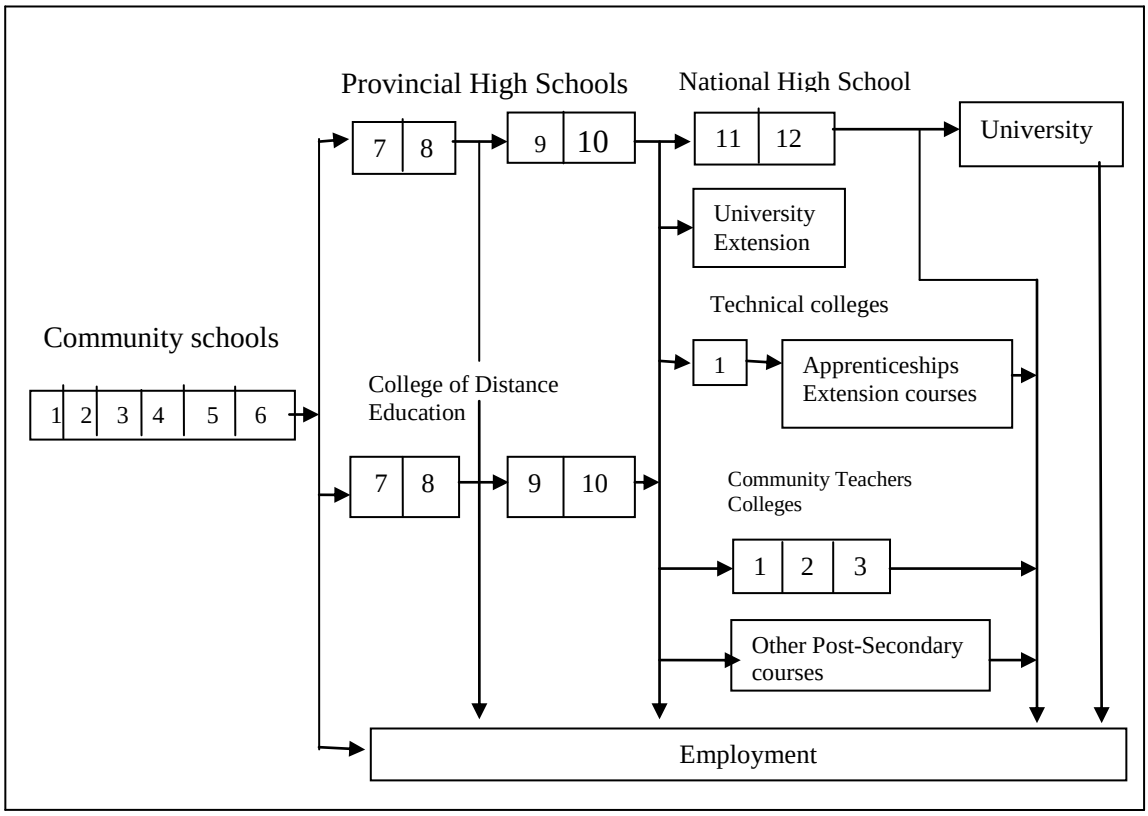


Figure 1: PNG national education structure after Independence (PNGDE, 1995, p.vii).

The community sector covers the first six years of education, known as grades 1 to 6. Although children at the age of 7 were required to enrol in grade 1, many

over-age children were also enrolled at this grade level (Papua New Guinea Department of Education, 2002). At grade 6 in the community school, students sat examinations to gain entry to provincial high schools. The provincial high schools consisted of four years (grades 7-10) of schooling and a further two years (grades 11-12) were offered at the national high schools.

The students sat examinations in grade 10 at provincial high schools to gain entry into the national high schools. Students who scored high grades (distinctions and credits) in all of the four subjects, Mathematics, English, Science and Social Science, were selected to do grade 11 at the national schools (Papua New Guinea Department of Education, 1995, 2002). The students did further examinations at grade 12 at the national high schools and those who scored high grades attended universities, which offered degrees, diplomas and certificates. Students who scored lower grades in grade 12 attended other training institutions including technical, teachers and nursing colleges, which offered diplomas and certificates. Additionally, the grade 10 students who scored 'middle-range' grades attended other training institutions, including technical, teachers and nursing colleges. Students who scored low grades in grades 6 and 10 enrolled in colleges of distance education. The grades 6, 8, 10 and the 12 examinations and curriculum were managed and coordinated by the Measurement Services Unit (MSU) and Curriculum Development Division (CDD) of the National Education Department (Papua New Guinea Department of Education, 1995, 2002).

The curriculum from Australia was used in the pre-tertiary sector from the 1940s until the mid 1980s. Although PNG was an independent nation and its teaching force consisted of Papua New Guineans and a few expatriate teachers from other

countries, the teaching and learning experiences students engaged in were still influenced by the educational policies developed during the colonial periods. These educational "policies were geared towards the social, political and economic" (Primary and Secondary Teacher Education Project, 2002, p. 16) interests of the countries who colonized PNG. The curriculum content promoted knowledge development without much practical-oriented learning experiences for the students to engage in to develop their skills and talents (Papua New Guinea Department of Education, 1991). The curriculum portrayed an objectivist approach to teaching and learning (McGee & Taylor, 2008). An objectivist model curriculum follows a sequential cycle, from objective to content through to the learning experiences or activities and to the evaluation stage. The teaching and learning in community schools, high schools and national high schools were driven by the need for students to pass the examinations, so that students could proceed to the next level of education and through to getting employment after graduation (Matane, 1986; Papua New Guinea Department of Education, 1991).

PNG had a pyramid-based national education system from 1975 to 1992, with a wide bottom and narrow peak. Within this structure or system students were required to pass the national examinations (grades 6, 8, 10 and 12) in order to gain entry to the next level of education as discussed already (Papua New Guinea Department of Education, 1991). As a result, many students dropped out in grades 6, 8, 10 and 12. Additionally, a number of studies conducted in PNG by researchers and by the Department of Education (as part of its regular evaluative processes) revealed inaccessibility to education by many students, low retention rates at primary schools and an education offered that was irrelevant to the needs of the PNG society (Geissinger, 1997; Papua New Guinea Department of

Education, 1991, 1995; Webster, 1993). Webster's (1993) study reveals that 28% of the country's school age children were unable to access education, with schools established far from their local communities. According to Geissinger (1997), education was inaccessible for many students because the country is mountainous with rugged terrain and flooding rivers as well as having poor transport systems, where children have to walk long distances to school.

The Education Sector Review in 1991, commissioned by the United Nations Development Program (UNDP) and the United Nations Education Socio-economic project (UNESCO), revealed a poor provision of education from primary schools through to high schools and to the national high schools, where many school age students did not attend school (Papua New Guinea Department of Education, 1991). There were a number of the reasons for the non-attendance of many students. First was the continuous civil unrest, such as tribal fighting, which led to some schools being closed down (Geissinger, 1997; Papua New Guinea Department of Education, 1991, 2002). Second, the dislike of schooling by some students also caused many of them to leave school (Papua New Guinea Department of Education, 2002). Third, although there were schools available, many parents did not see the value of the education and decided not to send their children to school (Webster, 1993). Further, many children who enrolled in grade one did not complete the primary cycle of education, and as a result the dropout rate from schools increased. Furthermore, the education students received did not empower them to take advantage of the resources in their communities after they left school (Papua New Guinea Department of Education, 2002). In response, the PNG government decided to address the issues discussed above by reforming the entire national education system. The Matane Report of 1986 had recommended a

new curriculum based on human development, and the Education Sector Study of 1991 called for a new education system (Matane, 1986; Papua New Guinea Department of Education, 2001a, 2002). These reforms are discussed in the next section.

1.3.1 Status of the current PNG national education system and curriculum

The government of PNG redeveloped its national education system with an aim of creating a better social system. In 1993, the Department of Education reformed both the structure and the curriculum within the PNG national education system (Papua New Guinea Department of Education, 2002). The structure of the current PNG national education system consists of five sectors: elementary, primary, secondary, technical and vocational, and tertiary (Papua New Guinea Department of Education, 2004), as shown below.

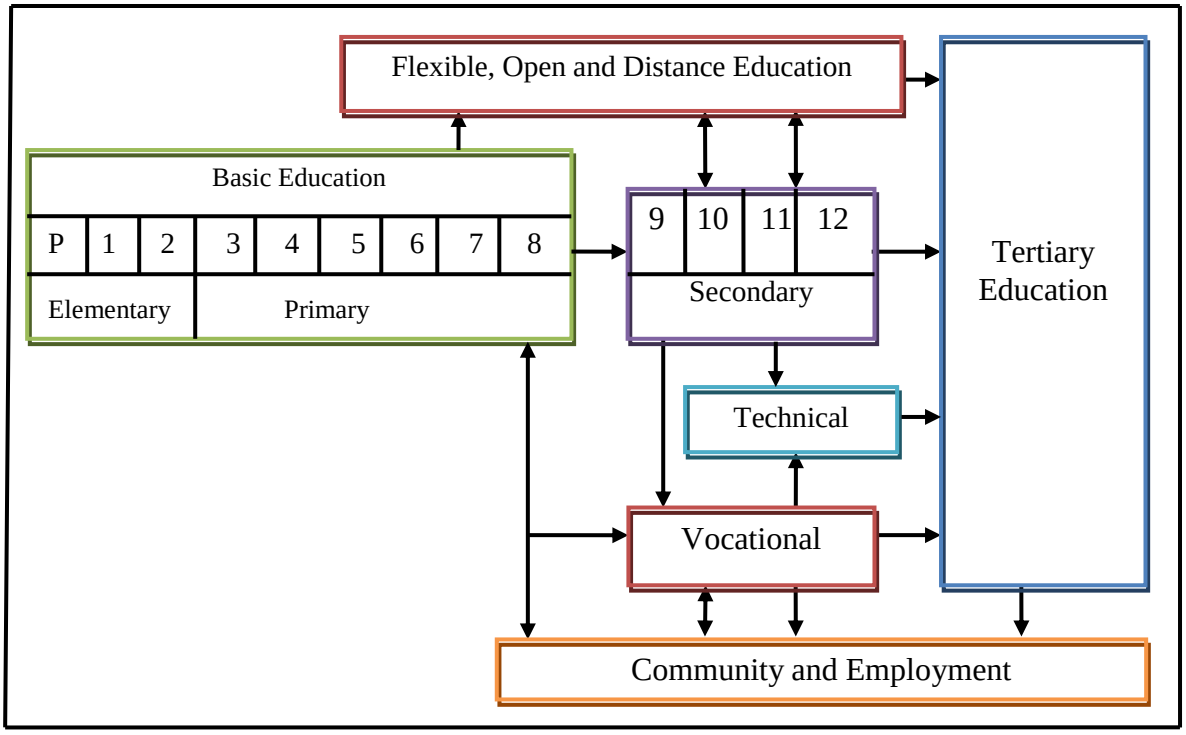


Figure 2: The current national education structure (PNGDE, 2004, p. 4).

The nine years of basic compulsory education include the elementary and the primary sectors, with a community-oriented education. The elementary sector covers the first three years of schooling - elementary prep, elementary 1 and elementary 2. The primary sector covers the next six years of schooling from grades 3 - 8 (Papua New Guinea Department of Education, 1999, 2001a, 2002, 2004). The secondary sector comprises four years of education from grades 9 - 12.

The technical and vocational sectors are collectively known as Technical Vocational Education Training (TVET), and the tertiary education consists of university and other training institutions, such as teachers' and nursing colleges. National examinations at grades 8, 10 and 12 and curriculum development remain under the control of the Department of Education. Students who score marks above the standard mark in grades 8 and 10 examinations by the Department of Education gain entry into secondary schools. At the end of the secondary schooling, students in grade 12 are selected on the basis of their final grades in the grade 12 examinations for entry into higher learning institutions, that is, the universities and other tertiary institutions. Students with low grades can enrol in the alternative forms of education, called Flexible, Open and Distance Education (FOADE) to up-grade their marks and re-apply to higher learning institutions if they wish, or seek employment (Papua New Guinea Department of Education, 2004). Examinations are based on the content of the curriculum reformed in 2004. The development of this new curriculum is now discussed in the following sections.

The new PNG national curriculum is based on the Matane Report of 1986, entitled "A philosophy of Education" (Papua New Guinea Department of Education,

2003a, p. 4). Matane (1986) reported that the goal of the traditional curriculum in PNG was survival, while the missionary-introduced curriculum was for eternal life, and the Australian curriculum in the colonial times was for economic development. Matane proposed that the above curriculum goals be integrated into a single curriculum goal that should develop every person to fit well into the PNG society by utilising the resources and the opportunities available to her or him in a sustainable way in order to become a productive member of the society.

So, on the basis of this argument or proposal, the National Education Department, in 2004, developed a new national curriculum for its elementary, primary and secondary education sectors (Papua New Guinea Department of Education, 2003a). The new curriculum is an outcome-based curriculum, which has been largely influenced by the United States of America's (USA) outcome-based education model based on Spady's (1993) ideology. It is centred on the goal of Integral Human Development (IHD) [Papua New Guinea Department of Education, 2003a]. Other goals to support and achieve the central goal of IHD relate to:

- equality and participation,
- national sovereignty and self-reliance,
- natural resources and environment,
- Papua New Guinean ways (Matane, 1986; Papua New Guinea Department of Education, 2003a).

The national outcome-based curriculum goals above are derived from the PNG National Constitution (Government of Papua New Guinea, 1975; Matane, 1986; Papua New Guinea Department of Education, 2003a), and are defined as the key

national outcome-based curriculum goals. The curriculum promotes educational experiences based on student-centred learning in real life situations and includes knowledge, skills, attitudes and values designed to empower students to be productive members of society after leaving school in PNG (Papua New Guinea Department of Education, 2003a; Spady, 1993). In the following paragraphs, the term 'curriculum' is defined and 'layers of curriculum' are introduced and briefly discussed. The intent is to make clear to the readers the different definitions of curriculum that exist and how the concepts association with the different layers of curriculum is used in this thesis.

The word 'curriculum' has many different definitions and means different things to different people (McGee, 2008). For example, it can mean a national curriculum statement, document, policy, subject, course, programme, teaching plan, learning experience and so on (Allen & Vidovich, 2008; Henson, 2010; McGee, 2008; Papua New Guinea Department of Education, 2003a), as illustrated in the following examples. Allen and Vidovich (2008) define curriculum as a policy document that contains educational purposes and directions with defined learning experiences. Tanner and Tanner (1980) view curriculum as the learning experiences and intended outcomes formulated through systematic "reconstruction of knowledge and experience, systematically developed under the auspices of the school (or university), to enable the learner to increase his or her control of knowledge and experience" (p. 43). According to Print (1993), the "curriculum is defined as all the planned learning opportunities offered to learners by the educational institutions and the experiences learners encounter when the curriculum is implemented" (p. 9). Similarly, McGee (2008) defines curriculum as "the educational experiences that are planned to take place in a classroom as

well as putting the planning into practice in the classroom" (p. 66). Finally, Tymms (2010) proposes the "curriculum to be something like a 'map' which teachers teach to students who in turn will be able to use this map to navigate the terrain of the future …[and the] students acquired a set of skills that they can use to make sense of their futures as they engage with them" (p. 21).

These definitions of curriculum clearly argue about different curriculum from the macro level down to micro level. Since the word 'curriculum' does not have a fixed definition, it has been interpreted as many different 'layers' by some. For example, Allen and Vidovich (2008) identify three curriculum policy layers, known as the macro layer, the intermediate layer and the micro layer. The macro-curriculum policy is the overall framework that includes new global theories and ideologies in relation to a range of philosophical, social, cultural, technological, economics and political understandings. The intermediate curriculum policy is developed from the macro-curriculum and is the official national framework of a country that influences further curriculum developments in school and classroom contexts. The micro-curriculum policy is that developed by teachers in school and classroom contexts.

These concepts of curriculum policy development are seen to have existed or exist in many countries. For example, in New Zealand these concepts are manifested in four layers of curriculum interpretation. The first is the macro-curriculum, which comprises of theories, ideas and concepts from the economic, philosophical, political, social and cultural arenas (Fagerlind & Saha, 1989; New Zealand Ministry of Education, 1993, 2007; Rudolph, 2002). The second layer is the

intermediate layer or the national curriculum (Hume, 2006; McGee, 2008; Schagen, 2008), the New Zealand curriculum (Barker, 2008; Earl & Forbes, 2008; New Zealand Ministry of Education, 2007), or the intended curriculum (McGee, 2008). However, the literature indicates that the macro-curriculum is amalgamated or integrated into intermediate layer or New Zealand national curriculum (Barker, 2008, Hume, 2006, McGee, 2008). The New Zealand national curriculum, or the intended curriculum, contains learning areas which provide each teacher in New Zealand with a framework for further interpreting, planning and implementation. The third layer is the micro-curriculum policy, which involves the actual teaching plans developed by teachers from the national curriculum policy and delivered to students in school and classroom settings (Barker, 2008; Earl & Forbes, 2008; New Zealand Ministry of Education, 2007; Schagen, 2008). The fourth layer is the student-experienced curriculum. This curriculum layer is what students experience from the delivery of the micro-curriculum in school and classroom settings (Hume, 2006; McGee, 2008).

Similar to the New Zealand curriculum, in PNG there are four curriculum layers. The first layer is the macro-curriculum (Papua New Guinea Department of Education, 2003a). This curriculum layer comprises of goals, ideas, theories and concepts that were influenced by global ideological shifts in politics, economic, technology, social and cultural-historical arenas (Fagerlind & Saha, 1989; Rudolph, 2002). Like in New Zealand curriculum, the macro-curriculum is integrated or amalgamated into the intermediate policy layer (Papua New Guinea Department of Education, 2003a). The PNG national outcome-based curriculum is the second or intermediate policy layer, which comprises key learning areas that were developed from the goals contained in the macro-curriculum or national

curriculum statement and provides a framework for further curriculum development in school and classroom settings (McGee, 2008; Papua New Guinea Department of Education, 2003a).

The third curriculum layer (the micro-layer or micro-curriculum) involves the teaching programmes that are interpreted, developed and delivered to students by the teachers from the national curriculum in school and classroom contexts (McGee, 2008; Papua New Guinea Department of Education, 2003a). The teaching programmes comprise of school schemes, lesson plans and a range of activity plans. The fourth curriculum layer is called student-experienced curriculum - what PNG students undertake and experience from the teachers' delivery of their micro-curriculum in school and classroom contexts. However, there is no literature in PNG that shows the students' layer of curriculum (student-experienced curriculum. This study strives to define and put on record the students' level of curriculum layer.

The words 'macro-curriculum,' 'micro-curriculum' and 'student-experienced curriculum' will be used throughout this thesis. The macro-curriculum encompasses macro-curriculum layer - global goals, ideas, theories, concepts, and the intermediate policy layer refers to the PNG national outcome-based curriculum. Since the macro-curriculum layer has been amalgamated into intermediate policy layer (PNG national outcome-based curriculum), the words macro-curriculum and national outcome-based curriculum are used interchangeably throughout this thesis. Micro-curriculum means the teaching programmes that are interpreted, developed and delivered to the students by teachers from the macro-curriculum or national outcome-based curriculum in

contemporary school and classroom contexts in PNG (Papua New Guinea Department of Education, 2003a; Queen, 1999). The student-experienced curriculum means the learning experiences that students experience or undertake (Hume, 2006; McGee, 2008). The policy layers of curriculum development and implementation discussed above are summarised in Table 1 below.

<table>
<tr><th rowspan="2">Authors</th><th colspan="3">Layers of Curriculum</th></tr>
<tr><th>Global Level</th><th>National Level</th><th>School & classroom levels</th></tr>
<tr><td>Allen and Vidovich (2008)</td><td>macro policy</td><td>Intermediate policy</td><td>micro policy</td></tr>
<tr><td>(Hume, 2006; McGee, 2008; MoE, 2007; Schagen, 2008</td><td rowspan="2"></td><td>NZ national curriculum</td><td>micro-curriculum & student- experienced curriculum</td></tr>
<tr><td>PNGNED (2003a)</td><td>PNG national outcome-based curriculum</td><td>micro-curriculum</td></tr>
<tr><td>This thesis</td><td colspan="2">Macro-curriculum</td><td>Micro-curriculum & student-experienced curriculum.</td></tr>
</table>

Table 1:
Summary of layers of curriculum

In the primary sector of education, the PNG outcome-based macro-curriculum has two goals that need to be achieved. The first goal, entitled 'Integral Human Development,' calls for the empowerment of every student's "cognitive, emotional, spiritual, physical, moral, cultural and social" [wellbeing aspects of development] (Papua New Guinea Department of Education, 2003a, p. 27). The PNG outcome-based macro-curriculum provides direction for the development of appropriate cultural and traditional values to be integrated into the micro-curriculum in school and classroom situations for students to experience (Papua New Guinea Department of Education, 2002, 2003a). Additionally, the PNG macro-curriculum places stronger emphasis on teachers planning and delivering these values in the form of knowledge, skills, attitudes and values to achieve

quality student learning in PNG contexts. This emphasis points to teachers as key players in making the curriculum goals become reality by crafting and implementing varied meaningful learning experiences for students (Papua New Guinea Department of Education, 2003a).

The second goal of PNG national outcome-based curriculum is called ‘our ways of life.’ This goal seeks to capture the PNG indigenous knowledge in teaching and learning, by redeveloping, retaining, reviving and expanding the forms of indigenous knowledge, skills, attitudes and values that are believed to have been alienated by Western ideas and influences (Matane, 1986; Papua New Guinea Department of Education, 2003a). The indigenous knowledge of PNG refers to such things as: the rich 800 plus local languages; the cultural practices, rituals, initiations, and belief systems of indigenous people; different organic ways of farming; family raising practices; art making; dance and drama; food catering, hunting; fishing and building, to name a few.

The PNG national outcome-based curriculum also suggested teachers integrate and implement appropriate other international knowledge into the micro-curriculum, in order to educate a person who can then live and work productively in PNG and internationally (Papua New Guinea Department of Education, 2003a). The international knowledge includes the new ideas, theories and concepts of science and technology, which have been accepted internationally as important for the positive development of society (Papua New Guinea Department of Education, 2003a).

Features of PNG primary curriculum

The seven key learning areas (curriculum subjects) which were developed from the goals of the national curriculum for primary sector of education are shown in Table 2 below (Papua New Guinea National Department of Education, 2003a, 2003b). Other curriculum documents, teacher guides and student textbooks are also provided.

Lower Primary (Grades 3-5	Upper primary (Grades 6-8
Arts	Arts
Community Living	Social Science
Language	Language
Mathematics	Mathematics
Health Education	Personal Development
Physical Education	Making a Living
Environmental studies	Science

Table 2:
Key learning areas (curriculum subjects) of the PNG primary national curriculum (Papua New Guinea Department of Education, 2003, p. 22).

The upper primary level of education has seven curriculum subjects – Arts, Social Science, Language, Mathematics, Personal Development, Making A Living and Science. Each of these curriculum subjects contains strands, sub-strands, learning outcomes and performance indicators for the teachers to implement in school and classroom settings (Papua New Guinea Department of Education, 2003). Norman (2005) points out that "the [PNG] reformed curriculum is structured around strands, sub-strands, [learning] outcomes, and performance indicators and teachers need to understand their progress and development from one grade to the next" (p.2). Language curriculum subject has three major strands, Mathematics

and Personal Development each has five strands and Science, Social Science and Arts each has four strands. The Personal Development curriculum subject has five strands, and Making A Living three strands (Papua New Guinea Department of Education, 2003a, 2003b). Within each strand, there are many sub-strands, and the learning outcomes are organised into the strands and performance indicators show how teaching and learning could be designed in order to achieve these learning outcomes. The PNG upper primary teachers need to interpret the features in each of these curriculum subjects and develop their micro-curriculum and deliver to the students in school and classroom settings in order to achieve the two goals above.

1.4 Issues and purpose of the study

The government of PNG has developed a national curriculum for human development and learning. However, in PNG, there are concerns or issues relating to national curriculum implementation and quality of students' learning in contemporary school and classroom settings (Hagunama, 2008, Ovia-Aihi, 2010, Solon & Solon, 2005). Literature in other countries highlights issues or concerns relating to curriculum implementation that signal the importance of investigating the PNG outcome-based macro-curriculum implementation (e.g; Berlach, 2004, Beswick, 2006, Lamb, 2010, Perry, 2007, Remilard, 2005, Rogan, 2007).

Additionally, in PNG, stakeholders such as parents, citizens and politicians have open-publicly criticised the outcome-based macro-curriculum implementation as the worst curriculum in the PNG education history in that, it does not facilitate quality student learning (The National, 2009). Solon & Solon's (2005) study

reported some problems or issues relating to macro-curriculum implementation in PNG schools. These issues centre on:

- Teachers' needs for planning and programming of the curriculum outcome into teaching strategies;
- Low level of teachers' reading comprehension;
- Lack of resource materials to support learning under the new curriculum;
- Inadequate professional development of teachers through in-service;
- Conservative attitudes displayed by school leaders, teachers and head teachers;
- Fear of students not performing well in the grade eight examination;
- Lack of school libraries and resource centres for teacher research (Solon & Solon, 2005, p.3).

The quotes above clearly indicate that the interpretation of PNG macro-curriculum, and development and delivery of micro-curriculum are proving to be challenging in school and classroom contexts. The concerns above may be related to teachers' personality straits (Dorman, 2003, Teven, 2007), personal values and beliefs (Beswick, 2006, Hume, 2006), attitudes and behaviour (Hayes, Hindle & Withington, 2007, Thijs, 2009), macro-curriculum content (Hargreaves & Moore, 2000, Moreland, 2003), pedagogies (Lamb, 2010, Stone, 2006) and students' attitudes and behaviour (Schagen & Hipkins, 2008), as reported in other countries. These overseas studies highlight the importance of investigating PNG teachers' pedagogical decisions and actions, and nature of students' learning in the implementation of their national curriculum in school and classroom settings. However, Solon and Solon's (2005) study did not focus on students' perceptions, views and lived experiences in their macro-curriculum implementation, so the nature of students' learning in PNG is yet to be researched.

Additionally, my experience as teacher educator in PNG with in-service teachers (both primary and secondary teachers) indicated a need for research on the national curriculum implementation and quality student learning. I have become personally aware of some issues that in-service teachers, particularly primary teachers, have raised including possible constraints for the successful implementation of the macro-curriculum. These constraints relate to teacher resistance to change, teacher attitudes towards the purposes of education, a lack of understanding of the primary curriculum content, the effort needed to plan and prepare for lessons based on the national outcome-based curriculum and a lack of properly constructed learning activities or experiences appropriate to students' learning.

From the issues and concerns discussed above, it is clear that there is a need to investigate the national curriculum implementation and nature of students' learning in PNG contemporary school and classroom contexts. Thus, the intent of this study has been to investigate teachers' pedagogical decisions and actions and nature of students' learning in the implementation of their outcome-based macro-curriculum in PNG school and classroom contexts. This study was the first of its kind in the PNG upper primary level of education to explore teachers' and students' perceptions, views and lived-experiences in the implementation of their national curriculum. Additionally, this study was carried out in two schools (one urban church-run and one rural government agency), comparing similarities and differences of the findings within and across the two case studies to get a more complete picture about macro-curriculum implementation in PNG upper primary level of education. The methods of data collection involved include, interviewing the teachers and students, videoing their lessons and gathering their teaching and

learning documents to triangulate the findings of the topic or phenomenon under study.

1.5 Research questions of this thesis

To carry out this study and gain access to the field, a key question guided this study project. Three sub-questions were developed from the key question. The questions are:

1. What factors are influencing teachers' decisions and actions, and nature of students' learning in the implementation of their national outcome-based curriculum in contemporary upper primary schools in PNG?

    1.1 What factors are influencing teachers in their interpretation, planning and delivery of the national outcome-based curriculum in classrooms?
    1.2 What factors are influencing students' learning and how?
    1.3 What matches are there between the national outcome-based curriculum, the teachers' micro-curriculum and student-experienced curriculum?

1.6 Structure of this thesis

There are seven chapters in this thesis. Chapter 1 introduces the study by providing the researcher's personal contextual information and involvement in curriculum development and implementation. The background context to the study relates to government, people and history of education and curriculum development. Then the issues and purpose of the study, research questions and the

thesis structure are outlined. Chapter 2 of this thesis contains the review of literature that examines the study problem pertaining to curriculum development and implementation internationally and nationally (PNG). The macro-curriculum content, the teacher, the students, the teaching and learning approaches, and the professional development supports are identified and discussed as factors influencing micro-curriculum implementation in developed and developing countries.

Chapter 3 of this thesis describes the research methodology that was used for this study. An interpretive research paradigm underpins the methodology which uses case studies approach and the qualitative data collection strategies (interviews, observations and documentary). Ethical procedures (including ethical considerations) are also described. Chapters 4 and 5 present the findings from the two case studies, respectively, and describe data in three key groupings: teachers' micro-curriculum implementation, models of micro-curriculum and student-experienced curriculum. Chapter 6 presents the discussion of the findings of the two case studies by comparing and contrasting factors that influenced the micro-curriculum implementation and student-experienced curriculum are examined in this chapter. Chapter 7 concludes the study, and offers knowledge contribution to existing literature and future implications and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The subject of the study raised in Chapter 1 is explored in this chapter, which presents a critical review of literature pertinent to curriculum development and implementation globally and nationally (PNG). Building on this literature, the research methodology chapter is developed, and the reviews are utilised in the discussion on the findings in Chapter 6.

The critical review discusses definitions of curriculum development and models of curriculum, including a theory of micro-curriculum implementation. From this micro-curriculum implementation theory, the macro-curriculum content, the teacher, the student, teaching and learning pedagogies and professional development activities were further explored as factors influencing curriculum implementation in developed and developing countries. Finally, an overall summary of this chapter is presented.

2.2 Definition of curriculum development

Curriculum development can be viewed as a decision-making process (McCutcheon, 1995; McGee, 1997; McGee & Taylor, 2008; Queen, 1999; Walker, 2003), beginning with thought or an idea, which is then implemented through action (Ornstein, 2003). The decision-making process can involve an individual or a group (both small and large), where the ideas about worthwhile knowledge and skills for teaching and learning are discussed, accepted or refuted, argued about and developed. Also, decisions can be made about the general

organisation of the curriculum - an order or system showing how ideas or knowledge and skills are to be developed and presented from one stage to the next (Eisner, 2002; McCutcheon, 1995; McGee, 1997). These decisions may concern the learners, appropriate resources and skills required, time and the contexts of implementation (e.g., Reis, 1999; Walker, 2003; Wardekker, 2004).

However, curriculum decision-making processes are not straightforward and can often be very challenging (Walker, 2003). Such decisions can be affected by political, social, economic, philosophical, ideological, and advanced technological influences in a society (McGee, 1997; McGee & Taylor, 2008). These influences affect the curriculum decision-making processes "at the national level for the development of new or revised syllabuses or handbooks or resources; at school level for the development of school programmes; and at the classroom level for particular class programmes" (McGee, 1997, p. 17). Thus, the decisions about curriculum are made in national, school and classroom settings when implementing different models of curriculum.

2.2.1 Curriculum development models

The theory underpinning curriculum development has had a long history. Many different curriculum models had been developed and implemented between the 1940s and early 1990s that lay the foundation for major curriculum reforms that occurred later between the 1990s and 2000s. Tyler (1949) was considered the father of the first curriculum model, as his curriculum model widely influenced both macro-curriculum development (the national level), and micro-curriculum development in schools, teacher training institutions, universities and other training providing organisations globally. Tyler's model has been called

'rationale/objective' (Kelly, 2004; McKernan, 2008; Parkay & Hass, 2000; Print, 1993; Queen, 1999; Reis, 1999) and 'linear' (Walker, 2003) because it involves the formulating of objectives, goals or aims for student achievement. The content is developed from the objective/goal/aim, and the learning experiences and assessments are then designed from the content. The evaluation is carried out after the implementation of the content to see whether or not the objectives have been achieved (Kelly, 2004; McGee, 1997; Print, 1993; Taylor & Richards, 1979; Tyler, 1949; Wardekker, 2004). This process of developing the curriculum is organised in a systematic way or order (Kelly, 2004; Walker, 2003), where there is a close relationship and strong flow-on links between the objective, content, learning experiences and evaluation stages (George, 2009; Walker, 2003).

From Tyler's (1949) linear/objective curriculum model, many other curriculum models have been proposed by curriculum theorists. In 1969, Hilda Taba (Taba, Durkin, Fraenkel, & McNaughton, 1971) proposed a curriculum model which was very similar to Tyler's linear model (McGee, 1997; Print, 1993) but different in that she claimed the 'situational needs' should be identified or diagnosed first. Situational analysis refers to determining worthwhile knowledge and skills that the learners (students) should learn aspects of, the students' contexts (interests, abilities, aspirations and needs), and the contexts or environments where teaching and learning could be undertaken. It is from these situational needs that the objectives are formulated, followed by the content, teaching and learning experiences and evaluation stages (McGee, 1997; Print, 1993). Nicholls and Nicholls (1978) and Wheeler (1967) designed similar curriculum models based on logical sequencing, where the situational needs are diagnosed or identified, as in the Hilda Taba Model, and then the objectives are designed, followed by content,

teaching and learning experiences, and on to the evaluation phase. From evaluation, the situational needs are again diagnosed, and the curriculum process continues (Hunkins & Hammill, 1994; McGee, 1997; Print, 1993). The curriculum development models of Nicholls and Nicholls (1978) and Wheeler (1967) involve an iterative process, while Taba's et al., (1971) model is prescriptive.

Walker (1971) was another curriculum theorist, whose curriculum model was called 'naturalistic' (McCutcheon, 1995) and 'interactional' (McGee, 1997; Print, 1993). Naturalistic means the different phases of the curriculum should occur as outlined or expected, while interactional is the process where the different phases of the curriculum could interact to influence each other. The interactional or naturalistic model of curriculum development has three phases: curriculum platform, deliberation, and curriculum design (McCutcheon, 1995; McGee, 1997; Walker, 1971). The curriculum platform phase encompasses underpinning theories, beliefs, values, concepts, view points, aims and objectives, while the deliberation phase is where the teachers argue about, refute, accept, change and adapt the curriculum platform in school and classroom contexts (McCutcheon, 1995; McGee, 1997; Walker, 1971, 1990). In other words, the curriculum platform is where the objective is designed, while deliberation phase concerns the development of content for the students to experience. The design phase of curriculum relates to the actual implementation and assessment of the curriculum.

The accounts of curriculum development processes above clearly indicate that the Tyler (1949) model of curriculum commences with the objective phase and ends with the evaluation phase, while Taba's model of curriculum begins with the

situational analysis phase and ends with the evaluation phase. So, Taba's model of curriculum is an extension of Tyler's model. In the models of Nicholls and Nicholls (1978), and Wheeler (1967) the curriculum development commences with the situational analysis phase but does not indicate an end in the evaluation phase. The results of evaluation are used again to redevelop the curriculum in an iterative process. Walker's model of curriculum commences with the objective phase and ends with evaluation. However, each phase of the curriculum may interact with another. As a result of the curriculum development processes described in the models to date, the teachers often transmit the curriculum content to the students, while students appear to learn by passively listening and absorbing and memorising information, before performing summative learning activities (tests and examinations) to measure overall performance (McGee, 1997; McGee & Taylor, 2008; Muijs & Reynolds, 2011). The different models of curriculum development discussed above were collated and incorporated by Print (1993) into a single model for curriculum development, as shown in Figure 3 below.

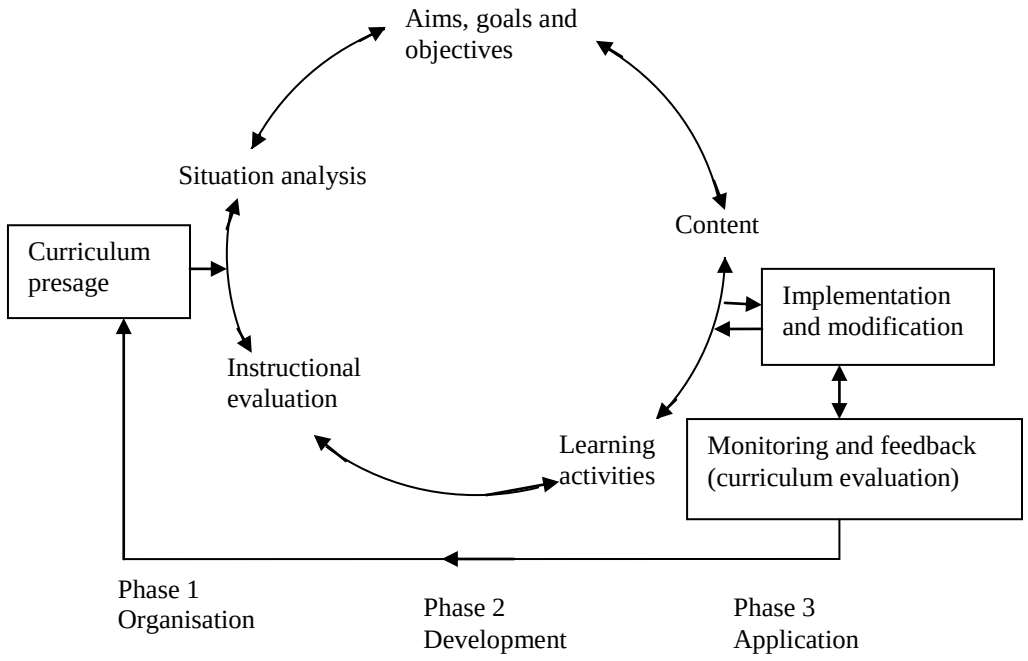


Figure 3: Model of curriculum development (Print, 1993, p. 84).

Figure 3 above shows three phases of curriculum development: phase 1 organisation; phase 2 development, and phase 3 application. In phase 1, teams or committees are formed based on their abilities, qualifications, experiences and competencies to develop the curriculum. This phase is illustrated by the rectangle on the left labelled curriculum presage. Presage means to indicate a future occurrence. In phase 2, the actual curriculum development is done, as represented by circular structure involves an iterative process. At the application phase, the actual curriculum content is implemented in school and classroom contexts. Teachers make modifications to the content to suit students' abilities, needs, and aspirations, as illustrated by a rectangle at the top right. The bottom rectangle on the right shows the evaluation of the implemented curriculum. The team in the organizational phase monitors and evaluates how teachers implemented the curriculum and student learning. Teachers and students provide feedback and based on feedback, the team revisits the curriculum to revise and/or change it.

In the 1990s, a new transformational outcome-based curriculum model was introduced in the United States of America, which was an extension of the different curriculum models as summarised by Print (1993) above. This new curriculum model based on Spady's (1993) ideology, has since been adopted in Australia, New Zealand, South Africa, Scotland, Canada and Papua New Guinea (Fullan, 1999; Papua New Guinea Department of Education, 2003a; Spady, 1993). The descriptor 'transformational' refers to the process of changing or altering current practices to adapt to new ways of teaching and learning, assessing student learning and organising learning environments (Killen, 2003; Spady, 1993; Walker, 2003). In such a curriculum, the students perform a variety of learning activities to construct their own learning "in settings, real situations, relating more

directly to life" (Spady, 1993, p. 10). This approach of curriculum development is called 'inside out' (George, 2009; Spady, 1993), and it is an interactive process (Spady, 1993; Spady & Marshall, 1991). According to George (2009), the 'inside out' description refers to the argument that learning "outcomes should always be central, as the starting point for designing and understanding the design of learning" (p. 161), that is, the curriculum content, pedagogies and student learning activities are developed from the learning outcomes. The evaluation and reporting systems are used to measure whether or not the learning outcomes have been achieved by students.

According to Spady (1993), curriculum content and structure should link with a variety of formative and summative assessments, such as tests, assignments, journal writing, diary keeping, and oral presentations (p. 16). Consequently, in this Spady model, students' assessment reporting systems are criterion-referenced rather than norm-referenced (George, 2009; Papua New Guinea Department of Education, 2003a; Spady, 1993), where teachers report on an individual student's performance and his/her future learning against the learning outcomes using a set of guidelines or criteria. Student achievement is not compared and ranked in relation to other students. Further, the teachers are encouraged to use a variety of teaching and learning strategies in this model to promote quality student learning in school and classroom contexts to achieve the outcomes (George, 2009; Papua New Guinea Department of Education, 2003a), rather than simply transmit information. The implementation of a transformational outcomes-based curriculum is an ongoing process designed to achieve quality student learning in school and classroom contexts (Spady, 1993).

In summary, Print's model of curriculum represented an integration of other curriculum models employing an iterative process of curriculum development. In contrast, Spady's transformational outcome-based curriculum model involves the development first of learning outcomes, followed by the other phases of content, teaching and learning pedagogies, assessment and evaluation. Each phase of the curriculum development interacts to influence the other. Print's model follows prescriptive processes, while Spady's model involves an interactive process. As discussed already, Spady's model of curriculum development has been adopted by many countries for the twenty-first century, including PNG.

The definition of curriculum development and the different curriculum models discussed include curriculum implementation as part of the curriculum development process. This inclusion is because curriculum "implementation consists of the process of putting into practice an idea, program, or set of activities and structures new to people attempting or expected to change" (Fullan, 2007, p. 84). This definition implies that curriculum implementation is related to how teachers interact with the macro-curriculum and develop it into the micro-curriculum, which they deliver to students in school and classroom settings (Deng, 2007; Queen, 1999). Since curriculum implementation forms a key part of Spady's model of curriculum development, implementation of the micro-curriculum in school and classroom contexts should be considered in any investigation into curriculum models. Factors which influence curriculum implementation have been proposed by Fullan (2001, 2007) in his theory of micro-curriculum implementation. This theory of micro-curriculum implementation is discussed in the next section to help frame and examine the study problem.

2.2.2 Theoretical framework of micro-curriculum implementation

To facilitate discussions of factors that may influence the national outcome-based curriculum implementation in PNG upper primary school and classroom contexts, the micro-curriculum implementation theory proposed by Fullan (2001, 2007) is adopted as a framework. This micro-curriculum implementation theory is discussed and expanded upon in the following paragraphs.

In Fullan's theory, micro-curriculum implementation is how teachers actually interpret the macro-curriculum content and develop and deliver it to the students, and how students experience it in school and classroom contexts. Fullan (2001, 2007) proposed three major groupings of factors influencing micro-curriculum implementation: (a) characteristics of change (b), local characteristics, and (c) external characteristics. According to Fullan (2001, 2007), the factors within each of the three groupings interact directly and indirectly to influence micro-curriculum implementation in school and classroom contexts. In this thesis, the word 'interactive' means the action of several interrelated factors that influence the production of success or failure. The three groupings and their factors are described in turn.

The *characteristics of change grouping* consists of need, clarity of chance, complexity and quality/practicality as a system of factors that interact to influence the implementation of macro-curriculum in school and classroom contexts (Fullan, 2001, 2007). The *need* factor is defined by Fullan as the desires, requirements and /or important things for the development of the society that ought to be included in a macro-curriculum change. These needs underpin important aspects or essentials of the outcome-based curriculum content such as

goals, values, ideas and concepts, which should be diagnosed, prioritised and planned for the teachers to interpret, develop and deliver to the students in school and classroom contexts (Fullan, 2001, 2007). The *clarity* of change factor means the goals, values, ideas and concepts, which are included as macro-curriculum content, should be clearly and explicitly written for the teachers to interpret, plan and deliver to the students to experience in school and classroom contexts. A lack of clarity means the macro-curriculum content is not clearly written for teachers to implement.

Complexity means the macro-curriculum content is challenging to schools and teachers, and the implementation remains a continuous difficulty in school and classroom contexts (Fullan, 2001, 2007). The difficulties encountered by teachers can be connected to dissonance between the macro-curriculum content and their goals, values and belief systems, lack of appropriate pedagogies, ineffective use of curriculum documents, and lack of understanding of the reasons for curriculum change. *Quality and practicality c*oncerns the macro-curriculum content being realistic, clear and linked to other needs of the society, as well as teachers being able to implement it without encountering difficulties in school and classroom contexts (Fullan, 2001, 2007). Additionally, the students experience a variety of learning experiences from the content of the macro-curriculum. Fullan's micro-curriculum implementation theory does not single out any particular country or region or type of macro-curriculum and can be applicable to the national outcome-based curriculum implementation in PNG contemporary upper primary school and classroom contexts.

According to Fullan (2001, 2007), the *local characteristics grouping* consists of teachers, principals, community and districts that contribute to having an input in micro-curriculum implementation in school and classroom contexts. The *teachers* factor in influencing the micro-curriculum implementation relates to their personality, attitudes and behaviour and motivation, and depends on a strong interrelationship between the students and others for the implementation to be successful. Fullan also pointed out that the students' attitudes and behaviour, and their understanding, can influence micro-curriculum implementation in school and classroom contexts. The *principals* factor need to understand and embrace curriculum change at the school level. They need to be proactive in their instructional leadership and provide regular support to the teachers in terms of resource allocation, attending to students' concerns, and establishing effective ways to monitor results, as well as providing quality leadership to create a team-work spirit and collaborative work environment among teachers and students (Fullan, 2001, 2007).

The *community* factor refers to the need for active schools' boards and parental involvement in the curriculum implementation to ensure quality student learning (Fullan, 2001, 2007). The school boards need to understand the nature of the curriculum change, support the principals and the teachers, and make decisions in the best interests of students' learning. Also, parents need to build a close relationship with the schools by supporting the principals and the teachers in various learning activities designed by the schools for the students to experience (Fullan, 2001, 2007). Like community, the *district* factor refers to the provincial and district education personnel's need to understand curriculum change, adopt it into their administrative systems, and support curriculum implementation with

required resources such as finance, paying regular visits to both rural and urban schools, and providing professional development activities for the teachers. These scenarios clearly point to the stakeholders (provincial and district education personnel, principals, parents) having input into the success of micro-curriculum implementation, while teachers' and students' attitudes and behaviour, and their motivation and understandings, are factors which are applicable in PNG upper primary school and classroom contexts.

According to Fullan (2001, 2007), the *external factors* grouping consists of government and other supporting agencies which also have an input into the quality of micro-curriculum implementation in school and classroom contexts through the sourcing of funding and provision of support through the National Education Department (NED). The role of the NED is to establish relationships between the provinces, districts and schools to disseminate information, source funding, provide countrywide professional development support for the teachers, distribute curriculum materials, and monitor and evaluate the implementation of the curriculum in school and at classroom levels. Schools also get support from other agencies, such as Non-Government Organisations (NGOs), politicians and other government agencies, for the implementation of the micro-curriculum (Fullan, 2001, 2007).

In summary, these discussions indicate that the interpretation, planning and delivery of the outcome-based national curriculum and the nature of students' learning can be influenced by factors related to: (1) the macro-curriculum content, (2) the teacher, (3) the student, (4) teaching and learning approaches, and (5) professional development activities for the teachers in PNG upper primary school

and classroom contexts. These factors are further explored forming the themes for the literature review in the following sections, as they relate to the study problem.

2.3 Macro-curriculum content

This section discusses the macro-curriculum content as a factor influencing the nature of micro-curriculum implementation in school and classroom settings. The first sub-section presents the various definitions and organisation of macro-curriculum content, while the second sub-section discusses types of macro-curriculum content that teachers interpret and develop into their micro-curriculum and deliver to the students to experience. The final sub-section discuses the implementation of macro-curriculum content in both developed and developing countries.

2.3.1 Definitions and organisation of macro-curriculum content

There are many different definitions of macro-curriculum content that have been proposed by theorists, writers, educators and educational psychologists in curriculum development and implementation processes. For example, Henson (2010) pointed out that macro-curriculum "content is defined as the information selected to be part of a curriculum" (p. 235), while Walker (2003) proposed that macro-curriculum "content can be described as a list of school subjects or, more specifically as a list of topics, themes, concepts, or works to be covered" (p. 5). Nicholls and Nicholls (1978) noted that macro-curriculum "content might be described as knowledge, skills and values to be learned" (p. 48). The definitions above can be summarized where macro-curriculum content is viewed as topics, themes and concepts that contain detailed ideas about knowledge, skills, attitudes and values (Foshay, 2000; Henson, 2010; Papua New Guinea Department of

Education, 2003a), which are systematically sequenced or organised for the teachers to make meaning of and deliver to the students to experience in school and classroom settings (Walker, 2003).

Organisation of macro-curriculum content

The sequencing or organising of macro-curriculum content is called a 'vertical dimension,' while 'horizontal dimension' refers to the scope or breadth of the content (Henson, 2010, pp. 188-189). According to Henson, the vertical dimension is concerned with the presentation of topics and sub-topics, concepts and sub-concepts, and ideas and sub-ideas from the top down, in a hierarchical order, while the horizontal dimension looks to inclusion of sufficient topics, concepts, and ideas for teaching and learning purposes in a given timeframe. However, not all macro-curriculum content is systematically sequenced in this fashion for the teachers to implement in school and classroom situations. If the macro-curriculum content is not systematically sequenced for the teachers to implement in school and classroom settings, they (teachers) can encounter difficulties implementing it (Fullan, 2001, 2007; Henson, 2010). In addition, Wardekker (2004) noted that some macro-curriculum content contains information that is not reader-friendly for the teachers to read and understand. He pointed out that such macro-curriculum content contains comprehensive reading information, which teachers often encounter difficulties with when following through and developing their micro-curriculum in school and classroom contexts.

In most countries, including PNG, the macro-curriculum content is developed by a National Education Department (NED) and given to teachers to implement in school and classroom settings (Harris, 2008; Kelly, 2004; Papua New Guinea

Department of Education, 2003a; Walker, 2003; Wardekker, 2004). The literature on macro-curriculum recommends that it should contain subject-centred content, society-centred content, teacher-centred content, learner-centred content and integrated content for the teachers to interpret, develop and deliver to the students in school and classroom contexts in the twenty-first century, if the aim is to empower students with the potential, aspiration and ability to become productive members of society (Eisner, 2002; Schiro, 2008; Walker, 2003; Wardekker, 2004). Each of these macro-curriculum content types is discussed in turn below.

2.3.2 Types of macro-curriculum content

This sub-section discusses the literature on the different types of macro-curriculum content that the teachers implement in school and classroom contexts, including subject-centred, society-centred, teacher-centred, learner-centred and integrated content.

Subject-centred content

Bruner (1960, 1986) was first to propose subject-centred content, which is designed and delivered for the development of the student's intellect or mind. Bruner (1960) claimed that "the task of teaching a subject to a child at any particular age is one of representing the structure of that subject in terms of the child's way of viewing things" (p. 33). This view of curriculum content means that the subject content knowledge selected for teaching is at the students' level of ability and understanding (Eisner, 2002; Walker, 1971). This knowledge can be factual, conceptual, procedural and meta-cognitive, and is used through a range of learning activities for the purpose of empowering students with a rational mind (McNeil, 2006). Factual knowledge is viewed as basic and contains specific

terminologies, ideas and concepts the students need to master or acquire in an individual curriculum subject to solve simple problems (Forehand, 2005; Krathwohl, 2002; Vieyra, 2006). Conceptual knowledge refers to understanding of the interrelationships which exist within a larger body of ideas and concepts. These relationships include theories, models, structures, categories, laws and rules and generalisations (Anderson & Krathwohl, 2001; Krathwohl, 2002; Mason, 1999).

Meta-cognitive knowledge is the student's general understanding or comprehension level of their abilities, and their awareness of how knowledge can be applied strategically in different contexts based on their understandings of their own strengths and weaknesses (Anderson & Krathwohl, 2001; Krathwohl, 2002; Pintrich, 2002). Meta-cognitive knowledge includes strategic knowledge, knowledge about cognitive tasks or learning activities, and self-knowledge of capability in a curriculum subject (Ferguson, 2002; Krathwohl, 2002; Pintrich, 2002; Raths, 2002). According to Pintrich (2002), strategic knowledge refers to how students use their general thinking to strategically solve problems in different subjects, while knowledge about cognitive tasks or learning activities is how students retrieve information from experience (memory) and use it in different situations to find appropriate solutions to problems. Self-knowledge is about students making their own choices, based on their strengths and weaknesses when performing the learning activities.

Subject-centred content focuses on promoting the students' intellectual development so that they become knowledgeable or intellectual members of society (Bruner, 1960; Campbell, Campbell, & Dickinson, 2004; Kalyuga, 2009).

The development of an intellectual or mentally disciplined person was first coined by Dewey in 1902, (as cited in Terwel, 2004), and Terwel contends that to participate effectively in the twenty-first century, students need to develop a disciplined mind from detailed content knowledge gained in a variety of curriculum subjects through learning activities. It is believed such learning at the primary level of education develops a disciplined mind (Schiro, 2008), and eventually some students become intellectuals, such as lawyers, accountants, mathematicians, linguists, academics, while some students undertake other productive activities in their lives and serve society (Bruner, 1960; Gardner, 2006; Schiro, 2008).

Society-centred content

The aim of including society-centred content in a macro-curriculum is to meet the needs of the society (Eisner, 2002; Schiro, 2008). Schiro describes two forms of society-centred content: 'social efficiency' and 'social reconstruction'. Social efficiency and social reconstruction content enhances the production of future citizens through a range of learning activities with "the skills and procedures they need in the workplace and at home to live lives and perpetuate the functioning of society" (Schiro, 2008, p. 4). Social efficiency is concerned with macro-curriculum content containing ideas and concepts that promote, orient towards, and empower the students to become productive citizens or members of society (Knoll, 2009; Schiro, 2008; Spady, 1993). Such content is thought to enable students to take control of their own learning behaviour and the environments in which they operate from (Popkewitz, 2009; Schiro, 2008). Social reconstruction content on the other hand consists of ideas and concepts aimed at solving societal problems pertaining to social inequalities and injustice arising from gender,

sexism, racism, illiteracy and other social issues related to politics and economics (Schiro, 2008; Terwel, 2004; Walker, 2003). According to Walker (2003), these forms of society-centred content embrace the development of students with the core "values of [justice], equality, liberty, and community" (p. 71) to reconstruct society as the future adult generation they can live harmoniously.

Teacher-centred content

Teacher-centred content contains concepts and ideas for the teacher to teach to the students in school and classroom situations (Schiro, 2008). The concepts and ideas are broken down to clearly show how the teachers could follow and deliver them to the students (Schiro, 2008; Walker, 2003). Teaching and learning resources, pedagogies and other related resources required by the teachers to implement the macro-curriculum content are also listed (Walker, 2003). This content is transmitted to the students as intended or planned, while the students' job or task is to learn from the teachers (Muijs & Reynolds, 2011; Schiro, 2008; Walker, 2003). The aim of the teacher-centred content is to help teachers to transmit the content knowledge directly to the students so that the students can become intellectual members of society (Bruner, 1960; Queen, 1999). Teachers are viewed as intellectuals who are experts in the knowledge the students need to learn (Henson, 2010; Walker, 2003). Students in turn absorb and memorise what the teachers transmit to them in school and class contexts (Walker, 2003).

Learner-centred content

Many authors identify learner-centred content as the ideal curriculum to develop human potential and abilities (Dewey, 1902; Matane, 1986; Papua New Guinea Department of Education, 2003a; Schiro, 2008; Spady, 1993; Walker, 2003).

Dewey was the first to propose child-centred content for a macro-curriculum arguing that the child should be the centre of macro-curriculum content development and delivery in school and classroom contexts. Proponents of this view claim that learner-centred content empowers the individual student to develop his or her potential and abilities to be a productive member of the society (Walker, 2003; White, 2005).

Implementing a learner-centred content involves the teacher mapping out individual students' learning needs, such as interests, abilities and prior knowledge and experiences, and developing the content to meet these needs, then delivering to students to construct their own learning. According to Schiro (2008), the teachers who implement learner-centred content "see the world through the eyes of the learners, who are their central concern" (p. 101). In other words, the teachers facilitate the macro-curriculum content based on the students' learning needs such as interests, abilities and aspirations, potentials. The learners perform the learning activities and reconstruct their own learning in many different situations, as they adapt and build on from previous learning experiences under the guidance or support of their teachers (Cobb & Yackel, 1996; Gredler, 2009; John-Steiner & Mahn, 1996; Vygotsky, 1978). As Rouet (2009) concurs through their learning experiences, the "learners [learn] to make their own decisions ... for genuine knowledge construction" (p. 448).

Integrated content

An integrated macro-curriculum is one that uses a combination of subject-centred content, society-centred content, teacher-centred content and learner-centred content, as discussed above, to develop students' potential and abilities as

productive members of the society (Huang, 2004; Lester, 1992; Schiro, 2008; Walker, 2003; Wardekker, 2004). According to Walker (2003), the curriculum ideal is one that balances all four types of macro-curriculum content. He claims:

> Sometimes a curriculum ideal is clearly student-centred, teacher-centred, subject-centred or society-centred. More usually, an ideal will have a characteristic way of thinking about students, teachers, subjects, and society and a distinctive set of relationships or priorities among the four. The mix we find in any particular ideal helps us understand the relative importance of the four crucial considerations in that ideal. Since all four common places are important, a sound curriculum should have an appropriate balance among them. (p. 59)

Schiro (2008) also claims that teachers need to integrate the different content types as discussed above into a micro-curriculum arguing that "the job of the teacher and the curriculum is to create engaging learning experiences that naturally integrate the content of the different academic disciplines in holistic ways that do not atomize and partition knowledge" (p. 101).

The next section moves from the development of the macro-curriculum to its implementation as the micro-curriculum in school and classroom contexts.

2.3.3 Implementation of macro-curriculum content

The manner of implementing the macro-curriculum content can be described as the 'enactment,' 'fidelity' or 'mutual adaption' approaches (Snyder, Bolin, Zumwalt, & Fullan, 1995). An enactment approach refers to the actual

interactions the teacher and students undertake to experience when they use the macro-curriculum content in school and classroom situations (Remilard, 1999, 2005; Snyder et al., 1995; Walker, 2003), while mutual adaption and fidelity approaches are concerned with the teachers' interactions with the macro-curriculum content (Snyder et al., 1995). In particular, the mutual adaption approach describes a process where the teacher alters or modifies the content of the macro-curriculum to suit the students' learning needs in school and classroom situations (Fullan, 1977), while the fidelity approach involves the implementation in school and classroom contexts of the macro-curriculum content as it stands without change being made (Carroll et al., 2007; Fullan, 1977; O'Donnell, 2008). In the following paragraphs, macro-curriculum content implementation is discussed in developed and developing countries.

Implementation of macro-curriculum content in developed countries

Typically, in an outcome-based curriculum in developed countries, the learning outcome is the central feature the teachers consider when developing their micro-curriculum. The learning outcomes and accompanying performance indicators are generic and the teachers need to interpret the ideas and concepts contained, and develop a micro-curriculum that they deliver to students in school and classroom contexts (Hargreaves, Earl, Moore, & Manning, 2001; Hargreaves & Moore, 2000; Spady, 1993). Spady (1993) maintains that teachers need to elaborate or expand the learning outcomes of the macro-curriculum into the micro-curriculum content through a variety of formative and summative learning activities that students to undertake to achieve the learning outcomes.

Krathwohl (2002) proposed that the teachers need to develop their micro-curriculum content from the macro-curriculum learning outcomes in ways that "form separate dimensions, the noun providing the basis for the Knowledge dimension and the verb forming the basis for the Cognitive Process dimension" (p. 213). In other words, the 'nouns' in the learning outcomes of the macro-curriculum describe the desired knowledge, while the 'verbs' illustrate the cognitive skills. For example, one of the learning outcomes of the national 2007 NZ curriculum reads: "describe the characteristics of pubertal change and discuss positive adjustment strategies" (New Zealand Ministry of Education, 2007, p. 66). In this learning outcome, the nouns 'characteristics' and 'adjustment' describe the knowledge, while terms 'describe' and 'discuss' are verbs that illustrate cognitive skills. The learning outcomes in the PNG national outcome-based curriculum also contain knowledge and cognitive processes dimensions. For example, the learning outcome: "explore the functions of different systems and parts of the body" (Papua New Guinea Department of Education, 2003b, p. 22) from the upper primary Personal Development area of the curriculum contains the nouns functions, systems, parts and body which point to the knowledge dimension, while 'explore' is a verb that illustrates the cognitive process dimension. In the Papua New Guinea education system, the outcomes-based curriculum identifies what students will demonstrate as a consequence of following the national syllabuses developed for Elementary prep to grade 12. Each subject syllabus identifies a set of outcomes for each grade that students are expected to achieve. Each outcome is accompanied by a list of indicators that identify examples of the knowledge, skills and attitudes that students will need to demonstrate in order to achieve the learning outcome. Teachers will use the outcomes and indicators to write learning objectives when planning programmes and lessons. These objectives will identify

the learning steps to be completed in order to achieve the learning outcomes (Department of Education, 2003a).

In the USA, studies by Hargreaves and Moore (2000) and Hargreaves et al. (2001) found that some teachers implementing an outcome-based macro-curriculum were making meaning from the learning outcomes and designing a variety of appropriate learning activities for the students to experience. However, the teachers also revealed that the interpretation and breaking down of the learning outcomes to plan and deliver the micro-curriculum to the students in school and classroom contexts were challenging. This process was difficult because the macro-curriculum learning outcomes were not clearly written and were too broad for the teachers to take meaning from and deliver to the students (Hargreaves et al., 2001).

A number of studies in Australia and New Zealand found teachers experienced difficulties in implementing outcome-based macro-curriculum (Lamb, 2010; Moreland 2003; Schagen & Hipkins, 2008; Stone, 2006). According to Lamb (2010), Moreland (2003) and Stone (2006), the outcome-based macro-curriculum content was not clear enough for the teachers to interpret and develop their micro-curricula for delivery to the students. In particular, Moreland's (2003) study in New Zealand found that "details of the different technological areas, including the associated knowledge bases … were not well articulated or understood by teachers" (p.277), while Stone's (2006) study in Australia reported that teachers were compressing the macro-curriculum content into their teaching programmes and an "over-abundance" of information was delivered (p.135). Further, Stone (2006) and Schagen and Hipkins' (2008) study in New Zealand found that the

non-availability of relevant teaching and learning resources to support individual student's learning needs and the implementation of individual curriculum subjects, the lack of funds, and the requirement of more time for planning and preparation, have hindered the macro-curriculum content implementation. Also, Lamb's (2010) study in Australia reported that the implementation of the macro-curriculum content was inhibited because the principal of the school did not accept the new curriculum change, and "exercised 'power over' the teachers by restricting opportunities for collaboration and planning in mathematics, and demanding that teachers follow the [old] school mathematic programs" (pp. 201-202). While Lamb (2010) and Stone (2006) reported that teachers experienced difficulties in employing constructivist teaching approach in delivering the content of their micro-curricula, as anticipated by the outcome-based macro-curriculum, Moreland (2003) found that teachers employed constructivist pedagogical approaches: "In planning lesson sequences the most noticeable shift for teachers was in their deliberation planning of opportunities for student to review, shift and modify their thinking and work" (p.290). What appeared to be common in these studies was that teachers were able to make meaning from the macro-curriculum content, and planned the units of work to be covered, as well as students' learning activities (Lamb, 2010; Moreland, 2003; Stone, 2006). Also, in New Zealand, the study commissioned by the Ministry of Education (MoE) to investigate the implementation of NZNC with secondary and primary teachers, McGee et al. (2004) found that primary teachers planned both single subject and integrated subjects units of work and delivered them to students. For example, the teachers integrated health curriculum content into other curriculum subjects' content. Years 7 and 8 teachers also integrated "food and nutrition" content into English, and the physical education content into Te Reo Maori and English

subjects. At the secondary school level, the study found that the teachers taught subject-centred content (separate learning areas) to the students (McGee et al., 2004).

Further, a national survey by Schagen and Hipkins (2008) investigated the implementation of the 2007 New Zealand National Curriculum in terms of the impact it has had on secondary and primary teachers, principals, and other stakeholders such as parents. In primary curriculum implementation, the study found that half of the teachers viewed the revised curriculum content as allowing for integration of different subjects, while 30 percent of the teachers indicated that there was no difference since they had been integrating subjects in the previous version of the New Zealand National Curriculum. The secondary teachers indicated that they were able to interpret, plan and deliver the curriculum intent from the revised version.

Additionally, the literature indicates that when teachers interact with macro-curriculum content to interpret and develop their micro-curricula, they often thought of questions related to 'what' and 'how' to reach decisions about teaching and learning (Dillon, 2009; McNeil, 2006). The *what* questions teachers thought of refer to the nature of curriculum content (worthwhile knowledge and skills), while *how* questions are concerned with the meaning-making processes they (teachers) undertake for the students to experience, and the processes involved in designing and delivering of the micro-curriculum content and students' learning (Remilard, 1999, 2005). For example, teachers asked questions like: what are the worthwhile knowledge and skills needed to plan, and how can these be delivered to students to experience in classroom contexts?

When teachers interact with the macro-curriculum content "before," "during" and "after" (McGee, 1997, p. 69), they develop a "participatory relationship" with the curriculum (Remilard, 2005, p. 235), which involves the teachers' studying, reading, evaluating and adapting the macro-curriculum content for school and classroom contexts (Remilard, 1999). In the USA, the study by Drake and Sherin (2006) within a primary school, found that the teachers used an iterative process of reading, evaluating and adapting the macro-curriculum content to design and deliver their micro-curricula. Reading is the process of looking at the macro-curriculum content and making meaning, while evaluating is judging the content in the context of the students' learning needs, pedagogies, relevant resources and contexts of learning when deciding the micro-curriculum content. Adapting involves the teachers making changes to the macro-curriculum content when devising the micro-curriculum content in ways that fit the learning situations in school and classrooms and allow the students to achieve the learning outcomes (Drake & Sherin, 2006).

In summary, the studies in Australia and New Zealand clearly indicated that outcome-based macro-curriculum content, availability of relevant teaching and learning resources, lack of funding and time needed for planning influenced the teachers' interpretation and development of their micro-curricula. While some New Zealand teachers appeared to use constructivist pedagogy in implementing their micro-curricula to students, some Australian teachers experienced difficulties in employing the constructivist teaching approach. Also in Australia, some teachers were impacted by some school principals' lack of support in the implementation of the outcome-based macro-curriculum content. Similar to teachers in Australia and New Zealand, in the USA, some teachers encountered

difficulties breaking down the learning outcomes for the outcome-based macro-curriculum to develop their micro-curriculum, while some teachers were able to develop their micro-curriculum. However, the teachers in Australia, New Zealand and USA were interpreting and developing their micro-curricula from the macro-curriculum content and delivering to the students in school and classroom settings. Similar to studies in developed countries, studies in developing countries have indicated how the macro-curriculum content was implemented in school and classroom contexts. The following paragraphs discuss literature related to macro-curriculum content implementation in developing countries.

Implementation of macro-curriculum content in developing countries

Learning outcomes of the macro-curriculum are central to micro-curriculum development and delivery in school and classroom contexts (Spady, 1993). Like Berlach (2004) in Australia, Norman (2005) pointed out the differences between the learning outcomes written in the outcome-based macro-curriculum and the objectives in the objective-based curriculum in the previous macro-curriculum in PNG. Norman explains that "the reformed curriculum uses outcomes to replace objectives" (p. 2), and points out that objectives are written in the future tense, while learning outcomes are in the present tense. She argues that outcomes written in the present tense imply students are to undertake a variety of formative learning activities, since their (students') learning is occurring at the time they perform these activities, rather than in the future in summative learning activities, as indicated in the objectives in the objective-based macro-curriculum. In this new approach to students' learning, Norman (2005) emphasised that teachers should focus on the learning outcomes the students need to learn at present, rather than at the end of a lesson or a programme in the objective-based curriculum.

Studies in developing countries including PNG have reported on a number of factors that influence implementation of outcome-based macro-curriculum in school and classroom situations (Hagunama, 2008; Kaleva et al., 2005; Norman, 2005; Ovia-Aihi, 2010; Rogan, 2007; Rogan and Aldous, 2005; Solon & Solon, 2005). Teachers in South Africa and PNG experienced difficulties understanding the outcome-based macro-curriculum content and did not know how to break down the learning outcomes and performance indicators to develop their micro-curricula (Kaleva et al, 2005; Rogan, 2007; Rogan and Aldous, 2003, 2005). As a result of this, the teachers in the two countries did not interpret what the outcome-based macro-curriculum content intended for the students to learn, resulting in a mismatch between the macro-curriculum content and teachers' micro-curriculum.

While in South African, the teachers' "understanding of OBE [outcome-based education] implementation is seen as a change in teaching style, and not the achievement of the specific and critical outcomes" (Rogan, 2007, p. 113), the PNG teachers encountered difficulty reading, understanding and making sense of the terminologies such as strands, learning outcomes and performance indicators, although these words have been defined (Solon & Solon, 2005). Such terms underpin the outcome-based macro-curriculum content, and when these words are difficult for teachers to understand and comprehend the processes of interpreting and developing an effective micro-curriculum obviously remains a challenge (Kaleva et al., 2005). When outcomes-based curriculum content is complex and lacking clarity to teachers, there are problems, as teachers find it difficult to interpret, develop and deliver a quality micro-curriculum. They may misinterpret the purpose and the intent of the curriculum and resort to planning and delivery of the micro-curriculum based on their own personal belief systems, opinions, and

management styles and knowledge. The intended outcomes are not achieved (Fullan, 2001, 2007; Norman, 2005; Queen, 1999).

Additionally, Ovia-Aihi's (2010) study of rural and remote primary schools in PNG found that teachers' lack of reading and understanding the macro-curriculum intent impacted on their interpretation of the macro-curriculum content, and planning and delivery of the micro-curricula, while the African teachers held "overwhelming desire to faithfully implement the new curriculum, but tinged with an enormous perplexity about how to do [it]" (Rogan & Aldous (2005, p. 331). The studies in Africa and PNG also found that non-availability of relevant teaching and learning resources influenced teachers' in planning and delivering their micro-curricula as well as lack of insufficient financial support by the governments (local and national) and poor physical infrastructure conditions of the schools inhibited the teachers in the implementation of outcome-based macro-curriculum content (Ovia-Aihi, 2010; Rogan, 2007; Rogan & Aldous, 2005)

In PNG, other stakeholders, such as politicians, criticised the implementation of the 2004 outcome-based national curriculum as the worst curriculum in the history of the PNG education system. In a news article (Kenneth, 2009, March 16), it was reported that a Member of Parliament (MP) raised great concern about the national curriculum now being implemented in schools, which he believed was yet to effectively serve the needs of the students. The Education Minister was quoted in the news media saying that teachers needed further training in order to fully understand the curriculum and its rationale and to implement it effectively in primary schools in the PNG primary education sector (The National, 2009).

However, Hagunama's (2008) study with 6 upper primary teachers in PNG revealed that teachers integrated the outcome-based macro-curriculum subjects using a thematic approach. The thematic approach is where "the teachers clustered all the learning outcomes from other subjects which were relevant to the learning outcome in technology and developed a teaching plan" (p. 137). Two integrated plans were developed from the thematic approach, which related to theory and practice. However, the study did not report on the actual delivery of the two integrated plans and students' experiences of the curriculum in school and classroom contexts.

In summary, the literature discussed above clearly indicated that outcome-based macro-curriculum content was difficult for the teachers to interpret and develop their micro-curricula and deliver to the students because the terminologies such as strands, learning outcomes and performance indicators were not clear enough to understand, although they were defined. The teachers lack in understanding to read and comprehend the intent of the macro-curriculum content inhibited the implementation of the macro-curriculum, Further, the non-availability of relevant teaching and learning resources and physical infrastructure influenced the teachers in the implementation of outcome-based macro-curriculum content.

In relation to macro-curriculum content as a factor influencing the micro-curriculum implementation, as pointed out, Fullan (2001) has asserted that macro-curriculum content can be problematic for micro-curriculum implementation, in that "teachers and others find that the change [of new curriculum] is simply not very clear as to what it means in practice" (p. 77). The literature relating to the

teacher as a factor influencing macro-curriculum implementation in school and classroom contexts is discussed in the next section.

2.4 Teacher as a factor influencing curriculum implementation

In curriculum implementation, teachers develop a participatory relationship between the curriculum and the students (Remilard, 2005) and influence the students' learning in school and classroom contexts (Rushton, Morgan, & Richard, 2007; Sanders & Horn, 1998). The literature linked to the teacher as a factor in the implementation process is discussed, and has three sub-sections: teachers' personal characteristics, their professional tasks, and relationships with students.

2.4.1 Teachers' personal characteristics

Teachers' personal characteristics can positively influence or inhibit the different stages of curriculum implementation, such as interpreting, developing, and the delivery of worthwhile learning opportunities for the students to experience (Fullan, 2001; McGee & Taylor, 2008). The implementation of the micro-curriculum is influenced by teacher personality traits, values and beliefs, and attitudes and behaviour (Teven, 2007). Each of these personal characteristics is discussed in turn below.

Teachers' personality traits

Psychologists define personality traits as one's natural ability or intellectual endowments of character pertaining to undertaking the activities and relating to others (Berk, 2007, 2010; Eysenck, 1986). The literature discusses five main

human personality traits such as extraversion, neuroticism, agreeableness, conscientiousness and openness which influence our thinking and thought processes (Berk, 2007, 2010; Costa & McCrae, 1992; Eysenck, 1986; Lee-Baggley, Preece, & DeLongis, 2005; Matthews, Deary & Whiteman, 1998; Robert & Kendler, 1999). The teachers' personality traits can impact on the micro-curriculum implementation in school and classroom settings (Berk, 2007, 2010; Mitchell & Ziegler, 2007; Poole et al., 2007).

People who are extroverts tend to be more sociable and cooperative, feel happy, relate to activities well and are adaptable to their environments (Costa & McCrae, 1992; Eysenck, 1986), while people who are neurotic tend to be more stressed, burnt-out and depressive in the activities they perform and in relating to other people (Matthews et al., 1998; Robert & Kendler, 1999). Agreeableness as a personality trait describes people who tend to be more cooperative, collaborative, and supportive and respect other people's views and opinions when interacting in social activities (Neuman, Wagner, & Christiansen, 1999), while people who are more conscientious tend to exhibit perseverance, thoughtfulness, self-discipline, follow rules, are well organised, focus on activities and strive to achieve (Cano-Garcia, Padilla-Munoz, & Ortiz, 2005; McCrae & Costa, 1986). According to Berk (2007, 2010), Costa and McCrae (1992) and Lee-Baggley et al. (2005), people who tend to be more open are creative, imaginative, open and flexible, intellectually active and sensitive to inner feelings of others.

Teachers' personality traits are part of their natural make up or characters (Berk, 2007, 2010; Mitchell & Ziegler, 2007; Poole et al., 2007) acting as internal forces that shape their thinking and thought processes and impacting on how they

implement the micro-curriculum in school and classroom settings (Fullan, 2001, 2007; Steiner, 2004). An individual teacher's different personality traits such as being neutral, open, agreeable, and being conscientious can engage or disengage student learning in implementing the micro-curriculum in school and classroom settings (Rushton et al., 2007).

Studies in Australia, New Zealand and USA reported that these main five personality traits impacted on how teachers interpreted the macro-curriculum and developed and delivered their micro-curriculum to the students (e.g., Dorman, 2003; Milfont, Denny, Ameratunga, Robson, & Merry, 2007; Teven, 2007; Zembylas, 2005). These studies reported that the teachers who tend to be more agreeable, conscientious, and open created friendly teaching interactions to engage students in learning, while teachers who tend to be more neurotic displayed 'control' teaching behaviour, and sometimes their teaching interactions discouraged students' learning. For example, Teven's (2007) study concluded that the teachers who tend to be more agreeable, conscious and open were 'caring' towards the students, while teachers who have less of these traits often experienced burn-out and were stressful in the implementation of the micro-curriculum.

However, Berk (2007, 2010) and Poole et al. (2007 argue that all five main personality traits can encourage or discourage student learning and development, depending on how a teacher aligns his or her personality with his or her teaching behaviour in micro-curriculum implementation. Additionally, Fullan (2001, 2007) stressed that teachers' personality can engage student learning when teachers feel and think positively towards each student, act neutrally and openly treat all

students equally regardless of class, gender, students' physical impairment, colour, race, religion and the like. The teachers' values and beliefs can be strong convictions or driving forces influencing their thought processes, which they use these to make many choices and to reach decisions in deciding what is 'worthwhile' (knowledge and skills) for the students to learn (Barkatsas-Tasos & Malone, 2005; Parkay & Hass, 2000).

Teachers' values and beliefs

Values are ideologies that are central to human beings (Dunn, 2006), and beliefs are influenced or determined by the values human beings have internalised through experience (Lemin, Potts, & Welsford, 1994). Teachers' internalised values are called 'self-concepts' (holding beliefs about themselves, developed from experience) which shape their thinking processes and in turn influence their practices and students' learning (Brown, 2004; Muijs & Reynolds, 2005). According to Dunn (2006), beliefs are expressed when we are passionate about, will for, and have a desire to do certain activities. For many teachers "beliefs are deeply ingrained, especially where they touch on deeply held values and ideologies" (Muijs & Reynolds, 2011, p. 94). Hence, the development and delivery of micro-curriculum and how students are engaged in different learning experiences in school and classroom situations can be influenced by the values and belief systems held by teachers (Muijs & Reynolds, 2011).

Teachers' belief systems influencing curriculum implementation have been identified and grouped into three categories in Beswick's (2006) study of the mathematics curriculum subject in Australia. They are (1) centrally held beliefs; (2) clustering beliefs; and (3) the basis on which the beliefs are held. The centrally

held beliefs are strongly linked to other beliefs, and the processes that one would take or need to be taken to alter and adapt to new practices are often difficult (Muijs & Reynolds, 2011). Clustering beliefs are held in groups and are fragmented, so they are also difficult to change. Muijs and Reynolds (2011) claim that teachers' belief systems are influenced by 'teacher knowledge' which they catergorised as content knowledge (teachers' curriculum subject content knowledge) pedagogical knowledge (teachers' effectiveness of teaching) pedagogical curriculum subject knowledge (teachers' effective strategies or methods in implementing the curriculum subject) and personal practical knowledge (how well teachers know each of their students).

Teachers who know their students' strengthens and weakens in their learning abilities and aspirations often turn to effectively implement the curriculum (Whyte, 2008). Studies conducted in Israel, USA and New Zealand also clearly revealed that the values and beliefs teachers had developed from their content knowledge and pedagogical content knowledge influenced their curriculum implementation and their students' learning in school and classroom contexts (Drake & Sherin, 2006; Hume, 2006; Leander & Osborne, 2009; Levin & Nero, 2009; Remilard, 2005). Remilard (2005) recommended that the teachers' belief systems and the content knowledge they bring when interacting with the curriculum should be further investigated. Hume (2006) revealed that "the beliefs and values teachers held about science and the teaching and learning of science, and the pedagogical styles ... have had a direct bearing in *why* students' learned particular content" (p. 307).

A number of studies conducted in Pacific Island countries, such as PNG and Solomon Islands have shared similar views to the studies in USA, Israel and New Zealand finding that teachers' values and beliefs were influenced by content knowledge and pedagogical content knowledge. For example, in the study by Alamus (2010) with 16 primary teachers in the Solomon Islands, it was found that the teachers' beliefs were influenced by content knowledge and pedagogical content knowledge in the mathematics curriculum area. The study reported that each teacher held different beliefs about the nature of mathematics content knowledge and associated pedagogical content knowledge. In terms of mathematics content knowledge, the majority of the teachers held strong convictions that mathematics as a curriculum subject was both problem-solving and student-oriented, but in relation to their pedagogical content, the teachers believed that the mathematics pedagogy was teacher-centred.

In PNG, the study by Hagunama (2008) examined six primary teachers' beliefs about the implementation of the upper primary level of the national outcome-based curriculum within the *Making a Living* subject area, as part of technology and technology education and the supporting curriculum materials. The teachers primarily believed that *Making a Living* subject content was technology and skills-oriented. In another study, Kaleva (2003) found that grade 7 and 8 teachers held strong beliefs about the nature of mathematics content knowledge and pedagogical content knowledge, which were connected to PNG cultural practices and formal school mathematics practices. The teachers believed that the PNG indigenous mathematics knowledge should be integrated into formal mathematics content knowledge for quality student learning. However, the study found that:

> There is a mismatch between teachers' stated beliefs and their practice. For example, although the teachers' stated beliefs are that they should teach CM [Cultural Mathematics] in school and show how SM [School Mathematics] is used in a cultural context, in practice it doesn't happen. (Kaleva, 2003, p. 5)

In summary, the teachers' beliefs are shaped by their practice (Muijs & Reynolds, 2011). The teachers' values and beliefs as well as positive attitudes and behaviour are crucial for curriculum implementation and for quality student learning (Whyte, 2008).

Teachers' attitudes and behaviour

Attitudes refer to human's thinking and thought processes, and behaviour is seen in terms of the outcomes or actions from possession of certain attitudes (Philias-Olatunde, 2009). Psychologists refer to attitude as 'human nature' where it is gained through learning processes in social environments (Mitchell & Ziegler, 2007; Teven, 2007). People's thinking and thought processes often impact on their actions in the activities they perform (Berk, 2010). For example, in teaching and learning processes, teachers' attitudes experienced and reinforced over many years impact on how they interpret the macro-curriculum, develop the micro-curriculum and deliver it for quality student learning (Fullan, 2001, 2007). Teachers' ways of thinking, feeling, behaving and acting to bring the best out of students in school and classroom contexts is considered of paramount importance in education, because both the positive and negative attitudes of the teachers impact on students' learning and development (Berk, 2010; Fullan, 2001).

According to Ryan (1989), originally cited in Whyte (2008)

> ... those of us working with young children have a particular responsibility. It is during these early years that foundations of future attitudes are being formed. Whether we like it or not, we are one of the influences which play a part in shaping young minds ... when we are working in schools, our values and attitudes are embodied in all our practices. (p. 183)

Teachers' personal pedagogical values around curriculum implementation when interpreting can encourage or discourage student learning and development (Fullan, 2001). The studies from overseas and in PNG reported on teachers' attitudes and behaviours that either engaged or disengaged students in learning (Hayes, Hindle, & Withington, 2007; Ovia-Aihi, 2010; Perry, 2007; Shapira-Lishchinsky, 2007; Thijs, 2009). For example, in England, teachers modified their negative attitudes and behaviour to foster appropriate interactions with the students in the implementation of micro-curriculum, which encouraged students' learning, because often teachers "blaming external factors for pupil behaviour to a point where they had more confident in their own impact on behaviour in their classrooms" (Hayes et al., 2007, p.174). In the Netherlands, the study by Thijs (2009) examined students' engagement in the teaching-learning process and revealed that the teachers who tend to be more 'authoritarian' exerted more restrictions on students than the teachers who tended to be more 'permissive'. The study concluded that teachers who were more authoritarian exerted pressure on the students to engage with learning activities, while the teachers who tended to be more permissive used humour and/or flexible approaches to engage students in

learning. It appears that authoritative and permissive interactional teaching behaviours can both encourage and discourage students' learning and development in micro-curriculum implementation. What is significant is how teachers exercise or employ their authoritative and permissive attributes to engage students' learning and development in the micro-curriculum implementation (Fullan, 2001; Mitchell & Ziegler, 2007).

A study in Israel found that some female teachers arrived late to classes more often than their male colleagues (Shapira-Lishchinsky, 2007). The female teachers related their lateness behaviour to their work and family commitments, and their physical state of health as well as perceived injustice in the reward systems created in the education system, where more male teachers were given senior positions at the school level than female teachers, even though they may be equally qualified. These female teachers demonstrated their frustrations in their lateness for classes. Mitchell and Ziegler (2007) claimed that when some teachers develop low self-esteem, they may lose interest in crafting quality teaching and learning programmes and delivery of quality student learning activities.

However, some teachers who develop positive self-esteem towards their students create better relationships which encourage student learning. Studies in Australia, China and Africa revealed that teachers' kind and appreciate attitude promoted students' learning in micro-curriculum implementation (Lianghua, 2009; Perry, 2007; Philias-Olatunde, 2009). These studies suggested that teachers who developed kindness and appreciative attitudes are often willing to help and assist students which encouraged students to draw nearer to them and form closer relationships with the teachers. However, in Africa, Philias-Olatunde (2009)

found that a few teachers who tended to have negative attitudes toward teaching did not have students best interest at heart, because they chose teaching as a profession only to make a living. The individual teacher's state of mind, such as feeling of low self esteem and feeling negative towards work may discourage the implementation of micro-curriculum (Sutton & Wheatley, 2003). A study in PNG primary schools found that the teachers' personal effort in adapting to and implementing the outcome-based macro-curriculum and negative behaviours like not attending classes for a prolonged period of time (two to three days or a week), having long breaks (recess and lunch), and coming to school late impacted on the micro-curriculum implementation and student learning because time needed for teaching were wasted (Ovia-Aihi, 2010).

2.4.2 Teachers' professional tasks

Teachers perform many professional tasks in implementing the curriculum in school and classroom contexts. Some of the key professional tasks the teachers perform that impact on the curriculum implementation involve interpretation (Fernandez, Ritchie, & Barker, 2008; Queen, 1999), planning (McGee & Taylor, 2008; Parkay & Hass, 2000; Terwel, 2004) and delivery of the micro-curriculum (Muijs & Reynolds, 2011), organising and creating physical learning environments (Terwel, 2004), and creating relationships with the students and others (Sewell & George, 2008). The interpretation of macro-curriculum and planning micro-curriculum were discussed already (section 2.3.3), while delivery of micro-curriculum is examined later (section 2.6). In the following paragraphs, the teachers' task of organising and creating physical learning environments, and creating relationships with their students are discussed.

Organising and creating physical learning environments

Teachers' creation and organisation of physical learning environments conducive to quality student learning, such as classrooms, are vital for successful curriculum implementation. Classroom organisation forms the framework for delivering the micro-curriculum and situating learning activities for the students to experience (Lave & Wenger, 1991; Wenger, 1999). The physical classroom set-up is also important for enabling teachers to manage and control teaching-learning interactional behaviours for the purpose of fostering positive social interactions and creating mutual learning relationships (Muijs & Reynolds, 2011). For example, teachers organise students' seating arrangements in many different ways - rows, small groups, in semi-circles or in whatever ways they see fit - to implement curriculum and promote student learning. These "seating arrangements will need to match the formats and goals of the lessons, as the way pupils are positioned can influence the effectiveness of different types of delivery" (Muijs & Reynolds, 2011, pp. 103-104).

A number of studies found that teachers often organise their physical classroom environments by allotting parts of the classroom to different curriculum subjects, mixing students in ability and gender groups, and setting rules and procedures for students to follow (Hill & Epps, 2009; Li Ling, 2006; Poon, Tan, & Tan, 2009; Smith & Sutherland, 2006; Whitburn, 2001). These studies found that the purpose of creating such orderly environments was to enhance quality delivery of the micro-curriculum and the learning experiences of students. Kaufman and Moss (2010) commented that: "A classroom where students know where things are kept and how they work, understand procedures, and can navigate the classroom independently may increase the time available for learning" (p. 133). In such

classroom environments, Scheuermann and Hall (2008) note that "students energetically doing their assignments, highly engaged in different types of activities in all areas of the classroom" (p. 174). The teacher's ability to design and create such learning environment in micro-curriculum implementation promotes positive learning relationships (Johnson, 2010; Nagel, 2003).

Teachers' relationships with students

The nature of teachers' relationship with students can have a significant impact on how they interpret and implement a national curriculum and the quality of the micro-curriculum experienced by students. Teacher to students relationships influence the nature of curriculum interpretation and implementation (Fullan, 2001, 2007; Hindin, Morocco, Mott and Aguilar, 2007). When relationships between teacher and students are underpinned or supported by effective processes like communication, planning, organising, controlling, motivating and supervising, teachers tend to create a family-like learning classroom whereby every student freely interacts with the teacher (Petegen et al., 2007). The study by Petegen et al. (2007) indicated that teachers' interpersonal relationship skills can create a positive classroom climate for quality student learning. Important aspects of the teachers' interpersonal relationship for effective learning include being respectful to every student, communicating well with students, being fair and firm with students, understanding students' difficulties and mentoring students to take control of their own learning.

In contrast, relationships that are detrimental tend to result in poor students' learning (Flesch, 2005). Fullan (2001) argued that teachers need to develop interests in student learning and create personal relationships with students to

facilitate mutual interaction and quality learning. Henley (2010) identified four factors that influence the teacher-student relationship in micro-curriculum implementation as "students' feelings, teacher authenticity, sense of humour [and[respect for students" (pp, 56-62). A relationship based on students' feelings relates to how teachers focus their attentions on, and interact with, students' emotions, which can play an important role in their (students') behaviour. The teachers' ability to motivate, control their impulses and moods, be empathetic to, and respond appropriately to each student is crucial in creating a warm relationship (Henley, 2010). Teacher authenticity refers to teachers being trustworthy, sincere (where students can rely upon them), while a sense of humour relates to teachers being lighthearted and funny. Respect for students was linked to the teachers being fair, promoting students' rights, and listening to and accepting students' views, opinions and suggestions, which in turn encourage effective micro-curriculum implementation (Henley, 2010).

It appears from the literature that the teachers' personal characteristics, such as personality, attitudes and behaviour, and their professional roles and relationships with the student, can have positive and negative influence on micro-curriculum implementation in school and classroom contexts. Micro-curriculum implementation is also influenced by the student as a factor, and literature connected to the student as a factor is discussed in the following section.

2.5 Student as a factor influencing curriculum implementation

The development and facilitation of a student-oriented micro-curriculum should be based not on what the teacher thinks the students should be learning but on

what the teacher can elicit from the students and the national curriculum, because students are central to outcome-based macro-curriculum (Papua New Guinea Department of Education, 2003; Parkay & Hass, 2000). Individual students' attributes such as prior experience, views, opinions, attitudes and behaviour, existing ideas and their developmental stages all need to be considered when discussing the influence students have on the implementation of the micro-curriculum (Berk, 2010; Fullan, 2001; Muijs & Reynolds, 2011; Parkay & Hass, 2000). Student's personal characteristics influencing curriculum implementation are discussed in the two sub-sections: students' developmental stages (cognitive, emotional, social and physical), and attitudes and behaviour.

2.5.1 Students' developmental stages

Developmental psychologists, academics, theorists and philosophers have all discussed various stages of human development. Human beings such as individual students go through different stages in cognitive, emotional, social and physical development influence their understanding and comprehension of the micro-curriculum implementation (Berk, 2007, 2010; Mitchell & Ziegler, 2007; Poole et al., 2007). Students between the ages of 12 to 20 years are called 'adolescent' (Berk, 2007, 2010; Poole et al., 2007). Poole et al. (2007) define "adolescence is the time between puberty and adulthood when children undergo the physical and psychological changes they need to assume adult roles" (p. 390).

The stage when adolescents experience or go through cognitive change is called 'formal operational' (Berk, 2007, 2010; Mitchell & Ziegler, 2007; Piaget, 1952; Poole et al., 2007) and occurs in students from the ages of 12 years. At the formal operational stage, some students develop abstract thinking, and their capacity for

thinking increases including understanding of their own thinking processes and the abilities to develop hypotheses, create new knowledge, draw inferences and join ideas in a complete picture (Berk, 2010; Poole et al., 2007). Also, at this stage, some students begin to think scientifically and work out systematic ways of solving problems. Thus the brain is developing to support "diverse cognitive skills, including improved processing speed, attention, memory, planning, capacity to integrate information, and self-regulation" (Berk, 2010, p.367).

Emotional development is concerned with the students experiencing changes in their feelings (Berk, 2007, 2010; Poole et al., 2007). Students' emotional, physical and cognitive development is influenced by their interactions with the environment in which they are situated (Berk, 2010; Poole et al., 2007; Wenger, 1999; Wertsch, del Rio, & Alvarez, 1995). For example, some adolescents feel more about themselves than others, worry about what other people would think about them, develop more understanding of their own thoughts and feelings and are able to identify other people's thoughts. Adolescents also tend to "construct an imaginary audience: a mistaken belief that other people are looking at them and are preoccupied with their appearance and behaviour as they are" (Poole et al., 2007, pp. 412-413).

Adolescents' social development relates to the change processes they experience in their relationships with other people (Barker, 2008; Berk, 2007; Henley, 2010; Muijs & Reynolds, 2011; Poole et al., 2007). Adolescents tend to seek relationships with those who are in the same age group, are involved in social roles such as volunteer services, are oriented toward academic tasks, make choices about their personal life, have more leisure time with peers, do not often establish

firm relationships and alter their needs and expectations (Berk, 2007, 2010; Poole et al., 2007). Although adolescents can generally apply given rules and conceptualise procedures well, some students still encounter learning difficulties; thus, teachers need to identify each student's learning needs when developing the micro-curriculum (Henley, 2010; Poole et al., 2007; Scheuermann & Hall, 2008). Adolescence is a crucial development period when students are trying to make sense and relate abstract knowledge, ideas and concepts to real life situations (Berk, 2007, 2010; Poole et al., 2007). Teachers need to carefully plan and deliver varied learning experiences to engage students actively so that learning becomes fun and meaningful to them (Berk, 2010; Mitchell & Ziegler, 2007).

Between the ages of 12 and 18 years, students are challenged by many factors in their developmental stages, so learning can be problematic if teachers are not careful with their teaching approaches with each individual student (Berk, 2010). Teachers need to understand student's growth stages and adopt varied "approach[es] to instruction [that] can help students learn to take control of their learning by defining learning goals and monitoring their progress in achieving them" (Fullan, 2001, p. 43). As can be seen, students' development stages impact on students' attitudes and behaviour, which in turn influence micro-curriculum implementation in school and classroom contexts (Muijs & Reynolds, 2011; Queen & Algozzine, 2010).

2.5.2 Students' attitudes and behaviour

Students' attitudes and behaviour influencing micro-curriculum implementation in school and classroom contexts is a growing global concern (e.g., Berk, 2007, 2010; Henley, 2010; Li & Siu, 2009; Poole et al., 2007; Queen & Algozzine,

2010) with both external and internal factors playing a role in the nature of these attitudes and behaviours (Henley, 2010; Muijs & Reynolds, 2011). External factors relate to the students' family background, and the cultural activities or practices of society in which they are brought up, while internal factors are linked to the school, teachers and their peer groups (Muijs & Reynolds, 2011). Muijs and Reynolds argue that parents often influence their children to display positive attitudes and behaviours in school and classroom environments. Like family background, schools, which have clear positive behaviour development - related policies, guidelines and procedures in place support students' positive attitudes and behaviour, as do the teachers with positive classroom rules, procedures and routines for students (Henley, 2010; Muijs & Reynolds, 2011; Scheuermann & Hall, 2008). As previously shown, Muijs and Reynolds argue that teacher's personal characteristics (personality, attitudes and behaviour, relationships), as discussed previously (section 2.4), influence students' attitudes and behaviour, and these in turn influence micro-curriculum implementation.

A qualitative study in Australia with 55 students (12 years to 16 years) explored teachers' everyday behavioural interactions in school and classroom contexts (Johnson, 2008). The students pointed out both positive and negative teacher attitudes and behaviour influencing their learning. For example, the students viewed positive teachers as those who made time available for consultation, listened to their (students') problems, taught effectively, were encouraging, and were able to intervene and assist when they (students) encountered difficulties in undertaking learning activities. Teachers who displayed these positive attitudes and behaviours were commented on by one of the students:

> My teacher is important because he's the one that urges me on to do stuff. He says 'Come on Christopher, you can do it, just think positive', and if it wasn't for him I couldn't have done all of this that I have. (Johnson, 2008, p. 393)

However, some teachers displayed negative attitudes and behaviour towards students and this was pointed out by one of the students: "My maths teacher, I hate her. She doesn't listen to you. She just doesn't listen to you. She makes a mistake and you try and tell her and she says that she's just doing it to catch you out" (p. 392). Similarly, Fullan (2001) notes that the students who have attitude and behaviour dilemmas often disengage from undertaking learning activities. For example, they display low self-esteem and never undertake homework, easily give up challenging activities and display frustration towards school activities. Fullan also revealed that they "dislike subjects with a high proportion of writing [and] dislike subjects where they do not understand" (p. 158).

Saun (2008) found in a study of 12 primary teachers in PNG who were implementing the national curriculum that students' attitudes toward disengaging in curriculum subjects were linked to the teachers' teaching effectiveness and their attitudes towards each individual student. Saun observed that: "Some of the possible reasons for students' misbehaviours included: negative teachers' attitudes and approaches; … teaching styles; lesson presentation methods; lessons being teacher-centred; peer influences, and students' own problems" (pp. 66-67). The teachers added that parental-related problems, such as the father and mother being separated and lack of parental support impacted on the students' attitude and behaviour, which in turn influenced micro-curriculum implementation in school

and classroom contexts. Also, the study by Hagunama (2008), which investigated the implementation of the PNG national curriculum in upper primary schools, reported that if teachers were made aware of the views held by students on technology then they may become aware of common misconceptions that inhibited students' learning of technology subjects.

According to Parkay and Hass (2000), teachers need to adopt different approaches in identifying students' individual development stages and plan the micro-curriculum from where the students are. Similarly, Henley (2010) argued that the teachers need to use a variety of strategies or techniques to minimise students' negative attitudes and behaviour and increase positive attitudes and behaviour. Some of the students' negative attitudes and behaviour were related to teasing, bullying, fighting, displaying anger and becoming aggressive too quickly and displaying hatred towards others. However, Henley argues that teachers who use a single way of reducing students' negative behaviour dilemmas often blame students for negative attitudes and behaviour.

Although a student-oriented micro-curriculum encourages quality learning, Rogan's (2007) study revealed that the teachers often disregard this dimension by developing and facilitating the micro-curriculum from what they think is best for students to learn, and, consequently, the students were unable to comprehend and understand ideas and concepts. However, Fullan (2001) argues that there should be a balance in the implementation of the micro-curriculum, from the teacher level down to the students for quality learning because he asserts that if students are not empowered with meaningful learning, then the micro-curriculum implementation is a waste. If learning experiences are not well designed and aligned or compatible

with their developmental stages, then students can misinterpret the micro-curriculum (Down, Ditchburn, & Lee, 2008). Down et al.'s study in Australia revealed that when students were involved in a community-oriented project, the students misinterpreted the micro-curriculum and then proposed their own ideas. The study also pointed out that the students' misinterpretation of the micro-curriculum was related to teachers not planning and delivering a student-oriented micro-curriculum. In New Zealand, the study by Schagen and Hipkins (2008) with secondary and primary teachers found that students' attitudes and behaviour impacted on the curriculum implementation. For example, they found that "students' behaviour was recognised as a barrier to curricular change by 18 percent of primary teachers, and 27 percent of secondary teachers" (p. 93). The literature discussed above clearly shows that the students' personal characteristics (developmental stages and attitudes and behaviour) must be considered and addressed during micro-curriculum implementation. In the following section, the theoretical underpinnings and teaching and learning approaches influencing micro-curriculum implementation are discussed.

2.6 Theoretical underpinnings and pedagogical approaches as factors influencing curriculum implementation

This section examines the literature related to teaching and learning approaches. Teaching and learning are opposite sides of the same coin and are integral to effective implementation of the micro-curriculum. Many authors have attempted to define teaching and learning. For example, the Webster's International Dictionary defines teaching as "show, direct and guide," while learning is "to acquire (as a skill or habit or a modification of an existing habit) through experiences, practice, or exercise" (Gove, 2002, pp. 1286, 2346). Alexander

(2008) defines teaching as "the power of talk to engage and shape children's thinking and learning, and to secure and enhance their understanding" (p. 94), while Ambrose, Bridges, Lovett, DiPietro and Norman (2010) note that "Learning is a process, not a product ... because this process take place in the mind … [and] involves change in knowledge, beliefs, behaviours, or attitudes ... on how students think and act [and] is not something done to students, but rather something students themselves do" (p. 3).

These definitions clearly indicate that the teaching and learning approaches are different because teaching involves ways in which the teachers deliver the micro-curriculum to the students to experience, whereas learning pertains to how students pattern their behaviour in order to acquire the knowledge, skills, attitudes and values (Berk, 2007, 2010; Casas, 2011; Devlin-Scherer, 2005). While research on teaching and learning effectiveness has been done again and again over many years, investigating pedagogies to effectively implement the micro-curriculum, teaching and learning still remain a challenge (Ambrose et al., 2010; Killen, 2003; Skinner, 2010). Determining effectiveness is different because the teaching and learning approaches that work best in one classroom situation will not necessarily work for another situation. Each situation is different and unique, and the teaching and learning approaches can either constrain or support the implementation of the micro-curriculum. The literature extensively discusses and categorises teaching and learning into two approaches: behaviourism and constructivism (e.g., Casas, 2011; Goodson, 2005; Henley, 2010; Moore, 2009; Muijs & Reynolds, 2005, 2011) and these are examined in the next two sections.

2.6.1 Behaviourist teaching and learning approaches

Behaviourist teaching and learning approaches are the oldest or most traditional pedagogies used in micro-curriculum implementation in educational institutions such as schools, teachers colleges, universities and other training providing organisations (Casas, 2011; Killen, 2003; Muijs & Reynolds, 2005, 2011). Behaviourist teaching and learning approaches are linked to the theories of classical conditioning and operant conditioning (Berk, 2010; Pavlov, 1960; Poole et al., 2007; Skinner, 1992). The classical conditioning theory was proposed by Pavlov (1960), through animal (dogs) learning experiments, while the operant conditioning theory, as proposed by Skinner (1992) claims students' behaviour could be changed and reinforced by continuous 'reinforcement' such as verbal and non-verbal language, physical contact, closeness and praise, rewarding systems, interactions and punishments. According to Pavlov (1960), the dogs produce saliva as an unconditional reflex, and when dogs were fed, they (dogs) learned to associate him (Pavlov) with food. He then introduced sounds of a bell together with food and the dogs salivated. Finally, he removed the food and rang the bell and the dogs also salivated, and: "Because of this association, the neural stimulus alone could bring a response resembling the reflex" (Berk, 2010, p. 18). So classical conditioning is related to a stimulus-response relationship where "the different kinds of habits based on training, education and discipline of any sort are nothing but a long chain of conditioned reflexes" (Pavlov, 1960, p. 395), while Skinner (1992) argued that students' learning behaviours can be reinforced and "the individual is likely to be called energetic, enthusiastic, interested" (p. 204) in learning.

What appears to be common in these two teaching and learning theories is that the teacher delivers the information with reinforcements (both positive and negative) to alter or change students' learning behaviours. Students develop association relationship around the teacher and learn directly from him or her, who is seen as an expert and a manager who constructs knowledge and transmit it to them (Crebbin, 2004). This behaviourist approach of teaching and learning "indicates that the more a teacher manages students and their learning, the less students feel a need to take responsibility for their own learning" (Crebbin, 2004, p. 50). Thus the behaviourist teaching approach is a 'teacher-centred' (Moore, 2009) approach, and is variously referred to as directed teaching (Muijs & Reynolds, 2011), systematic teaching (Moore, 2009), expository teaching (Casas, 2011; Skinner, 2010), active teaching (Moore, 2009; Muijs & Reynolds, 2005, 2011), explicit teaching (Devlin-Scherer, 2005; Killen, 2003), whole-class teaching (Killen, 2003; Muijs & Reynolds, 2005, 2011; Skinner, 2010) and transmissive teaching (Skinner, 2010).

In ideal behaviourist teaching, the information is directly transmitted to the students and is well structured and systematically presented from the introduction through to the conclusion (Casas, 2011; Devlin-Scherer, 2005; Goodson, 2005; Killen, 2003; Moore, 2009; Muijs & Reynolds, 2005, 2011; Schiro, 2008; Skinner, 2010). The introduction, body and conclusion of the lessons are broken down into detailed steps, where the previous lessons learned are reviewed, the objectives are introduced to the students, the content is arranged in order from the simple to complex, and is explained step-by-step with demonstrations, modelling and questioning, while students passively listen and absorb information.Students are taught basic facts, concepts, procedures and skills, and perform related

learning activities (Flores & Kaylor, 2007; Leno & Doughtery, 2007; Schiro, 2008).

In behaviourist terms, students learn by observing and repetitively imitating the provided practices to acquire the skills and memorise the content to achieve the desired objectives. Teachers also teach directly from textbooks, correct learning activities with the whole class, and summarise main ideas at the end of the lessons. They reinforce the student learning with verbal praise, encouragement and other reward systems, and actively discourage students who exhibit negative behaviour in order to maintain control and order in the classrooms (Casas, 2011; Muijs & Reynolds, 2011; Skinner, 2010). The aim of behaviourist teaching is for students to master the content directly from the textbooks, worksheets and other prepared tasks and then perform summative learning activities (tests and examinations) where their (students') understanding or learning is measured. Some common forms of behaviourist pedagogies include lecturing, simulation, discussion, demonstration, and drill (Casas, 2011; Goodson, 2005; Moore, 2009; Muijs & Reynolds, 2011).

A number of studies found that directed pedagogies impact on the quality of micro-curriculum delivery. For example, in one study, the teachers' use of drill and practice, strategy instruction, demonstration and simulation pedagogical approaches did not match the micro-curriculum content and intent, so the students experienced minimal learning (Christensen et al., 2007). However, in other situations, strategy instruction and the drill and practice teaching strategies can have positive and negative impacts on student learning. The strategy teaching instruction is a combination of more than one teaching strategy designed to cater

for individual students or a group of students who have special learning needs in the implementation of the micro-curriculum.

The case study by Tournaki (2003) in New York primary schools revealed that in both special education and mainstream classes, students who were taught with a strategy instruction method performed better than those students who were taught with drill and practice strategy, because the strategy instruction method enabled students to transfer knowledge into actual practical situations. Another study by Aggul, Yalcin, Acikyildiz and Sonmez (2008) in Turkish primary schools found that when teachers used a combination of demonstration and the simulation teaching approaches in delivering the science micro-curriculum, student achievement improved. Students effectively demonstrated the theoretical science ideas in real practical applications.

A simulation pedagogical approach to teaching is where the micro-curriculum content is transformed into a story or song as near as possible to real life situations, while the demonstration method of teaching is used for students to experience the content of the lesson directly in step by step fashion. Qualter and Abu-Hola's (2000) study in Jordanian primary schools revealed that girls performed better than boys in science when lecture-demonstration learning strategies were used. Their teachers pointed out that the lecture-demonstration learning strategy took more time to prepare but the quality of student learning was enhanced. They believed this improvement occurred because the lecture-demonstration learning strategy allows the teacher to prepare all the learning materials for the students to use. The teacher then lectures or instructs and

demonstrates the learning experiences, while students watch and follow instructions to complete the learning activities.

2.6.2 Constructivist teaching and learning approaches

Constructivist teaching and learning approaches have been advocated for micro-curriculum implementation in school and classroom contexts in the twenty-first century. These approaches have their origins in constructivism theory. Constructivism means that reality or truth is constructed and experienced by learners (human beings) themselves in an activity they undertake (Bhadra, 1990; Neuman, 2000, 2007). Constructivist learning was first proposed between the 1930s and 1950s by a Swiss cognitive theorist, Jean Piaget to explain how children construct their own understanding (Berk, 2007, 2010; Crandell et al., 2009; Slater, Hocking, & Loose, 2003). According to Berk (2010), Piaget's 'cognitive-developmental theory' is based on how "children actively construct knowledge as they manipulate and explore their world" (p. 19). In this process students evaluate the learning activities and decide upon and construct their own understanding, which grows out of the activity they undertake individually and as a group - small and large (Muijs & Reynolds, 2011). As argued by Slater et al. (2003) that: "Since children are active in developing or constructing their worlds, Piaget's theory is often referred to as a constructivist theory" (p. 42).

Vygotsky's sociocultural learning theory originated from Jean Piaget's early constructivism contributions (Berk, 2007, 2010). Vygotsky's sociocultural learning theory (Chaiklin, 2003; Kozulin, 2003; Vialle, Lysaght, & Verenikina, 2005; Vygotsky, 1962, 1978, 1986) was informed by contemporary schools of

thought in psychology, education, linguistics and sociology (Berk, 2007, 2010; Bodrova & Leong, 2007; Mahn & John-Steiner, 1996; Vygotsky, 1962, 1978, 1986). The development of human cognition and learning in society is the main focus of Vygotsky's sociocultural theory. Society means the social systems, structures, organisations and institutions where human cognition and learning are developed (Bodrova & Leong, 2007; Kozulin, 2003; Vygotsky, 1978), while culture is part of society and "comprises the patterns of ideas, values and beliefs common to a particular group of people, their 'characteristic' ways of thinking and feeling" (Inglis, 2005, p. 7). Social refers to human beings interacting individually and in groups (small and large) as members of society in order to learn and develop knowledge understanding (Brown, 2004; Cohen, Manion, & Morrison, 2011; Flick, 2004; Lincoln & Guba, 1985; Vygotsky, 1962, 1978), while the three interrelated levels of culture that facilitate the development of the human mind and learning (Williams, 1980 as cited in Inglis, 2005) are: lived culture, recorded culture and cultures of the selective traditions (Inglis, 2005, p. 16).

According to Inglis (2005), the first level, the *lived culture,* refers to the people's daily routines, ways of life, interactional behaviour, how they feel and think, as well as their experiences in groups, both small and large 'at a particular time and place,' for example, classroom routines to do with behaviour management and use of equipment, while *recorded culture* is related to the different types of written documents and art which are kept and used in the lived culture, for example, books, videos. The culture of the selective tradition, or *high culture,* refers to different types of creative art works, customs, attitudes and rituals, which are highly significant for the lived culture (Inglis, 2005). For example, the selective

culture could include students' creative and imaginative art-work, such as paintings, songs and dramas. These three levels of culture together comprise "condense[d] and organize[d] knowledge about the social world" (Neuman, 2000, p. 40).

The sociocultural theory of learning first focused on student cognitive (mind) development and learning in school and classrooms, where these contexts were viewed as micro-social systems (cases) (Cole & Engestrom, 1993). The theory was later extended to any age group in employment organisations, training providing institutions such as universities and colleges, and other social settings including family and church organisations (Berk, 2007, 2010; Crandell, Crandell, & Zanden, 2009). This perspective on learning is concerned with "culture – the values, beliefs, customs and skills of a social group – [being] transmitted to the next generation" (Berk, 2010, p. 23). According to Vygotsky (1962, 1978, 1986), students' thinking and learning are social and cultural activities because they do not develop or change by themselves - there has to be an intentional social interaction using language (with other human beings) in an activity in order to develop or change and learn (Bodrova & Leong, 2007; Inglis, 2005; Kozulin, Gindi, Ageyev, & Miller, 2003; Vialle et al., 2005; Vygotsky, 1978; Wertsch, 1985). In school and classroom settings, students develop their thinking and thought processes from experiences involving appropriate values, norms, knowledge-structures, models, and beliefs in teaching-learning behavioural interactions (Bodrova & Leong, 2007; Inglis, 2005; Jenks, 2005; Neuman, 2000; Rogoff, 2003; Vygotsky, 1978).

Constructivism is the major tent or theory that underpins the sociocultural perspective of learning as proposed by Vygotsky (1962, 1978). Vygotsky proposed that the students interact with sociocultural symbols and signs such as language, artifacts, attitudes and behaviour and construct their own knowledge and internalise it in school and classroom settings under the guidance of their teachers and competent peers (Bodrova & Leong, 2007; Vygotsky, 1978; 1986). For example, in school and classroom contexts, "all learners [students] actually construct knowledge for themselves, rather than knowledge coming from the teacher and being 'absorbed' by the pupils" (Muijs & Reynolds, 2011, pp. 78-79). The students apply their prior learning (experiences) in the learning activities they perform to construct new realities (Muijs & Reynolds, 2011; Schunk, 2008). This process happens when students' previous knowledge, such as intentional thoughts are brought to the activities they encounter in school and classroom settings (Hitzler & Eberle, 2004; Vialle et al., 2005; Vygotsky, 1962). Students apply an iterative process to construct their own meaning by going back and forth to retrieve information from memory, making choices to reach meanings from strengths and weaknesses, and applying the knowledge in different situations (Krathwohl, 2002; Pintrich, 2002).

Other concepts of learning which have their roots in from constructivist theory include symbolic interactionism, thought and language, zone of proximal development, and activity, mediation and internalisation (Bodrova & Leong, 2007; Kozulin, 2003; Kozulin et al., 2003; Vialle et al., 2005; Vygotsky, 1962, 1978, 1986; Wertsch, 1985). These concepts of learning are now discussed in turn.

Symbolic interactionism

Meltzer, Petras, & Reynolds (1975) defined symbolic interactionism as "the interaction that takes place among the various minds and meanings that characterize human societies" (p. 1). Symbolic interactionism was first proposed by Mead (1934) in the fields of sociology and psychology, and was expounded throughout the years in sociology, psychology and education (Denzin, 2004; Meltzer et al., 1975). Human beings intentionally grow or construct meanings out of the social activities they encounter with physical and psychological tools, and these meanings again become the knowledge of society (Denzin, 2004; Meltzer et al., 1975). In social activities or practice, the symbolic systems refer to 'cultural artifacts' such as physical tools and psychological tools (Vygotsky, 1978), which are "manufactured and created by people through the history of their culture in order to enhance their actions and abilities" (Vialle et al., 2005, p. 49).

The physical tools concerned can be pens, tables, hammers, saws, computers and other mechanical tools and electrical devices (Vialle et al., 2005; Vygotsky, 1978), while psychological tools are "symbolic artifacts - signs, symbols, texts, formulae, graphic organizers – [which] when internalised help individuals master their own natural psychological functions" (Kozulin, 2003, pp. 15-16). Psychological tools also include "language; various systems for counting; mnemonic techniques; algebraic symbol systems, works of arts; writing; schemes, diagrams, maps and mechanical drawings, all sorts of conventional signs" (Wertsch, 1985, p. 79). Physical tools are used for constructing the physical world, while psychological tools facilitate the development of the human mind (Mahn & John-Steiner, 1996; Vygotsky, 1978). So this interaction has an impact upon, and occurs between, two or more people as objects, and/or between

person/s and physical object/s (Cohen et al., 2011; Meltzer et al., 1975). This resonates with Vygotsky's argument that the psychological tools described above are often interacted with by the students to construct their own learning in school and classroom settings (Kozulin, 2003; Vygotsky, 1978; Wertsch, 1985; Wertsch et al., 1995). Students construct reality on the basis of meanings of the sociocultural signs or symbols they interact with in school and classroom contexts (Cohen, Manion, & Morrison, 2007; Neuman, 2007; Vygotsky, 1962, 1978, 1986).

Thought and language

Thought and language together comprise another aspect of learning that Vygotsky (1962, 1986) highlighted in his sociocultural learning theory. People's thoughts are social because they are constructed through social interaction and used as a tool for making meanings during the sociocultural activities they (people) undertake. Like thought, language is socio-culturally constructed and used as a tool for communicative purposes, which in turn foster social interaction and meaning making (Bodrova & Leong, 2007; Bronckart, 1995; Vialle et al., 2005; Vygotsky, 1962, 1986). According to Vygotsky (1962), thought and language are interrelated and depend on each other for human development and learning. He notes that:

> The meaning of a word represents such a close amalgam of thought and language that it is hard to tell whether it is a phenomenon of speech or a phenomenon of thought. A word without meaning is an empty sound; meaning, therefore, is a criterion of "word," its indispensable component. (Vygotsky, 1962, p. 120)

Vygotsky explains that thought is formed by human beings in their minds and constructed into spoken and written social languages as a means of expressing thought. Spoken and written languages are mediated, and new thoughts are constructed. This development is an iterative process, as "the relation of thought to word is not a thing but a process, a continual movement back and forth from thought to word and from word to thought" (Vygotsky, 1962, p. 125).

Spoken communicative language is divided into two distinctive lines of social communication - inner speech and external speech - and each involves semiotics (Bodrova & Leong, 2007; Vygotsky, 1962; 1986). Semiotic refers to the use of signs and symbols in language, and the process of constructing meanings through language, including signs and symbols (Bodrova & Leong, 2007; Mahn & John-Steiner, 1996). For example, in language the signs and symbols are letters of the alphabet, the words, sentences and paragraphs and their meanings, while in mathematics, science and other disciplines, it is the numbering system and how other symbols and signs are used and associated with expressed ideas and concepts. According to Vygotsky (1962), external speech is used for communicating with others. Like inner speech, the external speech (both spoken and written words) contain semiotics that people draw from, make sense of, and construct their own learning (Bodrova & Leong, 2007). This is where: "A word derives its sense from the sentence, which in turn gets its sense from the paragraph, the paragraph from the book, the book from all the works of the author" (Vygotsky, 1962, p. 146).

Zone of proximal development

Vygotsky's *zone of proximal development theory* explains the relation between human development and learning (Bodrova & Leong, 2007; Chaiklin, 2003; Kozulin, 2003; Kozulin et al., 2003; Vygotsky, 1978). According to Vygotsky (1978), the zone of proximal development "is the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). The 'actual development' means a student's mental operations or functions are matured or developed to the extent that he or she is capable of patterning his or her behaviour independently in order to acquire knowledge and skills independently (Kozulin, 2003; Lompscher, 1999; Vialle et al., 2005; Vygotsky, 1978). In other words, certain cycles of the student's mental functions are completed and the student can undertake activities (Bodrova & Leong, 2007; Kozulin, 2003; Vygotsky, 1978).

The 'level of potential development' is concerned with a student's mental functions or operations that are still in the process of developing or maturing, and the student needs guidance or the support of a teacher who is knowledgeable, has skills, expertise and experience, to undertake or perform the activities (Chaiklin, 2003; Kozulin, 2003; Vygotsky, 1978). Vygotsky (1978) explains that the student's mental "functions that have not yet matured but are in … an embryonic state. These functions could be termed the 'buds' or flowers of development rather than the fruits of development" (p. 86). At this level of development, the teacher and student actively interact between the activity or task to make meaning and co-construct knowledge (Bodrova & Leong, 2007; Chaiklin, 2003).

The support teachers provide during the learning process for the students to construct their own learning is called scaffolding (Bodrova & Leong, 2007; Kozulin, 2003; Vialle et al., 2005). The teacher supports the student by "giving hints and clues, rephrasing questions, asking the child to restate what has been said, asking the child what he [or she] understands, demonstrating the task or a portion of it, and so on" (Bodrova & Leong, 2007, pp. 40-41). Additionally, Chaiklin (2003) maintains that the teacher needs to identify the student's potential for development and provide related tasks or activities, as well as providing appropriate support, so the student can create his or her own knowledge and learning in teaching. However, Bodrova and Leong (2007) argue that if a student resists or ignores the support and does not perform the activity, the teacher needs to rethink and modify the support so that the student can undertake the activity. In this changing level of support, the task or activity is not altered or changed but remains, while the assistance provided is gradually withdrawn so the responsibility of performance is transferred until the student creates their own knowledge and transfers the skills to new situations (Bodrova & Leong, 2007).

Activity, mediation and internalisation

Activity is an action carried out to construct something (Engestrom, 1999), while mediation is a meaning-making process using psychological tools in order to develop the human mind (Mahn & John-Steiner, 1996; Vygotsky, 1978; Wertsch et al., 1995). Internalisation is a process of transforming externally performed activities into internal psychological functions (Engestrom, 1999; Vygotsky, 1978; Wertsch, 1985; Wertsch et al., 1995). The relationship between the activity, mediation and internalisation was proposed by Vygotsky in a triangular diagram

or model to illustrate human action and learning (Vygotsky, 1978), as shown in Figure 4 below.

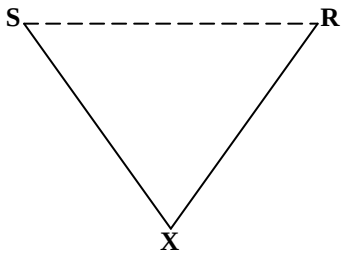


Figure 4: Basic theory of activity, mediation and internalization (Vygotsky, 1978, p.40).

This triangular model of human learning above shows a stimulus (S), a response (R) and a symbol (X). This implies that stimulus (S) is teacher; response (R) is student's learning behaviour and activity (X). The teacher facilitates learning through activities and students mediate on activities to construct their own knowledge or reality (Arnseth, 2008; Engestrom, 1999). This mediation process is explained by Vygotsky:

> When a human being ties a knot in her handkerchief as a reminder, she [or he] is, in essence, constructing the process of memorizing by forcing an external object to remind her [/him] of something; she [/he] transforms remembering into an external activity. (1978, p. 51)

The quotation above illustrates how human beings mediate on the learning activity to construct their own knowledge or reality and internalize it. Thus, "the concept of mediation emphasizes the role played by human and symbolic intermediaries [artifacts] placed between the individual learners and material to be learned" (Kozulin et al., 2003, pp. 2-3). Kozulin (2003) argues that two kinds of mediation are involved in meaning making – the first relates to human to human mediation,

and the second is mediation through symbolic mediators (Kozulin, 2003). Inter-human mediation involves interactional behaviour (both positive and negative) and verbal and non-verbal communications (Kozulin, 2003; Vygotsky, 1962; 1978). For example, in the teaching-learning process, the human-to-human mediation relates to the "teacher mediation as modeling … management (praise and critique) [and] feedback" (Kozulin, 2003, p. 20). The symbolic mediation refers to the tools or mediators (physical and psychological) as discussed in the symbolic interactionism aspect of learning (Kozulin, 2003) such as concrete materials (cubes, blocks, models, tools, science and technology equipments), written activities (tests, class exercises), science and mathematical formulas and to name a few. The acquisitions above are then transformed and internalised as mental functions.

The externally performed activities transform internal psychological functions (Vygotsky, 1978; Wertsch et al., 1995). Externally mediated activities include the combination of tools and signs (as discussed in symbolic interactionism theory) while internal functions are thought and thinking processes (Engestrom, 1999; Vygotsky, 1978). Vygotsky argued that human beings mediate using psychological tools and develop their own higher mental processes such as senses, memory, perception and attention (Kozulin, 2003; Mahn & John-Steiner, 1996; Vygotsky, 1978; Wertsch, 1985). Culturally designed tools (physical and psychological) influence human behaviour from outside and develop thinking and thought processes which are eventually internalised (Bodrova & Leong, 2007; Kozulin, 2003; Wertsch et al., 1995).

In summary, when looking through the lens of sociocultural theory, curriculum implementation can be interpreted as a sociocultural activity. The models of curriculum development (section 2.2.1) can be viewed as socio-cultural artifacts, and contain features such as aims/objectives, outcomes, content, teaching and learning experiences, and assessment and evaluation. These curriculum features can be viewed as socio-cultural processes too and/or symbols or signs, which the teachers use to draw meanings from and construct their micro-curriculum which they deliver to the students to experience. Students mediate the learning activities in cooperative groups to construct their own learning and develop thinking and thought processes in school and classroom settings. Since sociocultural learning emerged from constructivism theory, it is clear from the literature that the constructivist teaching and learning approaches are employed to facilitate student learning and mind development.

In constructivist teaching and learning approaches, teachers use cooperative group activities to implement the micro-curriculum (Moore, 2009). Cooperative group activity has been defined as:

> learning activity organized so that learning is dependent on the socially structured exchange of information between learners in groups and in which each learner is held accountable for his or her own learning and is motivated to increase the learning of others. (Olsen & Kagan, 1992, as cited in Richards & Rogers, 2001, p.192)

In cooperative group activity, the students work in groups as a team and collaboratively draw out group meaning and construct knowledge (Moore, 2009; Muijs & Reynolds, 2011). In other words, the students mediate on the activity to

make their own collective meanings (Berk, 2010; Killen, 2003; Vialle et al., 2005) in situations where "learning is also socially constructed through interactions with peers, teachers ... [in] group work and discussion" (Muijs & Reynolds, 2011, p. 79). Muijs and Reynolds propose four structures: start phase, explanation phase, reflection phase, and application and discussion phases in cooperative group activity

In the start phase, the teacher sets up the activities, asks related questions, organises students into groups, and sets rules and procedures for the activities, while the explanation phase is when the teacher assigns structured activities and the students undertake them in their respective groups. The reflection phase involves the teacher highlighting certain aspects of the lesson by facilitating and modelling, while students look back on the activities to further analyse and discuss their meaning until the teacher withdraws the assistance or support, and students undertake the tasks independently. The application and discussion phase is where the students discuss and present their findings and summarising the main ideas of the lesson.

A number of studies (Chan, 2006; Davison, Galbraith, & McQueen, 2008) revealed that the cooperative group activity promotes students' social and communication skills and empowers students to share and exchange ideas in learning. However, there were some differences pointed out in each study. Chan's study found that teachers raised grave concerns about the use of cooperative learning. The teachers indicated that the use of the cooperative learning strategy encouraged students learning, but it took up more time and required more preparation. In a primary school in the United Kingdom, Davison et al., (2008)

studied the use of different cooperative group learning strategies that comprised active listening, think-pair-share, numbered heads, round robin and jigsaws. Their study concluded that each of these cooperative learning strategies was not well used by individual teachers, due to lack of self-confidence and of knowledge about how to use each learning method.

A quantitative study by Samuelsson (2008), with grade seven primary schools students in Sweden, investigated the impact of the teachers using the self-regulated and the problem-solving learning strategies in facilitating the micro-curriculum. These strategies of learning improved the students' learning and students were able to demonstrate high reasoning skills. The self-regulated learning strategy, for example, encouraged students' discussions in mathematical activities with their peers.

As Davison et al., (2008) and Chan (2006), the studies by Lamb (2010) and Stone (2006) found that teachers experienced difficulties to employ constructivist teaching approach when delivering their micro-curriculum. For these teachers to adapt to new ways of teaching, and to use new learning strategies for quality student learning, they (teachers) need professional development support. In the following section, the literature on professional development activities that teachers need to enhance micro-curriculum implementation is outlined.

2.7 Professional development support as a factor influencing curriculum implementation

Teachers need professional development support in school and classroom contexts to effectively implement the curriculum because professional development

support is an avenue for teachers to continuously learn new ideas, skills and effective ways to enhance their knowledge, skills and experiences for curriculum implementation and improvement of student learning (Hargreaves & Fullan, 1992; Sankar & Jenkins, 2009; Timperley, Phillips, & Wiseman, 2003; Winton, McCollum, & Catlett, 2008). Through externally and internally provided professional development activities, the teachers may alter their belief systems and practices to adapt to new ways (Hargreaves & Fullan, 1992; Richardson & Hamilton, 1994).

External professional development activities are provided to teachers to support implementation of the curriculum, "by individuals or groups from outside the school or school district, and take place over several hours or, less frequency, several days" (Richardson & Hamilton, 1994, p. 110). People who provide in-service training to the teachers are personnel from the national and district education organisations, or consultants who are engaged by national and district education personnel (Fullan, 2001). The internal in-service training refers to the school-based professional development activities initiated by the teachers themselves (Richardson & Hamilton, 1994). In this form of professional development, teachers get together and map out their needs first. They then plan and take turns in providing training to each other to up-skill in how to implement the curriculum. Individual teachers may take short courses from other training providing institutions, such as local universities, for professional growth and to improve current practices.

Internally and externally provided professional development activities for the teachers to implement the curriculum have been studied globally. A study

commissioned by the Ministry of Education for teacher professional development in New Zealand examined the external and school-based professional development training (Sankar & Jenkins, 2009). The external professional development training was provided by national facilitators (both public and private providers, such as universities, and evaluation and education associates), who were led by a Ministry of Education team and trained regional facilitators. Together they provided school-based in-services to principals and teachers in wider school communities. Professional development activities provided by national in-service facilitators have shaped the teachers' practices and improved the implementation of the curriculum, and in turn impacted student learning. The study found that teachers created professional learning communities where "tools such as observations, concept mapping exercises, literacy diagnostics assessment, student voice, and teacher journals were used to engage in collegial problem solving resulting in deepened understandings" (Sankar & Jenkins, 2009, p.50) as well as setting up professional learning forums to invite external facilitators to discuss and critically reflect on their current teaching practices. As a result of this, quality students' learning was enhanced. However, the study found that "lack of support from school leadership and management and a culture of resistance in the school were identified as two critical impediments to sustainability" (Sankar & Jenkins, 2009, p.51) of professional development practices.

Fullan (2001) is critical, however, suggested that consultants often analyse processes of implementing the curriculum but do not translate these into how teachers could adapt them into their actual teaching practices. He further proposed that a mixture of both teachers and external individual experts providing in-service training would better up-skill the teachers to implement the curriculum in

school and classroom contexts. In-service training at the school level can create a type of learning community where teachers collaborate and share ideas as a team on a regular basis to improve current teaching and learning practices (Hipp, Huffman, Pankake, & Oliver, 2008; Johnson, 2007; Sinclair & Naizer, 2010). School-based professional development activities can include the viewing of videos of lessons to reflect on how to improve teachers' current practices (Borko, Koellner, Jacobs, & Seago, 2011), presentations, and group discussions of key ideas undertaken by the members of the school staff who attended external workshops, in-service training and conferences (Meaney, Trinick, & Fairhall, 2009; Onwu & Mogari, 2004).

Studies into curriculum implementation in Israel, China, South Africa and PNG all revealed that teachers encountered difficulty in designing teaching programmes and delivering these programmes effectively to students for better learning because they lacked professional development (Hagunama, 2008; Maniat, 2005; Resh & Benavot, 2009; Rogan, 2007; Yun-Peng et al., 2006). These studies recommended that teachers need professional development activities to enhance their understanding to effectively implementation the macro-curriculum in school and classroom settings. In particular, Yung-Pen et al. (2006) revealed that teachers in China were unable to develop their micro-curriculum as intended, and as a result they taught directly from textbooks, while Hagunama's (2008) study in PNG revealed that teachers lacked appropriate planning ability in designing problem-oriented learning experiences or activities for students in knowledge, skills, attitude and values in the PNG context. Also in PNG, Maniat (2005) reported that teachers need professional development support activities to fully comprehend the national outcome-based curriculum model and develop the

micro-curriculum. As in PNG, teachers in Israel and South Africa experienced difficulties in designing teaching programmes and developed appropriate students' learning activities because they lacked professional development support (Resh & Benavot, 2009; Rogan, 2007). In all, Fullan (2001) stressed that to implement a change, professional development should be provided to support teachers to understand the actual processes of implementing the new curriculum. The factors influencing curriculum implementation discussed in the literature review above are summarised and presented below.

2.8 Summary

Many different models of curriculum developed between the 1940s and 1990s are implemented in school and classroom contexts. Curriculum development is a decision making process with curriculum implementation as part of that process. Curriculum implementation has been defined as the process of putting ideas into actual practice in school and classroom contexts; however, curriculum implementation has its challenges. The literature identifies the macro-curriculum content as a factor influencing curriculum implementation in school and classroom contexts. These factors, particularly the sequencing and organisation of content, and types of content within the macro-curriculum. Studies in developed and developing countries all found that teachers encountered difficulty understanding and making sense of terminologies, such as learning outcomes or learning standards, strands and performance indicators, when interpreting and developing their micro-curriculum. These terms underpin the curriculum content and when these words are difficult for teachers to understand and comprehend the process of interpreting and developing an effective micro-curriculum remains a challenge.

A number of studies also reported that teachers' personal characteristics linked to personality traits (extraversion, neuroticism, agreeableness, conscientiousness and openness), values and beliefs about teaching and learning impact on micro-curriculum implementation. Additionally, the literature revealed that teachers' attitudes and behaviour, as well as their professional roles in organising and creating conducive learning environments are considered influential in micro-curriculum implementation. This finding is also related to teachers' relationships with the students. As well as teachers, many studies found students were factors influencing micro-curriculum implementation in school and classroom contexts, related to their development stages and attitudes and behaviour. The literature also revealed a growing concern about the impact of teaching and learning approaches on the implementation of the micro-curriculum. In behaviourist teaching and learning approaches, the teachers transmit information from their micro-curriculum to control students' learning behaviour, while constructivist teaching and learning approaches recommend the teachers to facilitate students' learning using socio-cultural activities to construct their own learning. In behaviourist approach to teaching, the students develop stimulus-response association around their teacher to learn, whereas, in constructivist learning, the students mediate on the learning activities to construct their own learning under the guidance of the teacher, Last, but not the least, the literature discussed how professional development activities can impact the teachers and their ability to influence students' learning in micro-curriculum implementation.

The research methodology, which provided access to the field to gather data, is discussed next in Chapter 3.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this study was to investigate the implementation of the PNG national curriculum (2004) and the nature of students' learning in PNG upper primary schools. To explore this topic of the study coherently, the following research questions provided direction to the field study. They are:

1. What factors are influencing teachers' decisions and actions, and the nature of students' learning in the implementation of their national outcome-based curriculum in upper primary schools in PNG?

    1.1 What factors are influencing teachers in their interpretation, planning and delivery of the national outcome-based curriculum in classrooms?

    1.2 What factors are influencing students' learning and how?

    1.3 What matches are there between the national outcome-based curriculum, the teachers' micro-curriculum and student-experienced curriculum?

This chapter describes the methodology applied in this study, including the choice of paradigm and the research design. Various paradigms and their related methodological approaches are first examined, and a justification is made for using an interpretive paradigm for this study. The research design section outlines key features pertinent to the chosen methodological approach for this study, including case studies and qualitative methods of data gathering and tools. Sampling and research trustworthiness considerations are also described, followed by a description of the actual research design within the context of the study and ethical procedures. Finally, an overall summary of this chapter is given.

3.2 Research paradigm

Research is concerned with systematic searching for reality or truth to solve existing problems that improve practices, inform policy discussion and formulation, and generate new knowledge (Cohen et al., 2011; Creswell, 2009; Johnson & Christensen, 2008). In order to systematically unveil the reality, a paradigm for research is needed, because the paradigm guides a study (Cohen et al., 2011). A research paradigm is a theoretical net or framework within which a study sits (Cohen et al., 2011; Hitchcock & Hughes, 1995; Neuman, 2006). A paradigm can be defined as "an integrated set of assumptions, beliefs, models of doing good research, and techniques for gathering and analysing data" (Neuman, 2007, p. 41) that encompasses ontological, epistemological and methodological considerations (methods of data gathering and analysis) (Cohen et al., 2007, 2011; Creswell, 2002, 2009).

Ontology and epistemology are branches of philosophy and the former refers to the reality or truth that exists, while the latter refers to the construction or generation of knowledge from reality or truth (Creswell, 2009; Punch, 2009). Maxwell (2005) views a paradigm as "a set of very general philosophical assumptions about the nature of the world (ontology) and how we can understand it (epistemology), assumptions that tend to be shared by researchers working in a specific field or tradition … [and] specific methodological strategies linked to these assumptions" (p. 36). It involves an intersection of philosophical underpinnings, methodological approaches, including methods of data collection, and techniques and tools of data analysis (Creswell, 2009; Hitchcock & Hughes, 1995). Importantly, the research paradigm involves the whole research inquiry

rather than just the outcome of the study (Cohen et al., 2007; Punch, 2009; Wolf, 1997). The three broad paradigms which guide most education research are: positivism, interpretivism and critical theory (Cohen et al., 2007; Hitchcock & Hughes, 1995; Neuman, 2000, 2006), and these are discussed below.

3.2.1 Positivistic research paradigm

Positivism is the traditional (Ary, Jacobs, & Razavieh, 2002; Cohen et al. 2007; Creswell, 2009) or the "oldest and the most widely used" (Neuman, 2006, p. 81) research paradigm. The positivistic research paradigm has its roots in the natural sciences and was first applied in the nineteenth century using scientific approaches and later extended to education and social sciences (Ary et al., 2002; Cohen et al., 2007; Neuman, 2006). This research paradigm has been given many other names: for example, *realism* (Cohen et al., 2007; Lodico, Spaulding, & Voegtle, 2010), *determinism* (Cohen et al., 2007; Creswell, 2009), *objectivism* (Bryman, 2008), *normativism* (Basit, 2010), *behaviourism* (Neuman, 2006), *nomothetical* (Cohen et al., 2007; Neuman, 2007) and *logical empiricism* (Neuman, 2006). The positivistic research tradition argues that the ontology or the nature of reality or truth exists out there in the physical and social environments (Cohen et al., 2007; Johnson & Christensen, 2008; Neuman, 2006). This research paradigm assumes that the nature of the physical world is a "hard reality, external to humans" (Basit, 2010, p. 79), while "social reality is made up [subjective] objective facts" (Neuman, 2007, p. 42). The positivistic research paradigm assumes that both physical and social realities are governed by "causal laws" which are there waiting to be unveiled or explored (Ary et al., 2002; Cohen et al., 2007; Neuman, 2006, 2007). Causal laws refer to "cause and effect relationships"

of systems that exist in the physical and social worlds (Creswell, 2009; Lodico et al., 2010; Neuman, 2006).

However, in the social world, positivism recognises that realities or truths are caused by human beings themselves and reacting with each other as 'agents' (Lodico et al., 2010; Neuman, 2006). Being an agent means that humans are capable of producing or creating realities. Human agency refers to a person's alignment of his or her behaviour with other fellow human beings' behaviour. As a result, power relationships are created through their interactional behaviour and an end is achieved (Cohen et al., 2011; Neuman, 2006). Human beings are driven by self desires, motivation, wants, needs, curiosity and interests, and in these processes they cause relationships in the social environments (Cohen et al., 2007; Lodico et al., 2010; Neuman, 2006). When human beings pursue the satisfaction of their wanted needs, desires, and interests, they take control by altering social relations to improve how things are done and to predict what will happen (Neuman, 2000, 2006). So within the positivistic view, human behaviour is assumed or believed to be caused by internal realities or truths and can be explored and documented by observing it (behaviour) (Bryman, 2008; Cohen et al., 2007; Neuman, 2006).

A positivistic research paradigm argues that the nature of understanding and generating knowledge is acquired by employing quantitative methods (Ary et al., 2002; Cohen et al., 2007; Lodico et al., 2010; Neuman, 2007). Quantitative research methods refer to the notion of measurement, where data is quantifiable using surveys and experiments, and a positivist researcher distances himself or herself from the participants of the study (Cohen et al., 2007; Johnson &

Christensen, 2008; Lodico et al., 2010; Neuman, 2007). Typical quantitative approaches include experiments that are performed to collect data for cause and effect relationships (Ary et al., 2002; Lodico et al., 2010) and surveys where questionnaires are used to gather data (Lodico et al., 2010) from "situations where an experiment is impossible" (Neuman, 2007, p. 43). In positivistic educational research, data are collected using tests, observational checklists and surveys, and the data are analysed using mathematical calculations where presentations are often shown in numbers, graphs and tables (Ary et al., 2002; Cohen et al., 2007; Johnson & Christensen, 2008; Lodico et al., 2010). The findings of the study can be generalised to a larger population (Lodico et al., 2010).

However, the positivistic research paradigm is criticised for manipulating human behaviour and choices rather than reflecting human beings constructing their own learning and development (Bryman, 2008; Cohen et al., 2011; Lodico et al., 2010; Neuman, 2006). Additionally, the positivist paradigm is denounced for not considering the construction and creation of social realities in social systems (Cohen et al., 2011). It is criticised for not taking into account human beings' experiences and their actions which impact on their learning and development (Cohen et al., 2007, 2011; Lodico et al., 2010). As a consequence of these concerns, the interpretive research paradigm has emerged (Cohen et al., 2011).

3.2.2 Interpretive research paradigm

The interpretive paradigm focuses on human actions and participants' understanding and meaning-making processes in everyday social activities (Lincoln & Guba, 1985; Neuman, 2006; Punch, 2009). There are three separate ways or traditions within which the interpretive paradigm unveils direct human

actions and meaning-making processes (Cohen et al., 2011; Flick, Kardorff, & Steinke, 2004).

The first tradition of the interpretive paradigm refers to the transformation process of human experiences into consciousness and language to create multiple realities. Human consciousness refers to a person's thinking, which is converted to mental thought processes and then transformed into intentional thoughts or mental acts which are facilitated internally and externally in everyday social life experiences (Cohen et al., 2011; Hitzler & Eberle, 2004; Vialle et al., 2005; Vygotsky, 1962). This tradition explores how social realities are constructed in the minds of human beings, and how human beings create meanings from their observation of the actions of other human beings in a social activity. Human beings transform their everyday life experiences into consciousness and language, and again create and re-create everyday life experiences in a particular situation (Cohen et al., 2011; Creswell, 2007; Hitzler & Eberle, 2004). This tradition looks at "how human beings make sense of experience and transform experience into consciousness, both individually and as shared meaning" (Patton, 2002, p. 104).

When consciousness is transformed into experiences, the realities are 'socially constructed,' that is, created by human beings through social interactions in their everyday life experiences (Bryman, 2008; Cohen et al., 2007, 2011; Lincoln & Guba, 1985; Neuman, 2006). Lincoln and Guba (1985) discussed two social realities: constructed reality and created reality. Socially constructed reality refers to multiple realities constructed in the minds of human beings, which are related to human beings' thought processes and consciousness, while created realities relate to multiple realities created from observations of actions of other human

beings (Lincoln & Guba, 1985). In other words, 'constructed reality' is the internal thinking and thought processes of human beings, while 'created reality' is the actual actions and behaviours they (human beings) produce and re-produce through social interactions in their everyday actions (Cohen et al., 2007, 2011; Flick, 2004; Lincoln & Guba, 1985; Neuman, 2006). This reasoning concludes that human beings intentionally construct and re-construct, and create and re-create, multiple social realities through meaningful interactions in the activities they undertake, and assign meanings through negotiation with others time after time in their everyday life in social settings (Cohen et al., 2007, 2011; Flick, 2004, 2007; Lincoln & Guba, 1985; Neuman, 2006).

The second tradition is related to making meaning from printed or written documents and how underlying meanings are drawn out (Flick et al., 2004; Soeffner, 2004). This tradition is concerned with unveiling human actions, and is called hermeneutics. Hermeneutic refers to how people make sense of their structured or ordered social world through the use of linguistic and non-linguistic human social activities (Cohen et al., 2011; Creswell, 2007; Flick et al., 2004; Soeffner, 2004). The individual participant's interpretations relate to lived-experiences in a particular context, and how they come to understand, create and re-create their social life (Bryman, 2008; Cohen et al., 2007, 2011). Linguistic social activities or lived experiences refer to the 'recorded language'- both spoken and written, or what is called 'texts' while non-linguistic relates to recorded text of behaviour or actions, such as bodily expressions and movements, which include facial expression and hand gestures, dressing and other body language. Creation and organisation of social environments through these activities illustrate

underlying meanings, categories and relationships (Creswell, 2009; Lincoln & Guba, 1985; Soeffner, 2004).

Interpretive researchers in this tradition try to get into the recorded texts of human social lives, and often unveil and understand the participants' lived-experiences from inside and within the context of a social system (Cohen et al., 2007, 2011; Lincoln & Guba, 1985; Neuman, 2006). The interpretive researcher also tries to focus on direct human behaviour and actions where the researcher tries to interpret underlying multiple meanings, concepts, categories, methods and relationships constructed and created by human behaviour and actions in an activity (Cohen et al., 2007, 2011; Creswell, 2009; Lincoln & Guba, 1985; Neuman, 2006). Everyday life experiences are structured by both spoken and written language (Cohen et al., 2011; Neuman, 2006). People intentionally interact on the basis of meanings the language (both written and spoken) presents in order to construct and create multiple subjective meanings in their everyday life experiences (Cohen et al., 2011; Hitzler & Eberle, 2004). So, there are inner subjective meanings for individuals based on opinions that underlie written and spoken languages in everyday activities in social settings (Cohen et al., 2007, 2011; Lincoln & Guba, 1985).

The third interpretive tradition concerns the use of language in constructing symbolic meanings and how these meanings are interpreted and constructed (Cohen et al., 2007, 2011; Denzin, 2004). Human beings draw on semiotics to gain insights into meanings (Cohen et al., 2007, 2011; Denzin, 2004; Flick et al., 2004; Meltzer et al., 1975). Semiotic refers to the creation and use of signs and symbols in language to communicate meaning. This way of communication is

pertinent to "the social world where the existence of symbols, like language, enables them to give meaning" (Cohen et al., 2011, p. 20). Language as a tool is used in constructing symbols for a particular social context and making subjective and objective meanings (Cohen et al., 2011; Denzin, 2004; Meltzer et al., 1975). This process occurs through intentional social interactions (Cohen et al., 2011; Denzin, 2004), and human behaviours which are "caused not so much by forces within themselves (drives, needs, etc.), or by external forces impinging upon them (social forces, etc.), but what lies in between, a reflective and socially derived interpretation of the internal and external stimuli that are present" (Meltzer et al., 1975, p. 2). Thus, through action processes, an "individual [person] constructs, modifies, pieces together, weighs up the pros and cons and bargains" (Cohen et al., 2011, p. 20) and makes "meanings [which] are modified and handled through an interpretive process that is used by each individual in dealing with the signs he/she encounters" (Meltzer et al., 1975, p. 1). Further, individual human beings align their thoughts and actions with other fellow human beings, and through interactions they create and re-create meanings for certain symbols/signs (Cohen et al., 2011; Denzin, 2004).

Within each of these traditions, the interpretive paradigm usually applies qualitative research methods with methodological approaches such as *ethnography* (Fielding, 2008; Wallen & Fraenkel, 2001), *grounded theory* (Birks & Mills, 2011; Butterfield, 2009; Glaser, 1978, 1992, 1994; Glaser & Strauss, 1967; Hodkinson, 2008), *mixed methods* (Bryman, 2008; Cohen et al., 2011; Fraenkel, Wallen, & Hyun, 2012; Creswell, 2002) or *case study* (Bryman, 2008; Gerring, 2007; Gillham, 2000; Merriam, 2002; Woodside, 2010; Yin, 1994, 2003).

An *ethnographic approach* is concerned with studies which are undertaken in the field over longer periods of time to unveil a complete picture of cultural practices, belief systems, customs, rituals, and traditions. The ethnographic researchers become part of the study group, where ongoing relationships are created with participants, and they undertake the activities, observe actual practices and listen to what participants say (Fielding, 2008; Fraenkel et al., 2012; Wallen & Fraenkel, 2001). According to Fraenkel et al., (2012), "ethnographic researchers do their best to see beyond the immediate scene or event occurring … in a location in order to understand the larger picture of which the particular event may be a part" (p. 509).

The *grounded theory approach* is used to generate "theories [that] are not available, or the field is dominated by many contradictory theoretical positions" (Sarantakos, 2005, p. 119). The interpretive researchers in this approach gather data in the field and analyse them by looking for themes related to a theoretical framework or research questions. Based on the major themes of the findings, the researchers again enter the field to collect data to expand upon and refine these themes. Theory is developed as it emerges from the data (Glaser, 1992, 1994; Glaser & Strauss, 1967). The *mixed methods approach* is an application of both qualitative and quantitative data gathering methods in a single study. The purpose of using two methods is that "the strengths of the two methods will complement each other and offset each method's respective weaknesses" (Fraenkel et al., 2012, p. 561). A *case study approach* is limited to a particular or specific unit, group or organisation, and the findings illustrate or describe that particular setting. Typical methods of data gathering and analysis in the above research approaches include in-depth interviews, observations and documents, and emergent theory

(Birks & Mills, 2011; Gerring, 2007; Gillham, 2000; Merriam, 1998; Yin, 1994, 2003).

In summary, the first tradition of the interpretive paradigm concerns how human beings transform their experiences into consciousness and use language to create multiple realities such as observation of the actions of other human beings in a social activity, while the second tradition is related to how human beings mediate printed or written documents to draw out underlying meanings. The third interpretive tradition concerns the use of language in constructing symbolic meanings and how these meanings are interpreted. Like the positivist paradigm, there are criticisms linked to the interpretive paradigm which are discussed next.

More recently, the interpretive research paradigm has been questioned for neglecting power relations of external structures and forces that shape human behaviour (action) (Bryman, 2008; Cohen et al., 2011; Neuman, 2006, 2007). This power relation concerns how "the power of others [is used] to impose their own definitions of situations upon participants" (Cohen et al., 2011, p. 21). These concerns have led to the rise of the critical theory research paradigm.

3.2.3 Critical theory research paradigm

The critical theory research paradigm lies between positivist and interpretive research paradigms (Basit, 2010; Neuman, 2006). In other words, the critical theory research paradigm shares some characteristics with positivist and interpretive research paradigms but also introduces other features of its own (Cohen et al., 2007, 2011; Creswell, 2007; Neuman, 2006, 2007). Similarities are highlighted in Creswell's (2009) observation that the critical theory research

paradigm "is typically seen with[in] qualitative research, but it can be a foundation for quantitative [positivism] research as well" (p. 9). For example, critical theorists like positivists believe that social realities are already constructed in the social systems and are there waiting to be unveiled (Cohen et al., 2007; Neuman, 2006). Additionally, the critical theory paradigm proposes that human beings are driven by self desires, motivation, wants, needs and interests, and in these processes they create cause-effect relationships in the social environments (Cohen et al., 2011). In relation to the interpretive paradigm, critical theory agrees that social realities are constructed and created by human beings themselves as proposed by the interpretive paradigm (Cohen et al., 2011; Neuman, 2006). Human beings construct and create multiple realities time after time through social interactions. Further, the critical theory believes that language, human behaviour and actions are key elements in creating multiple realities (Cohen et al., 2011; Lincoln & Guba, 1985; Neuman, 2006).

However, adherents of the critical theory research paradigm also criticise the two earlier paradigms. For example, critical theorists view the positivist research paradigm "as being narrow, antidemocratic, and nonhumanist in its use of reason" (Neuman, 2006, p. 94) and blame the paradigm for ignoring or excluding the social contexts and assuming that social organisations or societies do not change (Creswell, 2007; Neuman, 2006). As for the interpretivist paradigm, critical research theory argues that it is too subjective, and meaning-making systems may present false knowledge about a particular context and describe micro-level social realities for only a short period of time (Basit, 2010; Cohen et al., 2007; Neuman, 2006). It also argues that the interpretive research paradigm assumes participants' views as equal rather than singling out different conditions or realities (Neuman,

2006). Despite the similarities and differences discussed above, the critical research paradigm shares a commonality with positivist and interpretive paradigms that research is a process of making meaning from realities or truths to generate knowledge in order to combat new and existing issues, improve practices and create new knowledge (Cohen et al., 2011; Neuman, 2006).

What is unique to critical research theory is the belief that social realities are shaped by historical events, such as politics, society, culture and ideological shifts (Basit, 2010; Cohen et al., 2007; Neuman, 2006). The critical theory research paradigm also assumes that reality evolves in a process of change through human relationships, and is impacted by tensions, conflicts, disagreements and disparities over time in society (Basit, 2010; Cohen et al., 2007; Neuman, 2006, 2007). These conflicts or contradictions relate to gender inequality, power relations, exploitation, discrimination and racism as a result of political, social, economic and cultural activities impinging on the everyday lives of people (Basit, 2010; Cohen et al., 2007; Neuman, 2006, 2011). The critical theory research paradigm proposes that these disparities are rooted deeply in social institutions, such as family, church, communities, formal organisations like educational institutions and other organisations (Cohen et al., 2007; Neuman, 2006, 2007). In their research pursuits critical theorists uncover the underlying unfair structures in these social institutions and push for reform of policies and laws to be enacted to promote equality, justice, fairness, equal distribution of resources and empowerment in people's lives (Neuman, 2007). "Critical research aims to emancipate and empower the disempowered and those who are facing inequality and discrimination" (Basit, 2010, p. 15), and to bring about a more just, egalitarian society in which individual and collective freedoms are practised, and

to eradicate the exercise and effects of illegitimate power (Cohen et al., 2007). For example, in education, critical theory informs policies and laws, which are enacted to alleviate gender disparities and provide more and equal opportunities, as well as encouraging many females to be enrolled and educated at all levels of education.

The critical research paradigm uses action research as a key methodological approach (Cohen et al., 2007; Creswell, 2007; Neuman, 2011). Action research involves the "blending of theory and concrete action; theory informs one about the specific real-world actions one should take to advance social change, and one uses the experiences of engaging in action for social change to reformulate the theory" (Neuman, 2007, p. 44). Additionally, action research can be a self-reflective study to improve one's current practices and to unveil actions and practices of others to offer possible solutions to improve and overcome current social issues or problems (Basit, 2010; Cohen et al., 2007, 2011; Punch, 2009).

3.2.4 Justification for applying the interpretive research paradigm to this study

This study concerns PNG teachers' decisions and actions and the nature of students' learning in the implementation of the national outcome-based curriculum in contemporary upper primary schools. Curriculum implementation is an action-oriented social activity (Barker, 2008; Wenger, 1999), where the teachers and students construct and re-construct multiple meanings every day through teaching-learning interactional behaviours and actions in contemporary schools and classrooms, which can be considered micro-social systems (Cohen et al., 2011; Creswell, 2007; Lincoln & Guba, 1985). Teachers and students interpret

their own and others' behaviour, actions and use of language to construct and create multiple realities in teaching-learning processes (Basit, 2010; Cohen et al., 2007; Johnson & Christensen, 2008; Lodico et al., 2010; Punch, 2009).

This perspective on curriculum implementation suggests that interpretive and critical theory research paradigms, rather than a positivistic research paradigm, are suitable for this study. On further consideration, the critical theory research paradigm is not the most suitable for this study because it aims to unveil power relational issues, such as gender inequality, exploitation, discrimination and racism created by political, socio-cultural and economic activities, which is not the primary goal of this study (Cohen et al., 2011; Neuman, 2011). Additionally, the critical theory paradigm assumes that social realities have already been created and are there waiting to be discovered, while interpretive paradigm proposes to unveil 'live actions' of human beings in a social activity from their perspectives (Cohen et al., 2007; Neuman, 2006).

Curriculum implementation as defined in this thesis is a process of breaking down the macro-curriculum into a micro-curriculum which is delivered to and experienced by students in school contexts (Deng, 2007; Fullan, 2001; Queen, 1999). This definition suggests there are layers of interpretations experienced differently by different participants, such as teachers and students. The purpose of this study is to unveil the factors influence teachers' interpretation of the PNG curriculum, the development and delivery of their micro-curriculum, and *what* and *how* students are experiencing the micro-curriculum in PNG school settings rather than to uncover injustices and disparities, and to create policies to combat disparities. The recommendations of the study could be utilised by the National

Department of Education to revisit its policies. Thus, the interpretive research paradigm is considered the most suitable to apply in this study because the aim of this study is to uncover the knowledge that was constructed and re-constructed, and created and re-created, through teaching-learning interactional behaviour and actions in contemporary school and classroom contexts from the perspectives of PNG teachers and students. An interpretive research paradigm will enable the study to focus on teaching and learning activities of teachers and students, which take place in natural micro-social settings such as schools and classrooms (Bryman, 2008; Cohen et al., 2007, 2011; Creswell, 2007; Lincoln & Guba, 1985; Lodico et al., 2010).

As the researcher, I wanted to gain an inside understanding of the culture in school and classroom contexts so I can make meanings and create subjective realities based on the teachers' and students' direct actions and interactions that occurred in teaching-learning processes in school contexts. I wanted to draw on the teachers' and students' experiences, views, opinions, behaviour, activities and their use of language in the implementation of their national outcome-based curriculum to gain this understanding (Cohen et al., 2007, 2011; Lincoln & Guba, 1985; Lodico et al., 2010). This process of interpretation would enable or assist me as researcher to understand fully the factors influencing teachers' decisions and actions in their implementation of the outcome-based national curriculum and students' learning in PNG school and classroom contexts.

In summary, teachers' behaviour, actions, and their use of language are interpreted by the students to create multiple realities; likewise, the teachers' interpret students' behaviour, actions and how they (students) respond through

their use of language in teaching-learning processes in school as a micro-social system (Cohen et al., 2011; Newby, 2010). The three separate traditions of the interpretive research paradigm (section 3.2.2) are pertinent to and can guide the research design which is described in the next section.

3.3 Research design

Research design is best understood as a way of employing a set of procedures within a research paradigm to unveil or generate realities (Cohen et al., 2011; Maxwell, 2005). Procedures in interpretive research paradigms include approaches such as ethnographic, grounded theory, mixed methods and case study, as described previously, and data gathering techniques and tools and analysis, as well as ethical procedures and methods of ensuring research trustworthiness employed in the study (Bryman, 2008; Cohen et al., 2007, 2011; Mutch, 2005).

An ethnographic study is undertaken with a smaller unit or group, which is representative of a larger group, where the study's findings illustrate a larger picture. Also the ethnographic researcher becomes part of the study group and undertakes the activities. The aim of grounded theory research is to generate theory, while a mixed method approach utilises qualitative and quantitative approaches to enhance the trustworthiness of findings. The case study approach is limited to a particular unit, group, or organisation where the study's findings present that particular setting.

The aim of this study is to unveil the factors that are impacting the teachers' decisions and actions in the implementation of their national outcome-based curriculum and the nature of student learning in upper primary schools in PNG. This aim suggests that the case study approach is most suitable, which is described in detail in the following paragraphs.

3.3.1 Case study approach

The implementation of the 2004 PNG national curriculum can be viewed as a particular programme or an event/activity, and this study was undertaken to unveil teachers' and students' behaviours, actions, experiences and their use of language at upper primary level of education in two schools (one rural and one urban) during this process. This study investigated the factors that impacting on the teachers in the implementation of their national curriculum, and *what* and *how* students are learning in upper primary schools in PNG. Thus, the case study approach is a suitable means of obtaining answers because of its three distinctive features - "particularistic, descriptive and heuristic" which differentiates it from other types of research (Merriam, 1998, pp. 29-30). These distinctive features are described below.

'Particularistic' refers to specific contexts, programmes, events and phenomena of everyday actions of people. Thus, a case study focuses on specific phenomena human beings undertake and experience and represents the problem or issue as it presents itself. 'Descriptive' relates to the final outcome or 'end product' of case studies, which often contain "rich, thick descriptions of the phenomena under study" (Merriam, 1998, p. 29). Thick descriptions mean that complete and actual data of participants are presented in the case study, where meanings are drawn on

the basis of that data. “Heuristic means that case studies illuminate the reader’s understanding of the phenomena under study” (Merriam, 1998, p. 30). This is where the readers make sense of meanings of the findings to confirm or disagree by relating to their life experiences, often called the ‘inferential bridge’ of the phenomena studied.

Case study has many definitions. According to Johnson and Christensen (2008), “a case [study] is defined as a bounded system” (p. 406). A system consists of many interrelated parts of a whole setting or organisation, while bounded means an identification of a part or an element of that organisation and its boundaries to study (Bryman, 2008; Creswell, 2007; Johnson & Christensen, 2008, 2012; Merriam, 1998; Punch, 2009; Yin, 1994, 2003). The definition of a bounded system is further expanded by Gillham (2000):

> A case can be an individual: it can be a group – such as a family, or a class, or an office, or a hospital ward; it can be an institution – such as a school or a children’s home, or a factory; it can be a large-scale community – a town, an industry, a profession. (p. 1)

Yin (1994) defines “a case study [as] an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 13). According to Ary et al., (2002), “A case study is an in-depth study of a single unit, such as one individual, one group, one organization, one program, and so on” (p. 27). Bryman (2008) notes that a “case study entails the detailed and intensive analysis of a single case” (p. 52). These definitions clearly illustrate that a case study provides in-depth data and a whole or complete picture of real-life actions of human beings in a social activity in a particular natural setting (Punch, 2009).

Three types of case studies can be identified: an intrinsic case study, an instrumental case study, and a collective case study, which are "distinguished by the size of the bounded case, such as whether the case involves one individual, several individuals, a group, an entire program, or an activity" (Creswell, 2007, p. 74). An intrinsic case study is undertaken with issues or problems that interest a researcher, to uncover and understand in detail a particular or specific case, while an instrumental case study involves exploring some general areas to understand rather than a particular case. A collective case study includes multiple case studies, which are undertaken in one or a single research, to gain in-depth insights of the research topic (Creswell, 2007; Johnson & Christensen, 2008, 2012; Punch, 2009). In other words, "The first two of these are single case studies, where the focus is within the case. The third involves multiple cases, where the focus is both within and across cases" (Punch, 2009, p. 119).

The case study has advantages and disadvantages, or limitations (Merriam, 1998). Some advantages include: the actual practices of people undertaking activities in a particular setting or settings are unique and a case study can unveil complex human interactions, experiences and everyday life activities; blends description of events with analysis of findings; and present the findings for the readers to understand and relate their experiences from other similar settings (Cohen et al., 2011; Gerring, 2007; Merriam, 1998; Yin, 2003). In a collective case study, "several cases are compared for similarities and differences" (Johnson & Christensen, 2008, p. 408). By comparing and contrasting the cases, the researchers can understand the phenomena under study from within each case, and across cases (Merriam, 1998). Additionally, the findings of multiple case studies can be utilised by policy makers, like government departments to revisit policies

to make informed decisions, and recommendations and suggestions can be put into practise by practitioners such as teachers to improve their teaching practices (Merriam, 1998).

The limitation of case studies is that the findings can be exaggerated or illustrate false information for a particular phenomenon under study; furthermore the lengthy and detailed findings of the study may be too long/involved/ time-consuming to be read by busy policy makers and practitioners. Additionally, time, money and other support resources, such as transport, can prevent some data collection (Cohen et al., 2011; Gillham, 2000; Merriam, 1998). In addition, the readers may believe that the findings of the study illustrate a whole social setting, when the findings only show a part of the whole social system. Further, the findings can be biased, such as when case studies are funded, as the researchers may manipulate the data to suit the needs and aspirations of the sponsor/s (Merriam, 1998). Despite of these limitations and challenges, this study adopted case approach to generate data, because the intent of the study is to explore the teachers' and students' perceptions, views, lived-experiences and actions in the implementation of their national curriculum in contemporary school settings. The case study approach typically employs qualitative methods, and these methods are described in the following section.

3.3.2 Qualitative methods

Qualitative research methods are applied to unveil the direct actions and experiences of human beings in a social activity they undertake (Bryman, 2008; Cohen et al., 2007; Mutch, 2005). Interpretive case studies are ideally undertaken

in natural settings without manipulating the participants, and the meanings are drawn from the perspectives of participants (Cohen et al., 2007, 2011; Lincoln & Guba, 1985; Neuman, 2000, 2007) in order to present a complete picture of a particular social setting (Creswell, 2009; Lincoln & Guba, 1985).

Qualitative strategies, such as interviews, observations and examination of documentation, are used to gather rich descriptive data of lived-experiences of the participants and their direct actions associated with experiences in order to enhance understanding of the particular situation of the study inquiry (Burns, 2000; Cohen et al., 2007; Mutch, 2005). These qualitative methods deal with data in the form of words, texts and documents (Ary et al., 2002; Bryman, 2008; Cohen et al., 2011; Denzin & Lincoln, 2003; Johnson & Christensen, 2008). Qualitative methods are valuable because they "view human behavior as dynamic and changing, and… advocate studying phenomenon in depth and over an extended period of time" (Johnson & Christensen, 2008, p. 388). Inductive reasoning processes are typically used to analyse data (Ary et al., 2002; Bryman, 2008; Cohen et al., 2011; Glaser, 1978, 1992, 1994; Glaser & Strauss, 1967). An iterative process occurs when:

> Researchers build their patterns, categories, and themes from the bottom up, by organizing the data into increasingly more abstract units of information. This inductive process illustrates working back and forth between the themes and database until the researchers have established a comprehensive set of themes. (Creswell, 2009, p. 175)

The researcher frequently becomes part of the social setting and shares the feelings and experiences of the participants' daily lives in social activities (Bryman, 2008; Cohen et al., 2011; Lincoln & Guba, 1985; Neuman, 2000). Integrity is maintained by the researcher following protocols, such as when seeking consent from the participants, and by maintaining mutual understanding and positive relationships with the participants throughout the study (Ary et al., 2002; Bryman, 2008; Lincoln & Guba, 1985; Punch, 2009). The findings contain original verbatim data from the participants for trustworthiness. Trustworthiness refers to the overall processes or methods applied in the study inquiry, in terms of truth, validity and reliability of accounts. Trustworthiness in interpretive studies requires the issues of *credibility, transferability, dependability* and *conformability* to be considered (Bryman, 2008; Cohen et al., 2011; Lincoln & Guba, 1985; Neuman, 2000). This study employed qualitative methods or techniques to investigate the national outcome-based curriculum implementation in PNG. These methods are explained.

3.3.3 Data gathering techniques

Data gathering techniques are ways of gathering data from the participants in the field to answer research questions (Johnson & Christensen, 2012). As discussed previously, the case study approach was used for data collection in this research to keep data manageable for a single researcher. Within the case study approach, typical qualitative data gathering strategies or methods include interviews, observations and document analysis (Burton & Batlett, 2005; Lincoln & Guba, 1985; Mutch, 2005; Punch, 2009). These qualitative methods are described in turn.

Interviews

An interview is a special form of communication that occurs between the researcher and the interviewee/s to collect verbal and non-verbal data about a particular issue in interpretive studies (Lincoln & Guba, 1985; Punch, 2009). The interview is a flexible strategy for obtaining qualitative data, which provides opportunity for an interviewee to verbally express his or her thoughts, feelings, experiences, views, opinions and offer suggestions about the issue being studied (Cohen et al., 2011; Mutch, 2005; Wallen & Fraenkel, 2001, 2005; Yin, 1994). The interviewer's main role is to ask questions or facilitate discussions for the interviewees to respond to or answer, while notes are taken or tape-recorded as the conversation naturally proceeds (Bryman, 2008; Wallen & Fraenkel, 2001, 2005).

There are three types of interviewing techniques used in interpretive case studies: structured, semi-structured and unstructured (Bryman, 2008; Lincoln & Guba, 1985; Punch, 2009; Yin, 1994). A structured interview refers to "a series of pre-established questions, with pre-set response categories [where] … open-ended questions may sometimes be used" (Punch, 2009, p. 146), while a semi-structured interview is related to a set of general questions, which are uncategorised and guide the interviewer in interview conversations (Bryman, 2008, p. 196). An unstructured interview refers to an interview schedule, which does not have a set of questions but may contain a list of topics or issues or prompts related to the nature of the study to guide the interview conversations (Bryman, 2008; Cohen et al., 2011; Lincoln & Guba, 1985; Punch, 2009).

Interviews are used to "explore people's interpretations and meanings of events and situations, and their symbolic and cultural significance" (Punch, 2009, p.

148). Structured and unstructured interviewing techniques often apply on a one-on-one basis or in a focus group to gather data (Bryman, 2008; Punch, 2009). A one-on-one interview is a discussion that takes place between a single participant and the researcher, while a focus-group interview is undertaken by the researcher with more than one person in a group (Bryman, 2008; Punch, 2009).

Observations

Observations involve collecting qualitative information about human actions and behaviours in social activities and events in a real social environment, such as classroom teaching and learning (Cohen et al., 2011; Mutch, 2005; Neuman, 2007; Wallen & Fraenkel, 2005). There are two main observation strategies: participant observation and non-participant observation (Bryman, 2008; Cohen et al., 2011; Johnson & Christensen, 2012; Yin, 1994). Participant observation occurs when the researcher becomes part of the group under study and participates in everyday social activities of that social system to obtain the actual feelings and experiences of the phenomena, while at the same time taking notes of the actions and behaviours of the participants. Data are often audio recorded too. The observer as a participant can inform the participants of the study about his or her participation in the social activity (Bryman, 2008; Cohen et al., 2011; Johnson & Christensen, 2012; Patton, 2002).

In contrast, qualitative data gathered using a non-participant observation technique involves the researcher sitting or standing on the side while social activities like teaching and learning are taking place (Bryman, 2008; Cohen et al., 2011; Johnson & Christensen, 2012; Wallen & Fraenkel, 2005), Data can be obtained via note-taking or digitally, for example, using a video recorder (Cohen

et al., 2011; Johnson & Christensen, 2012). A video camera can be used as non-participant observer because the "video material catches the non-verbal data that audio recordings cannot, which may be particularly useful … in detailed case study data collection … [of] everyday routines and practices of participants and special events" (Cohen et al., 2011, pp. 530-531). In other words, the video recorder can record human behaviour, actions, verbal language and interactions in a social activity the participants undertake, as well as the physical organisational settings and structures (Best & Kahn, 2006).

Document analysis

The word 'document' is defined as "any written or recorded statement" (Lincoln & Guba, 1985, p. 277). Analysing documents is a form of collecting qualitative information from a primary or original source of written, printed or recorded materials to answer research questions in interpretive case studies (Creswell, 2009; Lincoln & Guba, 1985; Punch, 2009; Wallen & Fraenkel, 2005; Yin, 1994). The documents provide evidence of authentic or real activities undertaken by human beings in social organisations and human thinking (Lincoln & Guba, 1985; Yin, 1994). According to Punch (2009), "documents, both historical and contemporary, are a rich source of data for education and social research" (p. 158). Documents may include letters, plans, models, daily operational schedules, personal diaries, reports and photographs of activities (Lincoln & Guba, 1985; Punch, 2009).

In summary, the descriptions above present typical qualitative data gathering methods that interpretive researchers employ in unveiling human behaviour and

actions in a social activity. The following paragraphs describe the sampling techniques used in interpretive case studies.

3.3.4 Sampling techniques

Sampling means to set a limit or define a specific sub-unit, sub-group or subset of a larger unit, group, population or organisation under study to make the study manageable (Ary et al., 2002; Basit, 2010; Best & Kahn, 2006; Cohen et al., 2007, 2011; Flick, 2007; Johnson & Christensen, 2012). A larger group is often not sampled in educational studies because of limiting factors like time, expense, and accessibility to the study sites (Best & Kahn, 2006; Neuman, 2000). When sampling smaller groups for data, it is important that the sample is as representative of the larger population of the study topic as possible (Bryman, 2008; Cohen et al., 2011; Johnson & Christensen, 2008, 2012). When making decisions about sampling the researcher needs to consider four key factors:

- appropriateness of the sampling strategy used;
- appropriateness of sampling size;
- representativeness of the population and the boundary of sampling; and
- accessibility to the participants (Best & Kahn, 2006; Cohen et al., 2011; Johnson & Christensen, 2008, 2012).

Qualitative studies often apply purposive sampling to select the participants to gather field data from (Cohen et al., 2011; Johnson & Christensen, 2008, 2012) and gain access to specific research participants who possess relevant experience and knowledge for the study topic, and who are in a position to give a primary source of data (Cohen et al., 2011). Teddlie and Yu (2007) define purposive

sampling as “selecting units (e.g., individuals, groups of individuals, institutions) based on specific purposes associated with answering a research study’s questions” (p. 77). Such sampling facilitates the research questions drawing out the expertise, experiences, knowledge, views, perceptions, opinions and suggestions of a specific group of people who engage in a social activity (Creswell, 2007; Johnson & Christensen, 2012). It is important to note that the findings of qualitative studies that utilise purposive sampling cannot be generalised to a larger population, but they can be compared (Neuman, 2000). The next section describes how the trustworthiness or quality of a research project is addressed.

3.3.5 Trustworthiness of research

This section discusses the notion of trustworthiness in research including the triangulation in its various forms (Lincoln & Guba, 1985). Trustworthiness refers to the strength or truth, and value or merit of the study’s findings (Cohen et al., 2011; Lincoln & Guba, 1985). The findings of a study possessing trustworthiness can be trusted, because the study shows truthful accounts and is meritorious. Trustworthiness is related to considerations of the whole research inquiry process, including the theories that underpin the study, the research design, methodological approach, data gathering strategies, data analysis techniques, ethical approaches and the findings of the study (Cohen, 2007; Lincoln & Guba, 1985; Mutch, 2005). Triangulation refers to the multiple applications of data gathering techniques, sources of data and analysis of findings (Lincoln & Guba, 1985), and it contributes to trustworthiness. Triangulation increases the trustworthiness of the study inquiry by providing rich and detailed data not from a single source but from many sources of human behaviour and actions in the same study and through

various methods (Cohen et al., 2011; Lincoln & Guba, 1985; Neuman, 2000; Patton, 2002).

Trustworthiness in an interpretive research paradigm requires consideration of issues of the "credibility, transferability, dependability and confirmability" (Lincoln & Guba, 1985, p. 300) of the study. These issues are now discussed in turn.

Credibility

Credibility is a belief or confidence in a study that authentic or correct guidelines and approaches were considered by the researcher/s and subsequently employed in data gathering, analysing and reporting of the findings (Lincoln & Guba, 1985; Silverman, 2010). Credibility can be enhanced when the participants verify and approve the data as well as interpretations of the study findings (Lincoln & Guba, 1985). The verification and approval processes involve the researcher spending long hours repetitively going back and forth to get the participants approval of their own constructed multiple realities (Cohen et al., 2011; Lincoln & Guba, 1985). Triangulation of methods also refines and reduces the data that are obtained when grouped under research questions (Bryman, 2008; Cohen et al., 2011; Lincoln & Guba, 1985; Silverman, 2010). The reduction of data relates to the continuous process of refining the data by sorting, re-sorting, grouping, re-grouping, categorising and re-categorising until the data are fit to answer the research questions (Bryman, 2008; Cohen et al., 2011; Lincoln & Guba, 1985).

Transferability

Transferability refers to the study's finding being useful for others so they can make judgments and transfer to other similar social environments (Lincoln &

Guba, 1985; Silverman, 2010). Transferability is facilitated when the study provides the "thick description necessary to enable someone interested in making a transfer to reach a conclusion about whether transfer can be contemplated as a possibility" (Lincoln & Guba, 1985, p. 316). Such data will contain unique and significant information of a particular social environment (Bryman, 2008; Cohen et al., 2007), where others can make 'inferential bridges' by relating to their own experiences and activities (Bryman, 2008).

Dependability

Dependability and credibility are interdependent. Lincoln and Guba (1985) proposed that "there can be no ... credibility without dependability, a demonstration of the former is sufficient to establish the latter" (p. 316). This statement means that dependability is the stage of being certain or sure about the study's findings without doubt and that it can be relied upon (Cohen et al., 2011; Lincoln & Guba, 1985). The study's findings have value, and other researchers can refer to similar situations (Best & Kahn, 2006; Lincoln & Guba, 1985; Silverman, 2010).

Confirmability

Confirmability means the study findings have been accurately and fairly presented without bias by following the required study standards and requirements from the initial stages to the final stages of the study project (Bryman, 2008; Creswell, 2009; Punch, 2009). In qualitative case studies the researcher also communicates the findings of the study to the participants to verify the meanings interpreted and confirm the data (Cohen et al., 2007). This process involves an 'audit approach,' where data are constantly being scrutinised and changes are recorded and tracked

in an ongoing process, which leads to confirmation of the data (Bryman, 2008; Cohen et al., 2007; Lincoln & Guba, 1985).

Triangulation and its various forms

Triangulation involves looking "at something from several angles [rather] than to look at it in only one way" (Neuman, 2000, p. 124). It occurs when two or more strategies of data gathering and/or sources of data are used to illustrate an authentic picture of a phenomenon under study (Cohen et al., 2011; Hitchcock & Hughes, 1995; Lincoln & Guba, 1985; Patton, 2002; Silverman, 2010). Four types of triangulation are recognised: data triangulation; triangulation of observer; triangulation of method; and triangulation of theory.

Data triangulation refers to multiple data that are gathered from more than one place, with many participants, over a longer period of time, to see the reality, while triangulation of observer concerns many researchers and their observations of the same phenomenon of the study. Triangulation of method is the use of two or more strategies to gather data on the same issue or topic, and triangulation of theory employs more than one theoretical perspective in data interpretation and analysis to generate concepts, ideas and categories (Cohen et al., 2011; Lincoln & Guba, 1985; Neuman, 2000; Patton, 2002).

Inter-subjectivity

In qualitative educational research, inter-subjectivity is of paramount importance for a high quality study. Inter-subjectivity relates to the personal experiences a qualitative researcher encounters in undertaking research (Lincoln & Guba, 1985; Newby, 2010) when he/she acts as an instrument and draws knowledge from the

participants (Lincoln & Guba, 1985; Neuman, 2000). In this role, the researcher gathers the data by him or herself through interacting face-to-face with the participants and physically observing their behaviour and actions in real social worlds (Lincoln & Guba, 1985; Newby, 2010). This function has value in qualitative research because "the human-as-instrument can sense and respond to all personal and environmental cues that exist" (Lincoln & Guba, 1985, p. 193).

Since research involves people, the researcher must endeavour to create mutual understanding and a healthy relationship in his or her daily interactions with the participants (Lindsay, 2010; Matthews & Ross, 2010; Newby, 2010). As the researcher integrates with the participants, any power relationship is flattened, and the researcher becomes one of the participants and agrees to uphold the culture, values, beliefs and norms of that organisation or society the people belong to, in order to unveil the knowledge (Bryman, 2008; Lindsay, 2010; Matthews & Ross, 2010).

Additionally, inter-subjectivity concerns the whole research process, including the theories that guide the study, methodological approaches, data collection techniques and considerations, analysis of findings, and relationships between the researcher and the participants (Lincoln & Guba, 1985; Mutch, 2005). When the findings are triangulated, the study becomes more credible. This is when the research and the participants establish a better relationship to confirm credible data is obtained (Cohen et al., 2011; Lincoln & Guba, 1985). Further, applying correct procedures and techniques to analysis of qualitative data adds trustworthiness to the study, and this is described in the next section.

3.3.6 Data analysis

Interpretive case studies can employ a number of different techniques to generate knowledge from the qualitative data. Each technique used needs to be systematically and explicitly described for high quality research findings (Berg, 2007; Matthews & Ross, 2010; Newby, 2010; Sarantakos, 2005). Qualitative data of human activities obtained in the form of audio-tapes, video-tapes and documents are frequently analysed using inductive reasoning processes in interpretive case studies (Cohen et al., 2011; Creswell, 2007; Glaser, 1992; Glaser & Strauss, 1967). An inductive reasoning of data analysis involves constantly moving back and forth from data to data to generate reality related to the research questions.

Qualitative data can be inductively examined by the researcher/s in two ways, the first using interpretive criteria to compare and contrast the phenomena understudy, and the second semantics to gain insights into the language meanings and human behaviour and actions (Berg, 2007). Interpretive criteria are concerned with data being interpreted and analysed from the perspectives of the participants, using systematic and explicit rules (Cohen et al., 2011; Creswell, 2007; Maykut & Morehouse, 1994), while semantics means the data are interpreted and analysed by relating and listening to the meaning of words, phrases, sentences and paragraphs to better understand from the perspectives of the participants in that particular socio-cultural context (Sarantakos, 2005).

Qualitative case studies generate “huge amounts of data, and early analysis reduces the problem of data overload by selecting out significant features of future focus” (Cohen et al., 2007, p. 462). Thus, a continuous thorough reading, re-

reading, sifting, re-sifting, sorting, re-sorting, grouping, and re-grouping of the data is required to gain understanding of the salient features of the particular situation being studied (Bryman, 2008; Cohen et al., 2007, 2011). Once the data are organised and coded and re-coded to generate units of meaning, categories, and themes many times, the inductive analysis processes facilitate development of theory that fits the particular situation under investigation (Best & Kahn, 2006; Cohen et al., 2011; Glaser, 1978, 1992, 1994; Glaser & Strauss, 1967; Matthews & Ross, 2010; Newby, 2010; Patton, 2002; Sarantakos, 2005). A theory is a set of ideas or explanations that emerges or arises from the re-coded data of the study.

In summary, section 3.2 discussed literature as it relates to three major research paradigms (positivistic, interpretive and critical theory), which are often applied in educational research, and a justification was made for interpretive research in this study. Section 3.3 described critical literature pertaining to research design - the case study approach, qualitative methods and data gathering techniques, sampling procedures, research trustworthiness and triangulation, and qualitative data analysis techniques. The following section describes the research design used in this study, including the rationale behind key decisions.

3.4 Decisions about the research design within the context of the study

This section reports the contexts of this study, the methods applied to generate data, the sampling of research participants, and the criteria used in selecting the participants. Finally, the ways in which trustworthiness of the study was ensured, and the data analysis techniques employed are described.

3.4.1 Context of the study

This study used a multiple case study approach to explore PNG teachers' implementation of their national curriculum and student learning in two contemporary upper primary schools. Each case study represented a bounded micro-social system (see p.119). The multiple case study approach was employed because the PNG national curriculum is implemented in both rural and urban schools and government and church run schools, as pointed out in Chapter 1 (section 1.2.2). To achieve its aims and obtain a more holistic or complete picture of how PNG teachers are implementing their national curriculum, and *what* and *how* students are learning, this study was conducted in Madang Province in PNG. Madang Province was chosen because Madang is one of the first two provinces in PNG to implement the national outcome-based education model, introduced in 1993 by the government of PNG. As one of the first provinces to implement the outcome-based education model, the teachers and students have had more opportunities to experience the implementation of their national curriculum.

One of the upper primary schools was a rural school, and the other an urban school. The rural school was government run, while the urban school was a church agency. This decision was made to encourage representativeness, because schools are run by both the government and mission agencies in Madang Province. The urban primary school in case study one called Banipul (pseudonym) was selected to illustrate the national curriculum implementation for an urban school context, and the rural school in case study two called Alowale (pseudonym) for the rural context to allow comparison of findings. The data from the rural case study were gathered first since the distance to travel, time and money involved were considerable. The rural school was accessible by road

within an hours' drive from Madang town, as described in Chapter 5, and the researcher had to travel to and from the rural school using the public transport system for the duration of data gathering. Then the data from the urban case study were gathered. Data gathering methods used in these two case studies are described in the following section.

3.4.2 Data collecting methods

The study employed semi-structured interviews, non-participant observation and document analysis. In the semi-structured interview strategy, the teachers were interviewed on a one-on-one basis first, then the students were interviewed in focus-groups. Semi-structured interviews were executed after full consent was sought from both teachers and students and their caregivers. The main reason for interview teachers individually was to unveil teachers' personal experiences, views and opinions about their implementation of the national curriculum, while students were interviewed in focus groups to gather collective experiences, views and opinions on how students experience the micro-curriculum.

In the rural case study, teachers and students were interviewed in the principal's office, while teachers and students in the urban case study were interviewed in a store-room type office located in one of the grade 6 buildings. Further, semi-structured interview schedules were used for both teachers and student focus groups, which assisted the researcher in effective data collection and management (Appendices A and B). Teacher interview conversations took about 30 to 40 minutes, while student interview discussions took 20 to 30 minutes in the two case studies (Appendices C and D). Teachers' and students' verbal responses were

audio taped, and the researcher took notes of non-verbal behaviours during the interviews.

A total of 12 student focus-groups (6 focus-groups in each school and four members in each group) were utilised. Girls in grade 6 were called Focus-group One, and boys Focus-group Two. Focus-group Three was made up of grade 7 girls and Focus-group Four comprised of boys. Focus-groups Five and Six were made up respectively of girls and boys in grade 8 (Appendices C and D). The single gender groups were used because of cultural reasons. Boys were anticipated to be shy or too embarrassed to answer the research questions when interviewed together with girls, so too for the girls. In this cultural setting, the boys and girls were put into gender groups to allow them to answer the questions more comfortably.

Individual teachers and students could respond in English and/or Tok-Pidgin, as this allowed the participants to use languages they felt comfortable with, and allowed them to communicate naturally. The data in Tok-Pidgin from the teachers and students were translated by the researcher. The individual teachers and students were interviewed during their free times (lunch and after school), as they indicated these preferences on their consent forms. The interview schedules were drawn and given to individual teachers and students to read before carrying out the interviews (Appendices C and D). The recorded conversations were later copied onto a laptop and transcribed immediately. The interview transcriptions were given back to the participants for verification.

Another data gathering method used in the study was non-participant observation, using a portable video camera to observe and record the teaching-learning interactional behaviours and actions in the classrooms of the two case studies. The video camera was used as a tool to capture the live actions and behaviours of teachers and students in classroom settings and the classroom organisations and settings as illustrated and described in Chapters 4 and 5 respectively.

A total of 29 lessons were videoed in the two case studies. Each teacher presented 40-minute lessons, in many different subjects with 11 lessons videoed in the urban case study and 18 lessons in the rural case study. A summary of the lessons presented by each teacher in the two case studies is described in Chapters 4 and 5 respectively. The interactional behaviour and actions that occurred during teaching and learning in these lessons were captured by the video camera and uploaded onto the laptop and transcribed. As in the interview strategy, the teachers, students and their caregivers' full consent was sought prior to entering the classrooms to video the lessons.

The final data gathering technique used in the study was document analysis because teachers' planning programmes, students' assignments, projects, class exercises, test copies, homework and remedial and enrichment activities developed from the national curriculum. These documents were gathered because they represent actual work the teachers and students undertook and contain semiotics - words, phrases, sentences and paragraphs. Other documents, like the schools' organisational structures and student and staff enrolment records, were collected from the two principals of the schools. Some documents were photocopied with permission granted by the participants, and all documents were

returned to the participants after being analysed. The researcher handed over the transcribed data of interviews and documentaries to the participants to verify and confirm in the last two weeks of data collection. A total of 56 visits were made for the field data collection in the two case studies. The rural case study was visited 30 times, while the urban case study visited 26 times, and their daily occurrences were recorded (Appendices E and F). In the following paragraphs, the sampling of participants is reported.

3.4.3 Sampling of participants

The researcher kept the selected number of participants manageable for the purpose of this study in each case. The boundaries that guided the sampling of research participants include locality, school types, grade levels, gender, participants' roles, classes and age. Purposive sampling was used to select the two cases or schools, and the sample was limited to the upper primary level of education. This level of education was purposely selected because by this stage of their schooling, it could be reasonably anticipated that the students were achieving an integration of appropriate PNG indigenous knowledge, skills, attitudes and values with other appropriate international knowledge, skills, attitudes and the values to become productive members of society after they leave primary education. The upper primary teachers and students were seen to be in the position to be a primary source of data for this study because both (teachers and students) were experienced in the implementation of their national curriculum.

The PNG national curriculum's progressive content provides guideline for 'lived-experiences' of the teachers and students at upper primary level of education for the topic of this study. Therefore, purposeful sampling was carried out to achieve a more complete picture of multiple realities in the implementation of the national

curriculum, the teachers' and students' everyday life experiences, actions, opinions, views and the knowledge they construct through social interactions. The next section reports on the criteria used in selecting the participants.

3.4.4 Selection of participants

Teachers who had more than two years experience in implementing the upper primary national curriculum were invited to participate in the study, and were selected with the assistance of the principals of the schools. The criteria used to select the students were based on their age and gender. Grade 6 students (aged 12 and 13 years); grade 7 students (14 and 15 year olds) and grade 8 students (15 and 16 year olds) were selected (Appendices C and D). These age ranges were chosen because students at these ages should have experienced learning the knowledge, skills, and attitudes and values through the implementation of the national curriculum designed to enable them to become productive members of their society. Students were selected from class list provided by the class teachers. Table 3 below summarises sampling information about the teachers and students who voluntarily participated in the study.

School	Grade	Teacher		Students		Total
		M	F	M	F	
Banipul	6	-	2	4	4	10
	7	1	1	4	4	10
	8	-	2	4	4	10
Alowale	6	2	-	4	4	10
	7	1	1	4	4	10
	8	2	-	4	4	10
		6	6	24	24	
Total	12	12		48		60

Key: M = Male
F = Female

Table 3*:*
Participant information

A total of 12 teachers, who taught grade 6, 7 and 8 classes, were invited to participate in the study - six teachers each from the two case studies. It was originally planned to select 24 students in total over the two case studies, however, through an oversight by the researcher when accessing the study field, a total of 48 students (24 students in each case) were selected. Each case study involved 24 students, with four females and four males in each grade level, and fortunately this did not cause any logistical problems. In summary, the selection in the study was considered an equitable fair representation of teachers and students in gender from both urban and rural case studies for investigating the factors influencing the implementation of the national curriculum. The findings of these two case studies cannot be generalised to a larger population, but can be compared. The next section describes the processes and approaches the researcher undertook to enhance trustworthiness of the study.

3.4.5 Ensuring trustworthiness of the study

The researcher undertook measures to ensure the trustworthiness of the study was enhanced, so that the findings are a valid reflection of reality. In the following section, the means of achieving the trustworthiness of the study through processes and its approaches are reported.

For *transferability* of the study, the qualitative data are presented as thick descriptions of original sources with their meanings described (Chapters 4 and 5) and interpreted (Chapter 6) in the study report, so that other researchers and policy makers can refer to and make reference to the factors that are influencing curriculum implementation in PNG in similar situations. This study is dependable and credible, because the methods used and the findings are true accounts of what

was undertook and found. The *confirmability* of the study was addressed by the researcher collecting qualitative data in the field over a prolonged period of five months, in PNG. The transcribed data were subsequently presented to the participants and meanings verified, and signed and dated to confirm accuracy before analysis of the data began.

In this study, data triangulation, triangulation of theory, and triangulation of method was applied to investigate the research questions. Data triangulation for this study involved interviewing more than one teacher and many students in two different schools over the five months, as pointed out above. Also, document data gathered from those teachers and students were analysed, and many different subject classes were observed, rather than a single subject in each grade level (grades 6, 7 and 8) over the two case studies. Triangulation of method in this study was achieved through the use of interviews, non-participant observation and document analysis. These methods collected data in a combination of three different ways. Triangulation of theory was also applied in this study with the theoretical underpinnings of behaviourists and constructivist pedagogical approaches and outcome-based curriculum theory, as discussed in Chapter 2 guiding the interpretation and discussion of findings in this study, as discussed in Chapter 6. To further enhance the trustworthiness of the study, the data analysing techniques and procedures utilised are clearly reported in the next.

3.4.6 Data analysis of the study

This study applied inductive analysis to generate realities from the qualitative data (Birks & Mills, 2011; Butterfield, 2009; Glaser, 1992, 1994; Glaser & Strauss, 1967; Hodkinson, 2008). As alluded to earlier (section 3.3.6) an inductive analysis is an iterative process which sorts and orders qualitative data (from interviews,

observation and documents) to facilitate generation of units of meanings, categories, patterns and themes from these data, which in turn form sets of theoretical information (Cohen et al., 2011; Creswell, 2009; Punch, 2009). This whole process "involves moving back and forth between concrete bits of data and abstract concepts, between inductive and deductive reasoning, between description and interpretation" (Merriam, 1998, p. 178).

The five major steps applied to analyse the qualitative data inductively include: data organisation (Best & Kahn, 2006; Patton, 2002), generation of units of meanings, construction of categories, development of themes and writing of theory (Cohen et al., 2011; Glaser, 1978, 1992, 1994; Glaser & Strauss, 1967; Matthews & Ross, 2010; Newby, 2010) and these are described below.

Organisation of data

Organisation is important for quality management and analysis of the voluminous qualitative data that were generated from audiotapes, videotapes and documents in this interpretive study (Best & Kahn, 2006; Creswell, 2007; Patton, 2002). The teachers' audio and videotaped sources and documents were organised separately to the students' audio taped sources and documents for each case study in each grade level (grades 6, 7 & 8). The audiotaped and videotaped data were then transcribed "to represent what was said or meant in a particular event" (Gibson, 2010, p. 297), while the documents were copied and photocopied.

Generated units of meaning

The units of meaning were generated from the interview, observation and document transcriptions. Unit of meanings refers to "words, symbols, items,

sentences, characters, themes ... meanings and symbols" (Sarantakos, 2005, p. 303), which are indicated in the text data by codes. Coding means placing tags on or labelling the text data with numbers, words and symbols, such as letters of the alphabet (Birks & Mills, 2011; Lincoln & Guba, 1985; Sarantakos, 2005), to crack the data to identify the meanings (Matthews & Ross, 2010). The researcher created a variety of codes, comprising letters and numbers, and ascribed these as pseudonyms or codes for teachers' and students' throughout the transcribed data where and as appropriate (Appendices G and H). Each case study had different codes for grades 6, 7 and 8 (Appendices I and J). Then, the researcher read and re-read the transcriptions several times to gain full understand, and then underlined portions of the transcripts word-by-word, "phrase-by-phrase, sentence-by-sentence, paragraph-by-paragraph" (Cohen et al., 2011, p. 561), as exemplars of units of meanings or concepts and coded these with letters of the alphabet (Appendix K).

Coding units of meaning or concepts derived from the participants' own words (both spoken and written) and from the researcher's own created meanings (Cohen et al., 2011; Glaser, 1994; Glaser & Strauss, 1967; Newby, 2010). A continuous and thorough reading and sifting was done to refine and redefine the units of meaning to gain understanding of the particular situation being studied (Cohen et al., 2011; Fraenkel et al., 2012; Glaser, 1992; Glaser & Strauss, 1967; Matthews & Ross, 2010; Sarantakos, 2005). A total of 205 codes of meaning or concepts were generated from case study one, and 178 codes of meaning (concepts) from case study two (Appendix L).

Constructed categories

Lincoln and Guba (1985) state that: "Categorizing is a process whereby previously unitizing data are organized into categories that provide descriptive or inferential information about the context or setting from which the units were derived" (p. 203). The units of codes or concepts were read and re-read to understand the contained meanings pertaining to the topic of this study and research questions. Then the units of code or concepts were placed or grouped under each of the three research questions (Appendix M). Then under each of the research questions, the codes of meaning were carefully read and re-read, and constantly compared to identify similarities and differences within and across the two case studies (Birks & Mills, 2011; Cohen et al., 2011; Fraenkel et al., 2012; Glaser, 1992; Glaser & Strauss, 1967; Matthews & Ross, 2010), by asking the following questions (Johnson & Christensen, 2012).

- What commonalities are in the two case studies?
- What differences are in the two case studies?

Once the commonalities and differences in the units of code were identified, the categories were grouped and regrouped, integrated and re-integrated, linked and re-linked several times "into provincial categories on the basis of "look-alike" characteristics" (Lincoln & Guba, 1985, p. 204). After several modifications and shifting, the major categories and sub-categories and their properties emerged (Birks & Mills, 2011; Glaser & Strauss, 1967), and these "categories [were ordered] hierarchically … [in a] tree-like way" (Matthews & Ross, 2010, p. 401). The categories and sub-categories were then reduced to "more generalised, categories, whose properties and relationships to one another … provide[d] the

beginnings of a theoretical explanation of the data" (Hodkinson, 2008, p. 89). Based on the major categories and their properties, themes were developed.

Developed themes

A theme is a key or broad idea that pulls together the major categories and their characteristics (Hodkinson, 2008). Based on core categories, three major themes were developed that linked the categories, sub-categories and their characteristics systematically, and a theory based on the data emerged (Appendix N). This detailed process involved "a deep understanding of the storyline" (Cohen et al., 2011, p. 562), so the researcher went back and forth several times reading and re-reading to understand collectively the initial unit of codes, categories, sub-categories and their characteristics as well as the themes to ensure the theory was firmly linked to the data.

Writing the theory

When the researcher was convinced that the "analytic framework forms a systematic substantive theory" (Glaser & Strauss, 1967, p. 113), theory was written. In the theory, the categories which emerged from the participants themselves were described (Cohen et al., 2011; Glaser & Strauss, 1967). Finally, for a study to be trustworthy one has to accord with the ethical considerations, and this accordance is explained next.

3.5. Ethical considerations

Ethical issues in social research, like that done in education must be considered of paramount importance for a quality study. Ethics is defined as the "principles and guidelines that help us uphold [the conduct] ... about what does and what does not [that] constitute [one's] behavior" (Johnson & Christensen, 2008, p. 101) in

undertaking research with fellow human beings. It is essential that one follows ethical guidelines and procedures outlined by an organisation so that approval can be given to conduct research within and beyond that organisation (Bryman, 2008; Fraenkel et al., 2012). To create a healthy relationship for the study, social researchers need to establish contacts to seek approval of relevant authorities or organisations in order to access and obtain consent from the participants (Bryman, 2008; Lindsay, 2010). Such processes also assure the confidentiality of the data and protect participants from harm (Bryman, 2008; Fraenkel et al., 2012; Lindsay, 2010). Respecting the participants' right to decline or withdraw from the study and protecting the identities of participants, organisations and their culture, values and norms are crucial in educational research (Bryman, 2008; Johnson & Christensen, 2008; Lindsay, 2010). In the following section, the ethical procedures and how informed consent was obtained in this study are described.

3.5.1 Ethical procedures and informed consent

This study was executed within the guidelines and procedures outlined in The University of Waikato Ethical Handbook (University of Waikato, 2008). Approval for this study was granted by the University of Waikato Centre for Science and Technology Education Research (CSTER) ethics sub-committee (Appendix Q). The researcher formulated letters, which were sent to the PNG National Department of Education (Appendix R), Madang Provincial Education Division (Appendix S) and the principals of the two primary schools (Appendix T), to seek their approval for the study to be conducted. These processes of seeking consent support Lindsay's (2010) argument that: "Identification and recruitment of participants will often require the permission of one or more 'gatekeepers' in addition to the informed consent of the participants, for example,

the head teacher and local authority" (pp. 117-118). Once the full consent was sought and granted in writing from the PNG National Department of Education (Appendix U), the Madang Provincial Education Division (Appendix V) and the principals of the two primary schools (Appendices W and X), the researcher entered the schools to conduct the study.

Whilst in the field, full informed consent was sought from three groups: teachers, students and the parents/caregivers of the students in this study (Bryman, 2008; Fraenkel et al., 2012; Lindsay, 2010; Neuman, 2007). First, the researcher visited the schools and established contact by meeting with the school principals and explaining the research procedures for data collection and other details. Second, the teachers were recruited through the principals of the two schools. Finally, the students were invited to participate in the research (Appendix ZC). The researcher gave the participants a covering letter stating the nature of the study, together with the consent forms (Appendices Y, Z, ZA, ZB, ZC and ZD), and explained to the teachers and students about the objectives and procedures involved in the research so that they could make informed decisions about taking part in the study (Johnson & Christensen, 2008; Neuman, 2007). The consent forms provided information to the participants of the procedures they would be involved in, the protections that would be in place for their own security, interests and confidentiality and their entitlements in respect to withdrawing their participation (Johnson & Christensen, 2008; Lindsay, 2010; Neuman, 2007).

After the written consent forms were gathered from the teachers, students and parents/caregivers, the researcher conducted in-depth interviews, videoed the lessons and collected documents. Information and material collected from the

research participants in this study were treated as highly confidential and were not exposed to any other teachers and students (Cohen et al., 2011; Lindsay, 2010; Neuman, 2007). The researcher accorded respect to the participants and the research contexts by establishing and maintaining confidentiality. In order to up-hold this ethical principle, the researcher ensured the information provided was kept confidential by way of keeping it in safe storage and not disclosing it to any person apart from his supervisors. Participants' names and schools were not published in any way, but pseudonyms were used so that the risks of identifying individuals were minimised.

Participants' confidentiality was protected and they were assured of this in the consent form. Off-the-record or private communications maintained confidentiality (Cohen et al., 2011; Fraenkel et al., 2012; Johnson & Christensen, 2008; Lindsay, 2010). In all, the identity of student participants was kept highly confidential and not disclosed to their teachers and fellow students, as care was taken in reporting their data, particularly when it contained sensitive information regarding the teachers or other students. Interview transcripts and documentary analysis were communicated to participants only for confirmation and correction/amendment and monitored in every situation in order to minimise any potential harm that could arise (Fraenkel et al., 2012; Johnson & Christensen, 2008; Matthews & Ross, 2010). Participants' free times were worked out and interview schedules were drawn up and given to them to follow. They were interviewed at lunch breaks, and between 3:00 p.m. to 4:00 p.m. when classes ended, as indicated in their consent forms (Appendix ZC). During the study process, the selected schools and participants were very much respected at all times. Healthy relationships were maintained throughout the study with the

participants. The researcher did not exert pressure on the participants to gather the data but respected and upheld the culture, values and norms of the schools. The participants were also respected in the data gathering processes.

3.6 Summary

This chapter described three research paradigms and justified the interpretive research paradigm as suitable for the study. The research design was described in detail, including the case study approach, qualitative methods of data collection (interviews, observations and documents), inductive analysis and considerations of research trustworthiness and ethical procedures.

Next, Chapters 4 and 5 respectively report the findings of the data.

CHAPTER FOUR: FINDINGS FROM CASE STUDY ONE

4.1 Introduction

This chapter presents the findings from case study one. The case study investigated the teachers' implementation of the new outcome-based national curriculum and *how* and *what* students were learning in contemporary classroom contexts in PNG. The rich and detailed data generated from the interviews, observations and the documentaries were analysed inductively, and grouped into three major themes organised around the research questions, as described in Chapter 3.

Section 4.2 provides the background information about the context of case study one. The findings related to teachers' implementation of micro-curriculum are discussed in section 4.3 and teachers' models of micro-curriculum and the student-experienced curriculum are presented in sections 4.4 and 4.5 respectively. Section 4.6 wraps up this chapter with an overall summary.

4.2 Setting of the study

This section presents five aspects linked to the setting that are relevant to the study: the history of the school, infrastructure, organisational arrangements, student population and teaching designations.

4.2.1 History of the school

The study was conducted in the Banipul Primary School (pseudonym), which is a large urban co-educational primary learning institution, run by the Lutheran Church in Madang Province, PNG. The Madang province or town is located on

the northern coast of PNG, and was first settled by Europeans in 1871 (Ford, 1973; Reiner, 1986; Sinclair, 2005). In 1887, Wilhelm Thomas, a Lutheran missionary, came to Madang, and the Lutheran Mission established churches in different parts of Madang, along with a few schools (Reiner, 1986; Sinclair, 2005). In 1935, the Lutheran missionary established the Banipul Primary School in the Madang township (Reiner, 1986; Sinclair, 2005).

Initially Australian administered, the school and the staff largely consisted of expatriate teachers and a few national or local teachers who taught along aside them. In 1935, the classes consisted of grades 1 to 4 with students enrolling at the age of seven and finishing grade 4 by the age of 9 – 10 years. In 1966, the classes extended to grade 6. The school used an objective-based education system, which was adopted from Australia, up until 1992. In 1993, the National Education Department (NED) introduced outcome-based education in five primary schools and a high school in Madang Province. In 1995, Banipul Primary School adopted this outcome-based education model and introduced additional grade 7 and 8 classes within the established physical infrastructure (Papua New Guinea Department of Education, 1996).

4.2.2 School's infrastructure

At the time of the study, the school had a total of 13 permanent buildings. Eight housed classrooms, and others were teachers' houses, the students' and teachers' toilets, and the principal's office. Six of the classrooms were requiring maintenance. In addition, an elementary school (Early Childhood Education) had been established on the same land occupied by the primary school and bears the same name. Students who completed their elementary education in this

elementary school are admitted straight into Banipul Primary School. At the time of the study, the school had 10 computers, which were located in the principal's office, but were not fully utilised, either by staff or students. There was one photocopier machine, but staff experienced mechanical difficulties with this. Other modern communication devices, such as Internet and fax, were not available at the school, except for a phone, which was in the principal's office. Water and electricity were connected to the school and its perimeter was fenced. In all, the school was fairly well resourced with buildings, but the classrooms needed maintenance, and digital technologies were not easily accessible by staff and students.

4.2.3 School's staffing arrangement

The school was a level seven school. The levels refer to the status of the school in terms of student enrolment (Papua New Guinea Department of Education, 2001b). The Teaching Service Commission (TSC) creates teaching positions in PNG schools and teacher appointments are made to these positions by the Provincial Education Board (PEB) and endorsed by the TSC (Papua New Guinea Department of Education, 2001b). Figure 7 below presents the school's hierarchical organisational structure for teaching staff, which was provided by the principal at the time of this study. During the course of this study, the researcher observed that some teachers who taught grade 7 and 8 classes were using small storerooms as their offices in the two grade 7 and 8 buildings, while other staff members in these buildings had set up their office corners inside the classrooms. One of the store room type offices in the grade 8 building was occupied by the deputy headmistress. The grade 6 teachers had set up their office corners in their classrooms.

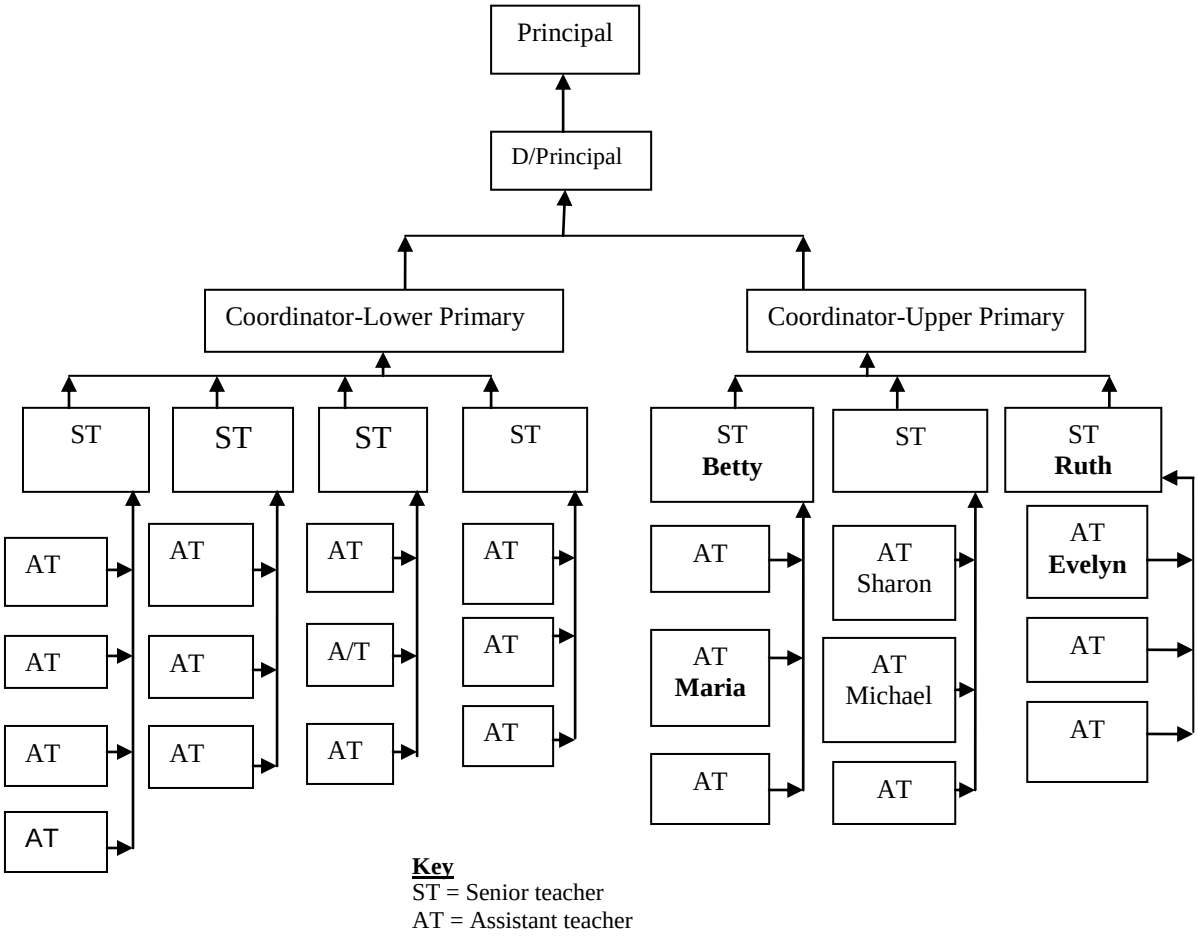


Figure 5: School's hierarchical organisational structure for teaching staff – case study one

The school consisted of 33 staff members and a principal who provided the overall leadership of the school. The deputy principal assisted the principal and worked with two coordinators (one each for lower and upper primary sections) in implementing the curriculum. The two coordinators in turn supervised and assisted the seven senior staff implementing the curriculum. Four of the senior teachers were from the lower primary and three from the upper primary. The seven senior teachers organised, supervised and assisted the other twenty-two assistant teachers in the implementation of the curriculum.

4.2.4 Student population

The school had a total student population of 850, of which 469 were males and 381 females. The lower primary school was made up of 452 students and the upper primary 398. The classes were arbitrarily labelled with colours of red, blue, green and yellow, from the lower to upper grades as illustrated in Table 4. Students came from many ethnic and cultural groups in PNG. A quarter of the students, who attended the school had come from families where the parents were employed locally in the town. Another quarter of the students came from the nearby rural communities located outside the boundaries of the provincial town. The remaining students attending school came from communities established on government lands referred to by the teachers as the town's 'squatter settlements'. This study involved the primary students from the upper school and their teachers. Details about the student population and the participating teachers' years of teaching experience are tabulated below (Table 4).

Grade	**Student enrolment**			**Teachers**	**Years of teaching experience**	**Teaching level of participants**
	M	**F**	**Total**			
6Red	18	15	33	-	-	-
6Blue	17	16	33	Betty	13	6blue
6 Green	19	13	32	Maria	15	6green
6Yellow	15	14	29	-	-	-
7Red	28	19	37	Sharon	22	7red & 7blue
7Blue	24	11	35	Michael	16	7blue & 7red
7Green	22	15	37	-	-	-
7Yellow	18	16	34	-	-	-
8Red	17	12	29	Evelyn	23	8red & 8blue
8Blue	24	12	36	Ruth	10	8blue & 8red
8Green	21	13	34	-	-	-
8Yellow	19	12	31			
Total	242	156	398			

Table 4:
Upper primary population and teaching experience per class - case study one

The six teachers had a wide range of teaching qualifications and all had more than nine years' teaching experiences. Sharon and Evelyn held certificates that included two years training to teach in primary school, while Betty, Maria, Ruth and Michael held diplomas after three years training from different Primary Teachers' Colleges in PNG. Sharon had many more years of experience in teaching at the school than the other teachers. "This is probably my eighth year in Madang Province and fourth year teaching at [Banipul] Primary School" (Sharon). As mentioned previously, the teachers were appointed to formal teaching positions by the government and were obligated to teach the national outcome-based curriculum (Papua New Guinea Department of Education, 2001b).

4.2.5 Teaching designations

In 2003, the Banipul Primary School implemented the outcome-based national curriculum (Papua New Guinea Department of Education, 2003a). When the study was conducted in 2010, the school had a total of seven years' experience in implementing the curriculum. At the beginning of the year in which this study occurred, each teacher was teaching all curriculum subjects in his or her class. However, this teaching arrangement was altered during the year (after term one), particularly in grade 7 and 8 classes, due to difficulties teachers encountered in implementing the curriculum. The difficulties were related to planning and delivery of the outcome-based curriculum. Sharon revealed:

> We have two ways of planning. We started with single outcome or stand-alone and then we went into integration. We find some difficulties in integrating subjects. We started teaching this year all seven subjects in a class and then all the seven subjects were not effectively taught. Then we decided to teach a subject each across the grade. (Sharon-UPTI303)

While grade 6 teachers continued to teach under the original arrangement, the grade 7 and 8 teachers re-organised the teaching such that they specialised in one or two subjects. The teachers were rotating from classroom to classroom, to teach their specialised curriculum subjects, while students remained stationary. Class timetables (Appendix ZK) gathered and lessons observed by the researcher indicated 40 minute lessons were planned by each specialised teacher and taught by them in their classrooms.

During the lesson observations, the researcher saw that the grade 7 and 8 classes were over-crowded with students, with not enough space in the classrooms for the students to comfortably collaborate with each other and move about easily when group activities were undertaken. However, the grade 6 classes did have enough space for the students to collaborate with ease. Some classrooms displayed the students' activities on the walls, while others did not. Student seating arrangements varied from grade 6 to 8. In grade 6 and grade 7 classes, the desks were arranged in groups (Appendix O), as shown in Figure 6.

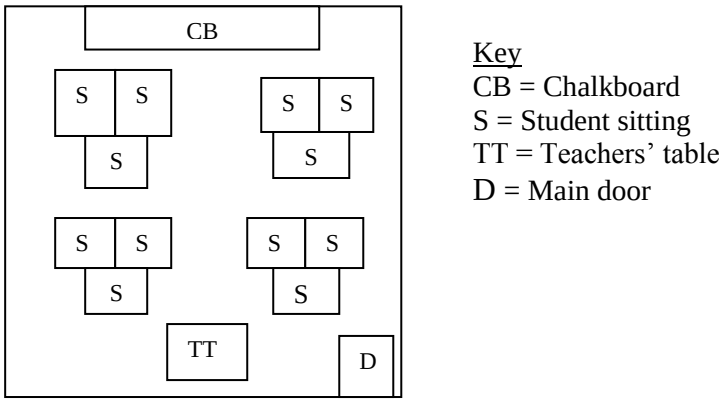


Figure 6: Organisation of two grade 6 and one grade 7 classrooms

Two of the grade 8 classes and a grade 7 class used long flat benches as desks (Appendix O). The students then sat on the chairs and were facing each other. The benches in these classrooms were arranged in two rows placed outwardly to the edges of the classrooms. The organisation of two grade 8 and one grade 7 classrooms is illustrated below.

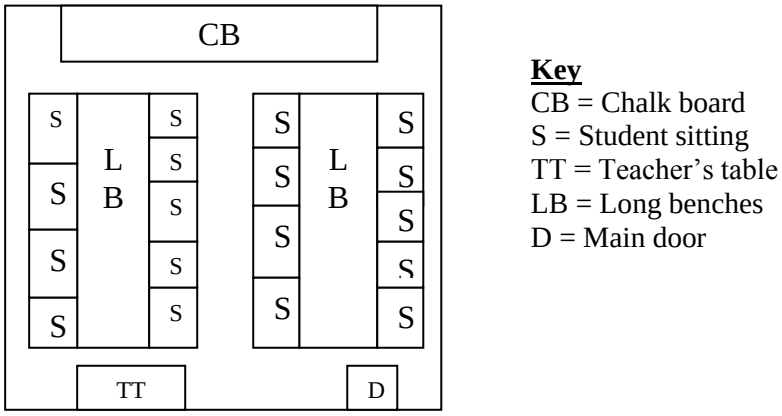


Figure 7: Organisation of two grade 8 and one grade 7 classrooms

The researcher observed that this arrangement of the desks promoted individual and pair activities more than group activities. It was difficult for the teachers to organise students for group activities. Students who sat next to the inner edges of the benches in the centre of the classrooms were able to interact with the teachers on a regular basis, while students who were placed to the outer edges of the benches interacted less often with the teachers. The next section outlines the teachers' micro-curriculum.

4.3 Teachers' micro-curriculum

This section reports on five themes or categories which emerged during the data analysis. Themes 4.3.1 and 4.3.2 relate to the teachers' interpretation of the national outcome-based curriculum and their planning of the micro-curriculum.

The delivery of micro-curriculum and issues with national curriculum implementation are discussed in themes 4.3.3 and 4.3.4 respectively. Theme 4.3.5 links to teachers' values and beliefs, and theme 4.3.6 involves teachers' perspectives on students' attitudes and behaviour. The teachers' professional development is outlined in theme 4.3.7.

4.3.1 Teachers' interpretation of the outcome-based national curriculum

This theme presents how teachers identified key ideas using five steps to interpret the outcome-based national curriculum and organise and expand upon key ideas.

Identifying key ideas

The teachers made links between the strands and the sub-strands, and the learning outcomes and performance indicators of the national curriculum document as discussed in Chapter 1 (Appendix O). As a first step, the teachers quickly scanned the strands and sub-strands through to the learning outcomes and their performance indicators. For example, Maria-UPTI302 stated: "First I look at all the teachers' guides and syllabus and then I see the outcomes and from the outcomes I look at the indicators…**"** In the second step, they read more deeply to determine the links or interrelationships between the ideas or concepts contained in the strands, sub-strands, learning outcomes and performance indicators. In step three, the teachers constructed or built explanations for the intent of the curriculum document. As a fourth step, they decided upon relevant learning activities for the students to experience in school and classroom situations. These interpretive steps are described by Evelyn, Betty and Maria:

> I'll have to read through and understand what I am reading before I can pick out the … questions or activities. (Evelyn-UPTI305)
>
> What you have to do is you read the learning outcomes you got to get activities that are in line with the learning outcome and then break it down and you do the activities for students. (Betty-UPTI301)
>
> By looking at the strand, first I defined it and I explained to myself what it means and then by looking at the sub-strand I do the same. I defined and see what it means then I try to link the two together to see what is expected of me to teach and when I look at the indicators then it puts me to a correct place where I'm suppose to teach. (Maria-UPTI302)

Interestingly, some teachers could not find relevant performance indicators. For example, Sharon-UPTI303 stated: "When I study the indicators I see that some indicators are not relevant for what I should be teaching." Finally, the six teachers re-visited the above steps they had used to ensure the curriculum intent was correctly interpreted. By doing that, the teachers were able to look for additional ideas and fit in missing information which was needed to develop appropriate activities that suit the students. For example:

> And these knowledge activities, I will have to sit down and think about them myself ... When I think that it is relevant to give to the children then I plan them and give them to the children with my own thinking that these are … activities. I try my best to think and think, you know find and collect and then put together then I see which are appropriate for the students and then I teach it to them. (Maria-UPTI302)

The six teachers were using an iterative step to make their own meanings from the national curriculum document. Then they organised and expanded upon key ideas.

Organising and expanding upon key ideas

Four teachers used mind maps to organise underlying key ideas of the learning outcomes before expanding them into knowledge, skills, values and attitudes

(Appendix O). Mind maps are diagrams which show words and ideas linked to and arranged around a central key word or idea. For example, a mind map Ruth had in her single outcome micro-curriculum model is shown in Figure 8 below.

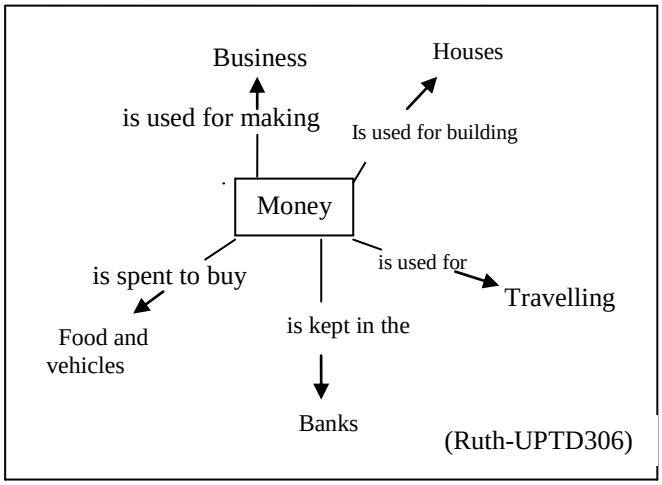


*Figure 8***:** A sample of a mind map from Ruth's micro-curriculum

With the use of mind maps, Maria and Sharon were able to link related ideas and information meaningfully into a complete picture for the students to understand. For example:

> When I am looking at the broad outcomes, first of all I try to draw a mind map and I try to break down the broad outcomes into simplified outcomes. Meaning that, simplify them so that it becomes simple for me to teach to the children, I will understand and I think the children will understand too. (Maria-UPTI302)

> Mostly I try to use a mind map to start off with so that I will see relevant areas that I am going to teach that will cover the piece of work that I'm going to teach to the children so that I teach things that children must know about the strand or sub-strand or outcome that I am going to teach. (Sharon-UPT303)

The teachers used mind maps to select and expand concepts from the national curriculum document. They then planned the micro-curriculum using these concepts.

4.3.2 Teachers' planning of micro-curriculum

This theme presents four factors that related to micro-curriculum planning. They are: time needed for planning, resources, planning considerations and processes and planning approaches.

Time needed for planning

The six teachers planned the micro-curriculum within the amount of time available for delivering the national curriculum, and its accompanying materials. For example, Ruth-UPTI306 pointed out: "I see the content of what I will teach; I see the materials … and then I also see the duration when planning the programme." Teachers were required to plan and deliver the strands, sub-strands, learning outcomes and performance indicators of each curriculum subject. However, three teachers found planning of the micro-curriculum was hard work and it took more time to think through and plan than they had anticipated. For example, Michael, Maria and Sharon commented:

> We don't have enough time to go for all these things. We realise that there is a lot of hard work in planning. (Michael-UPTI304)
>
> I see that it almost consumes all my time trying to break these things into what I can teach to the students. (Maria-UPTI302)
>
> I can even take two or three days to plan for this broad outcome. It's a lot of thinking and time I found out that we spend a lot of time planning. (Sharon-UPTI303)

In reality, only two of the six teachers planned for all strands, sub-strands, learning outcomes and performance indicators, while the other four teachers chose only the ones which were manageable within the length of the teaching time frame. For example, Ruth was selective:

> I do not take all sub-strands in my planning, but see the length of time it can take by looking at each of the topics that are prepared and then I see how much work I can prepare within the time frame. (Ruth-UPTI306)

The six teachers commented that they needed time to develop their micro-curriculum from the national outcome-based curriculum. The next theme outlines the accompanying teaching and learning resources.

Resources

The six teachers planned the micro-curriculum with the suitable resources that were available within classroom and school contexts. These teachers needed teaching resources such as charts, markers, science equipment and laboratories, and textbooks. Locating these resources and materials to match with the curriculum intent was not a straightforward activity for teachers. So the three teachers took more time to look for the teaching resources. When they could not locate the relevant teaching resources, these three teachers felt like giving teaching the curriculum subjects. The comments from Ruth, Michael and Sharon illustrated these:

> It takes a lot of time looking for resources and materials. When I do not find resources and materials, I use whatever is available or provided to me to plan and programme. (Ruth-UTPI306)

> We also see that we always need a lot of materials like papers, so many things to get prepared to make lessons become effective. (Michael-UPTI304)

> In planning I see that materials are not available. Then I feel like giving up. (Sharon-UPTI303)

It appears the development of the micro-curriculum was not a simple activity that the six teachers undertook, but rather a challenging one. Also, when there was

lack of curriculum and teaching and learning resources, two teachers encountered difficulties teaching the content. In this, Evelyn and Sharon stressed:

> There are many challenges that have been faced in terms of teaching resource materials. We don't have enough and there is lack of supply especially with OBE [outcome-based education] materials. (Evelyn-UPTI305)

> When we are planning we don't have enough syllabuses and actually the lesson presentation we don't have enough text books for the students to see. We have difficulties in materials especially the curriculum. (Sharon-UPTI303)

Clearly, time was needed by the teachers as well as suitable teaching and learning resources.

As teachers planned the micro-curriculum they used a number of processes and approaches.

Planning considerations and processes

The key driving force that the three teachers considered when planning their micro-curriculum include students' needs, abilities and prior knowledge, and their English language ability. These concerns are shown in the following comments made by Betty, Michael and Evelyn:

> When we are planning teaching programmes we've got to consider the big thing is the needs of the students and then we've got to plan according to meet[ing] those needs. (Betty-UPTI301)

> When I do my programme, I look at the abilities of students' understanding. (Michael-UPTI304)

> The main thing I consider with grade 8 levels in planning language level of students is the use of English instruction so I have to plan to suit their level. (Evelyn-UPTI305)

The six teachers also considered environmental contexts when designing their micro-curriculum. Environmental contexts included the school, the local area in which the school was situated, and classrooms. Some important cultural activities or practices which occurred annually or monthly in those environments were considered as central themes for the development of the micro-curriculum. This was recorded in the following comments.

> And sometimes I look at the environment that we are in. I consider some of those things to at least plan. (Michael-UPTI304)
>
> We consider things within our local environment. This year's theme we picked our themes from the elementary. From the elementary we picked the themes and then we made up our own themes. (Sharon-UPTI303)

Finally, Maria and Betty organised first the knowledge information, then selected or determined skills the students should acquire and finally the values and attitudes. These essentials were all included in the units of work. For example:

> Firstly, I consider the knowledge that I will have to teach to the student. And then I planned … skills that I expect them to acquire and to use and after that the attitudes I like the students to achieve. (Maria-UPTI302)
>
> When we are doing [a] unit of work, we … write knowledge, skills and attitudes. (Betty-UPTI302)

Ruth identified concepts by using revision exercises. For example:

> With the knowledge, we mostly look at revision exercises. We refer back to previous years they've been learning so it's more like …where I try to collect things that they've learnt and I work from there to see where they haven't done. (Ruth-UPTI306)

The six teachers then used two planning approaches, as suggested by the national curriculum, to develop their micro-curriculum.

Planning approaches

The six teachers used two approaches: the *single outcome (or stand-alone)* approach and the *integrated outcome* approach to develop the micro-curriculum (Appendices O, ZE & ZF). These two planning approaches were commented on by Sharon and Evelyn:

> We have two ways of planning. I started with single outcome or stand-alone and then we went into integration. (Sharon-UPTI303)

> We do integrated planning as well as single outcome lesson planning. (Evelyn-UPTI305)

Michael selected the strands and sub-strands of the outcome-based national curriculum using a yearly overview format. The units of work were developed around learning outcomes and themes (Appendices ZE & EF). From the units of work, daily lessons were designed.

> We plan the strands and … sub-strands in yearly overview. From the strand and sub-strands, and the learning outcomes in line with them, we then plan our unit of work and our daily plans. (Micheal-UPTI304)

Next, the students' activities were designed to match the learning outcomes and their performance indicators along with relevant resources and materials that were available within the classroom and school contexts. Betty and Ruth revealed:

> The students' activities are designed according … to the indicators and the bullet points' elaboration … so you get those activities and … work on each learning outcome. (Betty-UPTI301)

> I normally select activities … in line with the learning outcome and…with the indicators. I … always think of how the students are going to go about with these activities especially with the resources and materials available. (Ruth-UPTI306)

To share the workload, each teacher planned two subjects from the required range of primary subjects. The plans were then photocopied and shared for teaching. This collaboration is described by Betty and Maria:

> The subjects are divided among the teachers. Each teacher is planning two subjects each so I planned my subject and I photocopy it [and] distribute to other teachers to teach as well. (Betty-UPTI302)
>
> I plan two subjects and my other counterparts plan two each. (Maria-UPTI302)

The key points emerged about teachers' planning of the micro-curriculum are that they developed it within the amount of time available and the availability of suitable teaching and learning resources. In the planning processes, the teachers considered the knowledge, skills, attitude and values required by the students, as well as their needs, abilities and prior knowledge and the environmental contexts. The teachers then used two planning approaches – single outcome and integrated outcome - to design their micro-curriculum as recommended by the national curriculum and delivered in school and classroom contexts.

4.3.3 Pedagogies

This theme describes the key features of the pedagogical approaches, including the learning activities, the teachers employed in delivering their micro-curricula. The features identified are: the teaching styles teachers said they use, the teaching styles actually observed by the researcher, strategies for helping students to organise learning and types of learning activities that were designed for the students to undertake.

Teaching styles teachers said they use

Teaching styles refer to the ways the teachers delivered lessons to the students. The teachers commented that they taught both theory and practical lessons. Some teachers transmitted the knowledge and skills and asked the students a range of questions (Appendix O). Then the students undertook the activities and copied notes, and finally the teachers asked questions to conclude the lessons (Appendix O). This way of delivering lessons was stated by Michael, Maria and Sharon.

> I teach mainly theory lessons or theory programmes. After teaching them a new concept and going through explanations and giving exercises I think they learn better from there. (Michael-UPTI304)
>
> We start defining and then explaining all about what I know and I ask questions and give them as notes. (Maria-UPTI302)
>
> After the lesson I have to assess them through asking questions to see if they have achieved what I have taught. (Sharon-UPTI303)

Two teachers stressed that the students experienced difficulty in comprehending concepts because they were unable to read and understand written materials. As a result, they were unable to undertake some of the activities and sought support from the teachers by asking for further explanation. Sharon and Evelyn commented:

> Most times, we just talk and students' don't pick up easily and then students come back they ask. They need more explanation. I think that the students are not able to learn well because they can't read and understand. (Sharon-UPTI303)
>
> It's very difficult or quite challenging when you give the activity and the students cannot comprehend what you try to give to them. (Evelyn-UPTI305)

Betty reported that skills-oriented lessons were not straightforward to teach and were challenging. One reason given for the challenges was large class size. For example, Sharon had 37 students, which was the highest number, while Ruth had 36 and Michael 35 students (Table 3). Thus, the teachers were unable to support individual students with specific skill development related activities with one-on-one interactions. Betty commented:

> There are so many students in the class; some of those skills that we are actually writing them down and present over to them. They might not get the skills because it's hard to help them. (Betty-UPTI302)

However, some students encountered difficulty understanding content knowledge because some teachers believed they did not clearly explain and demonstrate the lessons with relevant illustrations and examples for the students to understand. For example:

> I feel [that] I am repeating information. That's what I feel and most times I think that I should have said this but I did not say [it] and I regret sometimes. Maybe I'm not teaching properly or [it is] the students themselves. I think that the students are not able to learn well because they can't read and understand or [maybe my] present[ations are] not clear to the students. (Evelyn-UPTI304)

The teachers commented that they delivered both theory and practical lessons. An account of teaching styles the teachers actually applied and used in delivering their micro-curriculum, as observed by the researcher, is presented in the following paragraphs.

Teaching styles teachers actually applied in the lessons observed

A total of eleven lessons presented by the teachers were observed in the classrooms (Appendix O). A single lesson of Betty's was observed, while two

lessons of each of the other five teachers were observed (Appendix O). The total lessons observed revealed that the teachers used three teaching styles: transmissive, structured and cooperative group activities (Appendix O). A description of each of these teaching styles is given in the following paragraphs, where the teachers' teachings are indicated with bolded **'T'** and the general students' responses with bolded **'R' [T**= teaching and **R** = general responses] in the quotations.

Transmissive teaching style

Two of the teachers (Betty and Michael) used a transmissive teaching style in their lessons. In this approach, Betty for example presented the main ideas and activities on the chalkboard before the lessons, while Michael used student textbooks in all his lessons. Betty printed the information neatly on the boards and the students were able to read what was written. Michael occasionally utilised the chalkboard but mainly used the student textbook as a teaching aid (Appendix O). The following example comes from one of Michael's lessons in which he used the student textbook:

> **T:** I want you to open to page 6. Last week, we looked at 8.6 on page 6. Is that correct?
> **R**: Yes.
> **T:** You took some exercises home to do them as homework. Today we will continue to look at this page… (Michael-UPV304, lesson 1)

The two teachers observed followed a general sequence that included an introduction, body and conclusion. They mainly transmitted information to the students, from the front of the class, while students passively listened to the teachers and responded to a few questions asked of them - by teachers (Appendix

O). The teachers took up most time explaining the lessons and gave a few minutes for the students to do activities. Betty went straight into introducing her lesson, while Michael began the lessons by greeting the students and the students, in turn, greeted him. For example:

> **T:** Good morning everyone.
> **R:** Good morning Mr George (pseudonym) and God bless you.
> **T:** How are you this morning?
> **R:** We are very well, thank you and how are you Mr George?
> **T:** Good, take your seats and sit down… (Michael-UPV304, lesson 2)

Betty asked the students to raise their hands and shake them hard in the air a number of times as a strategy for gaining students' attention prior to beginning the lessons. She mainly asked revision questions from her previous lessons to introduce the new lessons to the students. Michael, however, went straight into introducing the topics and activities from the textbook. Michael and Betty did not state the purposes of the lessons at any stage. Straight after the introduction, Betty explained and demonstrated the main ideas of the lessons, which she had presented on the chalkboard. She took more time explaining, and in some instances she repeated the same information a number of times. Michael read through the textbooks and explained the text as the students followed him. Michael took up most of the time explaining directly from the textbook (Appendix O). For example:

> **T**: Look at page 8. Look at question number five. Here the question says every year food increases by how many percent?
> **R:** Five percent.
> **T:** Every year the price or costs of goods in the stores in Port Moresby are increased by 5 percent every year … (Michael-UPV304, lesson1)

Overall lesson observations indicated that the two teachers asked a variety of questions of the students. A few students did not respond, while others partly attempted to respond. In such cases, the teachers redirected the same questions to other students to answer. However, if these students did not answer, the teachers gave the answers and continued with the lessons. Also, the two teachers frequently asked questions and quickly responded themselves without giving opportunity for the students to respond. The students always gave chorus-type feedback such as 'yes' or 'no' to the questions which were asked. An excerpt from Betty's lesson illustrates this:

T: We are going to add a consonant and our consonant is.
R: ment.
T: And our word is.
R: argument.
T: Are you going to drop the 'e'?
R: No, yes.
T: Is l a vowel or a consonant?
R: Consonant.
T: L is a consonant. (Betty-UPV301, lesson 1)

Betty focused her eyes on every student as part of her class control and moved about at a steady pace, while Michael developed the habit of looking at the textbook, reading and talking, then looking up to make eye contact with the students and continuing to read. Michael was unable to express the content of his lessons without the assistance of a textbook (Appendix O), whereas Betty was able to express ideas and information explicitly without referring to a textbook. In all, the two teachers rarely used positive reinforcement phrases to encourage, motivate and acknowledge students' specific efforts in the activities and responses, but they occasionally used phrases such as 'very good' and 'good' to individual students, groups and the whole class. These phrases often appeared in

the activity part of the lessons rather than other parts of the lessons. Michael provided activities directly from the textbooks for the students to undertake individually. Betty designed her own activities for the students to do (Appendix O). Although Betty and Michael organised the students in groups for their classes (Figure 10), they engaged students with individual activities (Appendix O). For example, an individual activity Michael provided to the students in one of his lessons was:

> **T**: You do these activities. Any questions? You may start or begin. Once again, your exercise books must be neat and tidy. Let's say I will collect all your books straight after this lesson to have a look or mark them. Your writings must be clear. Only blue and black ink biros must be used in writing the activities. No other colours. You underline the topic or heading, the ruler must be used. (Michael-UPV304, lesson 2)

There was evidence of support provided to each student, either individually or in groups by the teachers. While supporting the students, the teachers typically provided further explanations and demonstrations to students. In this example, Betty assisted the students by re-emphasising points and providing answers.

> **T**: Who has got an answer to question one already? Hands up: Only one person. Whatever suffix you adding to the word, always remember that it must be a consonant. You are adding a consonant and not a vowel. 'I' is not a consonant. 'I' is a vowel. Is that clear! You can add the suffix but it must be the correct suffix and not vowel. The word for number five is polite and not politics. Polite is different from politics. (Betty-UPV301, lesson 1)

Betty and Michael were unable to cover their lessons content completely because the students took more time than was available to do the activities and the time ran out for the lesson. Also the students were very slow to start the activities in all classes. Betty displayed students' work on the walls of her classroom, which were

labeled and arranged in different curriculum subjects. Michael had a few student activities displayed on the walls in their classrooms, while some sections were blank. The two teachers organised the students in groups of six in their classrooms (Figure 10) but they presented transmissive lessons (Appendix O). The students sat and faced each other and were able to read the chalkboard, and they collaborated easily in the activities. While these two teachers used a transmissive teaching approach in delivering their micro-curricula, Sharon, Maria, Evelyn and Ruth applied cooperative and structured group activities.

Cooperative group activities

The other four teachers (Maria, Sharon, Evelyn and Ruth) used cooperative group activities (CGA) in their lessons and they designed varied teaching materials and resources for use in their teaching (Appendix O). Evelyn and Ruth prepared and utilised teaching materials which contained the key ideas of lessons, supported with a variety of student activities. The key ideas and activities were usually presented on flash cards and charts. Sharon and Ruth provided support resources including markers, magazines, old newspapers, textbooks, models, glue, A4 sheets of papers and blank charts for students to use. Maria prepared the main ideas and activities neatly on the chalkboard before the lessons, and utilised a number of learning resources, such as A4 sheets of papers and charts, while Sharon prepared charts that contained the main ideas and student activities. Sharon also prepared the main ideas and activities of one of her lessons in the form of worksheets for the students to do (Appendix O). Sharon used a chart she prepared in one of her lessons as illustrates below:

T: OK. Let's all look up here. Let's read the instruction together from the chart.

R: Use arrows and labels to show the correct position on the time line of each of the following events.
T: OK. What we are going to do now is we will use this information to plot on the time line. … In groups of three, you will draw the time line. (Sharon-UPV303, lesson 1)

The four teachers had a common sequence in their lessons, starting with the introduction and moving through a conclusion. Evelyn, Ruth and Sharon spent few minutes to explain the important ideas of the lessons and provided more time for the students to perform the activities in their respective groups (Appendix O), while Maria took the most time explaining her lessons and provided less time than the other teachers for the students to do activities in all classes. The students were actively engaged in varied activities in all classes (Appendix O). Maria and Sharon began the lessons by greeting the students, while Evelyn and Ruth did not. For example, Maria greeted her class:

T: Good morning, class.
R: Good morning, Mrs Boi [pseudonym] and Mr Lingawa.
T: How are you all this morning?
R: We are very well, and how are you this morning?
T: I'm very good, thank you… (Maria-UPV302, lesson 2)

Evelyn, Ruth and Sharon undertook a variety of introductory activities to introduce the lessons for two to three minutes, such as:

T: I wrote this song at recess time. It's a short one. Let's sing the song. It's just to energise us and to enlighten us just for the lesson. Who knows this song? You know it?
R: Yes.
T: Let's sing it first. Hello, hello, hello, and one two sing. … That's enough. (Ruth-UPV305, lesson 2)

T: I will put some jumbled letters and I want you to un-jumble the letters and form the correct words. First word is from our previous lesson. … You finished with the two.
R: Yes.
T: Five words. Are you finished?

R: Yes**.**
T: I have five markers here. Five students are to come up and write the words, one, two, three, four and five. Next five get ready to give me something and say something about these words… May I have the markers? (Sharon-UPV303, lesson 2)

Maria usually asked revision questions about previous lessons to introduce the new lessons to the students. For example, Maria asked several revision questions of the students in her mathematics lesson on 'cubic numbers' to begin the lesson. Then she led them into a new topic, 'directed numbers,' as shown in the following excerpt from the lesson.

T: Yesterday we were looking at cubic numbers. What did we say cubic numbers are? Cubic numbers are numbers to the power of [pause] hands up please, hands up, please. Waya! To the power of, for example, if we have five here. What will come at the top here?
R: Three.
T: So what do we say that three is? The three is called the [pause]
R: … index,
T: And the five is the [pause]
R: … base. (Maria-UPV302, lesson 2)

After that, the teachers verbally introduced the purpose and the topics of the lessons and briefly outlined the order of the lesson's presentation and the activities to the students. Examples of Sharon and Maria introducing the purposes of their lessons are:

T: Today in our lesson we will look at some of the evidences that the archaeologists have found, where the first people came from and where they lived. I will put up the chart and we will look at the evidences and then we will plot the evidences on the time line for activity. (Sharon-UPV303, lesson 1)

T: For this morning, we are going to look at something new. All eyes here, please. Somebody say this, please. Ranu!
R: Directed numbers:
T: All of you say please.
R: Directed numbers.
T: Again!
R: Directed numbers. (Maria-UPV302, lesson 1)

As discussed already above, the three teachers (Ruth, Evelyn and Sharon) briefly explained and demonstrated the key ideas of the lessons, while Maria spent most time explaining the lessons and gave a few minutes for the students to do activities, and in some instances, she repeated the same information over and over.

The four teachers utilised the cooperative group activities in two different ways (Appendix O). In the first way, the teachers explained key ideas and outlined the procedures for the students to undertake the activities. Then the teachers organised students into different groups and gave support resources to the students to undertake the activities. In the second way, the teachers organised the students into different groups and distributed support materials. Then the teachers explained and demonstrated the key ideas of the lessons and activities. Using these two forms of group activity, Sharon and Maria engaged with the students in each group to discuss and write key ideas, whereas Evelyn and Ruth showed the students how to use mind maps to write their key findings. For example, in this instance Ruth used a mind map to explain and set activities for the students as part of a cooperative group activity (Appendix O).

> **T:** What I want us to do today, still on resources, I'd like you to get into your groups. And divide you into four groups and you will make a mind map of natural resources. Before we do that you will start of from where I will begin with your activities. While you are in your groups, I'll do an example of a mind map. This is what a mind map should look like. Let's say examples of natural resources. We said that resources are anything that we use. And most importantly, we said they are found in the nature. What we'll do now is we are going to do a mind map of natural resources. Let us just list only four. Who can give an example of a natural resource?
> **R:** Kaukau[sweet potato]
> **T**: Kaukau[sweet potato]
> **R:** Forest.
> **T**: Forest.

R: Land.
T: Land and…
R: Water.
T: Water. That is a mind map. You can add more because there are many, many natural resources… (Ruth-UPV306, lesson 1)

Evelyn, Sharon and Ruth asked the students a variety of questions voluntarily with *why, how, what, which* and *when,* while Maria frequently asked questions and the students always gave chorus-type feedback such as "yes" or "no" to the questions which were asked. In all, some students responded, while some did not. When students did not respond to the questions, the four teachers then redirected other students to answer. In some lessons, the four teachers answered their own questions and continued with the lessons. This is illustrated in excerpts from one Evelyn and Maria's lessons:

T: What will you say about these statements?
R: Good.
T: Good or we can say advantage or good side of an issue. How about bad sides of chewing betel nut? Doa [pseudonym]
R Cause cancer.
T: Doa said it causes mouth cancer. Paraka [pseudonym] at the back.
T: Can someone help Paraka? Yes, Tom [pseudonym]. Doa said causes mouth cancer. And we can also say it costs a lot of money. So K1.00 where we get from our parents for lunch goes to betel nut. We don't realise that. In a week we are spending K10.00 or K20.00 on betel nut… (Evelyn-UPV305, lesson 1)

T: Can liquid be squashed?
R: Yes.
T: Yes, yes, all say yes. OK! Very good, our answer is yes. Liquids can be squashed. Does liquid have a shape?
R: No.
T: Please hands up.
R: No, no, yes, yes, unless it is in the bottle or container.
T: All of you say no and our answer is what: yes or no.
R: No.
T: No, liquid does not have a shape unless it is in a bottle or a container. (Maria-UPV302, lesson 2)

Sharon and Maria raised their tone of voice at times to make students pay attention to the lessons, while Ruth and Evelyn spoke gently to the students. The four teachers were able to express ideas explicitly to students without the use of textbooks. As with teachers using the transmissive approach of teaching, these teachers rarely used positive reinforcement phrases to encourage, motivate and acknowledge students' efforts in the activities and responses to the questions. However, they always used the phrases 'very good' and 'good,' in the activity and concluding parts of the lessons. Four teachers presented cooperative group activities, and examples of cooperative group activities from Evelyn's and Maria's lessons were:

> **T**: Please discuss in your group. List at least five, not more than five. I'll give you 2 more minutes and then we'll do presentation… You have one more minute.… Can we stop now? (Evelyn-UPV305, lesson 2)

> **T:** You can list some liquids you know of in this mind map. I'd like you to work in your groups. Use a rough sheet of paper first you try to draw a mind map and list any liquids that you can think of. (Maria-UPV302, lesson 2)

The four teachers visited each group as students did their activities during each lesson. They supported the students by assisting and encouraging them to do the activities, providing further explanations and demonstrating key ideas and concepts to the students when needed. The four teachers were always racing against time in lessons, and they asked the students to complete the activities quickly. To speed the lessons up, Sharon and Maria asked individual students to give answers from their groups, and corrected the activities together as a class and then asked the students to copy summaries and homework activities. For example:

> **T:** All right, you make your corrections and I'd like you to copy this down to this bit here and these are some of the things I'd like you

> to bring tomorrow for our lesson: (a) 2 bottles, (b) some sand from the beach, (c) a straw, that's you are going to bring in your group, (d**)** some water. Later you decide who is to bring what. (Maria-UPV302, lesson 2)

In Ruth and Evelyn's classes, a representative from each of the groups presented the findings of the activities to the rest of the class (see section 5.5.3 for the students' learning outcomes). Finally, the four teachers verbally summed up the key ideas presented by the students. They also re-emphasised the key ideas of the lessons in a few sentences. A concluding part of the cooperative group activity in Evelyn's lesson illustrated this:

> **T:** They were very good presentations done by presenters. The main focus here is for you to attract somebody's attention to persuade someone to believe in what you want to say. In this activity, you have very well given your reasons why each character should be in the balloon. So don't forget or bear in mind, a balloon debate is simply whereby we talking ourselves to give what reasons in order to attract somebody's attention. Thank you very much for your attention. That's the end of our lesson. (Evelyn-UPV305, lesson 2)

The three teachers' (Evelyn, Ruth and Sharon) classroom environments consisted of two large rows formed by long benches joined end-to-end, as shown in Figure 11 (Appendix O). The students sat at the edges and faced each other in two rows. Class sizes were over 30 and the rooms were overcrowded. It was observed that the teachers encountered difficulties moving around freely and providing much needed support to each student in group activities. Also, it was quite challenging for the teachers to get students organised into various group activities, and to mobilise support resources. Maria, however, organised the students in groups of six in her classrooms, as illustrated in Figure 6 (Appendix O). The students sat and faced each other and were able to read the chalkboard and collaborated easily

in the activities. The students' learning outcomes and experiences are presented in section 4.5.3.

The six teachers stated that they delivered both theory and practical lessons. However, the lessons observed have indicated that the teachers presented only theory lessons. While two of the teachers applied a transmissive teaching style, the other four teachers adopted a more student-centred approach and used cooperative group activities (Appendix O). The six teachers commented that they used a number of strategies for helping students to organise their learning. The strategies are presented in the following paragraphs.

Strategies for helping students to organise their learning

Three teachers commented that they used cooperative groups for facilitating students' learning where students worked together sharing ideas and information as a team in the activities (Appendix O). Evelyn, Ruth and Michael described on their use of this strategy:

> With language most times I try to use group activities so they can all work together, especially in speaking and listening so they all cooperate and exchange ideas with one another. (Evelyn-UPTI305)
>
> I used activities in structured group discussions. (Ruth-UPTI306)
>
> We put students in groups … to work and share ideas themselves. (Michael-UPTI304**)**

Maria provided the support needed by the students in group activities. For example:

> I like group work because it's easy for me to move around and supervise and easy to identify [what] each student is doing in the

> group but as a whole class I see that it's time consuming so most of the time I like students to do work in the groups. (Maria-UPTI302)

Maria and Sharon commented that the students undertook activities using mind maps or concept maps (Appendix O). They felt these strategies enhanced students' understanding of the content of each curriculum subject, using mind maps to link the ideas into a complete picture. For example:

> I like them to be in groups and then to be drawing mind maps and concept maps to show what they know about the topic. (Maria-UPTI302)

> Concept mapping … can link all the ideas that I brought across to them. (Sharon-UPTI303)

Additionally, Betty stated that she used a guided discovery strategy for organising students' learning (Appendix O). For example:

> It's more like guided type of learning where you as a teacher have to guide them and sometimes it's a discovery type of learning that they have to discover themselves and come up with their own work. (Betty-301)

Ruth pointed out that she led learning by brainstorming the ideas and information in the guided discovered technique, while Sharon commented that she also applied brainstorming strategy and then proceeded on with concept mapping with guided questions for the students to undertake the activities (Appendix O).

> In most times, I first brainstorm ideas in guided discovery. (Ruth-UPTI306)

> I applied brainstorming, and then I have concept mapping and guiding questioning. (Sharon-UPTI303)

Ruth also commented that she used other strategies, such as discussion and interpretive techniques, while Betty stated that the teachers applied modelling as a strategy for organising students' learning (Appendix O).

> I use researching, discussion and interpreting [techniques] for the students to learn. (Ruth-UPTI306)
>
> We use strategies like teacher modelling. You model and students follow. (Betty-UPTI301)

Betty also gave her reasons for using different strategies. For example:

> So that learning will be effective. If you use only one type of strategy, the learning might not be effective so you got to use variety of strategies so students can learn. I use them so that it will develop some good understanding in the students. Students can learn effectively if a lot of strategies are given to them rather than only one. (Betty-UPTI301)

When using different learning pedagogies, Evelyn and Ruth commented that the students' learning was reflected in the type of work they produced. For instance:

> I try to make sure that students … are learning by put[ting] into practice, for example, we go through the vocabularies and then I ask them to use them in their speech and sentences. (Evelyn-UPTI305)
>
> We try to make students learn by getting them to do something for themselves. (Ruth-UPTI306)
>
> The outcome of the work will tell you that they have learnt to develop good attitudes. (Betty-UPTI301)

However, the students needed more time to complete the activities. Ruth and Betty felt this may be relating in part to students' lack of understanding of English language to perform various activities being a contributing factor to them being slow. For example:

> The students are very slow with one little activity and they take much of the time on one particular work. (Ruth-UPTI306)

> Language is a problem in the upper primary classes. They don't really get the content of the lesson; even though a lot of explanations, examples can be done and given to them still you will find it's difficult. (Betty-UPTI301)

Structured and cooperative groups, concept map, guided discovery, teacher modelling, interpretive techniques and discussions were the main strategies the teachers employed for facilitating students' learning. The next section describes the nature of student engagement in a range of learning activities.

Types of learning activities and student engagement

The teachers designed and engaged the students with a range of activities in each curriculum subject. The main activity types the teachers developed and the students undertook included tests, assignments and class exercises. A description of each of these activity types follows.

Class exercises

Identification of class exercise arose from analysis of students' exercise books, worksheets, and observations during the lessons. The analysis of the students' exercise books and worksheets revealed that there was a range of activities that were developed by the teachers and undertook by students in each curriculum subject. The activity types included short answer questions, filling in tables, story and letter writing, completing sentences, defining words, labelling diagrams, drawing of flow charts, and group discussions with open-ended questions (Appendix O). See section 5.5.3 for the students' learning outcomes and experiences from these learning activities (class exercises assignments and summative tests).

Assignments

Assignments were another learning activity the teachers designed and the students undertook in each curriculum subject. The assignments included construction of models, designing posters, creating traditional body paintings, answering questions and writing essays and imaginative stories. Each assignment contained descriptive information, which outlined the steps for the students to follow in order to complete the assignments correctly. The marking criteria were also included to guide the students (Appendix ZJ).

Summative tests

The summative tests consisted of multiple-choice questions, short answer questions, matching questions, labelling diagrams, drawing diagrams, true and false questions and fill-in-the-blank questions. Each test contained three parts, including multiple-choice questions, short answer questions and either matching, labelling diagrams, drawing diagrams, fill-in-the-blank or true and false questions (Appendix ZI).

In summary, the lessons observed clearly indicated that the students were engaged in group and individual activities. Betty and Michael provided individual activities in all their lessons, while Ruth, Evelyn, Sharon and Maria set group activities (Appendix O). The group activities were problem-solving oriented, whereby the students in each group discussed together as a team to offer suggestions and solutions and the findings presented from the front of the classrooms by representatives. The individual activities were usually short answer questions and filling in blanks (Appendix O). In all, the students undertook three

types of learning activities (tests, assignments, class activities) in each curriculum subject.

The next theme introduces the teachers' values and beliefs about teaching and learning.

4.3.4 Teachers' values and beliefs about teaching and learning

The following paragraphs outline the teachers' values and beliefs, which underpinned the way in which they (teachers) implemented the curriculum in school and classroom contexts.

Values are ideologies which are internalised through acquiring knowledge and practice while beliefs are convictions one has about the truth. The teachers' internalised values from their knowledge and teaching experiences influence their beliefs about curriculum implementation in school and classroom contexts. For example, Evelyn held a strong conviction that having depth content of knowledge in each curriculum subject would enhance better teaching and quality student learning.

> I believe that the teachers should have content knowledge at the upper level, so that we are well equipped with subject knowledge itself. Without subject content knowledge, I believe teachers cannot implement the curriculum and the students would not learn. (Evelyn-UPTI305)

The national outcome-based curriculum requires the teachers to plan and deliver student learning in many different ways. However, Betty tended to organise

students' learning individually rather than in groups, as this was related to her values and beliefs about teaching and student learning.

> I believe in individual work [more] than giving them group activity because I see that most times students would like to depend on [others] in group activities. (Betty-UPTI301)

On the other hand, it seems that Ruth held strong convictions about teachers using many ways of delivering and organising student learning. For example:

> I believe that learning will not be effective if you use only one type of strategy for teaching and learning … so you got to use variety of strategies so students can learn. (Ruth-UPTI306)

The six teachers held different values and convictions about their teaching styles and student learning and this was reflected in the teaching styles. The teachers' perspectives on the students' attitudes and behaviours in implementing the micro-curriculum are presented in the following paragraphs.

4.3.5 Teachers' perspectives on students' attitudes and behaviour

Teachers recognised that students go through physical, emotional and psychological changes as they grow and mature. These changes impacted on their attitudes and behaviour, and were linked to the activities they undertook. This recognition was expressed by Betty:

> There are a lot of changes going on in students. So the behaviours of students are changing and sometimes you try to put something good into them but they develop the attitude that you cannot get across to them. (Betty-UPTI-301)

Maria commented that some students displayed lazy attitudes and were not motivated and even became forgetful. These attitudes were detrimental to learning. For example:

> To acquire knowledge, or skills or attitude, I don't see them having interest … or I think maybe students are lazy so these are my challenges. Maybe they are copying and they are learning but they seem to be forgetting. (Maria-UPTI302)

Maria stressed that students who had attitude and behaviour dilemmas were encouraged to change so that they could improve.

> I normally tell them that your behaviour and attitude and when you grow up, it's in you and you are going to practice in the school, at your home in your community and wherever you go. (Maria-UPTI302)

Additionally, Michael described how some students did not cooperate in doing the activities and the teachers faced difficulty understanding them (students). For example:

> Some students do not cooperate to do the activities that are given to them. We sometimes sit down and find [it] difficult to understand them and [that] challenges us. (Michael-UPTI304)

Even though Ruth encouraged students to cooperate and help each other in the activities, some students did not pay attention.

> Most times I see that the messages are given but the students do not take [them] serious[ly], especially the students who are not listening. I don't think they take [it] seriously about learning and helping each other. (Ruth-UPTI306)

Michael described the teachers provided study hints for the students to improve their learning. For example:

> Giving them some hints of study. We go around at least teach them on what they need to know of. After teaching all these things, students come at least to improve on learning. (Michael-UPTI304)

In the study, six teachers revealed different values and beliefs they held on their teaching and student learning, recognising that the students went through emotional, physical and psychological changes, which influenced their (students') attitudes and behaviour. The next theme outlines the issues for teachers with the national curriculum implementation.

4.3.6 Issues with national curriculum implementation

This theme describes two issues which emerged from the data about the national outcome-based curriculum implementation. These issues focused on the breadth and depth of the detail of the curriculum, which are presented in turn.

Breadth

The national outcome-based curriculum contains seven different subjects (Language, Mathematics, Science, Social Science, Personal Development, Making A Living, Art), which teachers incorporated into their micro-curriculum. In church schools, Christian Life Study is added. Betty commented that the implementation of the seven subjects was not an easy and straightforward activity for the teachers to undertake. She also noted that the content of each curriculum subject required extensive support materials for implementation.

> For this year, it's a very big challenge because we are taking seven subjects.… The curriculum has[been] derived from so many subjects to only seven and a lot of learning materials need to be supplied as well so that it will help us with the implementation of those subjects. (Betty-UPTI301)

Michael noted that the content of each curriculum subject was difficult to understand and implement. Betty also identified that a few curriculum subject indicators were mismatched with their learning outcomes. For example:

> In the reform[ed] curriculum, it has strands and sub-strands, learning outcomes and indicators, which were comprehensive to implement. (Michael-UPTI304)
>
> Sometimes, those learning outcomes and the indicators that were put in the textbooks don't even match. (Betty-UPTI301)

Four teachers pointed out that some indicators in the seven curriculum subjects did not match the learning outcomes and that implementation was challenging.

Depth of detail in curriculum

The six teachers commented that some curriculum subject content included detailed information, which was helpful for them, but that other curriculum subjects were not specific enough and contained brief ideas and information and were difficult to implement. In this case, the teachers sought additional information so they could plan and deliver the micro-curriculum. Sharon and Betty noted:

> When we look at Language alone, the subject learning outcomes and strands, sub-strands are too broad. (Sharon-UPTI303)
>
> Some of the subjects are in detail - it helps us - and some of them are brief. The other one is sometimes the knowledge content in the teachers' guide and syllabuses are too brief, so we have to look [more] outside to get the information. (Betty-UPTI301)

Additionally, two teachers pointed out that the words or terms which framed the different curriculum subjects were not simple enough to interpret, plan and deliver the micro-curriculum. This difficulty was stressed by Evelyn and Ruth:

> They are a lot of big word or lots of big words that cannot be defined, especially teachers who find it hard. They don't have dictionaries around them, it's quite difficult. (Evelyn-UPTI305)

> Some of the terms in the curriculum are too broad so most of the time I use the common language that we use like 'Pidgin' to interpret the words into the students' own understanding. (Ruth-UPTI306)

Overall, the six teachers found the curriculum content was too broad and some words too complex to interpret easily. These issues made it difficult for them to plan and deliver to the students in school and classroom contexts. The next theme describes the level and nature of professional development support teachers identified.

4.3.7 Professional development support

Professional development, which supported the development and delivery of the micro-curriculum, came in three forms: national and provincial-based professional development support, school-based professional development support, and the teachers' evaluation of the professional development provided.

National and provincial-based professional development

This form of professional development support was provided to the teachers by officers or personnel from the National Education Department, Provincial Education Division, and non-government organisations (NGOs) in two ways. The first method involved the officers from the Curriculum Development Division (CDD) of the National Department of Education, and the Provincial In-service Officers, providing training to a teacher (called a trainer) at the school level, who in turn delivered in-service training to other teachers in his or her school. For example:

> The professional development support is provided by the people up in the national and provincial education offices. The in-service team whenever … ready with the programme, they send messages for the trainers to go. They train them and they come back and train us. (Betty-UPTI301)

The second method involved the non-government organisations (NGOs), such as AUSAID, who provided in-service support to school inspectors based at the Provincial Education Office. These school inspectors then provided professional development support to the teachers in the schools.

> The in-services were not run to individual teachers, it was from the people, maybe from AUSAID down to the inspectors then the inspectors were the ones that went out to all the schools and in-serviced all the teachers. (Maria-UPTI302)

In summary, the national and provincial educational personnel trained a teacher to run in-service trainings at the school level, while the NGOs trained school inspectors to run in-service trainings at the school level, to support the development and delivery of the micro-curriculum.

School-based professional development

The school's professional development committee (SPDC) organised professional development activities on the outcome-based curriculum and invited outside people to facilitate professional development activities for teachers at the school level. These people came from NGOs, such as the volunteer services organisations (VSOs), and the Curriculum Reform Implementation Program (CRIP), organised by AUSAID. Evelyn said:

> In our school, we have school based in-service committee where they organise for people to come in to help with the development of teachers [in] different areas. So just for this year we have the help of VSO, [who] conducted a workshop on formulating teaching resource materials. …. We did have some school-based in-services where we

> have … the CRIP where a committee came into help us with looking at outcome-based education itself. (Evelyn-UPTI305)

Evelyn also stated that the SPDC sponsored a teacher to attend in-service training and workshops, which were provided by the national and provincial education providers as well as the NGOs. Then this teacher provided in-service training of other teachers in the school.

> Whoever … attends workshops and in-services with national and provincial education and the NGOs, then comes back and help us with whatever he or she has gained. (Evelyn-UPTI305)

The next theme presents the teachers' evaluation of the professional development activities they had experienced, which had been provided by a fellow teacher, trained through NGOs, VSOs and CRIP.

Teachers' evaluation of professional development provided

The teachers believed that the school-based professional development support they had received had impacted on their development and delivery of the micro-curriculum. Evelyn stated:

> Planning in professional developments we get, they are very helpful. They are really helpful because it helps us to continue on teaching in this. It helps us to progress as well [and] it's … [also] helpful for a teacher like me where I do not have the chance to go out. (Evelyn-UPTI305)

Although, professional development support was provided for teachers, Betty and Michael felt that they needed sustained or prolonged professional development activities. They commented:

> In-services are done but it's not really … I think it's only once or twice. We need a lot of in-services on this … so that we can really implement this outcome-based education. (Betty-UPTI301)

> We need a lot of training on that at least to go about knowing all these ideas of new outcome-based [curriculum]. (Michael-UPTI304)

Also, Betty and Michael suggested that an appropriate person who had background knowledge of and expertise in the outcome-based national curriculum should facilitate in-service training for them. For example:

> We do get some professional development support from the school administration. ... But professional development in the school, we have our programs in place where we have in-services but then in-services on reform itself it must come from somebody who is familiar with all those things and well trained to be given to us. (Michael)
> It's only from one of us going out and coming back and giving the in-service to us. To do with planning and programming of those learning outcomes … the people that actually set the curriculum to come and… present some of the lessons that would be very big help to us as well. (Betty-UPTI301)

In summary, the professional development activities teachers experienced assisted them to develop and deliver the micro-curriculum; however, they felt these activities needed to be sustained with prolonged in-service training. The next major section presents the models of plans the teachers used to develop their micro-curriculum from the national outcome-based curriculum.

4.4 Models of micro-curriculum

This section outlines how teachers used two models of micro-curriculum to develop the classroom programmes from the national outcome-based curriculum: the integrated outcome and single outcome (or stand-alone) models.

4.4.1 Integrated and single outcome models

The teachers in this case study planned two levels using both the integrated and single outcome models of micro-curriculum, that is, units of work and weekly daily plans.

Units of work

Units of work using the integrated outcome model contained the learning outcomes from different curriculum subjects, which were linked to a main theme. For example, Betty-UPTD301 and Maria-UPTD301 used "Family Relationship" as a theme to integrate the learning outcomes from different curriculum subjects (Appendix ZE). The theme drew together and linked the learning outcomes, whereas the single (or stand-alone) outcome model's units of work contained learning outcomes which are neither integrated nor linked to the different curriculum subjects (Appendix ZF). Michael and Maria commented:

> For broad learning outcomes, we sometimes try to integrate with other subjects where they can have some kind of link to a theme. (Michael-UPTI304)

> And if it's not linking, we find that there's standalone or single outcome we use … which is a uniform one in the school. (Maria-UPTI302)

Both units of work were sequenced hierarchically and contained overviews that were placed at the top, followed by learning outcomes, which were expanded into knowledge, skills and attitude elements. From these overviews, the related content and assessment plans were included (Appendix ZF). A description of each of these components of the units of work follows.

Overviews

The 6 teachers placed the overviews of the respective model at the top of the plans. In the integrated model, the overviews contained the integrated curriculum subject strands and the sub-strands in three column tables (Appendix ZE). The overview of the single outcome model contained the four school terms (1-4), the strands and the sub-strands, learning outcomes and the assessments. The sub-strands of the subject were allocated equally to each school term along with the learning outcomes. Then, a range of formative and summative assessments, including tests, presentations and assignments, were outlined (Appendix ZF). The sources from which the information was collected were clearly indicated. After the overviews, the learning outcomes were included in the integrated model.

Integrated learning outcomes

Learning outcomes of the different curriculum subjects were selected and linked to the themes in the integrated model, while the single model had stand alone outcomes selected and included. Both models had the number of weeks for implementing the learning outcomes was indicated, for example, Betty and Maria indicated three weeks to implement the learning outcomes (Appendix ZE).

Term plans

The single outcome micro-curriculum model contained term plans, which were tabulated under the four headings, including weeks, learning outcomes, suggested activities and assessments. The total numbers of weeks for the school term were included, then the learning outcomes were allocated to the weeks. Each learning outcome indicated the suggested activities for the students to do. Finally, the

formative and summative assessments, such as assignments and tests, were included.

Expansion of learning outcomes.

The learning outcomes of the two models of micro-curriculum were expanded into detailed ideas and concepts, skills and attitudes. The knowledge area had key ideas and concepts related to conceptual and procedural information. The skills contained ideas and concepts pertaining to six thinking processes (remembering, understanding, applying, analysing, synthesising and creating), while attitude included ideas that were related to the students' attitudes and behaviour development such as developing appropriate manners, caring for others, take responsibility to look after properties and to name a few. Also, the purposes of the units of work were included. The information included in the purpose pointed to the relevance of students' learning (Appendices ZE & ZF). Then the content was presented.

Programme content

The information about programme content for both models of micro-curriculum include teaching and learning activities, strategies and resources. The teaching and learning activities contained the student-oriented performance indicators or activities. For example, the following are some student-oriented performance indicators that Maria, Betty, Evelyn and Sharon wrote in their plans.

> Students will list the groups they belong to and the influences it has on them. Explore how names are used to identify individuals and their relationships with others. Students will list positive and negative behaviours. (Maria-UPTD302 & Betty-UPTD301)

> Punctuation – capital letters – copy notes –end marks –full stops, do exercises, question marks, exclamation, vocabulary activity. Grammar

> and usage (verb – types and writing process, letters to the editor (review) samples – write own letter, fill blank spaces and do written exercises. (Evelyn-UPTD305 & Sharon-UPTD303)

A number of pedagogies were included under strategies. For example, Maria and Betty indicated "discovery learning, teacher modelling, guided learning, group activity and demonstration" in the integrated model (Appendix ZE), while Evelyn-UPTD305 included "group/pair activities brainstorming and demonstration," and Sharon-UPTD303 only included "brainstorming" in the single outcome model (Appendix ZE). The sources from which the resources and information was taken was included (Appendix ZE). From the content information and expanded learning outcomes, the assessments were planned.

Assessment

A range of formative and summative assessments was included under assessment, in the two models of the micro-curriculum. The assessments were tabulated and contained assessment methods and the task procedures, assessment criteria and the methods of recording assessment results for each curriculum subject. A range of assessment methods was provided, including group work, assignments, written reports, analysing work samples, summative tests and such like. The assessment tasks described the procedures for the students to undertake when doing the tasks. The standard-based assessment criteria included the criteria along with allocated marks. Class list and subject assessment period sheet (SAPS) were provided as methods of recording assessment results. SAPS were an official form used by the teachers to record and present the students' assessment results for each curriculum subject (Appendix ZE). These unit plans formed the basis on which the weekly daily lessons were designed.

Weekly daily plan

The weekly daily plans containing the grade, week, subject strands and the sub-strands, themes and resources were placed in tables (Appendix ZG). The teaching sequence in the introduction, body and the conclusion parts of the lessons were written for each day (Monday-Friday). The main teaching points were included and the teachers taught each curriculum subject according to the class timetables (Appendix ZK).

In summary, the integrated and the single outcome models of the micro-curriculum were sequenced hierarchically. However, the difference was that the integrated outcome model included learning outcomes of the different curriculum subjects, which were selected and linked to the themes, whereas the single outcome model contained learning outcomes which were used as stand alone. Both models contained weekly daily lesson plans which were developed from the units of work.

It was evident from the lessons observed that the two models of the micro-curriculum were followed by five teachers and not by one (Appendix O). Betty and Sharon followed the single outcome model than the integrated model. Like Betty and Sharon, Michael had his micro-curriculum models, but he taught directly from the textbooks (section 4.3.3). Maria, Evelyn and Ruth taught both integrated and single lessons as indicated in their micro-curriculum models (Appendix O). They were able to integrate ideas and concepts from the students' life experiences as well other related information into the lessons and activities (section 4.3.3). Sharon taught two lessons which were planned as a single outcome approach. However, she provided a different activity to the students in

one of her lessons than the one originally planned. Some of the pedagogical approaches indicated in the models of curriculum, which are discussed above, were used by the teachers, while some were not (Appendix O). A range of learning activities indicated in the micro-curriculum model above were performed by the students, as described (section 4.3.3), and their learning outcomes were reported (section 4.5.3). Thus, some students were able to meet the performance indicators of the national outcome-based curriculum while some did not. In all, there was a close link and relationship existing between the national outcome-based curriculum, the teachers' micro-curriculum and student-experienced curriculum. The student-experienced curriculum is presented next.

4.5 Student-experienced curriculum

This section outlines five themes that emerged from the data analysis about the nature of student-experienced curriculum. Themes 4.5.1 and 4.5.2 present the students' perspectives about teachers' teaching and the issues with national curriculum implementation. The students' learning outcomes, and their attitudes and behaviours, are covered in themes 4.5.3 and 4.5.4 respectively. The final theme, 4.5.5, links to the students' perspectives on the teachers' attitudes and behaviour.

4.5.1 Students' perspectives on the teachers' teaching

This theme introduces the students' perspectives on how teachers delivered the micro-curriculum in school and classroom contexts.

The students commented that the teachers used a number of ways to teach them. In the first way, the teachers introduced the main ideas and explained them to the

students. Then the students undertook activities and the teachers supported them in their activities. In the second way of teaching, the students explained that the teachers printed activities on the chalkboard or on handouts and they (students) undertook the activities with no explanation. The students felt they were able to understand the content and undertook a range of activities in each curriculum subject. These teaching styles were noted by one of the students in a focus group:

> Sometimes, the teacher prepares the notes and explains to us and we do activities where he or she corrects the activities we do in class. Sometimes, the teacher puts especially the exercises on the black board or gives us the handouts and tells us to do the activities. (UPSI206)

In the third way of teaching, the students stated that the teachers explained the main ideas step-by-step and then they provided activities, as well as commenting on the teachers' eye contact, how they position themselves, and how their explaining and their rapport made them learn. For example:

> By explaining step by step so that we can understand … and we can do the activity they give us. (UPSI206)

> *Sampela taim mipela save feelim how ol teacher save teach, teacher save toktok, how ol save look na sanap, mipela save laikim na how em save teach na tok long em save making mipela lainim ol samting.* (UPSI204)

Researcher's translation:

> Sometimes, we feel how teachers teach us. This includes explanation, how they stand and focused their eyes on us and stand in the classroom that makes us like their teachings and learn ideas and information. (UPI204)

The students felt better, satisfied and learnt well from the different curriculum subjects when teachers used different ways of teaching. For example:

> *Mipela save feelim gutpela taim ol teacher save teachim miplea ol kain ways olsem.* (UPSI204)

Researcher's translation:

We feel good when teachers teach us using different teaching styles. (UPSI204)
Taim teacher b'long me em teach olsem, mi yet mi feelim orait. (UPSI202)

Researcher's translation:

When my teacher teaches me using different teaching styles, I feel all right. (UPI202)

The students commented that some teachers handed out worksheets or referred them (students) to the activities printed on the chalkboards. Other teachers explained the main ideas and concepts step-by-step and then provided activities, and the students were able to grasp the content and undertook the activities. In the following paragraphs, the students' perspectives on the national curriculum implementation are presented.

4.5.2 Students' perspectives on the national curriculum implementation

This theme presents three aspects about students' perspective of the national curriculum implementation. They are: students' perspectives on the breadth of the curriculum, depth of detail in curriculum, and their subject preference.

Breadth

The students explained that they studied eight curriculum subjects: Social Science, Art, Making A Living, Christian Life Study, Language, Math, Science and Personal Development. They commented that some specific curriculum subject content was easy for them to understand, when the teachers provided a range of activities for them to do, while some content was challenging. For example, two students said:

Language and Social Science are easy to us. We can understand and do the activities provided by the teachers. Language is easy and Social Science too. (UPSI203)

> Sometimes the subjects are hard. With Math it's bit hard and challenging. (UPSI205)

The student perceived that they learned the content of seven curriculum subjects. They experienced difficulties in understanding some subjects, while it was easy to comprehend others and carried out related activities. The depth of the curriculum the students experienced is presented next.

Depth of detail in curriculum

The students were able to identify the content of each of the curriculum subject they had learnt in classroom and school contexts. Two from the student focus groups stated:

> *Because long siat b'long health, mipela lainim long sait b'long lukaim body b'long miplea. Because Science em toktok long planet long behain taim b'long yu…* (UPSI201)

Researcher's translation*:*

> In Personal Development, we learn the content knowledge on how to look after our body system. Science content has information on planets for our future… (UPSI201)

> *Mi save lainim Math long fractions, percentage, decimals. Social Science mipela lainim vegetation, plants, study b'long map, study b'long before ol samting bin kamap. Science mipela lukluk long digestive system na living things* (UPSI204).

Researcher's translation:

> In Mathematics, I learnt the content knowledge based on fractions, percentages and decimals. In Social Science content knowledge, we learn vegetation, study maps and history. In science content knowledge we look at digestive system and living things. (UPSI204)

Also, the students identified the progression in their learning from previous year's curriculum subject content. For example, a student in one of the focus groups noted:

> *Sait b'long Personal Development, how mi lainim olsem taim mipela stap grades, 3, 4 5, yumi i no save gut long body b'long yumi ol man meri. Taim mipela kam 6, 7 na bai next year go 8, mipela save gut because nau miplea stap primary em wanpela taim tasol mipela lainim.* (UPSI204)

Researcher's translation:

> When we were in grades 3, 4 and 5, we never knew males' and females' body parts in Personal Development, but when we are in grades 6 and 7 and continue next year in grade 8, we understand better because, such content knowledge is learnt once in life while in primary school. (UPSI204)

The students were able to identify the content of each curriculum subject in their progression from one grade to another.

Degree of subject preference

This theme outlines the students' enjoyment of each curriculum subject, which led to their subject preference.

Subject preference – liking

The students identified some reasons for liking particular subjects. They believed that the preference for a curriculum subject was related to their understanding of the content and the range of learning activities in which they took part. A student in a focus group stated:

> *Long mi yet em long olgeta subjects mi laikim because long ol activities tisas givim em mipela workim em easy. Na tu mi save understandim gut ol wanem samting i step insait long wan wan subject.* (UPSI202)

Researcher's translation:

> For myself, I like all the curriculum subjects because of the activities provided by the teachers that we do which were easy. And too, I understand better the content of each curriculum subject. (UPSI202)

Additionally, the students' preference for each curriculum subject was linked to the content they learned and experienced in undertaking a range of activities. Two from the student focus groups stressed:

> I like Mathematics because I want to do fractions. (UPSI203)

> I like Science because it tells us about our environment and living creatures around us. For Language, I like to speak and listening, writing that's why I like Language and for Math I like to play around with the numbers. That's why I like the subjects. (UPSI203)

Subject preference – disliking

The students identified some reasons for disliking particular curriculum subjects. They singled out not being able to understand a subject as a reason for disliking a subject because some subjects' content was not clear when delivered to them, and it was difficult to understand. For example, a student in one of the focus groups stated:

> *Making A Living mi save less tret long mekim because em olsem hard or dispela kain, mi feelim hard. Mi yet em olsem mi no laikim tumas … Personal Development.* (UPSI202)

Researcher's translation:

> I really do not like Making A Living subject because it is hard and I encounter difficulty. I do not really like Personal Development. (UPSI202)

Another reason for disliking a subject related to the teachers' attitudes and the manner of delivery. The student focus groups stated:

> I don't like Math because our teacher doesn't explain very well to us. That's why I don't like Math. (UPSI203)

> I don't like MAL because of the teacher teaching because he always talks a lot and shouts and I don't want this kind of teacher. (UPSI206)

The students' preference for each subject was related to the content and the types of activities they were engaged in, and their dislike to the lack of clarity of curriculum delivery, the teachers' attitude and their manner of delivery. The next theme reports on students' learning outcomes.

4.5.3 Students' learning outcomes

The students' learning was evident from activities they undertook, individually and in groups. The discussion that follows contains the evidence of the students' learning in each activity type discussed previously (section 4.3.3).

Documentary data

The extent and nature of students' learning varied in each part of the tests they undertook. Some students answered all multiple-choice questions, whereas some did not, and some students were better at matching questions, while some were not. This varied pattern of the students' learning was clearly indicated in all test questions. In particular, some students did not provide full or complete answers to some of the short answer questions nor fill in blanks, and some questions were even unattended to. A few students did not label the diagrams in the tests.

There was clear evidence of some students learning in the assignment activities they undertook. The students were able to produce or create charts and different models, such as samples of land, sea and air transport. They also wrote essays and short imaginative stories, such as recounting and oral presentations on given topics. However, while there were some indications of performance related to similar learning outcomes in test activities that a few students did better in

assignment activities, the majority of the students' work indicated that they experienced difficulties undertaking the assignments for each curriculum subject. This evidence showed that the models were frequently not constructed properly, and the essays and short stories contained grammatical errors and ideas that were not explicitly expressed. The class activities from the exercise books and worksheets indicated that the majority of the students undertook the activities as discussed previously, while a minority of the students did not. For example, the students were asked to do a fill-in-the-table exercise, where a list of words was provided. They chose each word and placed it on the correct heading (one, two and four syllable words) which was presented in a three column table, as shown in Figure 9 below. The evidence of work they produced (in italics), demonstrates that students were achieving the desired learning outcomes.

Identify and write these words (government, however, food, farmers, breakfast, fertile, instead, malnutrition, healthy, fed, property, climate, school, instead, vegetables, pacific, starchy) under the correct headings.

Words with one syllables	Words with two syllabus	Words with four syllables
Food *Breast* *Fed* *School*	*Starchy* *Climate* *Healthy* *Farmers* *Fertile* *Instead* *Country*	*Malnutrition* *Pacific* *Government* *Vegetables* *Property*

(UPSD201)

*Figure 9***:** A student fill-in-the-table work sample

In one activity, the students were asked to undertake an activity to show how the school's physical infrastructure could be improved. In this activity, they

discussed, evaluated and pointed out the key areas for improving the school, using a flow chart, as indicated below:

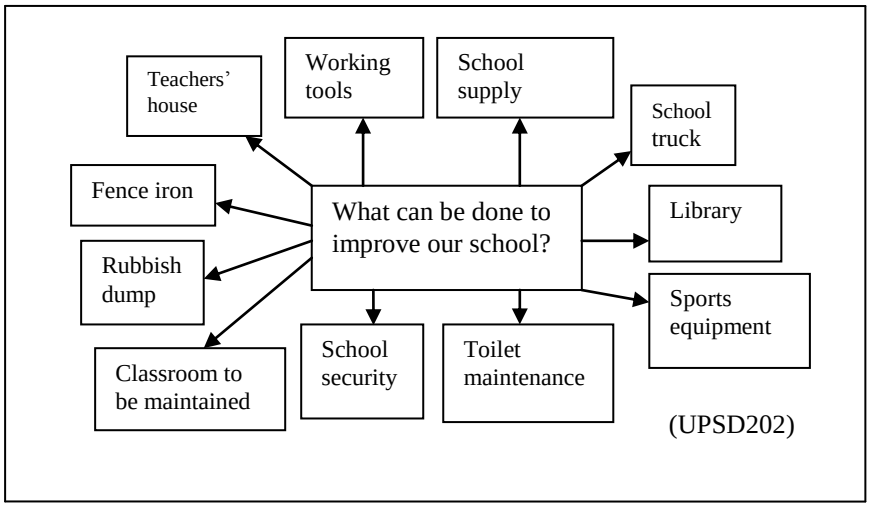


Figure 10: A male student sample of flow chart activity

The two sample activities provided evidence for the teachers that the performance indicators of the national outcome-based curriculum were achieved, since students were able to analyse, evaluate and create their own learning with a range of activities as discussed already (section 5.3.3). Not only was students' learning evident in the documents analysed, but the lessons observed also showed student learning. An account of students' learning outcomes and experiences in the lessons observed is presented below.

Students' learning outcomes from the lessons observed

Evidence of students' learning was seen in both individual and groups activities, and in the achievement of the performance indicators. For example, in each group activity, especially in Ruth, Maria, Sharon and Evelyn's classes, it was observed that the students were discussing and evaluating and contributing ideas (Appendix O). They collaborated and assisted each other to complete the given activities as a

team. The students in Ruth and Evelyn's classes collated their findings on charts for presentation, while students in Sharon's and Maria's classes provided their evidence of learning individually. Here in an activity exploring human settlement in PNG, the evidence of students' learning in Sharon's class is presented.

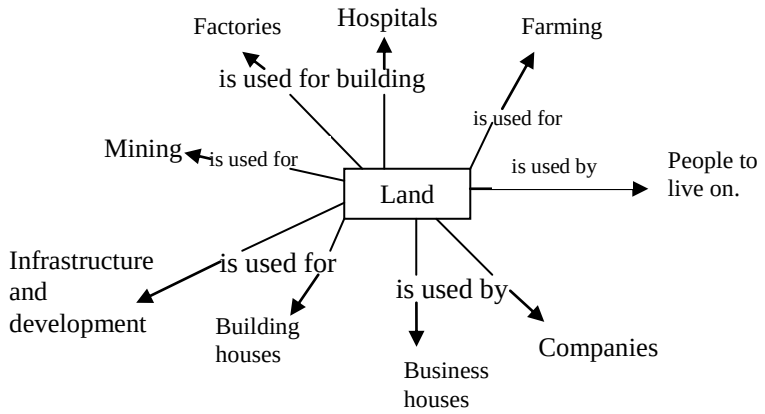
T: Let's go through the answers. Question one. Who are the archaeologists?
R: The scientists who study places where people lived long ago.
T: Correct. Where do the historians think the first people came from to PNG?
R: South East Asia.
T: Correct. And question number three: How do the first settlers travel to PNG?
R: They use crafts and canoes to travel on the waters between the islands.
T: Very good answer. And last, question four: List down the food plants that were already growing in PNG when the first people came.
R: Coconuts, bananas, sugarcane, sago, taro.
T: Good, Mary, (pseudonym) collect the handouts. (Sharon-UPV303-lesson1)

In the activity above, the students were given a handout by the teacher to read and find out about the first people who settled in PNG. Based on the reading, the students answered four related questions in their respective groups. When these questions were corrected by the teacher as a whole class, the students' learning became evident in that they read and understood the reading as shown in teacher-student response above.

In Ruth's and Evelyn's classes, the final work about PNG human settlement that the students created as a team was presented by a group member at the front of the class to the rest of the students, using concept maps. The presenters were confident and presented the ideas without much difficulty, while a minority was

unable to present confidently. The sample below is of another group activity, which was based on the topic "the use of natural resources in PNG," as presented by a student, from the front of the class in a lesson Ruth presented (Appendix O):

Concept map: Natural Resources



Our topic is on land. Land resources are used to make money. First one, land is used for farming such as pigs, cows, horse and many more. School, land is used for building schools for children to learn and land is used for people to live on and survive in our live. Land is used by business houses. Business people use [it] to build their house or business. Also land is used for building houses and land is used for infrastructure developments such roads, bridges, airport and many more. Also land is used for companies like RD Company and James Barnes and many more. Also land is used for mining companies; Ramu Nickel, and many more. Also land is used for crop plantation cocoa, copra, coffee and many more. Also land is used for factories come under companies, FRT use to sew clothes. Also land is used for hospitals. People use hospital on land to help sick people. And the land is used for many purposes to make businesses.

Ruth-UPV306,lesson 2

Figure 11: A student class presentation using concept map sample activity

The purpose of the activity above was for the students to identify the uses of the natural resources in PNG. The students were put into four groups to identify the uses of natural resources (land, water, forest and minerals). The evidence of students' learning in a group that identified the uses of land is shown above in Figure 13. It was evident that the students were expanding on and creating their own learning of the uses of land in PNG, as did the other groups who identified

the uses of water, forest and minerals. For example, the students explained the ideas, as illustrated straight after the concept map above, which indicated clear evidence of their own learning.

Students' learning was also seen in the individual activities. The students were able to read the information, understand and answer the questions, calculate mathematical problems and answer other questions in each curriculum subject. The students' actively engaged themselves in the activities and when the teachers called for the answers, they provided correct answers. However, as in group activities, some students encountered difficulties and did not provide correct answers. When the students were interviewed, they commented that the activities in some curriculum subjects were not easy to undertake but were challenging. At the same time, the students reflected on the activities they had experienced in previous grades and compared these against the ones they undertook. For example:

> We find [it] difficult to do the activities in some subjects. (UPSI203)
>
> Some activities we learnt in grade 7 were very easy for us but the new ones this year are bit difficult for us. (UPSI206)

In summary, class exercises, assignments and summative tests formed the main activities the students undertook in school and classroom contexts. The performance indicators were achieved by the majority of the students, while a few students encountered difficulties. In the lessons observed, it was obvious that the students collaborated with each other in group activities to create their own learning, as presented above (Figure 11 and Sharon's class). The majority of the students confidently presented their findings from the front of the class. In all, a

link existed between the teachers' micro-curriculum and students-experienced curriculum.

In the next theme, the students' attitudes and behaviour are presented.

4.5.4 Students' attitudes and behaviour

The students themselves pointed out that their attitude and behaviour were related to their learning. Some of the reasons for their particular attitudes and behaviour and the impact it had on their learning are provided below.

Some student felt ashamed to ask questions of the teachers when they did not understand the lessons well, and others felt ashamed to respond to questions the teachers asked. For example, two students stated:

> *Sampela taim em save askim mipela so mipela save sem long askim em na mipela no kisim wanpela samting.* (UPSI204)

Researcher's translation:

> Sometimes, the teacher asks us for any questions but we are ashamed to ask him or her and we never learn anything. (UPSI204)

> *Em save helpim mi but mi yet mi save feelim sem long askim em na olsem mi yet.* (UPSI201)

Researcher's translation:

> The teacher helps me but I feel ashamed to ask the teacher and the fault is with me. (UPSI201)

Some students who displayed these attitudes and behaviour did not learn well, so the teachers discouraged this behaviour in order to create a better learning environment. A student commented:

> *Mipela sampela students mipela save understand but sampela students ol no understand because ol gat attitude problem nabaut so sampela teacher i save understandim sampela students na ol save tok hard gen*

> *long taim sampela student mekim noise because em, em olsem wan wan mangi mipela stap long en, em one, one behaviour b'long mipela.* (UPSI204)

Researcher's translation:

> Some of us understand but some students do not understand, because they have attitude problems. The teachers know them and they talk hard on them when they make noise. This is how each one of us is in the class and that is our individual behaviour. (UPSI204)

However, the students who displayed other attitudes and behaviour learnt well. They listened well and felt better. For example:

> When my teacher is teaching I listen well and I feel good and learn better. (UPSI202)

> When I concentrate and do not make any noise I hear well and learn. (UPSI201)

Other students exhibited disinterest, displayed forgetful behaviour and they did not listen well. Additionally, some students' expressed the feeling that they were ashamed to ask questions of the teachers. However, some students stated that they learnt well when they concentrated and listened to their teachers. In the next theme, the students' perspectives on the teachers' attitudes and behaviour are introduced.

4.5.5 Students' perspectives on the teachers' attitudes and behaviour

This theme reports on the students' perspectives about teachers' behaviour and attitudes that were linked to their learning when the micro-curriculum was delivered.

Their teachers' positive and negative attitudes and behaviour were crucial to the students' learning. Some teachers were caring, loving and exercised fairness to all students, while some teachers displayed short tempered behaviour and became angry quickly. Two of the students said:

> Some of our teachers have [a] good attitude towards us and they teach well and we learn better, but some are not good. (UPSI204)
>
> I think that she … [needs to have patience] and [not to] … get angry [quickly] with us. (UPSI203)

Three students commented that sometimes, the teachers shouted at students, and in turn the students were afraid and never sought assistance from them. The students also disliked these teachers. For example:

> If she is in the classroom we don't want to go and ask her because she always shouts at us and that's why we were afraid of her. (UPSI203)
>
> I don't feel well when my teacher is very angry and upset when he or she is at the front of the black board. (UPSI206).
>
> I don't like my Making A Living teacher because my Making A Living teacher is [a] very, very angry woman and she always shouts and when she comes into the classroom, I don't want to see her face. (UPSI206)

Also, two students in a focus group commented that the teachers absent for classes. As a result of these factors, the students missed out and did not learn. For example:

> I don't like our teachers because they … [sometimes] don't attend classes. (UPSI203)
>
> *Ol teacher ol save teachim ol dispela subjects sampela ol no save take part long teaching. Sampela taim ... ol no save kam na teach. Sampela day ol mis out or stap out.* (UPSI204)

Researcher's translation:

> Some teachers who are teaching these subjects do not teach. Sometimes … they never come and teach us. Some days they missed classes and stay out. (UPSI204)

Some teachers took full control of the lessons and never provided opportunities for the students to answer questions, while some teachers walked out of the class without teaching when students did not follow instructions. Two students commented:

> Our teacher never gives a chance to let us speak when he asks questions so we are shy to give him the answers because he shouts at us when we answer the questions. (UPSI203)
>
> Sometimes some teachers when they come and find out that the students don't follow instructions they just go out of the door and they don't teach us the subjects so we stay and do nothing. (UPSI206)

When students were misbehaving during the class, they were not supported by the teachers. Also, the teachers' personal problems were perceived as a barrier for implementing the curriculum in school and classroom contexts by students. A student in a focused group commented.

> Sometimes, the teachers do not help us when we raise our hands because they see our bad behaviours and attitudes. (UPSI206).
>
> Sometimes they have a personal problem … and they do not want to explain what they want to explain to you. (UPSI205)

The students stated that the teachers displayed both positive and negative attitudes and behaviour in implementing the curriculum. The students learnt well when teachers approached them with care, love and treated them fairly. However, students did not learn well when some teachers displayed short tempers and shouted at them and were quick to become angry. Some teachers, in the students' view, were they did not attend classes for personal reasons. The summary of the findings of this chapter of the thesis is briefly summarised below.

4.6 Summary

The teachers employed iterative interpretation processes to construct meanings from the national outcome-based curriculum and developed two models of micro-curriculum: integrated and single outcomes. Each model was designed hierarchically and contained units of work and weekly daily lessons. The nature of the implementation of the micro-curricula was linked to teachers' values and belief systems, transmissive and cooperative group activity teaching approaches, issues with the national curriculum, availability of teaching and learning resources and professional development support. When the micro-curricula were delivered in classroom settings, the students' learning was linked to the teaching styles the teachers used, issues with the national curriculum, the students' own attitudes and behaviour and the teachers' attitudes and behaviour.

The next Chapter 5 presents the findings from case study two of a rural school. This chapter follows the same fashion of layout as Chapter 4.

CHAPTER FIVE: FINDINGS FROM CASE STUDY TWO

5.1 Introduction

In a similar fashion to Chapter 4, this chapter presents the findings from case study two.

Section 5.2 outlines the setting of case study two, and section 5.3 describes the findings pertaining to teachers' implementation of micro-curriculum. The teachers' models of micro-curriculum and student-experienced curriculum are described in sections 5.4 and 5.5 respectively. Section 5.6 summarises this chapter.

5.2 Setting of the study

This section outlines five aspects related to the setting or context that are relevant to the study: the history of the school, infrastructure, organisational arrangements, student population and teaching designations

5.2.1 History of the school

The second case study was conducted in the Alowale Primary School (pseudonym). Alowale Primary School was located in a rural area, along the North Coast Road in the Sumkar District of Madang Province, PNG (Ford, 1973). The school was government run and was accessible by road from Madang township. As described in Chapter 4, Madang was first settled by Europeans in 1871 (Sinclair, 2005), and was German territory from 1884-1913. In 1914, Madang became Australian territory (Reiner, 1986; Sinclair, 2005). From 1946 onwards, the Australian Administration established a few schools in Madang. The

Alowale Primary School was established in 1962, and enrolled students from the Bogia District, Karkar Island and nearby rural communities. Classes began with preparatory levels (students at the age of 7) and extended to grade 6 (students at the age of 12), and the teaching staff were all expatriates from Australia and England. In 1966, a few national or local staff members began to teach in this school. The school implemented an objective-based curriculum from Australia, until 1992. In 1993, the school adopted the outcome-based education model introduced by the National Education Department and enrolled grade 7 and 8 classes (students at the age of 13 and 14) (Papua New Guinea Department of Education, 1996).

5.2.2 School's infrastructure

At the time of this study, the school had a total of 15 permanent buildings. Eight buildings contained classrooms, and the other buildings were staff houses and a staffroom. The students used pit toilets, which were built from makeshift materials (bush materials). The bush materials were taken from the forests in the communities near the school. This was because the school possibly lacked sufficient funds to buy sawn or dressed timber in town to build permanent children's toilets. The school shared a land boundary with a Technical Vocational Centre (TVC), which bears the same name as the school. A small creek that runs nearby was connected to the school and was used by the students and staff for drinking and other purposes, such as washing and cooking. At the time of the study, the electricity was connected to the principal's office except, and a photo copier machine was only used by the teachers for teaching and learning purposes, apart from other modern digital technologies. The classrooms needed maintenance.

5.2.3 School's staffing arrangement

At the time of the study, the researcher observed that the upper primary classes were housed in three buildings. Each building contained two classes each for grades 6 to 8, a total of 6 classes. The grade 6 and 7 teachers who were the participants in the study set up their office corners inside their classrooms, while the two grade 8 teachers who also participated in the study used a store-room type office in the building, which was occupied by grade 8 students. Similar to the school in case study one, the Alowale primary was a level five school. There were a total of eighteen staff members at the time of this study. The appointments of the teachers to the teaching positions were made by the Provencal Education Board (PEB) and were endorsed by the Teaching Service Commission (TSC) of PNG (Papua New Guinea Department of Education, 2001b). The school's hierarchical organisational structure, which was provided by the principal at the time of the study, is illustrated in Figure 12.

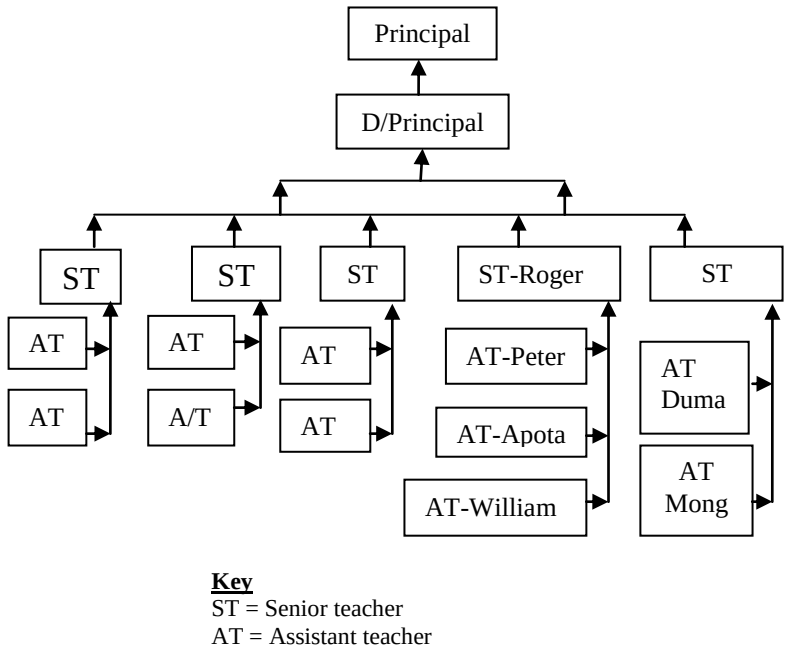


Figure 12: School's hierarchical organisational structure for teaching staff – case study two

The overall leadership of the school was provided by the principal. The deputy principal assisted the principal and worked with five senior teachers (two for upper and three for lower primary sections) in the implementation of the national outcome-based curriculum. The five senior teachers in turn organised, supervised and assisted the other eleven assistant teachers in implementing the national curriculum.

5.2.4 Student population

The total student population at the time of the study was 471. There were 261 male students and 210 female students. The upper primary school was made up of 173 students, and the classes (both for the lower and upper primary schools) were arbitrarily labelled with letters A and B. The students came from many cultural and ethnic rural communities. The upper primary student population and the participating teachers' years of teaching experiences are presented in Table 5 below.

Grade	Student enrolment			Teachers	Years of teaching experience	Teaching level of participants
	M	F	Total			
6A	20	12	32	Duma	5	6A
6B	14	20	34	Mong	20	6B
7 A	14	12	28	William	7	7A & 7B
7B	14	11	25	Apota	6	7A & 7B
8A	17	11	28	Roger	11	8A & 8B
8B	17	11	28	Peter	8	8A & 8B
Total	96	77	173			

Table 5:
Upper primary population and teaching experience per class – case study two

The six teachers had a wide range of teaching qualifications and years of teaching experience between them. Mong was trained for two years and held a primary teaching certificate, while the other five teachers had diplomas in primary

teaching, which they obtained from different primary teachers colleges in PNG. Mong, Duma and Peter reported:

> I graduated at St Paul's Teachers College in 1990. I got a teaching certificate. I did not upgrade my qualification yet but I've been teaching for the last 19 years. This is my twentieth year and I've been teaching in Madang Province and I went to Bougainville for restoration and I came back here. So for the last ten years I've been teaching grade eight. (Mong-RPTI502)

> I graduated in 2005 from Madang Teachers College with a Diploma in Teaching. I started of teaching in the field in 2006 and this is my fifth year of teaching, mostly at the upper primary level. I am currently teaching grade six, but in previous years I was teaching grades eight and seven. (Duma-RPTI501)

> This year is my eighth year of teaching. I started teaching in 2003 in this school. I graduated from Madang Teachers College. (Peter-RPTI506)

As already mentioned in this chapter, the teachers were formally appointed by the Teaching Service Commission and were responsible for implementing the national outcome-based curriculum (Papua New Guinea Department of Education, 2001b).

5.2.5 Teaching designations

As in case study one, the Alowale Primary School had had seven years experience in implementing the national outcome-based curriculum from 2003, when first introduced until 2009 when this study was conducted (Papua New Guinea Department of Education, 2003). Each grade 6 teacher was teaching all curriculum subjects in his or her class. Duma commented: "I have to take all seven subjects and I am taking one class." Grade 7 and 8 teachers specialised in teaching two or three subjects. The teachers were rotating from classroom to classroom to teach their specialised curriculum subjects, while students remained in class. When the researcher collected the timetables to observe the lessons, it

was seen that the lessons were timetabled at 40 minute intervals (Appendix ZR) for each curriculum subject. All classrooms had plenty of space for the students to collaborate with each other when undertaking activities. William had displayed some of the students' activities on the walls, while there was no display of students' work in the other five teachers' classrooms. Duma organised the students seating in straight rows, and the students sat in pairs and faced the chalkboard (Appendix P). Figure 13 illustrates Duma's classroom organisation.

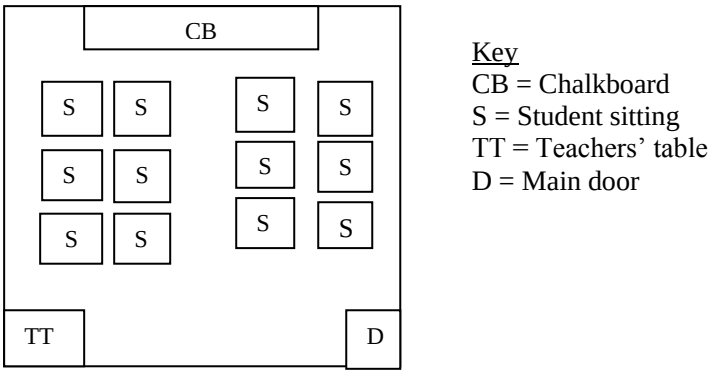


*Figure 13***:** Duma's classroom organisation

The other five teachers organised their classrooms with a student grouping of four to six who sat and faced each other and were able to read the chalkboard (Appendix P). They all had a similar pattern of organising their classroom, as in Figure 14.

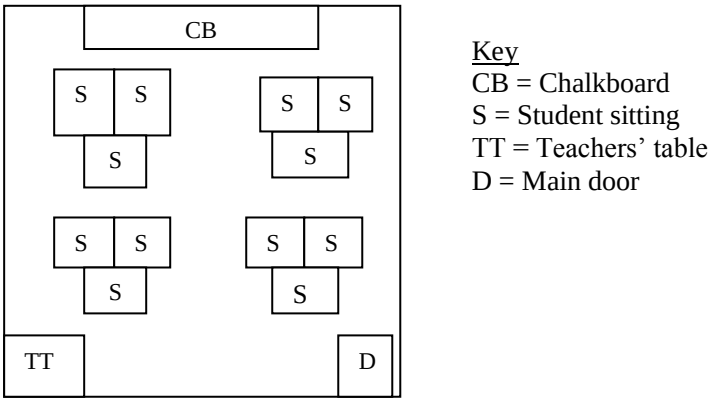


*Figure 14***:** Organisation of grade 7 and 8 classrooms and one grade 6 classroom.

From the lesson observations, it was evident that a few desks had holes and contained rough surfaces on them in all classes. Also, there were not enough desks for the students to sit at, and in some desks three students were sitting at a single desk, which created difficulties when students undertook activities like writing and sitting. This was commented on by one of the students:

> *No gat inap desks long mipela sindaun. Sampela save sindaun tri, tri na hard long bai sindaun gut na rait. Sampela taim mi laik study nabaut ol bai disturb na mekim noise. Bai yu hard long putim buks b'long yu na rait long desk taim miplea stap three pela long wanpela desk. (RPSI401)*

Researcher's translation:

> Not enough desks for us to sit at. Some students sit in threes and it's hard to sit and write properly. Sometimes, I like to study but others disturb and make noises. It's hard for you to put your books and write on the desk when we sit in threes at one desk. (RPSI401)

Additionally, the classroom walls contained betel nut stain, and were full of graffiti. Classroom floors and walls had big holes that required maintenance. In all, the physical classroom settings were not conducive for the implementation of the curriculum or for effective learning. The next section outlines the teachers' micro- curriculum.

5.3 Teachers' micro-curriculum

This section outlines five themes or categories which emerged during the data analysis. The teachers' interpretation of the national outcome-based curriculum and their planning of the micro-curriculum are described in themes 5.3.1 and 5.3.2 respectively. Theme 5.3.3 outlines pedagogies, and theme 5.3.4 is linked to teachers' values and beliefs. Theme 5.3.5 relates to teachers' perspectives on students' attitudes and behaviour. Issues with the national outcome-based curriculum implementation and the teachers' professional development support are presented in themes 5.3.6 and 5.3.7.

5.3.1 Teachers' interpretation of the outcome-based national curriculum

This theme describes three steps the teachers employed in interpreting the national outcome-based curriculum.

As a first step, the Alowale teachers identified the connections between the strands, sub-strands, learning outcomes and performance indicators of the national curriculum document. They accomplished this by skimming quickly through the strands, sub-strands through to the learning outcomes and performance indicators in the curriculum (Appendix P). William and Peter commented:

> I look at the strands and with the sub-strands, and learning outcomes and indicators. (William-RPTI503)
>
> *Mi save kisim ol outcome na mi save lukim ol examples of similar activities em come inline waintaim indicators insait long curriculum.* (Peter-RPTI506)

Researcher's translation:

> I get outcomes and look at examples of similar activities that come in line with the indicators in the curriculum. (Peter-RPTI506)

Then they read more deeply to determine the interrelationships between the ideas and concepts contained in the strands, sub-strands, learning outcomes and performance indicators. Duma and Peter stated:

> So long as the teacher sits down and then reads the learning outcome, the strand and the sub-strand. (Duma-RPTI501)
>
> I get the syllabus [curriculum] read the outcome and read the example of indicators given in the syllabus [curriculum] and then understand them. (Peter-RPTI506)

Finally, the teachers decided upon the learning activities for the students to undertake in school and classroom situations. This was commented on by Mong:

> I usually look more on students' activities. What they really have to do to achieve the knowledge or skills or attitude they are going to get from that [learning] outcome. (Mong-RPTI501)

The interpretation of the curriculum intent was not a simple activity for these teachers. William commented that it was challenging.

> There are many challenges that I encounter when I want to interpret the subjects. Some of them are like those subjects we are teaching don't really have resource books so sometimes we create. When we want to create, sometimes, in rural areas we find it very difficult to interpret. (William-RPTI503)

Before planning the micro-curriculum the teachers skimmed through the curriculum intent. They then read more deeply and decided relevant activities for the students. However, these ways of identifying content of the curriculum were challenging for the teachers in the rural school.

5.3.2 Teachers' planning of micro-curriculum

This theme describes the three aspects which are linked to the planning of the micro-curriculum. They are: resources, planning considerations and process and planning approaches.

Resources

The availability of relevant resources and materials within the rural school and classroom contexts were considered by the teachers in the development and delivery of the micro-curriculum. This was commented on by Peter and Mong:

> *Wanem kain ol resources na wanem kain materials em available we mi ken usim long teach, mi save considerim ol dispela ol samting pastaim na mi save mekim ol programmes b'long tis.* (Peter-RPTI506)

Researcher's translation:

> I consider the kinds of resources and materials which are available and plan the programmes to teach. (Peter-RPTI506)

> *Sampela taim mi consider long ol resources b'long ol environment insait long aria mi stap long en na mi planim na teach. Ol dispela helpim me long teachim ol lessens b'long me.* (Mong-RPTI502)

Researcher's translation:

> Sometimes, I consider the resources in the environment where I am located and plan and teach. These all help me to teach my lessons. (Mong-RPTI502)

Additionally, Mong and William identified that there were not many national curriculum documents available at the school for developing their micro-curriculum.

> It's difficult when there are no proper materials; I mean good syllabuses [national curriculum] - the school does not have syllabus or teachers' resources books [national curriculum] students' activity books when…it is bit hard. (Mong-RPTI502)

> There are many challenges that we encounter, and some of the challenges are the teachers' guides and syllabuses [national curriculum]. Some of us we do not have many in stock so sometimes we share and find [it] very difficult. Also there are not many resource books. (William-RPTI503)

When there were not many outcome-based national curriculum documents available at the school, Duma and Roger instead used the old objective-based curriculum (pre 2003) kept at the school for planning the micro-curriculum. For example:

> If there are no resources available, such as outcome syllabuses, then I need to improvise and modify and look here and there [for] collecting information from the old curriculum and then start to do my programmes. (Duma-RPTI501)

> When we want to make programmes, we look for these old textbooks, so we use books like *Create and communicate* just to cover up those outcome-based subjects. (Roger-RPTI505)

The relevant teaching and learning resources and materials were considered for planning the micro-curriculum. The teachers commented that the school did not have many outcome-based curriculum documents, and instead they adopted the old objective-based curriculum for planning the micro-curriculum.

Planning considerations and processes

The key driving forces that Peter and Roger considered when planning their micro-curriculum include the students' needs, ability and understandings. For example:

> *Taim mi laik planim ol teaching programs belong me, mi save considerim ability levels belong ol sumatin. The one thing is the understanding blong ol sumatin.* (Peter-RPTI506)

Researcher's translation:

> When I want to plan my teaching programmes, I consider the ability levels of the students and their understanding. (Peter-RPTI506)

> I consider students' needs when they need help from the outcome that I'm teaching. (Roger-RPTI505)

Roger, William and Mong also considered the essentials such as knowledge and skills the students should acquire and attitudes information. These essentials included in the units of work.

> Knowledge like comprehension, grammar especially in Language and other subject areas are things that can be taken note and remembered when … planning. (Roger-RPTI505)

> I consider the skills the students will acquire … and the knowledge and attitudes they must get. (William-RPTI503)

> I put down under the knowledge, skills … the students are going to know [and acquire] them and then from there they can develop their attitudes. (Mong-RPTI502)

Roger considered the indicators or activities and then matched those with students' needs, while the English language ability was identified by Duma as being the primary consideration in his micro-curriculum. For example:

> I consider, first of all the indicators from the syllabuses and see the needs of the students and I program those with indicators. (Roger-RPTI505)

> [In the] case of language, it is becoming a major problem here because those students in the classroom are not very good English speakers now a days. So, that's one of those need areas in the planning and programming. (Duma-RPTI501)

Additionally, the three teachers considered the environmental contexts, such as the classroom, the local area in which the school was situated and the village elders who held traditional indigenous knowledge. Apota, Peter and William commented:

> I consider the contexts or local environments when planning. (Apota)

> I consider the environment that the students are in and the school is in. (Peter-RPTI506)

> For instance, maybe planning Art's lessons – singing we have come back to the village leaders, tell them to come and take part with us and teach the students how to dance. (William-RPTI503)

Finally, the teachers decided upon a range of activities for the students that could be undertaken within the school and classroom contexts. Duma identified the activities in the indicators of the curriculum, while William noted that he organised child-centred activities in his micro-curriculum. For example:

> Designing of students' activities is the driving part and stays within the learning indicators. And also activities are derived from knowledge, skills and attitudes. (Duma-RPTI501)

> Students' activities are designed on a child-centred approach where the children will take part in most of the lessons. (William-RPTI503)

After performing the processes above, the teachers planned their micro-curriculum using two approaches of planning, as recommended by the national curriculum.

Planning approaches

The teachers used two approaches: the *single-outcome (or stand-alone) approach* and the *integrated outcome approach* to design the micro-curriculum (Appendix P). These two approaches of planning were commented on by Roger and Duma.

> I plan two programmes. Sometimes I use integration programme and in other case stand-alone outcomes. Stand-alone programmes are programmes that are by the subject itself. (Roger-RPTI505)

> For my case I am doing what is called 'stand-alone' to me so that in order to achieve those outcomes. (Duma-RPTI501)

In each of the two approaches, the teachers organised the strands, sub-strands and the learning outcomes of the national curriculum into year and term plans. Then the learning outcomes were selected and developed into units of work. From the units of work, the daily lessons were designed (Appendix P). This was described by Mong and Duma:

> This outcome-based programme, I usually do yearly, termly … and then I break them down…. And then from there I make my unit of work. So from that unit of work, daily teaching notes I will put down what the indicators I'm going to treat for number of lessons. (Mong-RPTI502)

> I as a person, as long as in that classroom I normally take these outcomes from the strands and sub-strand and then treat the indicators according to the learning outcomes. (Duma-RPTI501)

William commented that in both approaches, the teachers collaborated and collectively clustered or grouped the outcomes through the development of the themes and the units of work. Then the teachers developed the daily lessons individually. For example:

> In upper primary teaching programmes, the way we do plan is we gather together with all the teachers and we cluster the outcomes. We get the themes and from there we do the unit of work and individually we do our daily lesson teaching notes. (William-RPTI503)

The main points arising or emerging about teachers' developing of the micro-curriculum are that they planned it within the availability of suitable teaching and learning resources. In the planning processes, the teachers considered the students' needs, abilities and understanding as well as traditional and international knowledge, skills and attitudes and values. As in case study one, the Alowale teachers employed single outcome approach and integrated outcome approach to plan the micro-curriculum recommended by the national curriculum. After planning, the teachers delivered the micro-curriculum.

5.3.3 Pedagogies

This theme describes key aspects of the pedagogical approaches including the learning activities the teachers used in implementing their micro-curricula. The key aspects identified are: the teaching styles teachers said or commented they use and the teaching styles actually observed by the researcher, teachers' perspective on students' learning, strategies teachers used for organising student learning and types of learning activities teachers designed for the students to perform.

Teaching styles teachers commented they use

The teachers commented on a number of ways they taught the lessons. Apota stated that she explained the key ideas of the lessons and asked the students to copy them as summary notes and then undertake activities. William commented that he briefly introduced his lessons with key ideas and asked students to discuss further in their groups to come up with their own ideas, and the findings were presented to the class (Appendix P). For example:

> I define the important words or key words with all the students and then go through the important aspects of the lesson. Then I put important notes for the students to copy so that they can understand and at the same time I gave them activities for them to do. (Apota-RPTI504)

> I introduce the topic and the learning outcome of the lessons with some key ideas and then ask students to discuss in their groups. Then I ask students to report to class and we finish with the lesson. (William-RPTI503)

Duma stated that he explained the lessons with few examples to illustrate while students listened passively (Appendix P). Then the students were asked to do the activities, and finally the lessons were concluded with the whole class correcting the activities. For example:

> I explain the lessons with some examples to the students so that they can understand and do the activities well. The activities are corrected by all students to see whether they have learnt or not. (Duma-RPTI501)

Duma also noted that he delivered performance indicators in line with the learning outcomes, the strands and sub-strands. He further commented that when indicators were delivered to the students, the learning outcomes were achieved. Roger delivered two to three performance indicators in a week.

> I … go with learning outcome, strand after strand, sub-strand after sub-strand and … after treating … indicators involve in order to achieving the learning outcome. (Duma-RPTI501)

> Indicators in the teaching programmes are given in each week. So in a week, about two to three indicators can be taught and maybe two indicators are taught in another week. In [a] two to three week duration I take on board these indicators. (Roger-RPTI505)

The delivery of the micro-curriculum in school and classroom situations was not simple but challenging. Duma commented that he made improvements from his challenges.

> I also learn from my own mistakes [in] the first place when delivering the programmes. If I can make mistakes then those are my stepping [stones]. I need to learn from it and then adjust myself to proceed and move forward. (Duma-RPTI501)

The teachers described a number of teaching styles and commented that two to three performance indicators were delivered in line with the learning outcomes, the strands and sub-strands. The actual teaching styles, teachers used or applied in delivering the micro-curriculum observed by the researcher are presented next.

Actual teaching styles teachers used

A total of eighteen lessons presented by the teachers were observed: two by Roger and three each by Mong, William, Apota, Peter, while Duma presented four lessons (Appendix P). An analysis of the eighteen lessons revealed that the teachers applied two predominant teaching styles: transmissive and cooperative group activities (Appendix P). As in case study one, the teachers' teaching is indicated with bolded **"T"** and the general students' responses with bolded **"R"** [**T**= teaching and **R** = general responses] in the quotations. A description of each of these two teaching styles is presented in turn.

Transmissive teaching style

Four of the teachers (Duma, Mong, Roger and Peter) used a transmissive teaching approach in all their lessons (Appendix P). In this approach, they all presented the main ideas and activities of their lessons on the chalkboard. These main ideas and activities were taken directly from the students' textbooks. The information was legibly printed on the chalkboard for the students to read. They also used charts, students' textbooks and A3 sheets of papers. A part of a lesson in which Roger used the students' textbook as a teaching aid illustrates this approach:

> **T:** Now this morning you are going to open your books to page 108. Page 108 or one zero eight. Last Thursday we looked at identity and this morning we are looking at life styles and chances. (Roger-RPV505, lesson 1)

The four teachers observed followed a general sequence that included an introduction, body and the conclusion. They were transmitting the information to the students from the front of the classes, while students passively listened to them and responded to a few questions asked of them - by teachers (Appendix P). Most of the time in these lessons was spent by the teachers reading and explaining main ideas and activities from the textbooks. They gave less time to the students to do the activities. Mong went straight into introducing the topic of his lessons, while Roger, Peter and Duma introduced their lessons in a variety of ways. For example, Roger first greeted the students and then began his lessons, while Peter distributed the textbooks to the students and commenced the lessons. Duma took a few minutes of the lessons to write main ideas on the chalkboard while students sat quietly. After he had finished writing, he began the lessons. The following is an example of Peter beginning his lesson with textbooks.

> **T**: You all receive a book from your group. Which group hasn't got a book? OK! Class. … Turn to pages, 104, 105, 106 and 107. Since we have limited number of books, you hold the book in such a way that you all have chance to look at the … book and use the book together. (Peter-RPV506, lesson2)

Then Duma, Roger and Peter undertook a variety of introductory activities to lead the students into new lessons. Peter mainly asked revision questions to introduce his lessons, while Duma also asked revision questions, played a game of bingo, and told a short story to the class. Roger began his lessons with short related stories and asked revision questions. Duma and Peter took more time in the introduction part of the lesson than Roger, who took two to three minutes. For example, Peter asked a revision question of his class:

> **T**: What did we do yesterday in our Making a Living lesson (MAL)? Paul, [pseudonym], stand up, please. Speak loud and clear so that your friends can hear you.
> **Paul:** We talked about sustainable resources management.
> **T:** We talked about sustainable resources management. Is that true?
> **R**: Yes. (Peter-RPV506, lesson 3)

Peter then introduced the topics and activities from the textbooks, whereas Duma, Roger and Mong outlined the strands, sub-strands and the learning outcomes to the students, which were written on the chalkboards. For example:

> **T:** Our topic for today's lesson is mixtures. We are on learning 6.3.2, still on same strand and sub-strand. We have to conduct practical investigations into the nature of mixtures and communicate their findings in a scientific way using available materials. That is what we are going to do with this outcome. (Duma-RPV501, lesson 2)

Mong and Roger read through the textbooks and explained and demonstrated the text as mains ideas of their lessons. They asked students to read certain paragraphs, either as individuals or a group or the whole class, and continued with

the explanations. Duma and Peter explained a few main ideas, which they had prepared on the chalkboards and then they read the same text from the textbooks and explained it to the students. A lesson Mong taught directly from the textbook (Appendix P) illustrates this pattern:

> **T**: We are going to look at your book on page 4. What did it say?
> **R:** Soil and land.
> **T:** Raka [pseudonym] read that part to us.
> **Raka:** The amount of land.
> **T:** Good, right! So, for example, we have these people living down there. Where are there from? They are from the mountains
> **R**: Yes. (Mong-RPV502, lesson 2)

The four teachers asked a variety of questions of the students. Some students did not respond to the questions, while some partly attempted to respond. When the questions were not answered, the teachers redirected them to other students. If these students did not answer, the teachers provided the answers themselves and continued with the lessons. In some lessons, the four teachers asked frequent questions and responded to these themselves without giving an opportunity for the students to respond. Some students did not give full or complete answers. However, most of the questions that the students responded to were chorus-type feedback such as ‘yes’ and ‘no.’

Peter spoke loudly and asked the students to pay closer attention in his lessons, while Mong, Roger and Duma spoke gently and did not pay too much attention to the students who misbehaved during their lessons. All four teachers transmitted the ideas explicitly to students. They did not use forms of positive reinforcement phrases to encourage, motivate and acknowledge students’ efforts in the activities and responses to the questions, except for ‘good’ and ‘very good,’ which were used occasionally. The students undertook a range of activities individually and in

groups. For example, in individual activities, the students completed fill-in-the-blanks, drew designs and patterns, undertook short answer questions, displayed models they constructed and give reasons for their uses and purposes, and did reading and comprehension exercises (Appendix P). In group activities, the students discussed and evaluated issues related to the local and national PNG environments, health and hygiene, ways of living and traditional and modern methods of farming (Appendix P). These were all theory-based activities rather than practical-oriented activities. Duma provided individual activities directly from the textbooks to the students, whereas Mong designed and gave individual activities. Roger engaged the students in group activities, as illustrated:

> **T**: Now, there is a paper I gave to you. What I want you to do is look at the activity numbered bullet point three. You are to read it and answer this question for me, please. Choose a life style that you would like to follow. Give a reason for choosing this and describe how you will achieve the goals of your lifestyle. You understand.
> **R**: Yes.
> **T**: Any questions.
> **R**: No.
> **T:** Good, in groups, I give about 15 minutes. Can you do that? (Roger-RPV505, lesson 1)

The four teachers supported each student either individually or in groups. As in case study one, the teachers provided further explanation and demonstrated the main ideas to students. Duma supported individual students in an activity:

> **T**: If you are finished and you want me to check your activity you can raise your hands up. By now you should be doing your activity and you should all be doing activity number one B. There are few students already finished. (Duma-RPV501, lesson 4)

The four teachers did not present some full lessons because they took more time teaching and gave less time to the students to do the activities. Thus, the students

were unable to complete the activities within the given timeframe. The lessons which were completed were done in two ways. In the first instance, the teachers asked the students to provide correct answers for the activities. Also, the students presented the findings they undertook in groups from the front of the class. Then the teachers verbally summarised the lessons with main ideas. The second way of completing the lessons involved the teachers correcting individual students' activities. Then they asked the students to copy summaries and homework activities. The paragraph below illustrates how Roger concluded one of his lessons after the students' group activity presentation.

> **T:** Class, from our group activity, we can conclude that insects only reproduce sexually. Two insects produce asexually? They reproduce sexually. There are separate male and female insects. There are mother insects and father insect. The life cycle of insect is a series of stages of development from egg to the mature adult. And insects have a life cycle that shows no change, part-change or complete change in the appearance of the insect at the different stages. Is that clear?
> **R**: Yes.
> **T:** Ok! With that, thank you very much. It's the end of our lesson**.**
> **(**Roger-RPV505, lesson 2)

Duma placed the students individually in straight rows at their desks facing the chalkboards (Figure 13), while Peter, Mong and Roger organised the students in groups of six (Figure 14). The students in Peter, Mong and Roger's classes were facing each other and were able to read the chalkboard (Appendix P). They easily collaborated in various activities. None of the teachers displayed students' work on the walls of the classrooms. Although Peter, Wong and Roger's classroom organisation was promoting group activities, they applied transmissive teaching approaches in all their lessons. On the other hand, William and Apota applied cooperative group activities (Appendix P).

Cooperative group activities

William and Apota utilised cooperative group activities (CGA) in their lessons and they designed varied teaching materials and resources for use in their teaching (Appendix P). Both teachers prepared teaching materials that contained main ideas, as posters on charts and in A43 sheets of paper. The students' activities were printed on flash cards, chalkboards, charts and handouts. Both teachers provided support resources such as markers, charts and A3 sheets of paper for students to do their activities. Apota prepared and used a chart in one of her lessons:

T: This morning I am going to show you another way of working out or converting fractions to decimals. We will also look at converting percentage to decimals. Is this chart clear to you all? Can you see from the back?
R: Yes. (Apota-RPV504, lesson 2)

Both teachers followed a common sequence in their lessons, from the introduction through to conclusion. Apota asked students to raise their hands up and down before introducing the lessons as a warm-up activity, while William just commenced his lessons with introductory activities. Both teachers usually asked revision questions as an introductory activity to begin their lessons. For example:

T: There are five consequences which we have looked at. What are these five consequences of mismanagement of land and water resources?
R: Loss of biodiversity and ecosystem.
T: Number two:
R: Soil erosion.
T: Number three.
R: Low food production.
T: Number four:
R: Water pollution.
T: And number five:
R: Fewer resources**.** (Apota-RPV504, lesson 3)

Then they verbally introduced the purpose of the lessons, the topics and very briefly outlined the order of lesson presentation and the activities to the students. Here Apota introduced a lesson:

> **T**: Our lesson this morning is: Classifying and sorting out materials into metals and non-metals according to their physical characteristic properties. We are going to classify and sort out some of the things which I have asked you to collect. Please put them on the desk where you are sitting. (Apota-RPV504, lesson 1)

The two teachers took a few minutes to explain the key ideas of the lessons. Then they organised the students into groups and gave them support resources to undertake the activities. A group consisted of six to seven students, who faced each other and were able to read the chalkboard. In William's classroom, three students were sitting at a single desk, while Apota had two desks, each with three students. Some desks had holes and rough surfaces on them. There was enough space in the classrooms for the students to collaborate in teaching-learning processes that occurred in the classrooms. The students were given more time to do a variety of activities than in the transmissive classes. This is illustrated in Apota and William's lessons:

> **T**: Our activity for this afternoon will be in groups. You will be put into five groups. On your table, you have the cartridge papers. There are five of them. You are going to work in groups and brainstorm these consequences, like number one group work on Biodiversity and Ecosystem. Group two, Soil Erosion, group three, Low Food Production, group four, Water Pollution and group number five, Fewer Resources. You know your groups. (Apota-RPV504, lesson 3)

> **T:** Our activity for this morning is we are going to work in our work station groups. There are four workstations here. And I will time it. When you finish you are going to move to the next workstation with your group and biro. Write the question down. Have your answer. (William-RPV503, lesson3)

William and Apota asked the students varied types of questions. The questions began '*why,' 'how*,' '*what,' 'which*,' and '*when*,' and while many students did not respond to the questions, a few students attempted to answer. When students did not respond, the two teachers answered the questions and continued with their lessons. Apota yelled at the students who did not pay attention in some of her lessons but paced instruction, while William paced and spoke gently to the students. Both teachers had expressed ideas explicitly to the students without the use of textbooks. They used phrases 'very good' and 'good' in every lesson to encourage, motivate and acknowledge students' efforts in the activities and responses to the questions.

They supported the students in their group work by correcting, assisting and encouraging them in the activities. While supporting the students, the two teachers gave further explanations and demonstrated main ideas to students. After the activities, a representative in each of the groups presented the findings to the rest of the class (Section 5.5.3). Finally, William and Apota summed up the key ideas presented by the students. A conclusion part of the cooperative group activity in one of Apota's lessons illustrates this:

> **T:** Three groups are finished so we are going to look at their presentations today. Class, we look at the first presentation. We will look at what Lucy and Tina [pseudonym] have done. They'll tell us what they were working on, so Lucy and Tina come to the front and tell us. They're talking about the fewer resources. Before winding up our lesson, we have looked at so far the low food production, water pollution, and fewer resources and we have looked at some of the activities which spoil the environment. We will continue with our lesson. So with that, we know that we must look after the environment. (Apota-RPV504, lesson 3)

The six teachers commented that they used a variety of teaching styles in delivering one to two learning outcomes, which were in line with the strands and sub-strands for the duration of one to four weeks. However, the lessons observed showed that four of the teachers adopted a transmissive teaching style and two teachers used cooperative activities to teach theory lessons (Appendix P). The students' learning outcomes from these lessons are presented in section 5.5.3. In the following paragraphs, the teachers' views on students' learning is presented.

Teachers' perspective on students' learning

William commented that the students' learning was evident in the work they produced. For example:

> The students' learning in each subject comes through activities that I assigned or designed for the students. And when they do them correctly I know that they have achieved the outcome. (William-RPTI503)

Peter and Roger stated that they grouped their students as slow learners, average learners and high achievers, according to the type of work they created or produced from the learning activities.

> They are not really ok or really poor learners. Those students, who are intelligent or who have clear understanding of things, they go ahead of the others. (Peter-RPTI506)

> Not all of students are same in learning. Not all of them have better understanding. Some students don't understand well, while some at middle class level and a few students learn fast. (Roger-RPTI506)

Also Peter and Roger identified that some students were unable to undertake the learning activities. They stated this inability was related to the students' family background and conditions, and the local environments or communities' practices and activities from which they come from. For example:

> The factor is the environment where the students come from. The types of community also influence students' learning. The students come from communities [where] there are many law and order problems, no discipline in the community; pupils in the classroom too are stubborn. (Peter-RPTI506)

> Sometime when we give students homework, they come back [the] next day telling us that they cannot do it. Then we found out that some of the children, they have no time in the house. Sometimes the students say they don't have lamps, tables and sometimes they tell us that they don't have time to do these. (Roger-RPTI505)

The teachers commented that the students' learning was evident from the type of work they created from the activities. They commented that factors including family background and conditions as well as local communities' activities hindered learning. The next theme outlines the strategies the teachers used for organising students' learning.

Strategies for helping students to organise their learning

The six teachers commented that they used a number of strategies for organising the students' learning. From the lesson observations described previously, Duma was a transmissive teacher, but he commented that he supplied the ideas to lead learning in cooperative group activities, such as drawing mind maps in oral discussions, and cooperative and guided discovery learning (Appendix P). Further, Duma pointed out the reason for using these strategies was to provide more time to the students.

> We brainstorm ideas in the form of mind maps, concept maps and oral discussions, cooperative group learning and discovery type of learning. (Duma-RPTI501)

Additionally, William adopted cooperative group learning in the lessons observed, as described previously, and he stated that he used mind maps and cooperative

group activities (Appendix P) and gave his reason for using these as the students get involved in the activities and learn by themselves.

> The learning strategies that I use are group work, mind mapping and concept mapping. I mainly use these strategies mainly for the students, to involve them in the activities so that they can expand their thinking abilities. (William-RPTI503)

Like Duma, Peter and Roger were transmissive teachers, while Apota adopted cooperative group activities in the lessons observed. They commented that they applied cooperative group learning, guided discovery, discussion and concept mapping, and gave their reasons as in the following paragraphs (Appendix P):

> Many of the students don't think, so when they are working in groups and when they do mind mapping and all these they can share ideas with their friends and they can think further to do any activities. (Apota-RPTI504)

> When I see that some students cannot talk, I'll make sure that using these strategies I'll make them talk in groups. (Roger-RPTI505)

> I use these methods because I feel that students will learn more or I believe that they will learn more, and also it will help their understanding. With the help of the teachers guiding them, they will learn more rather than we the teachers telling them. Giving students information every time and that's the reason why I used those methods. (Peter-RPTI506)

The students cooperated and shared ideas and information as a team in cooperative group activities. They used mind maps in the activities to show their understanding by linking ideas and concepts into a complete picture. Duma believed that this type of learning is a child-centred one. He commented:

> It is more like where the lessons must be child-centred so that the child can do the activities by him or herself. So I normally believe in child-centred learning because if we can make the students do and talk and say, it makes them feel more comfortable and feel free to talk and learn in the classroom. (Duma-RPTI501)

Duma, Roger and Peter adopted a transmissive teaching style in the lessons observed, while William and Apota used cooperative group activities (Appendix P). These five teachers commented that they used a number of cooperative strategies for promoting students' learning. The nature of student engagement in a range of learning activities is presented next.

Types of learning activities and student engagement

The teachers designed a range of activities that were undertaken by the students. An analysis of documents and the lesson observations clearly indicated three main types of learning activities: class activities, assignments and summative tests the students undertook. Each of these activity types is presented in turn.

Class activities

The analysis of the students' exercise books, handouts and worksheets and observations revealed that a range of exercises was undertaken by the students in each curriculum subject. The class exercises in each subject included activities such as short answer questions, filling-in-tables, story and letter writing, completing sentences, defining words, labelling diagrams, and drawing flow charts. The instructions for each of these activities were clearly written and provided to the students. Duma and Peter commented on the specific types of activities the teachers provided to the students. For example:

> We give the students activities like written exercises, observation, portfolios, group work, displays, oral presentations, recount and so on. (Duma-RPTI501)

> We do activities like writing activities, discussion activities and class presentations. (Peter-RPTI506)

Lessons observed clearly illustrated that the students were engaged in group and individual class exercises. The group activities were oriented towards problem solving and the students in each group discussed together as a team. The findings were presented from the front of the classroom by a representative. The individual activities were mainly short answer questions and filling-in-blanks (Appendix P).

Assignments

The students undertook a range of assignment activities designed by teachers in each curriculum subject. The assignment activities included construction of models, designing posters, creating traditional dances and pattern making, and writing essays and short recount stories. Each assignment activity contained descriptive procedures for the students to follow in order for them to complete the assignments correctly. The marking criteria were also included to guide the students (Appendix ZQ).

Summative tests

The summative tests contained multiple-choice questions, short answer questions, matching questions, labelling diagrams, drawing diagrams and fill-in-the-blank questions. Each test consisted of three parts: multiple-choice questions, short answer questions and either matching, labelling diagrams, drawing diagrams or fill-in-the-blank (Appendix ZP). The students' learning outcomes from these learning activities (class exercises, assignments and summative tests) are described in section 5.5.3. The next theme introduces the teachers' values and beliefs about teaching and learning.

5.3.4 Teachers' values and beliefs about teaching and learning

The following paragraphs describe the teachers' values and beliefs, which underpinned the way in which they implemented the micro-curriculum.

Values are ideas we internalise by experience and beliefs are convictions we hold as truths. The teachers internalised values about pedagogies from their teaching experiences, and they believed that the use of a range of teaching and learning pedagogies would enhance or promote quality students' learning. Peter believed that when he used a range of teaching and learning pedagogies, the students would understand the content of the micro-curriculum. William had strong beliefs of students creating their own learning when different teaching and learning strategies were used. For example:

> I use teaching and learning strategies because I believe that students will learn more and also it will help them to understand. (Peter)
>
> I believe in students learning themselves rather than the teachers telling them every time. That's when they achieve the outcome. (William-RPTI503)

Similarly, Duma believed that the teachers who involved the students in the teaching-learning processes created their (students) own learning. He called this type of learning 'child-centred,' whereby the teachers facilitated learning and guided the students to experience their own learning.

> I normally believe in child-centred learning, because if we can make the students do and talk, it makes them feel more comfortable and feel free to talk and learn in the classroom. If it means teacher talking and doing all these and taking up all the class lesson time, I believe the students will not be learning in the classroom. They need to be given ample time to air their views, say what they want to say and … do their activities in the manner where they should prove to the teacher

> that they understand the content and point out on what needs to [be] learn[t] further. (Duma-RPTI501)

William held a strong value of teachers working hard, while Mong believed that creating a fair relationship with the students promoted the students to be responsible in their own learning. For example:

> My experience of teaching outcome-based curriculum is that a teacher must be very hard working. (William-RPTI503)

> Because I believe that when I have good contact with the students they will be able to learn as much from me. When the teacher is working with them they will learn to understand me more and then when they are doing more of those activities, they feel like be[ing] responsible and doing better in school. (Mong-RPTI502)

The teachers decided upon a range of pedagogies, which were based on their values and beliefs about quality student learning, and this was reflected in their teaching styles. The theme below describes the teachers' perspectives on students' attitudes and behaviour and their ability to understand the micro-curriculum.

5.3.5 Teachers' perspectives on students' attitudes and behaviour

The teachers commented that the family background and diverse traditional socio-cultural activities or practices of different rural communities were linked to the students' learning. Peter commented that students' attitudes and behaviour were connected to their parents' circumstances, such as education, social and economic status, and attitudes and behaviour. For example:

> *Dispela pasin em kamap because of biologically inherited or kain olsem blood. Sampela parents yu lukim olsem ol gat gutpela tingting na ol kam long gutpela background, they are well off or educated you will see that their kids are also clever in school. Sampela ol kam long papa-mama where ol i no gat gutpela tingting tumas or understanding b'long ol i low, blut ya, yu save pikini tu bai i wankain. Ol dispela pasin mekim mipela easy or hard long implement curriculum.* (Peter-RPTI506*)*

Researcher's translation:

> The students' attitude and behaviours are happening because of being biologically inherited or like in the blood system. Some parents have better understanding, attitudes and behaviour, have good background, well off, educated and their children are also learning better. Some children come from parents who have attitude and behaviour dilemmas and they do not have good understanding. So it's the blood system and the children too are like their parents. So all these attitudes and behaviour influenced us to encourage or hinder curriculum implementation. (Peter-RPTI506)

The students who experienced negative behaviour were influenced by inappropriate socio-cultural activities from their communities. Roger commented commented:

> *Na narapela factor em environment ol stap long en. The types of community em tu save affectim learning b'long ol. Ol kam long community where corrupt, plenty law and order problem, no discipline in the community, pupils in the classroom too are stubborn*. (Roger-RPTI505)

Researcher's translation:

> Another factor is the environment in which the students live. The types of community can affect student learning. They come from communities, which are corrupt with plenty of law and order problems, no discipline in the community, so students are stubborn in the classroom. (Roger-RPTI505)

The traditional socio-cultural practice (where males and females do not want to work together) from the rural traditional communities was part of students' upbringing, and was reflected in the classroom settings. Both boys and girls did not want to work together as a team in undertaking the learning activities. This was pointed out by Apota:

> The challenges I face when I'm trying to put students together I see that the boys work by themselves and girls by themselves. I think it's to do with their culture in their communities where they come from. (Apota-RPTI504)

Also, William and Roger stated that some students did not concentrate in their studies, and this was related to their own attitudes and behaviour. To minimise

this behavioural dilemma, the students were encouraged to cooperate with others, and to concentrate and listen well to follow instructions. For example:

> The students tend to forget a lot and do not concentrate. I think they got attitude and behaviour problems or due to other family issues or I don't known, but I see that they tend to forget. For that I encourage them to concentrate and to be more cooperative with others in the wok they do and to listen to the teachers. (William-RPTI503)

> Some of the challenges that I face in attitude and other areas, I found out that some of the children are not following the things that I expect them. So I try my best to at least to influence them in my own doings. (Roger-RPTI505)

The family circumstances and the traditional socio-cultural practices or activities from the rural communities that were part of the students' upbringing influenced the students' attitudes and behaviour, and this in turn impacted on the teachers in the micro-curriculum implementation. The next theme outlines issues with the national curriculum.

5.3.6 Issues with national curriculum implementation

This theme outlines two aspects of the national outcome-based curriculum that emerged as issues during the implementation process, which are the breadth and the depth of detail of the curriculum.

Breadth

Duma commented that the teachers developed their micro-curriculum from seven curriculum subjects, while Peter said that these seven subjects were too many for a teacher to plan and teach, and he commented that the Education Department

should reduce it to five subjects. Peter also commented that the curriculum is an activity undertaken by teachers in the school context. For example:

> The seven upper primary subjects we develop our programmes are Language, Mathematics, Science, Social Science, Personal Development, Making a Living and finally Arts. (Duma-RPTI501)

> The curriculum has been produced by the National Education Department that we are using now as an activity at the school to programme, but the problem with the curriculum is that the seven subjects are too many for us to teach. The department should produce only five subjects where it would be easy to teach. (Peter-RPTI506)

Apota identified that each curriculum subject consisted of strands, sub-strands and the learning outcomes, which did not provide sufficient information.

> The outcome-based curriculum contains only learning outcomes, strands and sub-strands and indicators and is not that wide enough to give us more information to develop our programmes further. (Apota-RPTI504)

William identified that the four of the seven curriculum subjects were properly designed and contained knowledge, skills and attitudes as resourceful equipment for the teachers to use in school and classroom contexts to empower students, while three curriculum subjects were not. For example:

> At the moment the … Making a Living, Personal Development, Science and Social Science [are] very nice … but … other subjects… are not designed in a manner of these four subjects. So they need to be designed in that same manner where we have knowledge, skills and attitudes … [where] these are very, very resourceful equipment in the classroom for the teachers to use. (William-RPTI503)

Mong reflected his experiences of learning from an objective based curriculum introduced by Australia, between 1966 up till 1992, and compared this with his teaching experience of outcome-based curriculum.

He commented that the outcome-based curriculum contained PNG indigenous knowledge.

> Outcome-based education is good because they are many things which [are] PNG-oriented that we are teaching to our students. For example, I knew more about Australia because during that time they were teaching us all about Australia, New Zealand and the Pacific and then I don't know much about Madang Province. At the moment when I'm teaching OBE, I knew all about Madang because I'm looking at my local area and all these things. (Mong-RPTI501)

The teachers explained that the seven curriculum subjects were too many for them to develop and implement in school and classroom contexts. They viewed the curriculum as an activity that occurs in a school setting and contains PNG indigenous knowledge, skills and attitudes as resourceful equipment to empower the students.

Depth of detail in curriculum

Some curriculum subjects included detailed content information, which was helpful for the teachers, while some contained broad and brief information. The lack of detail made it difficult to implement. William, Peter and Roger commented:

> Those teachers' guides and syllabuses of the outcome-based curriculum are broad and they stop there. (William-RPTI503)

> My general view is like this outcome-based curriculum is broad. (Peter-RPTI506)

> Sometimes, I face challenges with some of the terms in the curriculum being too broad so most of the time we use 'Pidgin' to interpret the words for the students to understand. (Roger-RPTI505**)**

Peter further pointed out that the teachers were encountering difficulty in developing their micro-curriculum because some indicators were broad and were not clear for them to understand. For example:

> *Mipela havim problem long programim because ol indicators insait long syllabuses. There are not enough and also sampela indicators em broad liklik long ol tisa bai understandim more.* (Peter-RPTI506)

Researcher's translation:

> We are having problems with programming because of the indicators contained in the curriculum syllabuses. There are not enough and also some are broad for the teachers to understand. (Peter-RPTI506)

Additionally, Roger and Apota noted that the curriculum contained words or terms that were not simple to understand for the teachers who planned and delivered the micro classroom curriculum. For example:

> Sometimes, I face challenges with students, that some of the terms in the syllabuses and teachers' guides are too broad. (Roger-RPTI505)

> I see that some of the teachers are not really up to date with the programmes so they find it difficult, especially the terms in the books. (Apota-RPTI504)

Overall the teachers found that the national curriculum was broad and contained words which were difficult for them to understand and interpret in order to develop and deliver their micro-curriculum in school and classroom contexts. The next theme outlines the level and nature of professional development support which the teachers were involved in.

5.3.7 Professional development support

The professional development support which the teachers received to gain more knowledge and skills in the development and delivery of the micro-curriculum is presented in three forms: the national and provincial-based professional development support, school-based professional development support, and teachers' evaluation of the professional development provided.

National and provincial-based professional development

The AUSAID funded most of the teachers' professional development activities at the National and Provincial Education levels. This was indicated by Mong, Duma and Peter:

> For the support, I think the AUSAID is supporting this funding the professional development programmes now going on in the province and at national level. (Mong-RPTI502)

> The in-service training we got from the provincial education people helped use to do our planning and programming of the outcome-based curriculum. (Duma-RPTI501)

> *The other thing is [the] provincial in-service, em save helpim mipela long supportim long implemented outcome-based curriculum.* (Peter-RPTI506)

Researcher's translation:

> The other thing is, the provincial in-service we got helps us and support the implementation of outcome-based curriculum. (Peter-RPTI506)

Apota and William noted that the provincial educational personnel (PEP) provided in-service training on the outcome-based curriculum to a teacher (called a trainer) at the school level, who in turn delivered professional development to other teachers in his or her school.

> The in-services are provided and supervised by the school inspectors who are based at provincial education office, to each teacher or facilitator who are taken on board from respective schools in the province. The teacher then comes back and provides in-service training to us in the school. (Apota-RPTI504)

> In the school we have Mr Pewa [pseudonym] who is the teacher in-service plan (TIP) coordinator getting through all these professional development programmes after the training from provincial education people. (William-RPTI503)

The national and provincial education in-service training was funded by AUSAID, through which the teachers acquired skills to develop and deliver the

micro-curriculum. The teacher who attended in-service training from provincial education personnel facilitated in-service training to other teachers in the school.

School-based professional development

William and Roger said that other NGOs, such as volunteer services organisations (VSOs), and the Curriculum Reform Implementation Program (CRIP), an organisation of AUSAID, facilitated professional development activities to support the teachers in the development and delivery of the micro classroom curriculum.

> Some of those supports came from CRIP. CRIP was one who gave us in-service on programming and planning, and this teacher in-serivce plan (TIP) also on programming and planning. (William-RPTI503)

> In some other ways the VSOs and these non-government organisations give support to us in terms of professional development. (Roger-RPTI505)

The professional development activities provided by the national and provincial educational personnel and the NGOs were evaluated by the teachers.

Teachers' evaluation of professional development provided

Peter and William identified that the professional development support they were engaged in had assisted them to develop and deliver the micro-curriculum. For example:

> These professional development supports were very helpful to me in terms of educating me about the outcome-based education and how I should go about implementing it. This is the way I feel that it is important. (Peter-RPTI506)

> These supports in professional development were very helpful to me in terms of programming my lesson plans, doing units of work, and programming assessment and also teaching or planning the right

> topic, the skills, and attitudes to teach the children. (William-RPTI503)

William and Alota expressed the need for sustained professional development support. For example:

> There were some in-service [training] conducted but in-service [training] are not that enough, because there is no proper in-service on this outcome-based [curriculum] and we need more. (William-RPTI503)

> Not many times we get professional development but once and we need more in-service training to implement the curriculum. (Apota-RPTI504)

Apota further suggested that an appropriate person who had background content knowledge of and expertise in the outcome-based national curriculum should provide in-service training for them.

> *Mipela laikim olsem another resourceful person somewhere in the colleges or something to come here and in-service us more on the new curriculum.* (Apota-RPTI504)

Researcher's translation:

> I would like a resourceful person from the colleges or somewhere else to come here and provide us with more in-service training on the new curriculum. (Apota-RPTI504)

In summary, the professional development activities, the teachers experienced assisted the teachers in the implementation of the micro-curriculum; however, they felt that these activities needed to be sustained with prolong in-service training. The next section outlines the models of micro-curriculum the teachers used to develop and deliver their classroom programmes of the national outcome-based curriculum.

5.4 Models of micro-curriculum

This section presents how teachers used the two models of micro-curriculum to develop their classroom programmes from the national outcome-based curriculum: the integrated outcome and the single outcome (or stand alone) models.

5.4.1 Integrated and single outcome models

In this case study, the teachers planned two levels using integrated and single outcome models of micro-curriculum: the units of work and weekly daily plans.

Units of work

Units of work using the integrated micro-curriculum model contained the learning outcomes from different curriculum subjects, which were linked or integrated to a theme in two ways. The first method contained the learning outcomes from different curriculum subjects which were linked to a main theme. For example, Roger-RPTD505 and Peter-RPTD506 used the theme: "factors that influence growth and development in animals and plants" to integrate Personal Development and Science curriculum subjects' learning outcomes (Appendix ZL). The second method presented the learning outcomes of a curriculum subject which had similar ideas and concepts, and integrated to a theme. For example, Roger-RPTD505 and Peter-RPTD506 used the theme, "culture, values and lifestyles" to integrate with learning outcomes in the Personal Development curriculum subject (Appendix ZL). The integrated model was explained by Duma, while William described that the integrated micro-curriculum was sequenced hierarchically:

> Integrated meaning you integrate or link the ideas in the strands and sub-strands and learning outcomes of one subject with the other subjects from a main theme. (Duma-RPTI501)
>
> Teaching programmes that we plan mainly using design down model [sequenced hierarchically] … that we are using and we plan from the teachers' guides. (William-RPTI503)

Units of work using the single outcome model consisted of single learning outcomes, which were neither integrated nor linked to different curriculum subjects' learning outcomes (Appendix ZM). For example, Duma-RPTD502 used the learning outcome, "identify and organise common substances into groups according to physical properties," while Peter-RPTD506 used "apply fractions in problem solving" to develop their single outcome model of micro-curriculum. The differences between the integrated and singled outcome models were explained by Mong and Duma:

> A stand-alone programme is when that outcome doesn't connect with outcomes in other subjects. (Mong-RPTI502)
>
> When you make a stand-alone, the programme is specifically for a particular subject and it means specifically for a learning outcome and strand and sub-strand, then all the programmes and activity designs will suit the learning outcome, and the strand and the sub-strands. (Duma-RPTI501)

As in case study one, the integrated and single outcome models of micro-curriculum were sequenced hierarchically. Both models consisted of yearly overviews, followed by learning outcomes, which were expanded into knowledge, skills and attitude and value elements. Based on these elements, the content and the assessments were included. The components or parts of (yearly overviews, term plans, expansion of learning outcomes, teaching and learning activities and assessment plans) the units of work for the two models are described in the following paragraphs.

Yearly overviews

The teachers placed the yearly overview at the top of the plans. The integrated model contained the following: the school terms, different integrated curriculum areas, the learning outcomes and themes, and duration and weeks (Appendix ZR). The yearly overview of the single outcome model of micro-curriculum contained: the school's terms (1-4), number of weeks for each school term along with the strands and sub-strands, the learning outcomes, and resources (Appendix ZM). The sub-strands had been allocated to each school term, and the learning outcomes were included for sub-strands. Immediately following the yearly overviews, the term plans were developed.

Term plan

The duration or the number of weeks for the learning outcomes was included. Below this information, other information, such as subjects, the strands, sub-strands and the learning outcomes were linked to the main themes were tabulated. Further, the purposes of the unit of work were included. The information in the purpose stressed the importance of students' learning that was related to the themes. In the single outcome model, the term plan included the number of weeks, strand and sub-strands, the learning outcomes and the number of indicators for each learning outcome. Finally, a total number of lessons to cover the learning outcomes were included. All this information was tabulated (Appendices ZR & ZM). Both the integrated and single learning outcomes were expanded into the micro-curriculum content.

Expansion of learning outcomes.

The learning outcomes were expanded and presented as knowledge, skills and attitudes and values. The knowledge area contained key ideas and concepts

related to conceptual and procedural information, while skills information included six thinking processes (remembering, understanding, applying, analysising, synthesizing and creating). The attitude and values contained information about students' attitude and behaviour development such as caring for, respect and honour people, ways on how to take responsibility took after about oneself and others (Appendices ZL & ZM). Then teaching and learning activities were presented.

Teaching and learning activities

The teaching and learning activities were presented under the heading weekly lesson overviews. This heading indicated each week for implementing the teaching and learning activities and contained student-oriented indicators or activities. Below the tables, the sources from which the information for the units of work was obtained was included (Appendices ZL and ZM). Right under the teaching and learning activities, the assessment plans were illustrated.

Assessment plans

A range of formative and summative assessment was included under assessment. The assessments information was tabulated including assessment methods and their task procedures, assessment criteria and the methods of recording assessment results. A range of assessment methods was provide, including group work, assignments, projects, presentations, analysing work samples and summative tests (Appendices ZL and ZM). These assessment tasks described the procedures for the students to perform. The methods of recording showed the ways in which the results of the assessments would be recorded using subject assessment period sheets (SAPS) and checklists. On the basis of these units of work, the weekly daily plans were developed.

Weekly daily plans

The weekly daily plans containing the grade, name of the teacher, themes, specific school term, week, days, the specific dates, indicators, teaching notes, sample activities and resources were placed in tables. The teaching sequence in the introduction, body and the conclusion part of the lessons were written for each day (Monday-Friday). The main ideas to teach were included and teachers taught each subject according to the class time tables (Appendices ZN & ZO).

In summary, the integrated and single outcome micro-curriculum models were sequenced hierarchically. In the integrated model, the different curriculum subjects' learning outcomes that were related were linked to the themes, while single outcomes in each curriculum subject were presented on their own. From the units of work in each model, the weekly daily lessons were developed and presented to the students. Lesson observations revealed that the two models of the micro-curriculum were followed by four teachers and not by two (Appendix P). Duma and Peter had their micro-curriculum models but taught directly from the textbooks (section 5.3.3), while Mong, William, Apota and Roger followed both integrated and single lessons as indicated in their micro-curriculum models (Appendix P). They were able to integrate ideas and concepts from the students' life experiences as well other related information, including indigenous knowledge and skills, into the lessons and activities (section 5.3.3). The different types of learning activities (class activities, assignments and summative tests), which were developed from the learning outcomes were delivered to the students using two teaching styles (section 5.3.3). The students undertook the above learning activities and their learning outcomes were presented in section 5.5.3. In sum, there was a close link existed between the teachers' micro-curriculum and

the national outcome-based curriculum. The next section describes the student-experienced curriculum.

5.5 Student-experienced curriculum

This section describes the five themes which emerged from the data analysis linked to the student-experienced curriculum. Themes 5.5.1 and 5.5.2 relate to students' perspective on teachers' teaching styles and the national curriculum implementation. The students' learning outcomes and their attitudes and behaviour are described in themes 5.5.3 and 5.5.4 respectively. Theme 5.5.5 presents the students' perspectives on teachers' attitudes and behaviour.

5.5.1 Students' perspective on teachers' teaching

The following paragraphs describe the students' perspectives on how teachers delivered the micro-curriculum in school and classroom contexts.

Students noted that the teachers were using different ways of teaching and that they learnt well. One of the students in a focus group commented:

> *Mipela feelim free na amamas na feel gutpela taim tisa save tisim mipela. Antap long dispela, mipela feelim em save teach gut.* (RPSI402)

Researcher's translation:

> We feel free, happy and good when the teacher teaches us. We also feel that our teachers teach better. (RPSI402)

Students asserted that the lessons were explained clearly at their level of understanding and they understood. The teachers who explained lessons well were described by two students.

Taim em teach em save explainim more na mipela save kisim ol samting. (RPSI405)

Researcher's translation:

When the teachers were teaching, they explained more and we understood well and learnt better. (RPSI405)

Ol save explainim long mipela na mipela save understandim na mipela save wokim wok b'long mipela. (RPSI405)

Researcher's translation:

The teachers explained things to us well and we understand better and do activities. (RPSI405)

One student commented that the teachers provided related examples when lessons were explained and they (students) were able to undertake activities, while another student stated that the teachers taught them (students) to work cooperatively in group activities. For example:

Teachers gave us plenty of examples from the lessons they teach to us, so we understand better to do our activities easily. (RPSI401)

The teachers were teaching us to work cooperatively in groups with others after they explain everything to us. In our groups we find answers to the activities. (RPSI403)

On the other hand, the students commented that some teachers did not provide related examples to support the lessons they explained, while some teachers gave students the textbooks to read through to carry out the activities. In some instances, the teachers provided the activities to the students and left the classrooms without explanation. For example:

Some teachers do not give us examples and it's hard for us to do our activities. They write only on the board and some teachers give us the textbooks only and we read from it and do our work. (RPSI401)

Sometimes, the teachers just give us work and left us on our own. (RPSI405)

If teachers explain better, it would be easy for us to understand and do our activities. (RPSI402)

The students identified that the teachers used different ways of teaching. While some teachers explained the lessons and the students were able to perform the activities, some did not and students experienced difficulties. The next theme links to the students' perspectives on the national outcome-based curriculum is presented.

5.5.2 Students' perspectives on the national curriculum implementation

This theme describes the students' experience of the national outcome-based curriculum in three aspects: the breadth, the depth, and the degree of subject preferences.

Breadth

The students pointed out that they studied seven subjects, which was also stated by teachers as discussed in theme 6.3.5. A student in one of the focus groups stated:

> I learn different subjects like Social Science, Mathematics, Language, Science, Social Science, Personal development, Making A Living and Art. (RPSI403)

Two students in the same focus group also expressed the opinion that some curriculum subjects were easy and others were challenging. For example:

> *Language em isi long bai yu raitim stori or activities na mi pilim isi long mekim na sampela em* hard. (RPSI401)

Researcher's translation:

> Language is easy to read stories or activities and I felt easy to do while some subjects are hard. (RPSI401)

> *Because Math em hat wok long multiply, subtraction na divide.* (RPSI403)

Researcher's translation:

> Because Math is difficult to multiply, subtract and divide. (RPSI403)

Students perceived that they studied content of the seven curriculum subjects, and experienced difficulties understanding some subjects, while some subjects were easy to comprehend and perform activities.

Depth of detail in curriculum

The students were able to identify each curriculum subject's content they had learnt in classroom and school contexts. Two students in focus groups expressed this:

> *Olsem science mipela lainim content, ol plants, kain olsem. Long Math kain content olsem mipela lainim fractions na decimals nabaut. Language yumi save lainim kain olsem punctuation.* (RPSI402)

Researcher's translation:

> In Science, we learn content on plants. In Math we learn content on fractions and decimals. In Language we learnt punctuation. (RPSI402)
>
> We learn English usage in spelling and listening. We learn about MAL on how to manage our resources and how to manage our flower beds or gardening. (RPSI403)

Some of the curriculum subjects' contents were easy and clear for the students, whereas others were not. This was commented on by two students:

> *Language em isi long bai yu raitim stori or activities na mi pilim isi long mekim na sampela subjects em hard.* (RPSI401)

Researcher's translation:

> Language is easy to read stories or activities and I feel easy to do and some subjects are hard. (RPSI401)
>
> *Mathematics em olsem mi no nap long kain olsem plasim ol, tekawe, taims, dipisin.* (RPSI402).

Researcher's translation:

> In Mathematics I cannot do addition, subtraction, multiplication and division. (RPSI402)

The students expressed the opinion that some curriculum subjects' were easy and some were not; the students were able to decide their preference for each curriculum subject.

Degree of subject preference

The students' subject preference related to the curriculum breadth and the depth are introduced in the following paragraphs.

Subject preference - liking

Some students noted that their preference for a curriculum subject was connected to their understanding of the content and a range of learning activities they undertook. Two students commented on this:

> I like Mathematics because we add numbers and play with number. Mathematics is where we have numbers and adding fractions and it's easy. (RPSI404)

> I like the subjects because the subjects contain important ideas for us to learn. (RPSI402)

Some students' preference for each curriculum subject was also related to their personal experience and for their future development in life. For instance:

> I like Language because I want to speak English in and out of the school. (RPSI405

> I like Mathematics because my aim is I want to become a pilot. (RPSI403)

> I like Making a Living and Science. Science is because I must learnt animal life in the sea and on land, and for Making a Living, I must know how to work on the land. (RPSI403)

Subject preference - disliking

The students identified some reasons for disliking particular subjects. They were particular about some subjects which involved a lot of work. Two students stated this:

> I don't like Making A Living because Making A Living has plenty jobs to do inside and outside. (RPSI403)
>
> I don't like Arts because it has lots of drawings to do and music work to do. (RPSI404)

Additionally, the students reported that the teachers asked them to bring learning resources from their local communities. Because of this, they disliked some curriculum subjects. This was mentioned by the student focus group:

> *Arts em ol teachers save salem mipela long kisim plenti ol kain ol samting i kam na wokim na mi save less. (RPSI405)*

Researcher's translation:

> In Art subjects, the teachers asked us to bring a lot of different things to school and work on them and I do not like it. (RPSI405)
>
> *Arts em save givim mipela moa hat wok long karim ol samting long haus na kam long school. (RPSI406)*

Researcher's translation:

> In Arts we do a lot of hard work and bring things from home to school. (PRSI406)

Another reason the students identified was related to the content of some of the curriculum subjects. For example:

> I don't like Personal Development, because Personal Development in this new curriculum expresses more sexual feelings about people. It talks about sexuality and it is not good for us because sex should be taught in high schools where students are mature. (RPSI405)

The students' understanding of the curriculum content, the types of activities they were engaged in and their personal experience were related to their preference for each subject. The next theme reports on the students' learning from the micro-curriculum.

5.5.3 Students' learning and outcomes

The theme reports on the students' perspectives on their learning, and their learning outcomes from different learning activities (theme 5.3.3).

Students' perspectives on their learning

The students commented that they learnt ideas from various activities they undertook. The ideas and information the students mastered were then applied in practical situations. This was stated by one of the student focus groups:

> In Language we do like speaking and listening skills and learn nouns, verbs, and adjectives. In Math we learn fractions including improper fractions, proper fractions and equivalent fractions and decimals, ratios, rates, expressing fractions in decimals and measurements and centimetres, meters, liquids, volumes, capacities. In social science, we learn about making maps and geography. (RPSI405)

Two students commented that when they performed the activities, they created things on their own and learned. Also, the two students identified that reading and understanding information helped them to do the activities. For example:

> We do the activities ourselves and we learn things and understand them better. (RPSI405)

> We learn about creating new things on our own from the activities the teachers gave us. (RPSI403)

> *Long mi yet mi lukim olsem reading and understanding em helpim mi long lainim ol samting. (RPSI405)*

Researcher's translation:

> For myself, I see that reading and understanding helps me to learn things. (RPSI405)

> *Yu readim plenti buk bai isi long catchim samting long wokim. (RPSI403*

Researcher's translation:

> We read books and it is easy for us to do activities and learnt better. (RPSI403)

Certain sociocultural activities or practices from the traditional communities where the students come from worked against students' learning. This was revealed by one of the female student participants:

> *Pasin belong ples na community em tu save makim hat long stadi.* (RPS1401)

Researcher's translation:

> The socio-cultural practices of the communities where we come from are hindrance to our studies. (RPSI401)

While students pointed out that they read and undertook activities to create their own learning, certain traditional socio-cultural practices or activities of the traditional local communities where they (students) come from, inhibited their learning. A description of the students' learning outcomes is presented next.

Students' learning and outcomes

The following paragraphs outline the students' learning outcomes from the three main learning activities they undertook as described in theme 5.3.3.

Documentary data

As in Chapter 4, the extent and nature of students' learning varied in each part of the summative tests they undertook for each curriculum subject. Some students answered all multiple-choice questions, while some did not; some students did better in matching questions and some did not. This varied learning pattern was obvious in all the summative test questions in each curriculum subject. Further, a majority of the students did not provide full or complete answers to some of the short answer questions and fill-in-the-blanks, while a few students attempted to do well. Additionally, some questions in each part of the summative tests were not attended to. In particular, a few students did not label the diagrams in the

summative tests. In all, a minority of the students seemed to perform better in all the curriculum subjects than the majority of the students in the summative test activities they undertook.

There was clear evidence that the majority of the students were unable to do the assignment activities in all the subjects. Some students performed better in some curriculum subjects and not in other subjects. This trend of performance was evident across all curriculum subjects. For example, some of the assignment activity samples, such as charts and posters, indicated incomplete sentences, mismatching the key ideas and were poorly presented. Also the essay story writing was full of grammatical errors and the researcher encountered difficulties understanding and analysing them. Figure 15 is a presentation speech written by one of the students, which illustrates this problem:

Assessment task one

Write a speech about a traditional dance.

My speech on traditional dance

Agree

I think that traditional dance is good because we have to promote our culture and customs of Papua New Guinea. Many ancestors in the past they use traditional dance because it is important to them. They use traditional dance to welcome important people like the governor to visit the society (community). Traditional dance are used in party or show to celebrate the year and other events taking place. Traditional dances are interesting because they tell a story and make the dance meaningful.

Disagree

Traditional dance is good but, people usually show there was no body in the crowd/public when an event taking place in town or society. That's why now a day's people usually forget about traditional dance because to malira the young girls. Traditional dance people do not get income. Sometimes malira will spoil the young girls to have a good marriage. (RPSD404)

Figure 15: A student presentation sample

From the analysis of the students' exercises books, handouts and worksheets in seven curriculum subjects indicated that some of the students were performing better and some encountered some difficulties. The same trend of performance in assignment activities described above was found in a range of class activities the students undertook for each curriculum subject. This was commented on by a student in a focus group:

> Some activities that we do are easy for us to understand and do while some activities are very hard but we do not worry about each of them and we complete our activity. (RPSI403)

Another activity that clearly showed evidence of students' learning is presented in a student's work sample, which is shown in Figure 16 below. The instructions of the activity outlined the students to discuss and identify, and they fill-in-the blanks in the headings: good and bad fishing and agricultural practices, as bolded. The students' answers are in italics.

Discuss and identify and give examples of poor/bad agriculture practices by foreign companies and also the examples of good fishing/agriculture practices by completing the table below.

Good fishing/agriculture practices	**Bad/poor fishing/agriculture practices**
Using fishing lines	*Dynamite fishing*
Using net to catch fish	*R.D Tuna uses big nets to catch fish*
They use gun to diving	*Poison chemicals to kill fish*
They use traditional nets	*People in villages use poison ropes to fish.*

(RPSD406)

Figure 16: A student fill-in-the blanks work sample

Additionally, another student's class exercise indicates:

> Recount on an activity you did yesterday afternoon.
>
> Yesterday after school I went home. I told the other girls to play ABC game and we were playing on the road. The boys told us that you stop the game and go straight to your house or otherwise we'll go and report you to your fathers and mothers. When I went straight to my house my mother asked just now you came and I said yes. Why are you coming late in the afternoon and I said we were playing on the road. My mother heard and she hit with a big stick. (RPSD403)

Figure 17: A student recount activity

Lessons observed

In the lessons observed, the students' learning was evident in both individual and group activities. In each group activity for each curriculum subject, the students were visibly discussing and contributing ideas as a team and collating their findings on charts. A member from each group went to the front and presented the findings to the rest of the students. A student interviewed commented:

> We do group presentations, the activities we do from the front of the blackboard to our class members, and they can take notes from their own fellow students' presentations. (RPSI405)

Additionally, the two paragraphs illustrated below show the evidence of the students' learning in group activities. Two student representatives from each group presented from the front of the classes in Roger and Apota's lessons:

> **T:** We start with the group that worked on village lifestyle. During our presentations, when our friends come and present, you try to take note of some of the things they are going to discuss up here or present to us. Let's have the people who worked on village come to the front please.

R: Good morning class. We are about to present our activity. Our activity is village lifestyle. (1) We want village life because it is easy to live or survive (2) Village life is good that we must know our traditional way of living and language. (3) Village is a place that we live where we do all sorts of work and activity, like hunting. (4) To enjoy traditional way of life and to be part of the community. (Roger-RPV505, lesson 1)

T: Let's look at another presentation.
R: Our topic is about low food production. Continues burning to clear land leads to reduce the soil, number one. Number two: allowing too many crops to grow among food crops. Three: Destroying gardens during tribal fights. Four: using poor quality seeds or plant cuttings. Our safety measures: Good gardening skills. Two: avoid burning of bushes and tribal fights. That's all.
T: Class, give them five big claps. (Apota-RPV504, lesson 3)

In Duma's class, the students undertook individual activities. However, the performance indicators students achieved in the curriculum subject were not observed because they (students) took more time to do the activities and the time was up for the next lesson. Peter, William and Mong were engaging the students with both individual and group activities. Mong corrected the activity with the students and their learning was illustrated:

T: Class, someone has done exercise 2A, so we will look at the answers for the exercises 1 and 2. What is the answer to exercise 1A??
R: 0.5.
T: Question 2: 30% as a decimal.
R: 0.30.
T: 0.30. Very good
T: Question 3: 25%
R: 0.25
T: Question 4: 12.5%
R: 0.125
T: Very good… (Mong-RPV502, lesson 3)

The varied activities provided in each curriculum subject were not easy but challenging for the students. This was commented on by a student:

There are problems and challenges we face when doing the activities. Some problems like some of us do not really understand the activities

> or when we try to do them, we do not complete the activities and we just do half and leave the [other] half part out. (RPSI405)

In summary, the summative tests, assignments and class exercises formed the main part of the learning activities that the students undertook in each curriculum subject. There was clear evidence that the students achieved the performance indicators. A minority of the students seemed to achieve the performance indicators in all curriculum subjects, while some students achieved performance indicators in some subjects and not in other curriculum subjects. This trend of achieving performance indicators was evident in the three learning activities described above. In particular, there was evidence of some students writing correct answers in the summative test activities but not undertaking the assignments properly, as in the class exercises. The lessons observed clearly indicated that some students collaborated with each other in group activities to create their own learning and some did not. The students who created their own learning were able to present their group work confidently from the front of the class. A similar pattern of evidence of learning was seen in the class activities. So it was obvious that some performance indicators were achieved and some not. The students' attitudes and behaviour are presented next.

5.5.4 Students' attitudes and behaviour

The students commented on their attitudes and behaviour that were related to their learning. For example, one of the students in a focus group commented that peer pressure, unnecessary stories, and undisciplined behaviour from their fellow students distracted them from listening attentively to the teachers.

> *Taim mipela lainim nabaut, ol desk mait blong mipela sindaun clostu long mi save mekim noise, stori, stori nabaut toktok laud na mipela no save harim gut long tisa.* (RPSI401)

Researcher's translation:

> When we are learning, our desk mates and those that sit close to me make a lot of noise, tell stories in loud voices, which prevent us from listening attentively to the teachers. (RPSI401)

Also, a student commented that they were not motivated to learn and developed lazy attitudes and behaviour, which impacted on their learning. Added to this, the student pointed out that the traditional socio-cultural activities or practices they believed in and practice inhibited learning. Another student commented that the students felt shy and ashamed to collaborate with the teachers and never asked questions when they (students) encountered difficulties with the learning activities. These attitudes and behaviours were detrimental to their learning. For example:

> *Sampela taim miplea pilim less long wokim ol work tisa givim because mipela traim hat tasol mipela no understandim sample subjects. Narapela samting em olsem, culture long ples em wan pela samting em bai mekim you hard long tadi.* (RPSI405)

> *Sampela taim mipela save shame long tokim tisa na mipela i no save tokim tisa. Sampela taim mipela shame long askim em na mipela save askim mipela yet long helpim mipela yet.* (RPSI402)

Researcher's translation:

> Sometime we feel lazy to do the work the teacher gave us because we tried harder but we did not understand some subjects. Another factor is that the traditional socio-cultural practices or activities are hindrance to our studies. (RPSI405)

> Sometimes we felt ashamed to ask the teachers and we never ask them. Sometimes we felt ashamed to ask the teacher and we ask ourselves and help each other. (RPS1402)

However, the students who possessed positive attitudes and behaviour were able to behave well and listened to the teachers, concentrated and undertook the

activities. As a result, they were learning better. This was stated by one of the students:

> Sample mipela save stap isi na harim tok belong tisa na miplea save wokim work. Taim tisa givim wok mipela making because mipela clear long em na miplea save long wokim. (RPSI405)

Researcher's translation:

> Some of us stay quiet and pay attention to the teachers and do our work. When the teachers gave us work, we did [it] because we understood better. (RPSI405

The peer pressure, disturbing behaviour, shyness, ashamed attitudes, and their holding of convictions of traditional socio-cultural practices and beliefs from the rural communities inhibited learning. However, students with positive attitudes and behaviour learned better. The summary of case study two is presented next.

4.5.5 Students' perspectives on the teachers' attitudes and behaviour

This theme reports on the students' perspectives about teachers' behaviour and attitudes that were connected to their learning when the micro-curriculum was delivered.

Their teachers' positive and negative attitudes and behaviour were crucial to the students' learning and development. Some teachers were caring, loving and exercised fairness to all students, while some teachers did not exercise patience and became angry quickly. Two of the students commented:

> Some teachers listen to us and talk nicely to us, and some teachers' attitudes are not good, they sometimes get angry with us. (RPSI406)

> Sampela tiam mipela makim mistake, sampela tisa ol less long correctim miplea, na miplea save stap tasol. (RPSI405)

Researcher's translation:

> Sometimes, when we make mistakes, some teachers ignore us, and do not want help. So we just stay on. (RPSI405)

Also, two students in a focus group commented that the teachers were absent for classes. As a result of these factors, the students missed out and did not learn. For example:

> Sampela taim tisa em no save kam long skul, na mipela yet save stap. Taim em no save kam, mipela no laikim samting. (RPSI404)

Researcher's translation:

> Sometimes, the teacher does not attend to classes, so we stay on our own, and never learn thing. (RPS1404)

> Sampela tisa ol save givim work na ol save go outside na stap longpela taim na klostu recess or lunch na ol save kam na tokim miplea long go out. (RPSI401)

Researcher's translation:

> Some teachers provide us with activities and they go out of the class, and never come in until when almost to recess or lunch break they come to class and send us out. (RPSI401)

Some teachers shouted at students, and in turn the students were afraid and never sought assistance from them, as a result some students disliked these teachers. This was commented on by two students:

> Sometimes, our teacher shouts at us and I don't feel good. (RPSI405)

> Taim tisa bolong miplea em no hamamas long wanpela taim, em save shout na korosim miplea. Mi yet mi laim tisa. (RPSI401)

Researcher's translation:

> When our teacher is not happy with something, he shouts and gets angry with us. I personally do not like him. (RPSI401)

The students stated that the teachers displayed both positive and negative attitudes and behaviour in implementing the curriculum. The students learnt well when teachers approached them with care, love and treated them fairly. However, students did not learn well when some teachers shouted at them and were quick to become angry. Some teachers, in the students' view, were they did not attend classes for personal reasons. The summary of the findings of this chapter of the thesis is briefly summarised below.

5.6 Summary

As in case study one, the teachers applied iterative interpretation processes to construct their own meanings or knowledge from the macro-curriculum and developed two models of micro classroom curriculum: integrated and single outcomes. Each model was designed hierarchically and contained units of work and weekly daily lessons. The implementation of the micro-curricula was related to teachers' values and belief systems, the issues with the macro-curriculum, students' attitudes and behaviour, professional development support and availability of teaching and learning resources. The students experienced the teachers' micro-curricula individually and in groups, and constructed their own learning. Students' learning was linked to the learning activities, teachers' teaching styles, students' own attitudes and behaviour, and teachers' attitudes and behaviours.

The major themes which emerged from the data and were analysed from case studies one and two are summarised and discussed in the next, Chapter 6.

CHAPTER SIX: DISCUSSION OF FINDINGS

6.1 Introduction

The purpose of this study was to investigate factors influencing teachers' pedagogical decisions and actions and the nature of student learning in the implementation of the new national PNG curriculum in classroom contexts. This chapter first draws together the key findings from the two case studies to identify and summarise similarities and differences across the case studies. Second, these summaries are discussed in relation to the key research questions. The first research question discusses factors influencing the teachers' implementation of micro-curriculum, while the second research question addresses the student-experienced curriculum. Then these discussions are re-visited to answer the third research question, which looks for *congruence between the macro-curriculum, the teacher's micro-curriculum and student-experienced curriculum*. Overall discussions are woven together with the literature discussed in Chapters 1, 2 and 3 about curriculum development and implementation internationally and PNG. This chapter concludes with an overall summary.

6.2 Similarities and differences in the key findings from the two case studies

Chapters 4 and 5 reported data on the teachers' implementation of micro-curriculum and the student-experienced curriculum. This section summarises the similarities and difference of the findings across the two case studies.

6.2.1 The teachers' micro-curriculum implementation

This section presents the summary of findings across the two case studies from interviews with the teachers, observations of their classroom practice and analysis of their planning documents underpinning the teachers' micro-curriculum implementation.

The study found that individual teachers in both schools developed single and integrated outcomes models of micro-curriculum as recommended by the macro-curriculum (national curriculum). Prior to developing these models, teachers across the case studies employed iterative interpretation processes to identify the key ideas and concepts from the macro-curriculum. During their interpretive processes, the Banipul teachers identified some mismatching performance indicators for the learning outcomes, so they decided to construct their own, while Alowale teachers kept the performance indicators provided by the national curriculum. Unlike Alowale teachers, the Banipul teachers also illustrated key ideas and concepts they identified on concept maps, which later assisted them in designing students' learning activities to reflect the desired knowledge, skills, attitudes and values.

As teachers began planning the content of their micro-curricula, they considered relevant materials and resources to support the content of their micro-curricula as interpreted from the macro-curriculum. They also took into account their students' learning needs, prior knowledge and English language ability and the school and local community environmental contexts. For example, the Alowale teachers considered and used indigenous knowledge as part of their micro-curricula: traditional methods of farming, fishing, building, arts and craft obtained from the

village elders. The Banipul teachers incorporated socio-cultural activities as themes for their micro-curricula: traditional feasting, dancing, marriage, family and relationships that occurred monthly or yearly. The content of the micro-curricula were developed first in the form of required knowledge from the learning outcomes and then skills and attitude and values were aligned with this knowledge. The content of the micro-curricula was student-oriented. A range of teaching and learning strategies, such as mind maps, brainstorming, guided discovery, cooperative group work, interpretive work, concept mapping, discussion, and demonstration were indicated in the micro-curricula, and formative and summative assessments were included. These assessments, based on performance indicators took the form of assignments, projects and summative tests.

The micro-curricula also included teaching and learning resources needed by the teachers to support teaching and assist student learning. However, teachers reported that a lack of relevant teaching and learning materials and support resources and professional development support across the two schools adversely affected their efforts in delivering both integrated and single outcome micro-curricula. As a compromise, the Alowale teachers used the old objective-based national curriculum to support and plan their micro-curricula, because the new national curriculum content was not detailed enough and it was too broad. The Banipul teachers used more time to think through and develop their micro-curricula, because they found the interpretation and planning from the national curriculum was hard work.

Lesson observations across the case studies revealed that there was a mismatch between the teachers' planned micro-curricula and their actual delivery of these micro-curricula to the students in the classrooms. Not all teachers delivered the micro-curricula in the classrooms as planned. Out of the twelve teachers in the study (6 from each school), seven delivered both single and integrated outcome micro-curricula in their classrooms, one teacher from Banipul School used a single outcome micro-curriculum, while four teachers in the two schools taught directly from the textbooks.

Lesson observations of the eight micro-curricula showed that teachers employed transmissive teaching styles or used cooperative group activities. Teachers using the transmissive teaching styles tended to transmit factual, procedural and conceptual knowledge from the introduction through to the conclusion of the lessons, while students passively listened. Teachers in these classrooms talked most of the time, explained the lessons step-by-step in detail by reading from the chalkboard, student textbooks and photocopied resources, and tended to ask closed questions (yes or no). They also provided class activities for the students to undertake individually and supported the students one-on-one in these activities, with phrases like 'very good' and 'good' being habitually applied to respond to students' responses. Lessons were concluded with whole class correction of the activities and summaries of the key points.

Teachers using cooperative group activities in delivering their micro-curricula typically organised the students into mixed gender groups of five or six members and personally distributed learning resources to these groups. Then students carried out the activities and the teachers facilitated learning by moving from

group to group, providing assistance and support where necessary. They gave more class time to the students to undertake the activities and asked questions that began with ‘why, how, and what’ to scaffold student learning. The phrases ‘very good’ and ‘good’ were employed meaningfully to engage students’ responses and learning. Finally, the teachers gave opportunities for each student group to present the findings of the activities to the class, and the lessons were concluded with key ideas from the students’ presentations.

Lesson observations also found that the teachers’ physical classroom organisation across the case studies predominately supported transmissive teaching styles or cooperative group activities. In transmissive classrooms, the desks were arranged in straight rows, which promoted individual activity, while in cooperative group classrooms the desks were grouped to encourage collaborative activities. The study showed that some students’ completed activities were displayed in both transmissive teaching and cooperative group classrooms to expose and promote learning, and for other fellow students to read and learn from. For example, at Alowale school, two classrooms displayed students’ completed activities, and three classrooms did likewise in Banipul School. However, other classrooms were totally bare and did not exhibit students’ completed activities. The conditions of some desks and classrooms needed maintenance and students across the two schools used their own learning materials and resources in the lessons, that is, not supplied by the school.

The study showed that the macro-curriculum content had a direct influence on the teachers in the implementation of their micro-curricula. Teachers across the two schools reported that the greater breadth and depth of the macro-curriculum

compared to the previous national curriculum caused difficulties with its interpretation and the development and delivery of classroom programmes. The adoption of a wider breadth of macro-curriculum, which includes seven learning areas (Language, Mathematics, Science, Social Science, Personal Development, Arts and Making A Living), meant there were too many subjects for the teachers to implement. So, teachers across the two schools shared responsibility, such that each grade 6 teacher interpreted and developed two to three learning areas, which they then shared with their fellow grade 6 colleagues. Similarly, grades 7 and 8 teachers each specialised in teaching one to two learning areas within each grade to prepare the students for their final national examinations. Teachers also found it difficult to interpret the meaning of words in strands, sub-strands, performance indicators and learning outcomes and to draw relationships between them even though these words were defined.

Teachers reported that they judged the nature of students' learning by the quality of work they produced during the activities in relation to performance indicators, and they grouped the students as high achievers, average learners and slow learners. However, there was a mismatch between what teachers said they did and their actual practice. For example, the assignments and projects assigned to the students appeared to be done at home after school and during weekends. Students brought their completed assignments to the schools for awarding of marks.

The Alowale teachers believed that the family background (education and socio-economic statues) and negative local socio-cultural activities (lack of discipline, law and order issues, traditional belief systems, rituals and customs, and no study facilities at home) impacted on the students' learning and performance, while

Banipul teachers commented that students needed more time to complete the activities, because a lack of understanding of the English language contributed to students being slow in their progress.

The study revealed that teachers held strong values and beliefs about the quality of student learning. The Alowale teachers held firm convictions about using a range of teaching and learning pedagogies for the students to construct their own learning. The Banipul teachers reported that they believed in having in-depth content knowledge in each curriculum subject as well as organising student learning in groups and individually. There were some matches and mismatches between the teachers' stated values and beliefs and their actual classrooms practice across the two schools. Lesson observations showed that twelve teachers in the two schools organised student learning in groups and individually. For example, the six Alowale teachers did create fair classroom relationships. Questions were evenly distributed to both genders and teachers interacted with boys and girls, giving them equal opportunity to present their activities in class. However, the teachers appeared to lack in-depth content knowledge in some curriculum subjects. As a result, they developed basic content knowledge and they delivered this content to the students rather than providing hands-on practical-oriented activities.

Teachers commented that students' positive and negative attitudes and behaviour impacted on the development and delivery of their micro-curricula. For example, the Banipul teachers believed that students displayed laziness and became forgetful when performing the activities. These teachers reported that students' negative attitudes and behaviour were influenced by their physical, emotional and

psychological changes and this in turn impacted on how they thought, felt and acted. The Alowale teachers noticed that in mixed gender groups, students displayed lack of concentration, disobedience in class and refused to work together as team members. They commented that these students' negative attitudes and behaviour were influenced by family background, education and socio-economic status, lack of family discipline, and local social-cultural practices which were part of their upbringing: values and belief systems, rituals, customs, traditions. However, there were some matches and mismatches between what teachers perceived about students' positive and negative attitudes and behaviour in the actual classroom observations. For example, in the two schools, what appeared to be common was that the majority of the students in class sat quietly and listened attentively while a minority appeared not to concentrate.

The study indicated that the national, provincial and school based in-service training activities supported the teachers in their interpretation of the macro-curriculum and the development and delivery of micro-curricula. For example, the knowledge, skills and new outcome-based approaches teachers learned during these in-service training sessions featured in the implementation of their micro-curricula. Consequently they developed factual, procedural and conceptual knowledge from the learning outcomes and constructed a variety of learning activities. They also delivered these key aspects within two outcome-based classroom models of micro-curriculum, as recommended by the national curriculum, and delivered these to the students. However, the teachers commented that they need to sustain their professional learning in the long term. The next section discuses *what* students experienced from the delivery of these micro-curricula and how across the two case studies.

6.2.2 The student-experienced curriculum

The findings reported in Chapters 4 and 5 from interviews with the students, observations of their learning as their teachers delivered the micro-curricula, and analysis of their learning documents are summarised below.

The study found that the students across the two schools experienced different teaching styles from their teachers. The Banipul students commented that when their teachers explained the main ideas and concepts step-by-step with related examples and illustrations, they were able to undertake the activities and understood the lessons. However, the Alowale students reported that they did not understand the lessons and found it difficult to do the activities when their teachers could not provide related examples to support the lessons they (teachers) explained. In some instances, the Alowale students reported that their teachers could not explain the lessons; students were given the textbooks to read on their own and do the activities without support and assistance, so they did not understand the lessons and encountered difficulties undertaking the activities. The Banipul students indicated that their teachers' positive rapport and body language encouraged them and they were able to do the activities.

Some students across the case studies also reported that their teachers briefly outlined the key ideas and assigned group activities for them to carry out. For example, the Banipul students commented that their teachers presented them with prepared activities from the chalkboard and worksheets without much explanation; hence, as they did the activities in groups they constructed their own learning. Like the Banipul students, the Alowale students reported that their

teachers briefly explained the ideas and concepts and engaged them with prepared group activities, which they discussed in groups and found their own answers.

The findings across the case studies revealed that the students undertook summative tests, assignments, projects and class activities from the seven curriculum subjects. The tests usually comprised multiple-choice questions, short answer questions, fill-in-the-blanks, matching exercises or labelling diagrams. The majority of the Banipul students who did the tests provided responses as anticipated by the teachers and achieved highly. They wrote correct answers and expressed the ideas explicitly in short answer exercises. In contrast, a minority of the Alowale students did the tests as anticipated by the teachers. In all, the Banipul students performed better than the Alowale students and met performance indicators. Students across the two schools also participated in simple project-oriented activities and assignments, which focused on basic psychomotor skills development.

In the two case studies, the samples of the students' work demonstrated that they constructed basic models, such as canoes, houses, vehicles and wooden combs, as project activities which were assessed. Many students followed the performance indicators to design and construct models. These students in both schools had varied success, experiencing some difficulties in constructing the models properly. Only a few Alowale students were able to follow the performance indicators and construct models, while the majority experienced some difficulties in undertaking the models. A minority of the students did not achieve the performance indicators across both schools. Although the Banipul students performed better overall than the Alowale students, it was common across the two

case studies that the students constructed the models at home and brought them to school for awarding of marks.

The Banipul students' learning documents in the assignments indicated that many students were able to write essays, personal narrative and recount stories logically and explicitly. However, many had incomplete sentences and grammatical mistakes, while a few students were unable to write essays, personal stories and recounts at all. On a few Alowale students wrote essays, personal narrative and recount stories. The majority of the Alowale students appeared to struggle with writing as their work samples indicated incomplete sentences and grammatical errors - a few students were unable to write at all. As with the project activities, the assignment activities across the two schools appeared to be undertaken at home and brought to school for awarding of marks. Their work samples were also displayed in some classrooms for other students to read and learn from.

Classroom observations in the two schools showed that the students were engaged with short answer questions, fill-in-blanks task sheets and statements for discussion as class activities. The students tended to execute fill-in-the-blanks questions during transmissive teaching and statements of discussion in cooperative group activities across the two schools. The short answer questions were used in both teaching approaches. In transmissive teaching, a minority of students in the two schools interacted with their teachers and gave correct answers, while the majority appeared to display difficulties in undertaking the activities and responded to the questions with only one or two words. It seemed that students needed more time to complete the class activities. In all, it was

difficult to determine the quality of students' learning from observation of teaching.

In cooperative activities, the students were engaged in group activities and their learning was more obvious to the observer in the two schools. They interacted in their groups and constructed their own learning. In particular, they discussed, shared ideas and argued collectively about the activities and constructed shared learning as team members. It was also obvious across the two schools that a minority of the students was sitting quietly and listening to their group members without much participation. In all, students collaborated during the activities and presented their final work to the class. For example, at Alowale School, all members of the group shared responsibility and had a turn in presenting a part of their findings to the class, as suggested by their teachers, while in Banipul School a representative from the group presented the findings. Unlike the group representatives of Banipul School, a few Alowale students were unable to speak properly and displayed shy, embarrassed behaviour. Overall, presentations across the two schools showed that the students constructed collective knowledge. This learning was confirmed from interviews with the Alowale students but not from the Banipul students.

The findings across the two schools demonstrated that the implementation of the content of micro-curricula did influence the students' learning. The students reported that they studied seven curriculum subjects: Language, Mathematics, Science, Social Science, Personal Development, Making A Living, Arts. Some students mentioned that they experienced difficulties understanding the content of each curriculum subject, while some found it easy to understand and carry out the

activities. As a result, the students who encountered difficulties were unable to perform the activities, while students who understood easily were able to do the activities. As a consequence of this, they liked some curriculum subjects and disliked others. For example, the Alowale students expressed that they liked some curriculum subjects because of personal expectations for future development, while they disliked other curriculum subjects. Their dislike for some curriculum subjects was caused by ineffective implementation of the content of micro-curricula and the demand from their teachers that they bring learning resources to school. The Banipul students reported that they liked some curriculum subjects because they understood the content of the micro-curricula and were able to perform the activities. Their dislike for some curriculum subjects was influenced by their teachers' negative attitudes and behaviour towards them and the manner in which the content of the micro-curricula were delivered. As students experienced the content of the micro-curricula, the Alowale students were aware that each curriculum subject was PNG-oriented, while Banipul students identified the content of each curriculum subject in their progression from one grade to another.

The findings across the two schools indicated that students' positive and negative attitudes and behaviour impacted on their learning. Some students commented that they behaved and acted positively towards their teachers by participating willingly in the activities assigned. They also listened attentively and concentrated when the micro-curricula were delivered. However, some students' negative attitudes and behaviour in the two schools discouraged their learning and development. For example, some felt shy and embarrassed when collaborating, answering their teachers' questions or asking questions when they did not

understand the content of the micro-curricula. As a result, they were confused and did not know how to carry out the activities.

Students in the two schools also confessed that they were lazy, forgetful and did not listen to their teachers. As a consequence, they faced difficulties with their studies and were unable to carry out the activities. These negative behaviours appeared to cause frustration for their teachers. The Alowale students commented that negative traditional belief systems and socio-cultural practices from the rural communities influenced their thinking, and these in turn impacted on their learning and development. As a result, they felt shy and embarrassed to collaborate together with the opposite gender to discuss and participate in class activities. They also commented that negative peer pressure and disturbing attitudes and behaviour of their fellow students hindered their learning, so they were distracted and unable to concentrate. The Banipul students reported that their teachers encouraged them to improve their negative attitudes and behaviour and were able to alter some of their negative behaviour. These changes helped them to understand the lesson and do the activities.

The study also indicated that the teachers' attitudes and behaviour did influence students' thinking and learning. Although the Alowale students did not report this, the Banipul students expressed that those teachers who were caring, loving and exercised fairness accelerated their learning. These teaching personalities enabled the students to understand the content of the micro-curricula better and helped them undertake the activities. Students also appeared to interact positively with their teachers. However, the students expressed the feeling that some teachers had short tempers, were quick to become angry and shouted at them, which impacted

negatively on their learning. Hence, they were confused and did not know what to do. As a result, the students found difficulty understanding and doing the activities. However, observations across the two schools mismatched what students reported above. It was observed that some teachers arrived late for classes in the mornings after tea and lunch breaks. This negative attitude inhibited teaching and learning and impacted negatively on teacher-student relationships. As a result, the students missed some lessons' content.

In summary, the key findings across the two case studies that appeared to underpin the teachers' micro-curriculum included iterative interpretation processes, outcome-based developmental processes, transmissive and group activity, pedagogical approaches, professional development activities, macro-curriculum content, the teachers' personal pedagogical values and belief and their classroom practices, and students' attitudes and behaviour. The student-experienced curriculum was linked to implementation of content of the micro-curricula, learning activities, their teachers' teaching styles, the students' own attitudes and behaviour and their teachers' attitudes and behaviour.

The first of the research questions regarding the factors which influenced the teachers' micro-curriculum implementation and the student-experienced curriculum across the two case studies are now discussed in sections 6.3 and 6.4, respectively.

6.3 Factors influencing the teachers' micro-curriculum implementation

The first question in the study, as stated below, is addressed in this section.

> *What factors are influencing teachers in their interpretation, planning and delivering of the national curriculum in classrooms?*

Findings from the study demonstrated that the PNG teachers drew meanings from the macro-curriculum, developed their micro-curricula and delivered these to the students in classroom contexts. The teachers' pedagogical decisions and actions were influenced by professional development practices, teachers' personal pedagogical values and beliefs and classroom practices, the macro-curriculum content, availability of materials and support resources, and the students' attitudes and behaviour. These factors are discussed in turn and linked to the literature introduced in Chapters 1, 2 and 3.

6.3.1 Professional development practices

This section examines the professional development practice as a factor influencing the teachers' pedagogical decisions and actions and how teachers interpreted the national curriculum, and developed their micro-curriculum.

The study found that the professional development practices (PDP) appeared to extend the PNG teachers' pedagogical knowledge, which they employed to create new outcome-based processes and approaches as they implemented their micro-curricula. The finding agrees with the literature which identifies PDP as an avenue by which the teachers learn new knowledge and skills for interpreting the macro-curriculum, developing their micro-curricula and delivering them to the students (Hargreaves & Fullan, 1992; Sankar & Jenkins, 2009). PDP is very valuable

because it introduces the teachers to new ideas, concepts, theories and techniques to implement the macro-curriculum for quality student learning (Fullan, 2007; Muijs & Reynolds, 2011).

In the current study, the teachers enhanced their pedagogical understanding through external professional development practices (EPDP) and internal professional development practices (IPDP). As a result, they appeared to alter their previous classroom practices and adopted new outcome-based ideas and techniques to implement their micro-curricula. Similar to findings reported by Fullan (2001, 2007), the present study found that the EPDP were led by the National Education Department Officers (NEDO) and Provincial Education Personnel in collaboration with external consultants, such as AusAid, which provided in-service training to one teacher (a trainer) in each school at the provincial level. This teacher in turn facilitated IPDP to other teachers at the school level. Non-government organisations (NGOs) and voluntary services organisations (VSOs) also facilitated the IPDP to the teachers in the two schools. This finding contrasts with a study by Sankar and Jenkins (2009), in which the EPDP in New Zealand was led by a Ministry of Education team and facilitated by national facilitators (universities and evaluation and associates) who trained regional trainers and together they provided in-service training to the teachers at the school level.

The PNG teachers revealed that the PDP, which were funded by AusAid consultants rather than the PNG government, were not sufficient for teachers to embrace the new outcome-based ideas, concepts and techniques. This finding signals that perhaps the PNG government did not fund its agencies (NED and

PED) sufficiently. In sum, the PDP seemed to enhance the teachers' pedagogical knowledge and enable them to employ iterative interpretation processes to construct meanings from the macro-curriculum, and employed outcome-based processes and approaches to develop the content of micro-curricula, as described in the next section.

Employing iterative interpretation processes

Teachers interacted with the macro-curriculum to create their own meanings and develop their micro-curricula. This finding is supported by the literature that recognises people construct their own meanings from written texts or documents, such as macro-curriculum content, using interpretive processes (Lincoln & Guba, 1985; Piaget, 1952; Vygotsky, 1978). In this research, the teachers moved back and forth and within the *strands* and *sub-strands*, *learning outcomes* and *performance indicators* to draw meanings and construct their own knowledge. In particular, the Banipul teachers employed five iterative steps: skimming, reading, explaining, deciding and revisiting, while Alowale teachers applied three iterative steps: skimming, reading, and deciding. The Banipul teachers employed two extra iterative steps (explaining and revisiting), probably because the Banipul school is located within the central vicinity of Madang Provincial town and the teachers could invite the National Standard Officers (NSO), NGOs and VSOs, who are also based in the Madang Provincial town, to facilitate their IPDP. The Banipul teachers could easily access these officers individually or as a group when they needed further support on how to implement their micro-curricula. Further, the Banipul school is a Church-Agency School, where the teachers seemed to uphold the Church Code of Ethics and Practices including a work discipline. As a result, it would appear that they are possibly more committed to implementing the new

national curriculum, while Alowale teachers were less so. The Alowale teachers were also unable to access the support of National Standard Officers (NSO) because they were hampered by lack of logistical support, such as vehicles. As a result, the NSO facilitators could not travel to Alowale School, so the teachers' professional learning opportunities were fewer than those teachers at the Banipul School.

Overall, the teachers in the two schools skimmed, read and decided (evaluated) the macro-curriculum to construct their own knowledge. This finding contrasts with earlier studies in PNG, where it was found that the upper primary teachers did not spend enough time on reading and coming to understand the macro-curriculum (Ovia-Aihi, 2010; Solon & Solon, 2005). However, the current study parallels the findings of Drake and Sherin (2006), who investigated primary teachers' implementation of curriculum in the USA. These primary teachers also used iterative interpretation processes, including 'reading' 'evaluating' and 'adapting' their macro-curriculum to construct their own meanings for the students to experience.

After identifying the key ideas and concepts from the *strands*, *sub-strands*, *learning outcomes* and *performances indicators*, the PNG teachers read or studied the actual meanings of these words and drew relationships between these curriculum components. On this basis they made decisions about worthwhile knowledge and skills for the students to experience, as reported by Drake and Sherin (2006). For example, Maria-UPTI-302 from the Banipul School explained: "I am thinking whether the students would understand this aspect of the curriculum first or the other one first." This finding demonstrated that the teachers

ordered their constructed knowledge to match with the students' learning needs. In so doing, they adapted the macro-curriculum by arguing about, accepting, making changes to and modifying, in order to develop their micro-curricula (Drake & Sherin, 2006; Fullan, 1977).

Developing the content of the micro-curriculum

The study found that the development of micro-curricula in classroom contexts was a decision making process for the teachers. This finding supports the literature that states that teachers make decisions in order to develop their micro-curricula in classroom contexts (McCutcheon, 1995; McGee & Taylor, 2008). As PNG teachers embraced the new outcome-based processes to develop the student-centred content of micro-curricula, they diagnosed the environmental contextual needs, including students' learning needs, relevant teaching and learning resources, PNG indigenous knowledge, and socio-cultural activities. This decision making process resonates with how macro situational needs analysis is executed to develop the macro-curriculum content as discussed in the theories of curriculum models in Chapter 2 (e.g., Nicholls & Nicholls, 1978; Print, 1993; Taba et al., 1971; Wheeler, 1967). This form of macro environmental needs analysis is carried out at the national level by the government through its National Education Department (NED), as discussed in Chapter 1, while PNG teachers undertook the micro environmental needs analysis to develop the student-centred content of their micro-curricula in classroom contexts.

The students' learning needs - abilities, interests, aspirations, English language ability and prior learning were mapped out first. Teachers did this so that the students remained central to their planning and delivery of the micro-curricula.

This undertaking appeared to demonstrate how teachers were taught in the PDP to embrace the student-centred learning approaches to develop their micro-curricula. Then they canvassed PNG indigenous knowledge, socio-cultural activities and relevant teaching and learning materials and resources to match these with the students' learning needs. This decision making process was explained by Duma-RPTI501 from the Alowale School: "I consider the needs of the students and then I look at the availability of the resources." It is very important to identify the micro environmental needs because it guides the teachers to develop their micro-curricula and deliver these for quality student learning.

The theory of transformational outcome-based curriculum, as discussed in Chapter 2, involves an 'inside-out' process of developing curriculum: the learning outcome remains central and other curriculum features - assessments, teaching and learning techniques and the content are developed from it (e.g., George, 2009; Spady, 1993). Constructivist learning theory identifies theories, concepts, ideas, models and goals as 'psychological tools' that people interact with to construct meanings for learning and development (Vygotsky, 1978). The current study revealed that the teachers embraced the outcome-based processes to develop the content of their micro-curricula. Their interview conversations and planning documents showed that the learning outcomes remained central as a 'psychological tool' for constructing the content of their micro-curricula, as they appeared to identify the factual, conceptual and procedural knowledge from the learning outcome, as advocated by Krathwohl (2002). From this collective knowledge, they identified skills and values and attitudes, such as psychomotor-skills information - remembering, understanding, applying, analysing, synthesising and creating, while attitudes and values included ideas to foster the

students' attitudes and behaviour development, as proposed by educational psychologists (e.g., Anderson & Krathwohl, 2001; Ferguson, 2002; Krathwohl, 2002; Raths, 2002). A range of instructional pedagogies was also developed with the learning outcomes, and formative and summative assessments were based on performance indicators.

As discussed in Chapter 2, people create socio-cultural artifacts time after time and apply them as a means for human learning and societal development (Kozulin, 2003; Vygotsky, 1978; Wertsch, 1985). The current study revealed that the teachers across the case studies developed the single and integrated models of micro-curriculum as socio-cultural artifacts (Kozulin, 2003) for the social and intellectual development of their students. These micro-curricula were sequenced hierarchically, beginning with scheme of units of work followed by yearly plans, term plans, and daily week plans. This finding supports an earlier study in PNG that the upper primary teachers developed units of work in school and classroom contexts (Hagunama, 2008).

In this research, the micro-curricula also contained basic content knowledge as well as basic psychomotor skills-oriented activities, rather than hands-on practical-oriented activities to empower the students, as proposed by the macro-curriculum. It can be argued that the teachers appeared not to understand how to design hands-on practical-oriented activities from the factual, conceptual and procedural knowledge as a result of a lack of prolonged PDP. An earlier study in PNG also indicated that the lack of PDP impacted on the upper primary teachers' ability to construct practical-oriented activities from the content of their micro-curricula (Maniat, 2005). A similar study in South Africa revealed that the lack of

PDP impacted on the teachers, as they faced difficulties in developing and delivering quality micro-curriculum (Rogan, 2007).

6.3.2 Teachers' personal pedagogical values and beliefs and their classroom practices

The delivery of the micro-curricula in the two case studies was influenced by teachers' personal pedagogical values and beliefs and their classroom practices. Some teachers seemed to embrace the new outcome-based pedagogical approaches and delivered their micro-curricula as planned in the classrooms, while some did not, and these are discussed in this section.

The study demonstrated that the teachers' personal pedagogical values and belief systems had a bearing on some of their decisions and actions in the classrooms. The literature supports the finding of this study that the teachers' pedagogical knowledge is crucial for quality student learning (Muijs & Reynolds, 2011). The present research found that the teachers held strong pedagogical beliefs about student-centred and teacher-centred learning and their classroom practices reflected these beliefs. This finding is similar to Alamu's (2010) study in the Solomon Islands, which found teachers held strong convictions about teacher-centred and student-centred learning, and these beliefs had a bearing on their classroom practices. Some PNG teachers who believed in student-centred learning employed constructivist pedagogical approaches in delivering their micro-curricula, as advocated by the national curriculum. Other teachers with teacher-centred beliefs applied behaviourist pedagogical approaches and appeared not to adopt the outcome-based pedagogical approaches. These pedagogical approaches are discussed in turn.

Constructivist pedagogical approaches

These pedagogical approaches are informed by the theory of constructivism and are characterised by teachers organising cooperative group activities for the students to construct their own learning (Piaget, 1952; Vygotsky, 1978). There were teachers in this study who framed their thinking and thought processes by setting activities and organising students' learning in cooperative groups. Teachers organised and facilitated the lessons from the introduction through to the conclusion and the students performed the activities to construct their own knowledge. A variety of cooperative activities, including discussion of statements and short answer questions were organised or set for the students to undertake in different groups.

Teachers guided each group and provided support and assistance where necessary, while students constructed collective knowledge as indicated in the literature (e.g., Kozulin, 2003; Piaget, 1952; Vygotsky, 1978; Wertsch et al., 1995). They temporarily stopped the students in the activities and asked questions beginning with 'why, how and what' to encourage and foster the students to think deeper about the activities. The activities continued while assistance provided was gradually withdrawn, so that the students could eventually create their own group knowledge, as proposed in the literature (e.g., Bodrova & Leong, 2007; Kozulin, 2003; Vialle et al., 2005; Vygotsky, 1978). Students participated and collaborated as team members in undertaking the cooperative activities. A student in each group presented the collectively constructed knowledge to the teacher and their fellow students as a way of concluding the lessons. Consequently, the teacher-student power relationship was lessened in the classrooms. This integrated

teacher-student relationship was also illustrated by physical classroom settings, which supported cooperative group activities.

The single and integrated micro-curricula developed by some teachers did match aspects of the constructivists teaching approaches as promoted in the models and the teachers stated they used constructivist pedagogical knowledge approaches. For example, three teachers in the two schools used single and integrated micro-curricula underpinned by constructivist approaches, and their physical classroom organisation promoted cooperative group activity. The literature supports the finding of this study that the teachers' physical classroom settings are frameworks which represent their pedagogical intentions and approaches to be applied (Lave & Wenger, 1991; Muijs & Reynolds, 2011). Although, there were some mismatches in their physical classroom organisation, one Banipul teacher used a single outcome micro-curriculum, but her classroom organisation encouraged behaviourist pedagogical approaches. Two teachers in the two schools also applied single and integrated micro-curricula, and their classroom settings exhibited behaviourist pedagogical approaches too. These mismatches indicated that the teachers needed prolonged PDP to fully embrace the constructivist pedagogical knowledge as anticipated by the national curriculum.

Behaviourist pedagogical approaches:

The international literature indicates that behaviourist pedagogical approaches were informed by theories of classical conditioning and operant conditioning, where teaching and learning is organised through a 'stimulus-response relationship' (Pavlov, 1960; 1963; Skinner, 1992). The current study shows parallels with these theories in that the teachers appeared to frame their thinking

and thought processes to control the students' behaviours through stimulus-response relationships in the delivery of their micro-curricula. The stimulus is the teachers' structured teaching behaviours and a response is students' learning behaviours. The middle point, within which the teachers' structured teaching behaviours and the students' learning behaviours appeared to meet, is where the teachers controlled the students' learning behaviour and students altered their behaviours.

The stimulus-response relationship was created when the teachers transmitted the factual, procedural and conceptual knowledge, and basic psychomotor skills-oriented knowledge. The knowledge information was structured and systematically presented step-by-step, from the introduction through to the conclusion, while students were passively listening, as reported in overseas studies (e.g., Flores & Kaylor, 2007; Leno & Doughtery, 2007). Teachers appeared to drive the students' learning, so that the students would develop a stimulus-response association with them (teachers). In association, teachers acted as a 'source' of knowledge or reality for the students to draw from, as noted by Crebbin (2004). The structured teaching-learning process created a hierarchical teacher-student power relationship, where the teachers' teaching behaviours exerted pressure upon the students to absorb information.

The physical classroom settings also illustrated this hierarchical power relationship, where the desks were organised in straight rows and encouraged individual activity. Teachers stood at the centre in the front of the classrooms and directed the lessons by talking most of the time before the students engaged in a few structured activities - short answer questions, reading comprehension, and

fill-in-the-blanks. Students did these activities individually under the supervision and support of their teachers. Supervision and support were limited to a few students, because teachers had to move to the next lesson due to time limitations. In these classroom settings, the students' participation seemed to be 'restricted,' as the majority of the students did not participate while the minority interacted with their teachers. As typically revealed in the literature (e.g., Casas, 2011; Muijs & Reynolds, 2011; Skinner, 1992; Skinner, 2010), the teachers asked a few closed questions (yes or no) and habitually reinforced students' responses with the phrases 'good' and 'very good'

Similar to the constructivist pedagogical approaches, there were some mismatches in the behaviourist pedagogical approaches between the espouse curriculum and the enacted one. For example, of the six teachers who applied behaviourist teaching approaches, four teachers taught directly from the textbooks, although they had their planned single and integrated micro-curricula. Of these four teachers, one Alowale teacher's classroom setting did match transmissive teaching approaches, while three teachers' classroom organisation suggested environments for cooperative activities. The two teachers, who used both single and integrated micro-curricula, had physical classroom organisations that supported cooperative group activities. These mismatches imply that the teachers may not understand how to put the constructivist pedagogical ideas into their actual teaching practices as anticipated in the PDP. It can also be argued that the transformational outcome-based ideologies and concepts derived from the macro-curriculum content were challenging for the teachers to implement in classroom contexts.

6.3.3 Macro-curriculum content

This sections discuses the macro-curriculum content as a factor influencing the teachers' interpretation of national curriculum, and development and delivery of the micro-curricula.

The terms used in the macro-curriculum represent important ideas and concepts for the teachers to make meaning of as they develop their micro-curricula and deliver these to the students. This study demonstrated that the words such as strands, sub-strands, learning outcomes and performance indicators, which underpin the macro-curriculum content, had a direct bearing on the teachers' pedagogical decisions and actions in the classroom contexts. The literature supports this study that the meanings in the macro-curriculum influence the teachers in the implementation of their micro-curriculum in classroom settings (Fullan, 2001, 2007). In the present study, the teachers experienced some difficulties in translating or transferring some of the terms to their micro-curricula. So, it is important to consider the breadth and structural features of the macro-curriculum.

As described in Chapter 1, the Five National Goals enshrined in the PNG National Constitution were adapted as national curriculum content to promote human learning and for societal development (Papua New Guinea Department of Education, 2003a). The goals are 'socio-cultural tools' in that people interact with them and create and re-create knowledge for learning and human development (Vygotsky, 1978). Socio-cultural tools are important because they can be used as realities to construct knowledge time after time in social environments (Wertsch et al., 1995). In the present study, the macro-curriculum content is a 'socio-

cultural tool' that contains different aspects of the cultural knowledge of their PNG society, which the teachers mediated to construct 'realities' for the students to experience in classroom contexts.

Teachers revealed that the breadth of the macro-curriculum - Language, Mathematics, Science, Social Science, Personal Development, Arts and Making a Living - involved too many facets of cultural knowledge to interpret for constructing their micro-curricula and delivering these to the students. This reality was because each curriculum subject contained many strands, sub-strands, learning outcomes and performance indicators. In addition, these terms encapsulated too many ideas, concepts, theories, symbols, signs, formulas and models in each curriculum subject for teachers to interpret, grasp and develop into their micro-curricula for delivery to the students. This finding implies that the macro-curriculum content was 'overcrowded' with voluminous information for the teachers to implement, even though the words *strands, sub-strands, learning outcomes* and *performance indicators* were defined and sequenced. The literature supports this finding in that some macro-curriculum content contains too much information for the teachers to follow through; consequently, they found it difficult to understand and develop their micro-curriculum and deliver it to the students (Wardekker, 2004).

In this research, the teachers across the case studies organised themselves to interpret and develop two to three curriculum subjects each when they were confronted by copious amounts of information in the macro-curriculum. What one teacher drew from the macro-curriculum content and developed into their micro-curricula would not necessarily suit another classroom setting because each

teacher is different, as are the students. For example, a teacher who held strong constructivist pedagogical approaches would not effectively deliver the micro-curricula that were developed by a teacher who held behaviourist pedagogical content knowledge, and vice versa. Maybe this is one of underlying causes behind grade 6 teachers' mismatches of their physical classroom organisation and the actual pedagogical approaches they used. Therefore, it is important that the macro-curriculum content needs to include sufficient information at a level the teachers can interpret and develop, and deliver to students for quality learning.

The study found that the structural features of the macro-curriculum, such as strands, sub-strands, learning outcomes and performances indicators, were too broad and thus difficult for teachers to mediate and develop into their micro-curricula, even though these words were defined. Previous studies in PNG support this study's finding that the words *strands, sub-strands, learning outcomes* and *performance indicators* were not specific enough and were not written at the level where the teachers could fully understand them and develop their micro-curricula (Kaleva et al., 2005; Ovia-Aihi, 2010; Solon & Solon, 2005). According to Rogan (2007), teachers in South Africa who implemented a similar outcome-based curriculum encountered difficulties because the words that framed the content were not simple and clear to understand. Studies in developed countries also found that the words or terms that make up the macro-curriculum content were ambiguous and statements were not written explicitly. Consequently, the teachers faced difficulties in implementing their micro-curriculum (Hargreaves et al., 2001; Lamb, 2010; Moreland, 2003; Stone, 2006).

In this research, it was challenging for teachers to gain insight into the language meanings for the words *strand, sub-strand, learning outcomes* and *performance indicators*. The teachers experienced difficulties understanding the phrases, sentences, paragraph structure, and drawing meanings between their relationships to develop the micro-curricula. Consequently, the Alowale teachers used the old objective-based curriculum, while Banipul teachers revealed that it was hard work and took more time to comprehend. Additionally, the lack of materials and support resources adversely discouraged the implementation of the micro-curricula in classroom settings. This situation is discussed in the next section.

6.3.4 Availability of materials and resources

This section discusses teaching and learning materials and resources as one of the factors which influenced the teachers in the implementation of the national curriculum.

The research revealed that the interpretation of the macro-curriculum, the development of the micro-curricula and delivery to students needed the support of relevant materials and resources. It is known that teachers make decisions about the relevant teaching materials and resources in relation to their pedagogical knowledge and students' learning needs (McCutcheon, 1995; McGee, 1997). This study found that the limited teaching and learning materials and support resources available, within and across the schools, classrooms and local communities where the schools were located, had a direct bearing on the PNG teachers' implementation of their micro-curricula in classroom contexts. As signalled in the theory of micro-curriculum implementation (Fullan, 2001, 2007), the PNG schools (except privately run schools and home-schools) often receive funds and

relevant teaching and learning materials and support resources from the government through its NED and PED systems for the teachers to implement their micro-curricula. The PNG schools also received support and assistance from the local communities, including other government organisations, business houses, parents and citizens and shareholders such as NGOs and VSOs. Teachers are also supported and assisted at the school level through school administration, including principals and the School Board of Governors (SBOG).

The teachers utilised the teaching and learning materials and resources from all the above sources to implement their micro-curriculum in classroom settings. However, this study found that there were few teaching and learning materials and resources provided by the PNG government through its National and Provincial Education systems. This signalled that the PNG government appeared not to support its own created social frameworks, such as NED and PED, to implement the macro-curriculum for human and societal development.

In addition, the wider society, the support given by business houses, parents, citizens and NGOs appeared not to include relevant teaching and learning materials and resources. The school principals and School Board of Governors (SBOG) also appeared not to consider micro-curricula implementation as a priority for quality student learning. This neglect from the PNG government, school administration and the wider local communities was reported by one of the teachers: “All these resources cost a lot of money and if the department and school want us to implement the outcome properly they should provide us with a lot of good teaching materials and funding” (Mong-RPTI502). This finding clearly demonstrated that the teachers and their students were left to ‘survive’ on

their own in the classrooms. Consequently, the teachers across the case studies were not encouraged to interpret the macro-curriculum and develop their micro-curricula and deliver these to the students with the provision of appropriate resources.

As teachers interpreted the macro-curriculum, they also pictured in their minds appropriate teaching and learning materials and resources to be used. They also thought about matching students' learning needs and their pedagogies with the relevant teaching and learning resources. However, when teachers realised that there was little and/or no relevant teaching materials and resources to match these, they were greatly discouraged. This discouragement was explained by Duma-RPTI501: "If there are resources available that gives me no problem; since there is no resource available, it gives me [a] problem." This finding suggests that issues such as funding impacted on teachers' motivation to interpret the macro-curriculum. Teachers thus developed the content of their micro-curricula in relation to teaching and learning materials and resources available within their means, not what they would ideally want.

When relevant teaching and learning materials and resources were not available to match with the contents, the teachers appeared to include the basic content knowledge rather than practical-oriented content for their micro-curricula. When teachers saw these support materials and resources were lacking, their continued motivation to develop the content of their micro-curricula was suppressed. This discouragement was expressed by Ruth-UPTI306: "In planning, when I see that materials and support resources are not available, I feel like giving up." This finding implies that the teachers were discouraged and as a consequence they

were demotivated to plan their micro-curricula. As a result, some teachers taught directly from the textbooks.

When teachers across the two schools delivered their micro-curricula to the students, the lack of relevant teaching and learning materials and resources was obvious to the researcher. As indicated in Chapter 1, the National Education Department (NED) is responsible for producing curriculum materials and distributing materials to schools in PNG (Papua New Guinea Department of Education, 2004). This study, however, found that the two schools had very limited outcome-based curriculum materials and support resources with only one textbook per two/or three students in each curriculum subject for sharing during their lessons. As students were sharing the textbooks during the activities, it was observed that they struggled to read and learn together.

It was also observed across the two schools that the students brought their own learning materials and resources from home to school and utilised them in the lessons. Teachers asked the students after the lessons to bring their own learning resources for the next day's lessons. This practice means there were virtually no teaching and learning resources available within the classrooms and schools for the teachers and students to use. It confirms earlier studies in PNG, as well as in South Africa, that the lack of relevant teaching and learning materials and support resources inhibited the implementation of the micro-curriculum and impacted on the students' learning (Ovia-Aihi, 2010; Rogan, 2007). Similarly, studies in Australia and New Zealand found that the lack of teaching and learning materials and resources impacted on the teachers in their implementation of the micro-curriculum (Schagen & Hipkins, 2008; Stone, 2006).

In the current study, the two schools had a limited number of desks for the students to sit at for learning. It was observed that three students were sitting at one desk in some classrooms, which impacted on the students' learning. Three students, who sat at the same desk, were crammed together with no flexibility for them to write and learn comfortably. The conditions of some desks were poor, which was not conductive to effective learning. The classrooms were also in need of being maintained and upgraded for quality teaching and learning. For example, some walls of the classrooms in the two schools had holes, full of graffiti and appeared to be dirty. The support resources that students needed to carry out a variety of activities in different curriculum subjects, such as computers, basic teaching and learning tools, and equipment, were not available in the two schools. Specifically designed classrooms, such as science laboratories, libraries and design and technology buildings for experimental work and the undertaking of different projects and assignments at upper primary level of education, were not available. The lack of appropriate physical infrastructure and resources appeared to work against quality micro-curriculum implementation.

6.3.5 Students' attitudes and behaviour

The study found that the students' attitudes and behaviour was a factor influencing the teachers in the implementation of the macro-curriculum and this is discussed next.

This study signalled that the students' interactional behaviour with their teachers had a direct bearing on the implementation of the micro-curricula in classroom contexts. Teachers in the present study reported that the students' behaviour

impacted on them in the interpretation of the macro-curriculum and development and delivery of their micro-curricula in classroom contexts. This finding parallels the international literature that states that the students' attitudes and behaviour influence their teachers in curriculum implementation (Berk, 2007, Li & Siu, 2009, Queen & Algozzine, 2010). Additionally, a person can make meanings from the behaviours of other people, which impact on his or her thinking and actions in social activities (Cohen et al., 2011; Lincoln & Guba, 1985).

Teachers in the two schools revealed that students with positive behaviour interacted appropriately, which encouraged them (teachers) to implement their micro-curricula in classroom contexts. Such behaviour included some students exercising self-discipline, being quick to follow teaching instructions and displaying willingness. As a result, the teachers were interested in the student learning and they appeared to be positive about interpreting the macro-curriculum and developing and delivering their micro-curricula. Teachers also revealed that such students paid close attention, concentrated in the lessons, worked hard in the activities and seemed to grasp the content of the micro-curriculum. It appeared that these students created positive relationships with their teachers and fellow students and motivated the teachers to spend time implementing their micro-curricula (Fullan, 2007).

However, some students' negatively perceived behaviour and interactions in teaching and learning processes discouraged the teachers from spending time in implementing their micro-curricula. This finding corroborates those of a previous study in PNG with upper primary teachers, which found that the students' negative behaviour interactions inhibited the micro-curricula implementation

(Hagunama, 2008). In the present study, the teachers commented that some students were reluctant to follow instructions and lacked self-discipline, confidence, concentration, avoided activities and did not work hard to do the activities, so the teachers were discouraged in their efforts to interpret the macro-curriculum and develop the micro-curricula. Some students also defied teaching instructions, classroom rules and were uncooperative in teaching-learning interactional relationships. As a result, the teachers' thinking and feelings seemed to be disturbed and their motivation to implement quality micro-curricula for the students to experience was lessened. It could be inferred that when those teachers delivered their micro-curricula, they seemed to create negative teaching and learning interactional relationships with their students, which could inhibit quality student learning.

This study signalled that the students' positive and negative interactional behaviour discussed above appeared to be influenced by their developmental stages (cognitive, physical, social and emotional) during the adolescent period, and the socio-cultural activities they experienced in PNG social environments shaped their thinking and feelings and their actions, which directly impact on their teachers in classroom settings (Berk, 2007; Mitchell & Ziegler, 2007; Queen, 1999). For example, the Alowale teachers expressed the opinion that positive and negative socio-cultural activities from the local communities, which shaped the students' thinking and thought processes, had a direct bearing in the implementation of their micro-curricula. This was explained by Peter: "Well that depends on the community that children or the family that a child is coming from." This finding implies that the teachers believed students, who interacted positively, were influenced by their family background – their level of education

and socio-economic status and aspirations, because the teachers believed they learned positive values and beliefs about life from their parents at the family level. It follows that the traditional local communities that upheld and maintained appropriate values, beliefs and followed laws and rules to govern the communities also shaped family beliefs and values and the students' thinking and feelings. As a result they interacted with teachers and peers appropriately.

So the study found that law and order issues, certain inappropriate traditional values, belief systems, customs, rituals and family related issues, which were part of students' upbringing, also moulded their thinking and thoughts processes. As a result, the students' negative attitudes worked against teaching and learning processes. For example, students did not want to cooperate and work in mixed gender groups. This finding supports a previous study in PNG with upper primary teachers whereby the lack of family discipline, traditional socio-cultural activities and marriage break ups shaped the students' thinking, and they in turn displayed negative behaviours towards their teachers in classroom contexts (Saun, 2008). The Banipul teachers reported that the students experience positive and negative changes in their emotional, social, physical and cognitive developments during the adolescent period, which influenced their thinking and feelings, and their behavioural interactions in turn impacted on the micro-curriculum implementation, as discussed in Chapter 2 (Berk, 2007; Poole et al., 2007).

However, it was observed across the two schools that the some of the students appeared to look confused, listened passively and did not complete the activities in given time. The students could not act promptly to recall and retrieve information easily. This situation appeared to show that the students' thinking and

thought processes may not yet be developed or ready to undertake the learning activities such as class the exercises presented to them. This finding seemed to support the literature that states that when the teachers' teaching instructions and learning activities mismatch the students' cognitive development level, the students would face difficulties undertaking the activities (Vygotsky, 1978).

6.4 Factors influencing the student-experienced curriculum

This section discusses the second question of the study, as stated below.

What factors are influencing students' learning and how?

The findings in Chapters 4 and 5 revealed that the teachers' micro-curricula had a direct bearing on the students' learning and development in the classroom contexts. The factors which influenced the students' learning included the pedagogical approaches of their teachers, learning activities, their own attitudes and behaviour towards their learning as well as teachers' attitudes and behaviour towards their learning. These factors are discussed in the following paragraphs.

6.4.1 The pedagogical approaches of the teachers

This section discusses the teachers' teaching styles as a factor influencing students' learning from the delivery of micro-curricula.

The study found that the teaching styles teachers employed in delivering factual, conceptual and procedural knowledge, and the range of learning activities students experienced did enhance their learning and development. The students

experienced the content in the micro-curricula from seven different subjects: Language, Science, Social Science, Personal Development, Making a Living and Arts. This finding related to the literature that states that primary students experience content knowledge delivered by their classroom teachers from different curriculum subjects (McNeil, 2006, Pintrich, 2002). In this study, the teachers applied two teaching styles, which appeared to be behaviourist and constructivist styles, to teach the content of their micro-curricula. Knowledge was passed on by more knowledgeable persons to younger learner/s through meaningful or intentional social interactions, where the learner/s construct their own knowledge from the recorded language and non-recorded language: behaviour, spoken words, bodily expressions, actions (Chaiklin, 2003; Cohen et al., 2011).

In the first teaching style (behaviourist), students across the case studies seemed to understand the factual, conceptual and procedural knowledge presented when their teachers explained the content in detail and step-by-step with illustrations and examples. It appeared these teachers provided real-life socio-cultural activities as examples and illustrations to clarify the factual, conceptual and procedural knowledge, which the students related to their own experiences as they performed the learning activities.

Other students, however, did not understand the content of the micro-curricula when not given related examples and illustrations of real-life practices and activities of society. For example, a female student participant in one of the focus groups at Banipul School commented: “It’s hard to understand what they are saying” (UPI205). These students appeared not to understand what was being

taught by their teachers and became disengaged. Consequently, they experienced difficulties performing the class activities. This finding is supported by an overseas study, which found that when teachers explained the content knowledge, some students understood and carried out the learning activities, while some did not and experienced difficulties in undertaking the activities (Qualter & Abu-Hola, 2000).

In the second teaching style (constructivist), the students across the two schools revealed that their teachers introduced key ideas and concepts and guided them through activities from the seven different curriculum subjects, where students discussed and shared ideas and argued together as team members in groups to construct their own knowledge. The two teaching styles, which students perceived impacted on their learning and development, are consistent with the teaching approaches observed in the PNG teachers, as discussed earlier (section 6.3.2).

6.4.2 Learning activities

The learning activities students performed enhanced their learning and understanding, and are discussed below.

The study found that the learning activities enhanced most students' learning and development. Students mediated the learning activities to construct their own learning and understanding (Vygotsky, 1978). Activity is very important, because it is through this activity that human beings mediate and transform their thinking and understanding (Arnseth, 2008; Wertsch, 1985). An earlier study in PNG reported that the upper primary students undertook a variety of learning activities,

which enhanced their understanding (Maniat, 2005). This earlier study supports the present research, in that the students across the case studies experienced a variety of learning activities - assignments, class exercises, projects, - which shaped their thinking and understanding.

The students mediated the activities they performed and constructed their own collective knowledge and individual knowledge to enhance their learning (Arnseth, 2008; Vygotsky, 1978). The collective knowledge was generated in groups, where the students interacted as team members to discuss, argue about, dispute and weigh out pros and cons, and order and re-order their ideas and concepts (Richards & Rogers, 2001).

Classroom observations and student samples of work revealed that the collective knowledge seems to be constructed during some basic project-oriented activities and some class exercises, while individual knowledge was constructed by each student from basic project-oriented activities, assignments and class exercises. It would appear that the class exercises (group and individual) were used by teachers as 'subordinate' activities to enhance students' understanding and enable them to perform major learning activities including summative tests, assignments and projects. Therefore, it could be concluded that all the learning activities facilitated the construction of individual knowledge rather than construction of collective knowledge. In so doing, some students liked some curriculum subjects and disliked others. Students liked some curriculum subjects because they understood the content of the micro-curricula and performed the learning activities without difficulties, while students disliked some curriculum subjects because of English language difficulties, as reported by Fullan (2001). They also liked and disliked

some curriculum subjects because of their teachers' attitudes and behaviour and their own personal attitudes and behaviour towards their learning.

6.4.3. Students' own attitudes and behaviour

The study revealed the students' own thinking, feelings and thought processes had impacted on their learning when they experienced the content of the teachers' micro-curricula. This finding is reflected in the literature, which proposes that the students experience both positive and negative thinking and feelings during their adolescent stages of development when they engage in social activities such as teaching and learning (Berk, 2010). In the two case studies, some of the students revealed that in certain circumstances they were more explicit in their thinking and thought processes. As a result, they interacted positively with their teachers and fellow students in teaching-learning processes.

The finding of this study appeared to parallel socio-cultural learning theory, which advocates that people's thoughts are constructed through social interactions, where their thoughts are used as tools for mediating activities to construct their own learning and to communicate with other people (Bodrova & Leong, 2007; Vygotsky, 1962). In this research, some students listened attentively, understood the ideas and concepts and followed teaching instructions to carry out the activities. These students also appeared to follow classroom rules and created collegial relationships with fellow students and performed the activities together as team members. Consequently, they embraced their own learning and development.

Some students also revealed that they sometimes experienced negative feelings, which influenced their thinking and thought processes. For example, they felt shy and embarrassed to ask question of their teachers when they did not understand the content of the micro-curricula or when they had to undertake activities and interact with mixed gender groups. As a result, they experienced difficulty in understanding ideas and concepts and carrying out the activities as team members. Students across the two schools further commented that they experienced laziness and forgot ideas and concepts, so they encountered difficulty in performing activities. Therefore, it can be argued that the students' developmental stages during their adolescent period (Berk, 2010; Poole et al., 2007). In addition, the Alowale students revealed that their thinking and thought processes were affected by certain socio-cultural activities or practices from their communities. This implies that traditional socio-cultural practices and activities, such as certain values, belief systems, customs, traditions, rituals, and the students' parents' attitudes and behaviour they (students) may have experienced from their local communities and at the family level hindered their learning and development. This influence may have occurred because the traditional socio-cultural and family contexts acted against what students learned at the school. In other words, conditions within the traditional local communities and family level did not further embrace or facilitate Alowale students' learning. This finding supports the opinions expressed by Alowale teachers, as discussed (section 6.3.1). Further, the students' interview conversations, and observations across the two case studies, revealed that the teachers' attitudes and behaviour encouraged and discouraged students' learning, and this is discussed next.

6.4.4 Teachers' attitudes and behaviour

The study demonstrated that the teachers' interactional behaviour in the two case studies could have a direct bearing on students' learning and development in classroom contexts. This finding is similar to trends in the literature that advocate that teachers' personality and temperaments drive their thinking and thought processes and these impact on the students' learning and development (Matthews & Deary, 1998; Steiner, 2004). In the present study, the teachers' behaviour, actions and their use of language were mediated by students to construct and re-construct meanings, which shape their learning and development (Kozulin, 2003; Lincoln & Guba, 1985; Neuman, 2000).

The PNG teachers' teaching interactional-behaviour and their interpersonal relationships did accelerate and inhibit students' learning, as advocated by Henley (2010). The students expressed opinions that their teachers' positive and negative teaching interactional-behaviour had a direct bearing on their learning, as reported by Johnson (2008). In Johnson's study, the students revealed that some teachers, who displayed positive behaviour, made time available to listen and attend to their learning difficulties and exercised fairness, while some did not. In the two case studies, some students revealed that their teachers' positive interactional behaviour, such as body languages, smiles on faces, warmth, rapport interactions and close attention, accelerated their learning. Other students also agreed that teachers' personality and temperament are key elements which influence their thinking and thought processes and can encourage and discourage learning in micro-curriculum implementation (Steiner, 2004).

Overseas studies parallel this study's findings that the teachers' personality traits have impacted on the students' learning in many ways in implementing micro-curriculum in school and classroom settings (Fullan, 2001, 2007; Rushton et al., 2007). In the present research, the students revealed that some teachers who created positive family-like interactional behaviour exercised love, caring and treated students fairly. These particular positive teaching personalities appeared to draw students nearer to their teachers, where they (students) found it easy to interact and share freely their learning difficulties, as reported by Lianghua (2009).

The students revealed some teachers' interactional behaviour that inhibited their learning and development. They spoke about some teachers who did not exercise patience when listening, displayed short tempers, reacted too quickly, became angry and shouted at them. This finding supports Teven's (2007) study in USA that found the teachers who tended to have neurotic personality temperaments experienced stress. As a result, they displayed aggressive behaviour towards their students, which disempowered the students in their learning and development. In the present study, for example, one of the male student participants in a focus group commented on similar PNG teachers' teaching behaviours, saying "Teachers [who] teach us get angry, upset and scream at us and I don't feel good" (UPI206). This study showed that some teachers who experienced stress perhaps created a negative classroom 'climate' with their aggressive teaching interactional behaviour. As a result, the students appeared to be disempowered, becoming fearful and confused and did not know what to do.

In the two schools, it was also noticed by the researcher that the teachers habitually displayed lateness behaviours, taking long recess and lunch breaks and arriving late to classes. Consequently, the students missed portions of their lessons, which adversely affected their learning. An earlier study in PNG found similar behaviours, where teachers had long breaks (recess and lunch) and came to school late. Some even did not attend classes for two to three days, which impacted adversely on students' learning (Ovia-Aihi, 2010). In an Israeli study, Shapira-Lishchinsky (2007) reported that the lateness behaviours of female teachers was caused by perceptions of an unjust promotional system, family commitments and their health status, which negatively impacted on the students' learning.

6.5 Congruence between the macro-curriculum, the teachers' micro-curriculum and student-experienced curriculum

The interpretation and discussion of the findings in the two previous sections, 6.3 and 6.4, across case studies revealed the factors influencing the teachers' micro-curricula implementation and the student-experienced curriculum. The interpretation and discussion of the content of these curricula indicated some matches and mismatches with the macro-curriculum. These matches and mismatches are considered by the third research question of this study in this section, as stated below.

> *What matches are there between the national outcome-based curriculum, the teachers' micro-curriculum and student-experienced curriculum?*

Any congruence that occurs between the macro-curriculum, the teachers' micro-curriculum and student-experienced curriculum happens because of interactions

between the macro-curriculum and teachers, and the teachers and students, in their school and classroom settings. First, the teachers interacted with and interpreted the macro-curriculum goals to construct their own knowledge and delivered this knowledge to students. Second, the students in turn interacted with the learning activities and teachers' teaching behaviours to construct their own knowledge or realities. Finally, it was from these interactions that the teachers and students transformed their thinking and thought processes to internalise knowledge or realities (Vygotsky, 1978). Subsequent paragraphs consider the mismatches, which are linked to the macro-curriculum goals.

6.5.1 Links between the macro-curriculum and teachers' micro-curriculum

As required by the macro-curriculum, teachers across the two case studies identified appropriate PNG indigenous factual, conceptual and procedural knowledge and appropriate international factual, conceptual and procedural knowledge, and planned these as student-centred lessons using single and integrated outcome micro-curricula. However, this collective knowledge proved to be superficial rather than in-depth knowledge at the upper primary level of education, because it was not translated into recommended project-oriented learning activities where students could experience and internalise learning as recommended in the macro-curriculum (Knoll, 2009; Schiro, 2008; Walker, 2003; Wardekker, 2004). These externally performed project-oriented learning activities were intended by the macro-curriculum to enhance students' learning through hands-on practical experiences, by developing their skills and talents and realising their potential, so that they could become productive members of society after leaving school at year eight education (Engestrom, 1999; Papua New Guinea Department of Education,

2003a; Vygotsky, 1978; Wertsch, 1985). In the case studies, no traditional PNG or international (modern) project-oriented learning activities were provided, as the teachers are yet to develop or design such learning activities for the students to perform.

It appeared that the learning activities (assignments, tests and class exercises) teachers did develop were driven by the need for students to pass the grade 8 national examinations, so that students could proceed to the next level of education and beyond to obtain employment after graduation (Matane, 1986; Papua New Guinea Department of Education, 1991). It can be argued that the national grade 8 examinations are having a direct impact on the designing of learning activities at upper primary level of education, as qualifications do in many other countries (Alamu, 2010; Hume, 2006; Schiro, 2008). Also, half of the teachers across case studies did not employ constructivist teaching approaches in implementing their micro-curricula. This omission could be because the macro-curriculum did not outline or provide examples of the use of constructivist teaching approaches. Instead guidelines include general statements like "students should work as individuals and in groups [and proposed] ... a range of teaching methods and strategies ... to cater for a range of physical, social, cultural, emotional and intellectual needs of their students" (Papua New Guinea Department of Education, 2003a, p. 18).

6.5.2 Links between the teachers' micro-curriculum and student–experienced curriculum

The study found that the students experienced the factual, conceptual and procedural knowledge delivered by their teachers through constructivist and

behaviourist teaching approaches as anticipated in the micro-curriculum. Students performed a range of learning activities, including assignments, summative tests and class exercises, and enjoyed some curriculum subjects and disliked others. Their disliking for some curriculum subjects could be linked to some teachers' inability to explain the factual, conceptual and procedure knowledge clearly so the students could undertake the learning activities.

On the other hand, students' liking for other curriculum subjects may be because some teachers explained the materials in detail and illustrated the factual, conceptual and procedural knowledge with relevant examples so students could perform the learning activities (Fullan, 2001, 2007). Although the students performed the learning activities above in groups and individually, constructing collective and individual knowledge, the constructed knowledge proved to be superficial. Perhaps by not experiencing project-oriented learning activities the self-actualisation of students' skills, talents, potentials and aspirations to become productive members of society, as anticipated by national curriculum, is not being achieved (Papua New Guinea Department of Education, 2003a).

Overall, a minority of the students successfully performed the performance indicators and achieved the learning outcomes, while the majority partly achieved the learning outcomes. Those students who failed to achieve experienced difficulties and did not meet the performance indicators to achieve the learning outcomes as anticipated by the national curriculum. This failure was related to the macro-curriculum goals, which were challenging for teachers to translate into appropriate learning activities at the upper primary level of education. The lack of

appropriate learning activities had a negative bearing on the students' learning and development (Fullan, 2001, 2007; Vygotsky, 1978).

6.5.3 Socio-cultural contexts for curriculum implementation

The socio-cultural contexts are important because they can support and embrace quality micro-curriculum implementation and quality student learning (Fullan, 2001, 2007; Vygotsky, 1978). In this research, it is important to consider the practices and activities of the wider PNG socio-cultural contexts, the local communities, school and classroom contexts and personal circumstances, because they can directly and indirectly impinge on micro-curriculum implementation and student learning (Fullan, 2001, 2007).

The findings from the rural case study demonstrated that traditional values, belief systems, customs, rituals of the local communities and family level activities did mould the students' thinking and thought processes, and these in turn impacted on micro-curriculum implementation and students' learning, while the findings from the urban case study did not. This finding means the PNG's traditional socio-cultural activities and practices of the local communities, and family level activities and practices can support and work against what students learned at school (Muijs & Reynolds, 2011; Saun, 2008; Whyte, 2008).

At the classroom level, the PNG teachers' physical classroom organisation and settings reflected their pedagogical conceptual frameworks and the different techniques or methods they used in delivering the knowledge and the ways they perceived students to construct knowledge. This physical classroom organisation

and settings were important because they supported or discouraged the PNG teachers' micro-curriculum implementation and students' learning.

6.6 Chapter summary

This chapter discussed the findings across two case studies in relation to the three questions of this thesis. The discussions demonstrated that professional development activities, teachers' values and beliefs, macro-curriculum content, students' attitudes and behaviour, and availability of relevant teaching and learning resources impinged on the teachers' micro-curricula implementation. The student-experienced curriculum was influenced by teachers' pedagogical approaches, learning activities, teachers' attitudes and behaviour and students' own attitudes and behaviour. Overall findings revealed that there were some matches and mismatches between the macro-curriculum, the teachers' micro-curriculum and student-experienced curriculum. The socio-cultural practices and activities were also considered important because they can directly and indirectly impinge on the micro-curriculum implementation and student learning.

The next chapter presents the conclusions, implications and recommendations of this thesis.

CHAPTER SEVEN: CONCLUSIONS AND IMPLICATIONS

7.1 Introduction

The purpose of this research was to investigate factors influencing teachers' pedagogical decisions and actions and the nature of student learning in the classroom implementation of the new national PNG curriculum. This chapter first presents summaries of the key findings of the discussions in relation to research questions. Second, the contribution to knowledge to existing literature is presented followed by the limitations of the study as they are related to the research design and the quality of the findings. Then the implications of this research are commented on and recommendations based on the findings are made. These recommendations could provide direction for policy development in PNG or countries in similar circumstances to promote quality curriculum implementation. Finally, a concluding summary is presented.

7.2 Conclusion of key findings of the study

This section summarises the key findings of the study in relation to the key research question of the thesis, as stated below:

> *What factors are influencing teachers' decisions and actions, and the nature of students' learning, in the implementation of their national outcome-based curriculum in upper primary schools in PNG?*

The study was carried out in two schools (one urban Church and one rural government) to explore and understand the PNG teachers' experiences and perceptions of the implementation of their new national curriculum and the nature of student learning in contemporary classroom settings. The findings across the two case studies were discussed under three themes (the teachers' micro-

curriculum implementation, the student-experienced curriculum and the congruence between the macro-curriculum, the micro-curriculum and student-experienced curriculum). These themes represent layers of curriculum interpretation. The first layer is the new national PNG curriculum (macro-curriculum), which is the national framework containing ideas, theories, concepts and techniques to guide and provide direction for teachers to interpret and plan and deliver learning programmes to the students in school and classroom settings as discussed in Chapter 1. The second layer are those aspects of the macro-curriculum that PNG teachers selected, constructed, integrated, internalised and developed into what is termed the micro-curriculum which they delivered to students.

The third layer of curriculum is what students experienced when the micro-curriculum were delivered in classrooms, and is termed the student-experienced curriculum. The term student-experienced curriculum has been used in the New Zealand educational research context and was adopted for this study in PNG school and classroom settings. The study found that the teachers developed participatory relationships around the national curriculum to construct their own realities or knowledge, and delivered these to the students. The students mediated the teachers' realities or knowledge to construct their own realities or knowledge. A summary of key findings from curriculum implementation of the study is provided below.

7.2.1 The teachers' micro-curriculum implementation

This study found that the interpretation, development and delivery of teachers' micro-curricula were influenced by: the professional development programmes provided by the government agencies; teachers' personal values and beliefs; the availability of relevant teaching and learning materials and support resources within the socio-cultural practices, the macro-curriculum content and students' attitudes and behaviour and development stages. With the support of the professional development programmes, the teachers employed iterative interpretation processes to select, develop, integrate and internalise appropriate international and PNG indigenous content.

These integrated forms of knowledge were delivered to the students through a range of collaborative and individual learning activities. The teachers' personal pedagogical values and beliefs impacted on their decisions and actions, with some teachers employing constructivist teaching approaches in delivering their micro-curricula as anticipated by the national curriculum, while other teachers applied traditional behaviourist teaching approaches such as demonstration. Some students' attitudes and behaviour indicated that they were not engaged in learning during teachers' micro-curriculum implementation in classroom settings.

Although the study reported that the teachers used iterative interpretation processes to construct their own pedagogical and content knowledge from the macro-curriculum, the macro-curriculum content was challenging for the teachers, because there were too many complex terms along with many ideas and concepts to interpret, integrate, internalise and deliver. The study also found that the lack of relevant teaching and learning materials and support resources adversely affected

the quality of micro-curriculum implementation and students' learning. Teachers and students were in fact left on their own to survive in the classrooms. This study reported that the professional development programmes, which were funded by external consultants such as AusAid, and facilitated in collaboration with National Education Department (NED) and Provincial Education Division (PED), were only provided for a limited period of time. PNG teachers needed sustained professional learning support to enhance quality micro-curriculum implementation.

7.2.2 The student-experienced curriculum

The study noted that the students' learning was influenced by the teaching approaches their teachers employed, the learning activities they experienced, the nature of their engagement in the learning activities, and their teachers' interactions with them. The students mediated the knowledge or realities their teachers constructed and used them as psychological tools to construct their own individual and shared realities or knowledge in classroom settings. This construction process occurred as some students who experienced the behaviourist and constructivist teaching approaches using individual and collaborative learning activities, engaged in the learning activities, constructed their own individual and shared knowledge and internalised it.

Students' behavioural-interactions with their teachers impacted on their learning and development. Also, in Alowale school, the socio-cultural practices and activities of the students' traditional local communities and families impacted on their learning and development. The traditional local communities' values and

belief systems, rituals, initiations and customs appeared to work against what students learned at school.

7.2.3 Congruence between the macro-curriculum, the micro-curriculum and student-experienced curriculum

The study reported some matches and mismatches between the macro-curriculum, the teachers' micro-curriculum and student-experienced curriculum in PNG classroom settings. The PNG teachers integrated appropriate international, PNG indigenous knowledges and constructed their own realities as anticipated by the macro-curriculum; however, this integrated knowledge or content for teaching proved to be superficial rather than in-depth knowledge, which directly impacted on students' learning and development. Further, only some PNG teachers applied student-centred teaching and learning approaches in implementing their micro-curricula as recommended by the national curriculum, while most used teacher-centred traditional teaching and learning approaches. The students mediated the teachers' constructed realities and constructed individual and shared knowledge.

7.3 Contribution to knowledge

This study contributes an understanding of the nature of student learning in curriculum implementation. Figure 18 below depicts student learning (in the central purple circle) as the end product of interactions between the macro-curriculum (green circle), the micro-curriculum (blue circle) and student-experienced curriculum (red circle), all of which are located within socio-cultural contexts for curriculum implementation and learning (outer black coloured circle).

The teacher and students are shown by the dotted brown circles. The following paragraphs explain the nature of student learning.

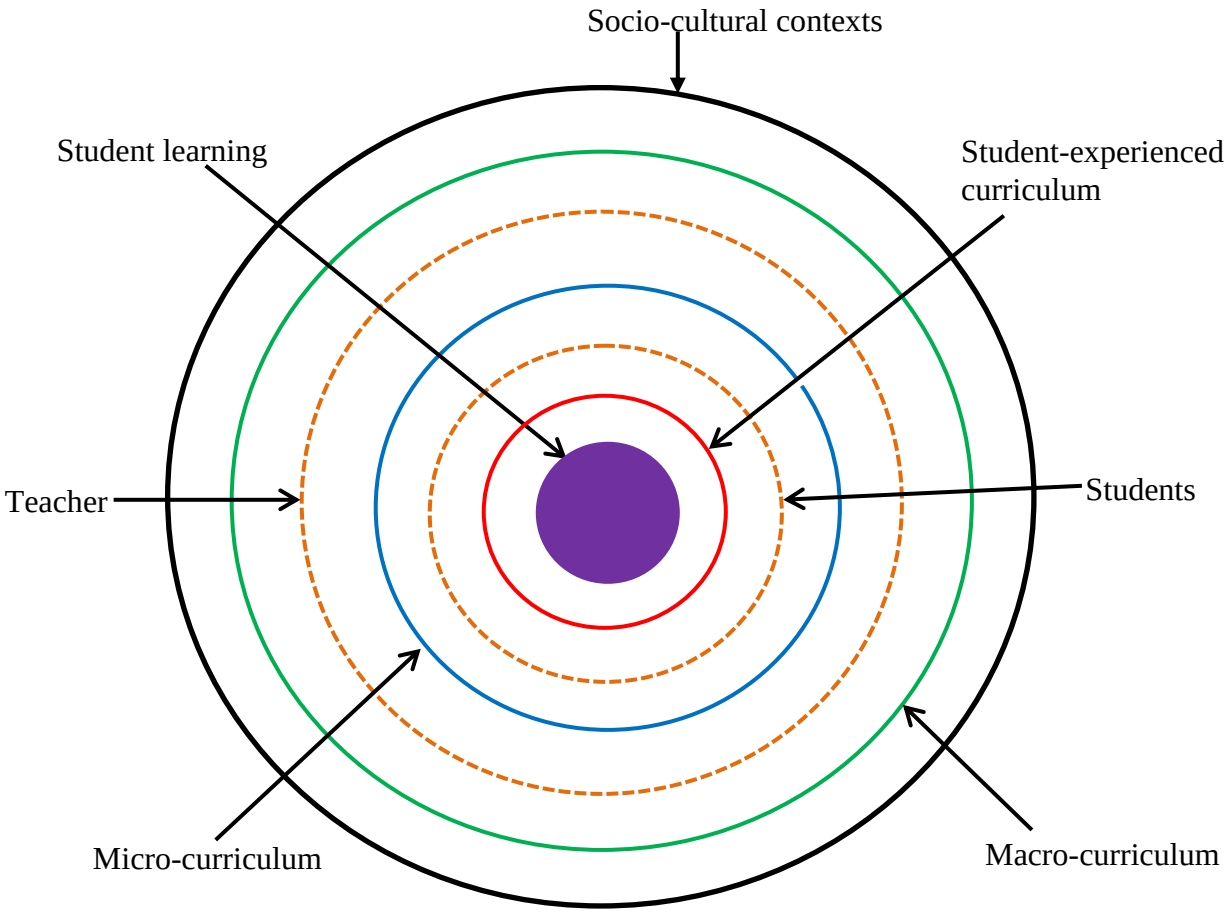


Figure 18: A framework showing the place of student learning in curriculum implementation

Student learning is being described in this thesis as the long-term learning that results from micro-curriculum implementation. As discussed in Chapter 1 (section 1.3.1), the Five National Goals enshrined in the PNG National Constitution were adapted as national curriculum (macro-curriculum) content for the teachers to implement in contemporary classroom contexts (Government of Papua New Guinea, 1975, Papua New Guinea Department of Education, 2003a). The study found that the PNG teachers developed a 'participatory relationship' with the

macro-curriculum (Remilard, 1999, 2005) because they interacted with the goals, ideas, concepts and theories of the macro-curriculum, using them as 'psychological tools' (Kozulin, 2003; Vygotsky, 1978; Wertsch, 1985). In this socio-cultural practice or activity, as discussed in Chapter 2 (section 2.6.2), the psychological tools include symbolic artifacts, such as symbols, texts, formulae, graphic information, language, arts writing, maps drawing, models and techniques that are mediated by teachers to develop their micro-curricula (Wertsch, 1985). From this participatory relationship, the PNG teachers integrated appropriate PNG indigenous factual, conceptual and procedural knowledge with other forms of knowledge into their planning for the micro-curricula. This integrated knowledge is the basis upon which the PNG teachers constructed their own knowledge, which they delivered to the students (Meltzer et al., 1975; Vygotsky, 1978; Wertsch, 1985).

The PNG students mediated their teachers' knowledge and used their teachers' knowledge as psychological tools to construct their own individual and shared learning in classroom settings. By constructing the learning through iterative processes time and time again in the PNG classroom settings, students appear to transform their existing conceptual frameworks through their thinking, feelings and thought processes – in this way they learn. So student learning is the long-term knowledge that PNG students have constructed in PNG contemporary classroom contexts. The PNG students take away this new knowledge from the classroom experiences as permanent or deeply embedded parts of their internal mental functions, and these again influence the way they think, feel and interact with the PNG socio-cultural practices and activities.

7.4 Limitations of the study

Any study has its limitations. This section now considers the limitations of the study in relation to the trustworthiness of the research design and the quality of the findings.

Due to limited resources and time constraints, the study was executed with a small sample of participants from two schools with upper primary teachers and students in PNG. These small samples might not truly represent the entire upper primary teachers' and students' experiences, views, opinions, perceptions and suggestions about their new national curriculum implementation and learning in PNG. Since this study involved only two schools (one urban Church school and one rural government school) in one province in PNG, out of a wide range of Church-run and government schools in urban, rural and remote schools, the study is unlikely to give a complete picture about curriculum implementation in PNG.

Further, the findings of this study about the new national curriculum implementation cannot be generalised to all schools in PNG because of the highly situated study approach employed in this study. It is important to appreciate that the case studies are a part of a whole programme, organisation or setting, which represents only the views, experiences, opinions and perceptions of the teachers and students who were involved in the study (Bryman, 2008; Gillham, 2000; Johnson & Christensen, 2008; Yin, 1994). However, the readers can make an 'inferential bridge' from the findings of the study to confirm or disagree by relating the study to their own life experiences and practices (Merriam, 1998).

To counter the limitations, the trustworthiness of the study has been enhanced by the use of data triangulation, where more than one method of data gathering was employed to generate data, multiple sources were used and the use of two different case study settings of the same phenomena enabled a cross-study comparison. The study also involved two different groups of research participants (teachers and students) in the implementation of the new national PNG curriculum, to increase the quality or credibility of findings.

7.5 Implications of the study

The key findings in relation to the matches and mismatches between the macro-curriculum, the teachers' micro-curriculum and student-experienced curriculum needed to be recognised and addressed, if quality curriculum implementation and student learning are to occur in PNG by policy-makers, including the Government of PNG (GoPNG) and its agencies: the National Education Department (NED), the Provincial Education Division (PED), the District Education Offices (DEO), policy implementers such as teachers, school principals and Board of Governors, and other stakeholders, such as parents, local communities, and implications for further research.

7.5.1 Implications for the Government of PNG and its agencies

The findings of this study indicated that the PNG government should maintain appropriate political will and drive to support its National Education Department (NED), Provincial Education Division (PED) and District Education Level (DEL), by providing sufficient funds, relevant teaching and learning materials, and learning facilities for the teachers to implement the macro-curriculum in school and classroom settings for quality students' learning and development (Fullan, 2001, 2007). The PNG government also needs to support its agencies, including

the NED, PED and DEL, with funds and resources for the officers in these agencies to perform their regular visits to the schools and advise and assist the teachers for effective micro-curriculum implementation and quality student learning. The NED should develop and implement external professional development practice (EPDP) for teachers in PNG, while PED and DEL can plan and deliver the internal professional development practices (IPDP) for the teachers and organise workshops, excursions and retreats to up-skill the teachers in their professional learning. The study also revealed that lack of teaching and learning materials and resources adversely impacted on the teachers to implement the national curriculum. Therefore, the specific physical infrastructure and support teaching and learning materials and resources should be put in place for quality implementation of the micro-curriculum.

The study found that although the National Education Department (NED) and Provincial Education Division (PED) facilitated professional development programmes in collaboration with external consultants, such as AusAid, the NED and PED, as well as District Education Level (DEL), need to seek funds from the National Government (NG), Provincial Governments (PG), Local Level Government (LLG), other donor funding agencies and local business communities to run the professional development practices for teachers. The NED needs to organise National Teachers' In-services (NTI) in collaboration with the PED in the four regions of the country for the teachers to effectively implement the new national outcome-based curriculum. Not only does the NED need to plan and undertake in-service trainings through the PED but it must also facilitate workshops, seminars, presentations and retreats for ongoing teachers' professional learning. These activities can be organised and provided for classroom teachers,

senior teachers, deputy principals and principals for quality teaching and students' learning.

The study further illustrated the need for the NED to revisit the national curriculum content. This process requires the Curriculum Development Division (CDD) of the NED to review the content and organise it in a form that is understandable and manageable for teachers, so they can implement quality learning programmes for students. The national curriculum content would benefit from inclusion of a range of sample project-oriented learning activities as exemplars for each school setting (remote, rural and urban) to guide the teachers in constructing appropriate learning activities for the students to undertake and internalise as learning. Focus on these project-oriented learning activities in the student-experienced curriculum may be needed for transforming their thinking and thought processes and to help students realise their hidden potential (Vygotsky, 1962; Vygotsky, 1978; Wertsch et al., 1995). Thus, it is important that the macro-curriculum content should be written in simple and clear language at the level that the teachers could understand and implement.

7.5.2 Implications for the school principals, Board of Governors and local communities

The study reported the need for school principals and schools board of governors (SBOG) to provide relevant teaching and learning materials and support resources to assist the teachers to implement the curriculum. The implication is that school principals and SBOGs need to budget, prioritise, manage and control the funds in accountable and transparent ways to give priority to curriculum implementation and student learning. They also need to write up proposals and source funding through their local national Members of Parliaments (LNMP), Local Level

Governments (LLG), and other local business houses to construct learning facilities such as classrooms, install water supply, electricity, and carry out maintenance exercises with the existing facilities, and put in place desks and other teaching and learning resources for effective teaching and learning. Further, the school principals and SBOGs should actively seek support and assist the teachers in quality curriculum implementation by making appropriate decisions and developing school policies and rules that favour and facilitate quality student learning. In particular, they need to invite people with expertise from other learning institutions, such as universities and teachers' training institutions (TTI), to provide in-service training for teachers.

The study indicated the need for certain appropriate traditional socio-cultural activities and practices in local communities and family contexts to encourage student learning and development. Traditional local community and family activities and practices can encourage and facilitate students' learning and development. So the principals and SBOG could raise parent awareness during parents' and citizens' meetings and send monthly and/or weekly newsletters to inform them about the importance of providing study facilities to encourage and assist quality student learning at home. The SBOG could inform local communities during their local gatherings to inform the parents to foster student learning using traditional activities.

7.5.3 Implications for the PNG teachers

The study demonstrated the need for some teachers to rethink their professional roles and how to interact in ways that create productive and safe learning environments. Areas that need strengthening include creating positive interactions that foster quality students' learning and development and being punctual to

classes. There is also a need for the teachers to employ teaching and learning pedagogical approaches appropriately and engage students in performing problem solving-oriented learning activities to experience and internalise learning. Additionally, it can be argued that for quality learning, the teachers should develop appropriate learning activities that do match students' cognitive development level. In this study, clearly there is a need in PNG to support these teachers in finding ways to develop behaviour and attitudes that are more conducive to students' learning.

In all, the teachers' and students' interactional-behaviour are crucial for quality teaching and learning. This is where the teachers and students create family-like relationships in their interactional behaviour, because they can foster and emotionally engage each other for effective micro-curriculum implementation and learning. Thus, appropriate socio-cultural practices and activities from the PNG government level down to personal levels (teachers and students) and within and across local traditional and urban communities could enhance quality implementation of micro-curricula and students' learning and development (Fullan, 2007; Muijs & Reynolds, 2011; Vygotsky, 1978).

7.5.4 Implication for further research

The study indicated the need for further study about teachers' implementation of their new PNG outcome-based curriculum and the student-experienced curriculum. The following are some indications for possible further research.

Since this study was conducted with upper primary teachers and students, a similar study of this could be conducted with lower primary teachers and students

to seek their views, experiences, opinions and suggestions about the new national curriculum implementation and learning. Additionally, a survey could be developed to extend the study to include both the lower and upper primary teachers and students in selected schools in all four regions (Highlands, Momase, New Guinea Islands and Papuan) of PNG to get a clearer picture on how the goals of the new national PNG curriculum are being achieved as a nation.

7.6 Concluding summary

This study investigated the implementation of new national curriculum which was introduced by the Government of PNG in 2004. The study specifically explored the views, experiences and perceptions of the teachers and students in two upper primary schools (one urban and one rural) in Madang Province. Within the interpretive research paradigm, the qualitative case study approach of generating data involved interviews, video observations and documentary analysis. The findings of the study revealed that the PNG teachers have adapted the new national curriculum by applying iterative interpretation processes to construct their own interpretations. They have identified appropriate international knowledge and integrated this with suitable and relevant PNG indigenous knowledge. This integration is the basis on which the teachers constructed new knowledge or realities which they delivered to the students using both constructivist teaching approaches, as anticipated by the national curriculum, and behaviourist teaching approaches. These realities of the teachers appeared to be superficial rather than in-depth realities for the students to experience. Students mediated the teachers' constructed realities and created their own individual and shared realities or knowledge. Student learning is being described in this thesis as the long-term learning that results from micro-curriculum implementation.

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LIST OF APPENDICES

Appendix A: Teacher semi-structured interview schedule

- Tell me about your name and teaching background.
- Tell me about the upper primary grade you are teaching.
- What subjects do you teach at upper primary class?
- How do you go about planning upper primary subjects' teaching programs?
- What sort of teaching programs do you plan?
- What sort of things do you consider when planning your teaching programs?
- The upper primary subject consists of strands and sub-strands. How do you cater for these in your teaching programs?
- There are broad learning outcomes for each strands and sub-strand. How do you cater for the broad learning outcomes of each strand and sub-strand in each subject in your teaching programs?
- There are indicators included for each broad learning outcome of each subject. How do you cater for these indicators in each subject's teaching programs?
- How do you design students' activities from each subject?
- What sorts of activities do you design for students?
- How do you make sure that students learn knowledge activities in each subject?
- How do you make sure that students learn skills activities in each subject?
- How do you make sure that students learn attitude and value activities in each subject?
- What sort of challenges you have for upper primary subjects? (Why?)
- What sort of teaching and learning strategies do you apply in teaching each subject? (Why?)
- How well do students learn in upper primary subjects? (Why?)
- How do you get help from others within the school to implement each subject?

Thank you very much.

Appendix B: Student semi-structured interview schedule

- Tell me your full name and the grade are you in
- What subjects do you learn in your class?
- Do you like the subjects? (Why not?)
- What sort of things do you learn?
- Name or give examples of the activities you do in class in the subjects?
- Are the activities easy or hard? (Why?)
- How about your teacher's teaching you these subjects?
- How do you get help from your teacher when you find activities challenging?
- Does your teacher help you when you find activities difficult? (Why?)
- What sort of different ways does your teacher teach you?
- How do you feel about your teacher's teaching styles? (Why?)
- What subjects do you like best? (Why?)
- What subjects you don't like? (Why?)
- What helps you to learn? (Why?)

Thank you very much.

Appendix C: Teachers' and students' interview timetable – Alowale Primary School

(i) Teacher interview timetable

Month	Day	Date	Time	Grade	Teacher
March	Mon	1/03/10	3:00-3:40	6A	Duma
	Mon	1/03/10	12.00-12:40	6B	Mong
	Tue	2/03/10	3:00-3.40	7A	William
	Wed	3/03/10	3.00-3.40	7B	Apota
	Thurs	11/03/10	3:00-3:40	8A	Roger
	Fri	15/03/10	3:00-3:40	8B	Peter
Total				6	6

(ii) Student focused-group interview timetable

Grade	Focused-group	Student names	sex	Age	Date	Time
6	1	RQ1	F	13	3/03/10	12:00-12:25
		RQ2	F	14		
		RQ3	F	14		
		RQ4	F	14		
	2	RQ5	M	13	11/03/10	12:00-12:25
		RQ6	M	14		
		RQ7	M	13		
		RQ8	M	14		
7	3	RQ9	F	14	12/03/10	12:00-12:25
		RQ10	F	14		
		RQ11	F	15		
		RQ12	F	15		
	4	RQ13	M	14	15/03/10	12:00-12:20
		RQ14	M	15		
		RQ15	M	14		
		RQ16	M	14		
8	5	RQ17	F	16	16/03/10	12:00-12:30
		RQ18	F	15		
		RQ19	F	16		
		RQ20	F	16		
	6	RQ21	M	16	17/03/10	12:00-12:30
		RQ22	M	16		
		RQ23	M	16		
		RQ24	M	16		
Total	**6**	**24**	**24**	**24**	**6**	

Appendix D: Teachers' and students' interview timetable - Banipul Primary School

(i) Teacher interview timetable

Month	Day	Date	Time	Grade	Teacher
	Tuesday	27/04/2010	12:30 -1:10	6 Green	Maria
	Tuesday	27/04/2010	3:00 - 3:40	7 Red	Sharon
April	Wednesday	30/04/2010	12:30- 1:10	6 Blue	Betty
	Wednesday	28/04/2010	12:30 - 1:10	8 Blue	Ruth
	Thursday	29/04/2010	12:30 - 1:10	7 Blue	Michael
	Thursday	29/04/2010	3:00 - 3.40	8 Red	Evelyn
Total				6	6

(ii) Student focused-group interview timetable

Grade	Focused-group	Student names	sex	Age	Date	Time
6	1	PX1	F	14	30/04/2010	12:30 - 1:10
		PX2	F	13		
		PX3	F	14		
		PX4	F	14		
	2	PX5	M	13	3/05/2010	12:30 - 1:00
		PX6	M	13		
		PX7	M	14		
		PX8	M	14		
7	3	PX9	F	14	4/05/2010	12:30 - 12:50
		PX10	F	14		
		PX11	F	14		
		PX12	F	14		
	4	PX13	M	14	5/05/2010	3:00-3:30
		PX14	M	14		
		PX15	M	14		
		PX16	M	14		
8	5	PX17	F	14	5/05/2010	12:30 - 1:00
		PX18	F	16		
		PX19	F	15		
		PX20	F	14		
	6	PX21	M	14	4/05/2010	3:00-3:30
		PX22	M	16		
		PX23	M	15		
		PX24	M	14		
Total	**6**	**24**	**24**	**24**	**6**	

Appendix E: Number of visits made to Alowale Primary School

Date	Visit	Visit type
18/02/2010	**1**	First visit was made to the school to establish contact and query a consent letter which was sent from New Zealand to the school. Met with the school principal and explained the research procedures for data collection. Confirmed a day with the school principal for the second visit to recruit the teachers.
23/02/2010	**2**	Went to the school and through the school principal, the teachers were recruited. Explained the research procedures to 6 teachers and gave consent letters and forms. The teachers were met at 10:00 a.m during tea break. Confirmed a day with the teachers to recruit the students.
25/02/2010	**3**	Went to the school and collected confirmed consent forms from the teachers. Through the class teachers, the 24 students were recruited using class lists provided. The researcher explained in detailed the research procedures to the students and handed the consent letters and forms. The 24 students were met at 10:00 a.m during their recess break in grade 8B classroom, while their teachers had tea break. **Challenge**: Because the researcher over sighted and recruited extra 12 students, there were 12 less consent letters and forms. However, the researcher went through the consent letters (students' and caregivers') with 24 students, and handed consent letters and forms to grades 6A, 6B & 7A students, while Grades 7B, 8A & 8B were informed that they would get theirs the next day (26/02/10).
26/02/10	**4**	Visited the school and gave 12 students in grades 7B, 8B and 8A who missed the consent letters and forms, and collected some completed consent forms from the 12 grades 6A, 6B and 7B students. Met the students at 10:00 a.m, while teachers had a tea break.
1/03/10 2/03/10	**5** **5**	Went to the school and interviewed grades 6A and 6B teachers. The grade 6B teacher at 12:00 -12:40 and 6A teacher at 3:00-3:40 p.m. Collected confirmed consent forms from grades 6A, 6B, 7A, 8A and 8B students. Went to the school and interviewed grade 7A teacher at 3:00-3:40 p.m, and delivered video consent letters and forms to grade 6A students. Explained in detailed the research aims and procedures.
3/03/10 5/03/2010	**6** **7**	Went to the school and interviewed grade 7B teacher at 3:00-3:40 p.m and interviewed female student focused-group 1 at 12:00–12:25. . Delivered video consent letters and forms to grades 6A and 6B students. Explained in detailed the research aims and procedures. Went to the school to interview teachers and students. **Challenge** However, classes were suspended or canceled and students were sent home. Teachers went to town for a briefing by the Provincial Education Board. The research arrived to the school without knowing and found no one was at school. A villager then informed the researcher of the event.
11/03/10	**8**	Went to the school and interviewed grade 8A teacher from 3:00-3:40p.m. Also interviewed male student focused-group at 12:00–12:25 p.m. Also, delivered video consent letters and forms to grade 7A and 7B and collected video consent forms from 6A and 6B students. Explained in detailed the research aims and procedures to grades 7A and 7B students.
12/03/10	**9**	Went to the school and interviewed make student focused-group 3 at

		12:00–12:25 p.m, and collected video consent forms from grades 7A and 7B. Also delivered the video consent letters and forms to grades 8A and 8B students and explained to them in detailed the aims and procedures of the research.
15/03/2010	**10**	Went to the school and interviewed grade 8B teacher at 3:00-3:40p.m and also interviewed male student focused-group 4 at 12:00–2:20 p.m. Also, the researcher collected video consent forms from grades 8A and 8B students.
16/03/2010	**11**	Went to the school and interviewed female student focused-group 5 from 12:00-12:30p.m and videoed two lessons in grade six.
17/03/2010	**12**	Went to the school and interviewed male student focused-group 6 and videoed three lessons in grade seven.
18/03/2010 19/03/2010	**13** **14**	Went to the school and videoed two lessons in grade eight. **Challenge** Unfortunately, a lesson that was videoed unintentionally deleted when the researcher tried to set the video camera for the next lesson. Went to the school to video the lessons. **Challenge** However, classes were disrupted to welcome a group of VSO from England who set up a Solar ITC system for the school sometime ago. The researcher left the school without videoing any lesson.
22/03/2010	**15**	Went to the school and videoed three lessons; Science and Language lessons in 6A class and Personal Development subject in 8A class. **Challenges:** Went to grade 8B class to video a 40 minutes lesson. However, the class teacher did not turn up for class due to family crawl over the weekend that affected teaching on Monday morning. Went to grade 6A class and videoed a 40 minutes Language lesson. However, this lesson was started late and carried on to the next subject's lesson.
23/03/2010	**16**	Went early in the morning to video the lessons. **Challenges** However, when approached the class teacher of 8B to video a mathematics lesson. He told the researcher that he was late for classes and asked the researcher to video his MAL lesson instead. Then the researcher entered grade 6B class to video a mathematics lesson. The class teacher was busy talking with other teachers, and the time was up for teaching the lesson. Later he asked me to video the lesson. When the researcher was about to video the lesson, the deputy principal of the school announced from a loud heeler called for an urgent staff meeting to talk about criminals stole a solar panel placed at the top of a pole next to the staff room. The researcher was unable to video the lesson and waited to video the lessons after recess.
25/03/2010	**17**	Went to the school and videoed two lessons; Mathematics lesson in 6B class and Science lesson in 7B class.
26/03/2010	**18**	Went early in the morning to the school and videoed Mathematics lesson in 8B class. Collected documents from two boys in grade 8B, two girls in 8B and one girl in 8A. Took main notes and returned documents to the students. **Challenge**: Went to grade 6B class to video an Art lesson but the teacher did not attend the class in the afternoon.

29/03/2010 30/03/2010	**19** **20**	Went early in the morning to the school and videoed 7A Language lesson. Collected documents 8A class teacher. **Challenge**: Went to grade 8B class to video an Art lesson but the teacher asked the researcher not to video the lesson. Went early in the morning to the school and videoed 6B Making a Living lesson. Collected documents from focused-group 5 and 6 of 8A class. **Challenge**: Went to grade 8B class to video a Making a Living lesson but the teacher informed the researcher that he would go to town to sort few personal issues. Went to grade 7B class to video a Mathematic lesson but the teacher informed the researcher that she would give a class test. The researcher made arrangements to observe this lesson next day.
31/03/2010	**21**	Went early in the morning to the school and videoed a Mathematics lesson in 7B and an Art lesson in 6A. **Challenge:** As there was 10 minutes yet left for the mathematics lesson for grade 7B class, the school's Christian Region Instruction Coordinator rang the school bell and announced on a 'loud hailer' for the students to be released for region instruction class. The teacher very quickly rushed to conclude the lesson and students felt uneasy.
6/04/2010	**22**	**Document analysis** Collect some documents from two students in 7B class (a boy and a girl) and collected teachers' display of students work in class. Took notes of physical classroom setting for grades 7 and 8 classrooms.
7/04/2010	**23**	**Document analysis** Collect some documents from students in 6A and 6B classes and collected teacher display of students' work in class. Took notes of physical classroom set for grades 6 classrooms.
8/04/2010	**24**	Went school to video a 40 minutes Art lesson in grade 8A class as agreed by the teacher. However, the teacher did not turn up for class. Informed the upper primary coordinator to inform him of videoing his Art lesson the following week. **Document analysis:** Collect some documents from students in 8A & 8B classes and grade 7B teacher.
12/04/2010	**25**	Went to the school and videoed a 40 minutes Art lesson in grade 8B class as agreed by the teacher. **Document analysis:** Collected teaching program documents from grade 6A, and 8B class teachers. Also collected documents from grade 7A and B students.
13/04/2010	**26**	**Document analysis:** Collected documents from grade 8A students.
14/04/2010	**27**	**Document analysis:** Collected documents from grade 6A and 6B students.
15/04/2010	**28**	**Document analysis:** Collected documents from grades 6-8 teachers and students.
12/05/2010	**29**	Travelled to the school and delivered transcribed interviewed and documentary analysed data to the teachers and students to verify and confirm.
26/05/201	**30**	Travelled to the school to crosscheck and to get confirmation of the verified and confirmed data from researched participants. Each participant (both teachers and students) confirmed that the transcript interviews and documentary analysis were their originals. The confirmation data were signed dated and given to the researcher. The school principal and the staff hosted a farewell function for the researcher.

Appendix F: Number of visits made to Banipul Primary School

Date	Visit	Visit type
18/02/2010	1	Followed up with the consent letter that was sent to the school from New Zealand. Met with the school principal and explained the research procedures for data collection. Confirmed a day with the school principal for the second visit to recruit the teachers.
24/02/2010	2	Went to the school and through the school principal, the teachers were recruited. Explained the research procedures to 6 teachers and gave consent letters and forms. The teachers were met at lunch. Confirm a day with the teachers to recruit the students.
25/02/2010	3	Went to the school after visiting Alowale Primary School, and picked the class list from the 6 teachers to recruit the students. Made student selection and gave students' names to class teachers, and to inform the students to meet the researcher at lunch. Since 24 students were recruited in the rural school, the urban school also had 24 students.
26/02/2010	4	Went to the school after visiting students in Alowale Primary school. Met the students at lunch and explained in detailed the consent letters and forms (students & parents) and the procedures of collecting data. **Challenge:** Four grade six blue students and a student in grade six green did not turn up. The 4 students did not turn up because the selected class list was kept by another teacher and these students were not informed. Went again to the grade six green class teacher and set time to meet the 4 students who missed out as well to inform the six green student who did not turn up.
1/03/2010	5	Went in the morning and informed grade six blue and green class teachers to confirm time (10:00 a.m) the next day to meet the 4 students and a student in grade 6 green who missed out on the procedures of research. Then the researcher went to the rural school.
2/03/2010	6	Explained research aims and procedures to grade six blue class and a student in grade six green class. Hand out student and caregivers' consent forms. Collected students and caregivers completed consent forms from grade 7red, 7blue, 8red, 8blue and 6green students. This was done in the morning at 10:00a.m and then went to the rural school.
9/03/2010 26/04/2010	7 8	Went to the school and collected students and parents/caregivers completed consent forms from grade six blue students and a grade six green student.Went to the school and visited grades 8, 7 and 6 teachers. Informed and confirmed individual teachers of interview times, collected grade seven class timetable, mapped out the designated interview venue, classroom locations, subjects to video, and talked to grade 6 students and confirmed the time of interviews.
27/04/2010	9	Went to the school and interviewed grade 6 green and grade 7red teachers at 1:30-2:10 and 3:00-3:40p.m. Delivered the video consent letters and forms, and explained in detailed to grades six green and blue students the aims and procedures of the research.
28/04/2010	10	Went to the school and interviewed grade 8 blue teacher at 12:30-1:10 p.m and delivered the video consent letters and forms to grade 7red and 7blue students. Also, the aims and procedures of the research were explained in detailed to students at 10:00 a.m.
29/04/2010	11	Went to the school and interviewed grade 7blue and grade 8red teachers at 12:30-1:10, and 3:00-3:40 p.m, and delivered the video consent letters and forms to grade 8red and 8blue students. The aims and procedures of the research were also explained to them in detailed at 10:00a.m. Also collected the confirmed consent forms from grades 6 and 7 students.

30/04/2010	12	Went to the school and interviewed grade 6 blue teacher at 12:30-1:10 p.m and collected the confirmed consent forms for the video from grade 8 students.
3/05/2010	13	Went to the school and interviewed male student focused-group 2 from 12:30 -1:00 p.m. **Challenges**. Teachers were absent for after lunch classes. Students were at will and many left early. As a result, the interview scheduled for male focused-group 4 was postponed to Thursday.
4/05/2010	14	Went to the school and interviewed female student focused-group 3 from 12:30-12:50p.m, and male student focused-group 6 from 3:00-3:30p.m. Also, collected documents from the teachers.
5/05/2010 6/05/2010	15 16	Went to the school and interviewed female student focused-group 5 from 12:30-1:00 p.m and male student focused-group 4 from 3:00-3:25 p.m. Also collected documents from grade 6 students and teachers. **Challenge** However, in the male focused-group 4, two participants did not show up as one went home early and one did not come to school that day. Thus, two students were interviewed. Went to the school and interviewed female focused-group 1 of grade 6 and collected the documents from students and teachers. **Challenge** However, in the female focused-group 1, one participant did not turn up and the interview proceeded with three participants.
7/05/2010 10/05/2010	17 18	**Challenge-** Went to the school at 2pm, and only to find out that the classes were cancelled and students sent home at 12:30p.m. I have had to return. Went to the school and videoed mathematics lesson in 7red class. The lesson was started 10 minutes late due to students' punctuality to lessons. The researcher also collected documents form grade six student participants and teachers.
11/05/2010	19	Went to the school and videoed a Mathematics lesson in 7blue class. The lesson started 10 minutes late due to students not punctual to lessons after recess. The researcher also videoed a Social Science lesson in 7Blue class and a Language lesson in 8blue class. Also documents were collected from the students and teachers.
12/05/2010	20	Went to the school and videoed a Social Science lesson in 8blue class. The researcher also videoed a Social Science lesson in 7red class. Many students came late to the class.
14/05/2010	21	Went to the school and videoed Language and Social Science lessons in grade eight red classes, and collected documents from the teachers and students.
17/05/2010	22	Went to the school and videoed a Science lesson in grade six green class and collected documents from the teachers and students.
18/05/2010	23	Went to the school and videoed a Mathematics lesson in grade six green class and collected documents from the teachers and students.
27/05/2010	24	Went to the school and videoed a Language lesson in grade six blue class.
30/05/2010	25	Went to the school and delivered transcribed interviewed data and documentary analysis to teachers and students to verify and confirm.
3/06/2010	26	Travelled to the school to crosscheck and confirm the verified data from researched participants. Each participant (both teachers and students) confirmed that the transcript interviews and documentary analysis were their originals. The confirmation data was signed, dated and returned to the researcher.

Appendix G: Pseudonym and codes for teachers and students – Banipul Primary School

(i) Teacher

Case study	Participant	Grade	Codes	Data
One (Banipul Primary)	Teachers	6 Blue	**UPTI301**	Interviews
		6 Green	**UPTI302**	
		7 Blue	**UPTI303**	
		7 Red	**UPTI304**	
		8 Blue	**UPTI305**	
		8 Red	**UPTI306**	
		6 Blue	**UPV301**	Videos
		6 Green	**UPV302**	
		7 Blue	**UPV303**	
		7 Red	**UPV304**	
		8 Blue	**UPV305**	
		8 Red	**UPV306**	
		6 Blue	**UPTD301**	Documents
		6 Green	**UPTD302**	
		7 Blue	**UPTD303**	
		7 Red	**UPTD304**	
		8 Blue	**UPTD305**	
		8 Red	**UPTD306**	

(ii) Students

Case study	Participant	Grade	Focus Group	Codes	Data
One (Banipul Primary)	Students	Grade 6	Female	**UPSI201**	Interviews
			Male	**UPSI202**	
		Grade 7	Female	**UPSI203**	
			Male	**UPSI204**	
		Grade 8	Female	**UPSI205**	
			Male	**UPSI206**	
		Grade 6	Female	**UPSD201**	Documents
			Male	**UPSD202**	
		Grade 7	Female	**UPSD203**	
			Male	**UPSD204**	
		Grade 8	Female	**UPSD205**	
			Male	**UPSD206**	

Appendix H: Pseudonym and codes for teachers and students – Alowale Primary School

(i) Teachers

Case study	Participant	Grade	Codes	Data
Two (Alowale Primary)	Teachers	6A	**RPTI501**	Interviews
		6B	**RPTI502**	
		7A	**RPTI503**	
		7B	**RPTI504**	
		8A	**RPTI505**	
		8B	**RPTI506**	
		6A	**RPV501**	Videos
		6B	**RPV502**	
		7A	**RPV503**	
		7B	**RPV504**	
		8A	**RPV505**	
		8B	**RPV506**	
		6A	**RPTD501**	Documents
		6B	**RPTD502**	
		7A	**RPTD503**	
		7B	**RPTD504**	
		8A	**RPTD505**	
		8B	**RPTD506**	

(ii) Students

Case study	Participant	Grade	Focused Group	Codes	Data
Two (Alowale Primary)	Students	Grade 6	Female	**RPSI401**	Interviews
			Male	**RPSI402**	
		Grade 7	Female	**RPSI403**	
			Male	**RPSI404**	
		Grade 8	Female	**RPSI405**	
			Male	**RPSI406**	
		Grade 6	Female	**RPSD401**	Documents
			Male	**RPSD402**	
		Grade 7	Female	**RPSD403**	
			Male	**RPSD404**	
		Grade 8	Female	**RPSD405**	
			Male	**RPSD406**	

Appendix I: Explanations of pseudonyms and codes for teachers

Pseudonym	Code	Explanation of codes
Betty	UPTI301	Case study 1 = Teacher 1 interview data
Maria	UPTI302	Case study 1 = Teacher 2 interview data
Sharon	UPTI303	Case study 1 = Teacher 3 interview data
Michael	UPTI304	Case study 1 = Teacher 4 interview data
Evelyn	UPTI305	Case study 1 = Teacher 5 interview data
Ruth	UPTI306	Case study 1 = Teacher 6 interview data
Betty	UPV301	Case study 1 = Teacher 1 video data
Maria	UPV302	Case study 1 = Teacher 2 video data
Sharon	UPV303	Case study 1 = Teacher 3 video data
Michael	UPV304	Case study 1 = Teacher 4 video data
Evelyn	UPV305	Case study 1 = Teacher 5 video data
Ruth	UPV306	Case study 1 = Teacher 6 video data
Betty	UPTD301	Case study 1 = Teacher 1 documents
Maria	UPTD302	Case study 1 = Teacher 2 documents
Sharon	UPTD303	Case study 1 = Teacher 3 documents
Michael	UPTD304	Case study 1 = Teacher 4 documents
Evelyn	UPTD305	Case study 1 = Teacher 5 documents
Ruth	UPTD306	Case study 1 = Teacher 6 documents
Duma	RPTI501	Case study 2 = Teacher 1 interview data
Mong	RPTI502	Case study 2 = Teacher 2 interview data
William	RPTI503	Case study 2 = Teacher 3 interview data
Apota	RPTI504	Case study 2 = Teacher 4 interview data
Roger	RPTI505	Case study 2 = Teacher 5 interview data
Peter	RPTI506	Case study 2 = Teacher 6 interview data
Duma	RPV501	Case study 2 = Teacher 1 video data
Mong	RPV502	Case study 2 = Teacher 2 video data
William	RPV503	Case study 2 = Teacher 3 video data
Apota	RPV504	Case study 2 = Teacher 4 video data
Roger	RPV505	Case study 2 = Teacher 5 video data
Peter	RPV506	Case study 2 = Teacher 6 video data
Duma	RPTD501	Case study 2 = Teacher 1 documents
Mong	RPTD502	Case study 2 = Teacher 2 documents
William	RPTD503	Case study 2 = Teacher 3 documents
Apota	RPTD504	Case study 2 = Teacher 4 documents
Roger	RPTD505	Case study 2 = Teacher 5 documents
Peter	RPTD506	Case study 2 = Teacher 6 documents

Appendix J: Explanations for pseudonyms and codes for students

Gender	Code	Explanation of codes
Female	UPSI201	Case study 1 = Student focus group 1 interview data
Male	UPSI202	Case study 1 = Student focus group 2 interview data
Female	UPSI203	Case study 1 = Student focus group 3 interview data
Male	UPSI204	Case study 1 = Student focus group 4 interview data
Female	UPSI205	Case study 1 = Student focus group 5 interview data
Male	UPSI206	Case study 1 = Student focus group 6 interview data
Female	UPSD201	Case study 1 = Student focus group 1 documents
Male	UPSD202	Case study 1 = Student focus 2 documents
Female	UPSD203	Case study 1 = Student focus 3 documents
Male	UPSD204	Case study 1 = Student focus 4 documents
Female	UPSD205	Case study 1 = Student focus 5 documents
Male	UPSD206	Case study 1 = Student focus 6 documents
Female	RPSI401	Case study 2 = Student focus group 1 interview data
Male	RPSI402	Case study 2 = Student focus group 2 interview data
Female	RPSI403	Case study 2 = Student focus group 3 interview data
Male	RPSI404	Case study 2 = Student focus group 4 interview data
Female	RPSI405	Case study 2 = Student focus group 5 interview data
Male	RPSI406	Case study 2 = Student focus group 6 interview data
Female	RPSD401	Case study 2 = Student focus group 1 documents
Male	RPSD402	Case study 2 = Student focus group 2 documents
Female	RPSD403	Case study 2 = Student focus group 3 documents
Male	RPSD404	Case study 2 = Student focus group 4 documents
Female	RPSD405	Case study 2 = Student focus group 5 documents
Male	RPSD406	Case study 2 = Student focus group 6 documents

Appendix K: Sample of unit of analysis – in-depth interview and a videoed lesson

Rural Primary School
(i) In-depth interview with teacher RPTI506

I felt that with Upper Primary classes, it is easier in organizing teaching and learning activities in line with the curriculum booklets such as the syllabuses and teachers guides in terms of programming and teaching. I normally teach Mathematics, MAL (Making a Living) and Arts. **(T) & (L). (RPTI506)**. In planning upper primary teaching programs, I used both the old curriculum materials including the new OBE curriculum materials in terms of planning**. (P). (RPTI506)**. Interpretation of OBE into my teaching programs**(I) (RPTI506)** The syllabuses and the teachers' guides have been produced by the National Education Department and they came out to schools that we are using now to program but the problem is with the resource materials, the backup curriculum materials that will be used to implement these teachers' guides and syllabuses. That is giving me problem. **(C) & (R-L) (RPTI506)**. Normally mi save mekim ol single outcome unit of work. **(SO) & (UW). (RPTI506)** Bas long yialy overview blong me, bas long term and weekly overview me save making unit of work blong me ya em singol outcome like I'm teaching Maths, mi save making blong Maths tasol. **(P-SO) & (UW). (RPTI506)** Na Arts em yet. Sampela taim mi lukim olsem easy long mi integratim tupela sabjeks, mi save integratim **(IN). (RPTI506)**.Taim mi laik planim ol teaching programs belong me, mi save considerim ability levels belong ol sumatin**.(SAB) (RPTI506)** That's one thing the understanding blong ol sumatin**.(STU). (RPTI506)** Mi save considerim the environment that they are in, the school is in. **(E) (RPTI506)** Wanem kain ol resources na wanem kain materials em available we mi ken usim long teachMi save considerim ol dispela ol samting pastaim na mi save mekim ol programs b'long long tis. **(R). (RPTI506)**. Mi save mekim ol yearly overview. Mi gat wanpela example em stap long Maths. Mi save kisim syllabuses, mi save brukim ol strands i go down long termly section, wanem, wanem strands bai mi tisim long term one**.(P) (RPTI506)** How much pela strands bai mi tisim long term two, term three na term four. Baim mi make sure mi save balancim. Two strands long term one, two long term two, two long term three na two long term four. Sapos sabjek in gat eight pela strands. And then dispela ol sub-strands mi dividim fairly or evenly into the terms so that I'm make sure me catering ol yet na mi no miss one pela strand or sub-strand out. That's how I go about. **(P) & (T). (RPTI506)**.

Urban Primary School
(i) Videoed Lesson Observation Analysis for teacher UPV304

T: Ok, our revision questions: Do we really know where the first, ah, settlers came to Papua New Guinea? Do we really know where the first people or the first settlers came from to Papua New Guinea? Do we really know? Hands up. **R:** Yes, no. **T:** Do we really know? Yes or no. **R:** Yes, no. **T:** Ok, but from evidence and clues from the historians we can see that ah see where people first came to Papua New Guinea and where they first settled.(T-IRQ). **.UPV304. [The teacher gave handout to students and asked to read then answer questions based on the readings in the hand out]. T:** Ok, I will give out the notes then you will read and then I will put up some questions for you to answer from the notes. (T-ISP). **.UPV304. T:** I have two hand outs: One is the first people and the other one is how these people lived. When the first settlers were came to Papua New Guinea? I want you to sit in a pair so that you can share the hand outs, in twos or in threes. You can come up here. Ok, as soon as you get the handout I want you to read. Start reading! Five minutes reading. **[While students were reading, the teacher printed 4 questions on the chalkboard].** (T-BE), (T-AE), & (T-BMU). **.UPV304.**

Appendix L: Coding units of meaning

Code	Unit of meanings	Code	Unit of meanings
T-E	Teaching-experience	**IM**	Improvise
T-FS	Teaching –favourite subject	**MO**	Modify
T	Teaching	**R**	Resources
C	Curriculum	**TS**	Teaching strategy
P	Planning	**LS-D**	Learning Strategy-Discovery
P-E	Planning -experience	**LS**	Learning strategy
P-LR	Planning –lack resources	**LS-B**	Learning strategy-brain storm
P-TP	Planning – teaching programs	**LS-M**	Learning strategy–mind map
SN & R	Students needs & Resources	**LS-C**	Learning strategy-concept map
P-IM & MO	Planning – improvise & modification	**ST**	Student
P-D	Planning - duration	**SSPK**	Students – prior knowledge
L-D	Learning - difficulty	**LS-CP**	Learning Strategy -cooperative
CC	Curriculum content	**CHL**	Child-centred learning
T-D	Teaching - duration	**CHT**	Child-centred teaching
S	Strands	**ASS-SSPK**	Assessing – students prior knowledge
SS	Sub-strands	**T-B**	Teaching-behaviour
PP	Planning-process	**TSI**	Teacher –students interaction
PTA	Planning – Thematic approach	**CM**	Curriculum model
UW	Unit of work	**IN-TL**	Integrated- teaching & learning
P-SA	Planning-stand alone	**PD**	Professional Development
L	Learning	**PD-L**	Professional development-lack
IN	Integrate	**T-L**	Teacher-learning
PD-SS	Professional Development-support	**SCS**	School- support
INP	Integrated program	**E**	Environment
I	Interpretation	**IN-T**	Integrated-Teaching
TH	Thinking	**TM**	Theme
P-ID	Planning- indicators	**T-CH**	Teaching-challenge
O	Outcome	**P-L**	Planning -lack
D-A	Designing - activity	**Ex**	Examination
Activity	Activity	**R-L**	Resource-lack
ID	Indicator	**P-A**	Planning -Activity
K	knowledge	**P-UW**	Planning-unit of work
SK	Skills	**IA**	Individual -Activity
AT	Attitude	**GA**	Group-Activity
A-AT	Activity – attitude	**TA**	Teaching -assistance
A-K	Activity - knowledge	**PA**	Peer activity
A-SK	Activity - skills	**TAB**	Teacher-ability
A- R	Activity - research	**TBK**	Teacher- background knowledge
A-IW	Activity - interview	**TAA**	Teaching- approach
CC	Curriculum content	**PAS**	Peer assistance
CC- CH	Curriculum content - challenge	**L-CH**	Learning-challenge

Appendix M: Unit of categories

Key question: What factors are influencing teachers' decisions and actions in their implementation of the national outcome-based curriculum in upper primary school in PNG?	
Sub-questions	**Categories and sub-categories**
What factors are influencing teachers in their interpretation, planning and delivery of the national outcome-based curriculum in classrooms?	**Interpretation** **Read and understand** Interpretation, planning and teaching Challenge in interpreting curriculum. Interpretation and resource lacking **Planning** **Planning process** Planning thematically and stand along Planning thematic and unit of work Planning stand alone Planning strands and sub-strands Planning, integrated and unit of work **Environment and context** Improvisation and modification **Students' needs and abilities** **Resources** Lack resources, learning and experiences **Teaching** Outcome and indicators Unit of work, teaching duration and indicator Teaching and learning approaches Teaching challenge **Teaching effectiveness** Warm up activity Warm up activity and body-material distribution Introduction lead-in-activities Stating the purpose of the lesson Activity explanation Teaching body activity explanation Types of learning activities Support from teachers Students' Learning experiences and outcomes Teaching conclusion **Learning** **Teachers' perspective** Learning strategy-brain storming and learning strategy mind map Lack of resources and learning challenge **Learning Activities** Knowledge activities, outcome and indictors Group activity Questions Group activity and questions **Student Interaction** Teaching and students' interest and learning **Students' behaviour and attitude and understanding** Students' behaviour Learning and behaviour

	Biological inherited behaviour and learning **Curriculum Content** Curriculum content challenge Curriculum model and learning Lack resources **Teaching Experience** Teaching experience and learning **Professional Development Support** Professional development and learning Professional development, teaching and learning Professional development and support
What matches are there between the national outcome-based curriculum, the teachers' micro-curriculum and students-experience curriculum?	**Planning model** Unit of work Planning teaching program **Integrated outcome model** **Single or Stands alone outcome model** Yearly plan Weekly/Daily plan
What factors are influencing students' learning and how?	**Teaching** Teaching and learning challenge Teaching and subject liking and disliking **Curriculum Content** Curriculum content and learning Students' learning and learning difficulties Curriculum content challenge Curriculum content likings and disliking **Learning and activities and outcomes** Activity challenge Subject liking Group activity Activity challenge and teacher assistance **Teacher-Student Interactional behaviours** Teaching assistance Teaching assistance and activity Teaching assistance and learning challenge Behaviour challenge Teaching assistance and behaviour challenge Behaviour and learning

Appendix N: Categories and themes

Key question: What factors are influencing teachers' decisions and actions in their implementation of the national outcome-based curriculum in upper primary school in PNG?		
Sub-questions	**Themes**	**Major categories**
What factors are influencing teachers in their interpretation, planning and delivery of the national outcome-based curriculum in classrooms?	**Teachers' micro-curriculum**	• Teachers' interpretation of the outcome-based national curriculum. • Teachers' planning of micro-curriculum. • Pedagogies. • Teachers' values and beliefs. • Teachers' perspectives on the students' attitudes and behaviors. • Issues with national curriculum implementation. • Professional development support
What matches are there between the national outcome-based curriculum, the teachers' micro-curriculum and the students-experience curriculum?	**Models of micro-curriculum**	• Integrated outcome model • Single outcome model
What factors are influencing students' learning and how?	**Student-experienced curriculum**	• Students' perspectives on the teachers' teaching. • Students' perspectives on the national curriculum implementation. • Students' learning outcomes. • Students' attitudes and behaviors. • Students' perspectives on the teachers' attitudes and behaviors

Aggregated Data per Teacher continue…

Teacher participant	*Type of data collected*	*Data code*	*No of lessons observed*	*Types of classroom activities observed*	*Micro-curriculum implementation strategies*	*Teaching styles espoused by teachers*	*Observed teaching styles*	*Observed classroom arrangement*
Betty	Interview Observation Documentary	UPTI301 UPV301 UPTD301	1	A short answer question activity.	Scanned the macro-curriculum content, read it, constructed explanations to understand, made decisions and finally studied the whole processes and revisited. Followed single outcome model only. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Indicated modelling, group activity, demonstration, guided discovery, Individual group/pair work, concept map, brainstorming.	Employed transmissive teaching style in the lesson.	Arranged the desks in groups.
Maria	Interview Observation Documentary	UPTI302 UPV302 UPTD302	2	-Group activity using mind. -Short-open-end question activity.	Scanned the macro-curriculum content, read it, constructed explanations to understand, made decisions and finally studied the whole processes and revisited. Followed both integrated and single outcome micro-curriculum models. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Illustrated modelling, group activity, discovery learning, demonstration, guided discovery, Individual and group/pair work, mind map, brainstorming.	Applied cooperative group activities in the lessons.	Arranged the desks in groups.
Sharon	Interview Observation Documentary	UPTI303 UPV303 UPTD303	2	Group discussions with open-end questions. -Reading comprehension activity on worksheet using flow charts.	Scanned the macro-curriculum content, read it, constructed explanations to understand, made decisions and finally studied the whole processes and revisited. Followed single outcome model only. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Showed demonstration, group work, discussions, guided discovery, pair work, concept map and braining storming	Applied cooperative group activities in the lessons.	The benches in the classroom were arranged in two rows placed outwardly to the edges of the classroom.

Aggregated Data per Teacher

Teacher participants	*Type of data collected*	*Data code*	*No of lessons observed*	*Types of classroom activities observed*	*Micro-curriculum implementation strategies*	*Teaching styles espoused by teachers*	*Observed teaching style*	*Observed classroom arrangement*
Michael	Interview Observation Documentary	UPTI304 UPV304 UPTD304	2	-Provided short answer questions from the textbook. -Fill-in-blank and short answer questions from the textbook.	Scanned the macro-curriculum content, read it, constructed explanations to understand, made decisions and finally studied the whole processes and revisited. Did not follow both the integrated outcome and single outcome models, and taught directly from the textbooks. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans	Illustrated demonstration. Modelling, discussion, group work, concept mapping.	Employed transmissive teaching style in the lessons.	The desks were arranged in groups
Evelyn	Interview Observation Documentary	UPTI305 UPV305 UPTD305	2	-Organised group activities with open-ended statements. -Statement of questions prepared on flashed cards for each group.	Scanned the macro-curriculum content, read it, constructed explanations to understand, made decisions and finally studied the whole processes and revisited. Used both integrated and single outcome micro-curriculum models. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Indicated brain storming, group discussion, guided learning, concept mapping, modelling.	Applied cooperative group activities in the lessons.	The benches in the classroom were arranged in two rows placed outwardly to the edge of the classroom.
Ruth	Interview Observation Documentary	UPTI306 UPV306 UPTD306	2	-Organised open-ended questions or statements using mind map. -Group activity – cut pictures and pasted on charts using mind map.	Scanned the macro-curriculum content, read it, constructed explanations to understand, made decisions and finally studied the whole processes and revisited. Followed both integrated and single outcome micro-curriculum models Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Indicated group activity, discussion, brainstorm, interpretive, concept mapping, mind mapping, jigsaw, guided discovery learning and demonstration	Applied cooperative group activities in the lessons.	The benches in the classroom were arranged in two rows placed outwardly to the edges of the classroom.

Aggregated Data per Teacher continue…

Teacher participant	*Type of data collected*	*Data code*	*No of lessons observed*	*Types of classroom activities observed*	*Micro-curriculum implementation strategies*	*Teaching styles espoused by teachers*	*Observed teaching styles*	*Observed classroom arrangement*
Duma	Interview Observation Documentary	RPTI501 RPV501 RPTD501	4	-Drawing- traditional designs and patterns of PNG. -Fill-in-blank questions. -Short answer questions.	Skimmed the macro-curriculum content, read it, and finally they made decisions. Did not follow both the integrated outcome and single outcome models, and taught directly from the textbooks. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Indicated modelling, group activity, demonstration, drill guided discovery, and brainstorming, mind map, discussion.	Employed transmissive teaching style in the lesson.	Arranged the desks in straight rows.
Mong	Interview Observation Documentary	RPTI502 RPV502 RPTD502	3	-Drawing - different cropping plants. -Problem solving exercises. -Short answer questions.	Skimmed the macro-curriculum content, read it, and finally they made decisions. Followed both integrated and single outcome micro-curriculum models. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Illustrated group activity, discovery learning, demonstration, modelling, guided discovery, concept mapping.	Employed transmissive teaching style in the lesson.	Arranged the desks in groups.
William	Interview Observation Documentary	RPTI503 RPV503 RPTD503	3	-Dialoguing in groups to give directions. -Group discussions with open-end questions and drew flow charts. -Jigsaw activity	Skimmed the macro-curriculum content, read it, and finally they made decisions. Used both integrated and single outcome micro-curriculum models. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model.	Showed demonstration, group work, discussions, guided discovery, pair work, concept mapping and braining storming.	Applied cooperative group activities in the lessons.	Arranged the desks in groups.

Aggregated Data per Teacher

Teacher participants	*Type of data collected*	*Data code*	*No of lessons observed*	*Types of classroom activities observed*	*Micro-curriculum implementation strategies*	*Teaching styles espoused by teachers*	*Observed teaching styles*	*Observed classroom arrangement*
Apota	Interview Observation Documentary	RPTI504 RPV504 RPTD504	3	-Fill-in-blank questions. -Individual problem solving activities. -Short answer questions on a chart.	Skimmed the macro-curriculum content, read it, and finally they made decisions. Used both integrated and single outcome micro-curriculum models. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans for using each model.	Illustrated demonstration. Modelling, discussion, drill, group work, concept mapping.	Employed transmissive teaching style in the lessons.	The desks were arranged in groups.
Roger	Interview Observation Documentary	RPTI505 RPV505 RPTD505	2	-Reading comprehension exercises. -Short answer questions.	Skimmed the macro-curriculum content, read it, and finally they made decisions. Used both integrated and single outcome micro-curriculum models. Planned both integrated outcome and single outcome (or stand-alone) models, and developed weekly daily plans using each model	Indicated cooperative group, research based, concept mapping, mind, guided discovery learning and demonstration, discussion.	Employed transmissive teaching style in the lesson.	Arranged the desks in groups.
Peter	Interview Observation Documentary	RPTI506 RPV506 RPTD506	2	-Fill-in-blank questions. -Short answer questions. -Displaying of models and asked students to give reasons for its use and purpose.	Skimmed the macro-curriculum content, read it, and finally they made decisions. Did not follow both the integrated outcome and single outcome models, and taught directly from the textbooks. Planned both integrated outcome and single outcome (or stand-alone) models, and planned weekly daily plans using each models.	Indicated cooperative group, research based, concept mapping, mind, guided discovery learning and demonstration, discussion.	Employed transmissive teaching style in the lesson.	Organised the desks in groups.

Appendix Q: Ethical approval letter from the University of Waikato

Dr Chris Eames
Centre for Science and Technology Education Research
School of Science & Engineering
Te Pūtaiao me te Mātauranga Pūkaha
The University of Waikato
Private Bag 3105
Hamilton, New Zealand

Telephone 64-7-838 4357
Facsimile 64-7-838 4272
Email c.eames@waikato.ac.nz

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

28 August 2009

Joseph Lingawa
37 May St
Hamilton 3216
New Zealand

Dear Joseph

The University of Waikato CSTER ethics sub-committee has considered your proposal *Investigating national curriculum implementation in PNG.*

We are pleased to inform you that we give ethical approval for you to conduct your research as specified in your application. Should you wish to vary the terms of the application, you will need to apply to the sub-committee for an amendment.

We wish you all the best for your study.

Yours sincerely

Chris Eames
Chair CSTER ethics subcommittee

Appendix R: Letter of permission to conduct research – PNG National Education Department

Joseph Lingawa
37 May Street
HAMILTON EAST
HAMILTON
New Zealand

Date: 5th August, 2009

The Director
Department of Education
Research, Policy and Communication Division
Research and Evaluation Section
P O BOX 446
WAIGANI
National Capital District
Papua New Guinea

Dear Sir/Madam,

Subject: Seeking permission to conduct research in Papua New Guinea.

I write to seek your approval for my research project in Papua New Guinea. My name is Joseph Lingawa and I am a doctoral student (PhD) from the University of Waikato in New Zealand. I have chosen two primary schools (one urban and one rural) in the Madang Province, Papua New Guinea as the context for conducting the field study.

This letter is seeking your consent to carry out the field study that is estimated to take six months and is scheduled to take place between February and July, 2010. When I am in Port Moresby I will report to your office before I leave for Madang Province to conduct the field study. My proposed research topic is*: Investigating national curriculum implementation in Papua New Guinea*.

The aim of this research is to investigate how teachers are interpreting the national curriculum and the factors that are influencing their interpretation of the national outcome-based curriculum and the planning and delivery of the student-experienced curriculum in contemporary PNG upper primary schools.

The study also seeks to investigate *how* and *what* students are learning. The research will focus on the implementation of the upper primary (Grades 6, 7 & 8) subjects and will investigate perceptions and experiences of the classroom teachers and students' perceptions and experiences during the implementation. The study will also provide an opportunity for teachers and students to voice their views, opinions and experiences in the implementation of the national outcome-based curriculum.

The study will involve three methods of data gathering. The first method of data collection strategy is a semi-structured interview. The participating classroom teachers will be interviewed on an individual basis for 30 to 40 minutes. The interviews will be tape recorded, transcribed and presented to teacher participants for verification purposes. Students will be interviewed using a focus group approach that will take about 20 to 30 minutes.

The second method of data collection will involve observation strategy. Data will be obtained by video-taping classroom teachings and learning episodes. 30 to 40 minute lessons will be video-taped as teachers are teaching the upper primary subjects.

The final method of data collection will involve document analysis. Texts and documents like teachers' teaching programs, work samples, copies of students' assignments, projects and other policies in your schools will be collected and analysed. Teachers and students will crosscheck the analysis of the texts and documents for verification purposes.
The full consent of the Madang Provincial Education Advisor and the principals of the schools will be sought prior to entering the schools and asking for participants. The participants' full consent will be sought before the interviews and videoing of the lessons commence, and obtaining of the texts and documents. Also, the full consent of the parents/caregivers will be sought for students who will be invited to participate in the study. Note that the schools will also receive a summary of the findings.

During the data gathering processes, the selected schools and the study participants will be very much respected at all times. A mature approach to data collection and relationships will be maintained throughout the study. The data collected will be treated as strictly confidential and will not be disclosed to any person other than my research supervisors during the study. The use of pseudonyms will be used for the names of the schools and participants in the final study report. All information collected for the study will be stored securely by the researcher in a safe locked cupboard.

My research supervisors' contact details are provided below for further information or questions regarding this study.

Dr. Anne Hume
Chief Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 07856 2889

Email: annehume@waikato.ac.nz

Dr. Sashi Sharma
Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone:856 2889

Email: sashi@waikato.ac.nz

The Ethical Approval Letter from the University of Waikato and the sample teachers' and students' interview schedules are attached.

I would be grateful if you grant me your permission to conduct my research in Papua New Guinea.

Thank you

Yours faithfully,

.....
Joseph Lingawa
Researcher/PhD Candidate
Phone : (647) 10760040
Email: jl315@studentswaikato.ac.nz

Appendix S: Letter of permission to conduct research – Madang Provincial Education

Joseph Lingawa
37 May Street
HAMILTON EAST
HAMILTON
New Zealand

Date: 5th August, 2009

Mr Chris Bulu,
Provincial Education Advisor
Madang Provincial Education Division
P O BOX 2070
MADANG
Madang Province
Papua New Guinea

Dear Mr Bulu,

Subject: Seeking permission to conduct research in two primary schools in Madang Province.

I write to seek your approval for my research project in two schools in Madang Province. My name is Joseph Lingawa and I am a doctoral student (PhD) from the University of Waikato in New Zealand. I have chosen two upper primary schools (one urban and one rural) in your province, as the context for conducting the field study. The schools are: **Banipul Primary School** and **Alowale Primary School.**

This letter is seeking your consent to carry out the field study that is estimated to take six months and is scheduled to take place between February and July, 2010. When I am in Madang I will report to your office before I enter schools to conduct the field study. My proposed research topic is*: Investigating national curriculum implementation in Papua New Guinea*.

The aim of this research is to investigate how teachers are interpreting the national curriculum and the factors that are influencing their interpretation of the national outcome-based curriculum and the planning and delivery of the student experienced curriculum in contemporary PNG upper primary schools. The study also seeks to investigate *how* and *what* students are learning.

The research will focus on the implementation of the upper primary (Grades 6, 7 & 8) subjects and will investigate perceptions and experiences of the classroom teachers and students' perceptions during the implementation. The study will also provide an opportunity for teachers and students to voice their, opinions, views, and experiences in the implementation of the national outcome-based curriculum.
The study will involve three methods of data gathering.

The first method of data collection strategy is a semi-structured interview. The participating classroom teachers will be interviewed on an individual basis for 30 to 40 minutes. The interviews will be tape recorded, transcribed and presented to teacher participants for verification purposes. Students will be interviewed using a focus group approach that will take about 20 to 30 minutes.

The second method of data collection will involve observation strategy. Data will be obtained by video-taping classroom teachings and learning episodes. 30 to 40 minute lessons will be video-taped as teachers are teaching the upper primary subjects. The final method of data collection will involve document analysis. Texts and documents like teachers' teaching programs, work samples, copies of students' assignments, projects and other policies in your schools will be collected and analysed. Teachers and students will crosscheck the analysis of the texts and documents for verification purposes.

The full consent of the principals of the two schools will be sought prior to asking for participants. The participants' full consent will be sought before the interviews and videoing of the lessons commence, and obtaining of the texts and documents. Also, the full consent of the parents/caregivers will be sought for students who will be invited to participate in the study. Note that the schools will also receive a summary of the findings.During the study process, the selected schools and the study participants will be very much respected at all times. A mature approach to data collection and relationships will be maintained throughout the study. The data collected will be treated as strictly confidential and will not be disclosed to any person other than my research supervisors during the study. The use of pseudonyms will be used for the names of the schools and participants in the final study report. All information collected for the study will be stored securely by the researcher in a safe locked cupboard.

My research supervisors' contact details are provided below for further information or questions regarding this study.

Dr. Anne Hume
Chief Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 07856 2889

Email: annehume@waikato.ac.nz

Dr. Sashi Sharma
Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone:856 2889

Email: sashi@waikato.ac.nz

The Ethical Approval Letter from the University of Waikato and sample teachers' and students' interview schedule are attached. Also note that a copy of this letter is being sent to the Lutheran Education Secretary for his information.

I would be grateful if you grant me your permission to conduct my research in Madang Province.

Thank you

Yours faithfully,

.....
Joseph Lingawa
Researcher/PhD Candidate
Phone : (647) 10760040
Email: jl315@studentswaikato.ac.nz

Appendix T: Letter of permission to conduct research – Principals of the schools

Joseph Lingawa
37 May Street
HAMILTON EAST
HAMILTON
New Zealand

Date: 5th August, 2009

The Principal
..... Primary School
C/Madang Provincial Education Division
P O BOX 2070
MADANG
Madang Province
Papua New Guinea

Dear Sir/Madam,

Subject: Seeking permission to conduct research in your school.

I write to seek your approval for my research project in your school. My name is Joseph Lingawa and I am a doctoral student (PhD) from the University of Waikato in New Zealand. I have invited two primary schools (one urban and one rural) in the Madang Province, Papua New Guinea as the context for conducting the field study. I would like to invite your school to be involved in my field study.

This letter is seeking your consent to carry out the field study that is estimated to take six months and is scheduled to take place between February and July 2010.
A total of 6 teachers will be selected, 2 teachers each from grades six, seven and eight. Teachers who have more than two year experience in implementing the upper primary national curriculum will be selected. Also, a total of 12 students will be selected for grades six, seven and eight. Each grade will have a total of 4 students, in which there will be 2 females and 2 males. The criteria to select students will be based on the age group. The grade six students who are at the ages of 13 and 14 will be selected. The grade seven students who are at the ages of 14 and 15, and grade eight students at the ages between 15 and 16 will be selected. Students will be selected from a class list that will be provided by the class teacher. When I am in Madang I will report to your school to discuss other research procedures and details with you. My proposed research topic is: *Investigating national curriculum implementation in Papua New Guinea*.

The aims of this research is to investigate how teachers are interpreting the national curriculum and the factors that are influencing their interpretation of the national outcome-based curriculum and the planning and delivery of the student experienced curriculum in contemporary PNG upper primary schools. The study also seeks to investigate *how* and *what* students are learning.

The research will focus on the implementation of the upper primary (Grades 6, 7 & 8) subjects and will investigate perceptions and experiences of the classroom teachers and students perceptions during the implementation. The study will also provide an opportunity for teachers and students to voice their views and experiences in the implementation of the national outcome-based curriculum.

The study will involve three methods of data gathering. The first method of data collection strategy is a semi-structured interview. The participating classroom teachers will be interviewed on an individual basis for 30 to 40 minutes. The interviews will be tape recorded, transcribed and presented to teacher participants for verification purposes. Students will be interviewed using a focus group approach that will take about 20 to 30 minutes. The second method of data collection will involve observation strategy. Data will be obtained by video-taping classroom teachings and learning episodes. 30 to 40 minute lessons will be video-taped as teachers are teaching the upper primary subjects. The final method of data collection will involve document analysis. Texts and documents like teachers' teaching programs, work samples, copies of students' assignments, projects and other policies in your schools will be collected and analysed. Teachers and students will crosscheck the analysis of the texts and documents for verification purposes.

The full consent of the participants will be sought before the interviews and videoing of the lessons commence, and obtaining of the texts and documents. Also, the full consent of the parents/caregivers will be sought for students who will be invited to participate in the study. Note that the school will also receive a summary of the findings.
During the study process, the selected schools and the study participants will be very much respected at all times. A mature approach to data collection and relationships will be maintained throughout the study. The data collected will be treated as strictly confidential and will not be disclosed to any person other than my research supervisors during the study. The use of pseudonyms will be used for the names of the schools and participants in the final study report. All information collected for the study will be stored securely by the researcher in a safe locked cupboard.

My research supervisors' contact details are provided below for further information or questions regarding this study.

Dr. Anne Hume
Chief Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 07856 2889

Email: annehume@waikato.ac.nz

Dr. Sashi Sharma
Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 856 2889

Email: sashi@waikato.ac.nz

The Ethical Approval Letter from the University of Waikato and sample teachers' and students' interview schedule are attached.

I would be grateful if you grant me your permission to conduct my research in *your* school.

Thank you

Yours faithfully,
.....
Joseph Lingawa
Researcher/PhD Candidate
Phone : (647) 10760040
Email: jl315@studentswaikato.ac.nz

Appendix U: Letter of approval from the PNG National Education Department to conduct research in schools

PAPUA NEW GUINEA

Department of Education

Office of the Deputy Secretary Administration and Policy

TELEPHONE: (675) 301 3529/3526
TELEGRAMS: TLX NE22193
TELEX: NE22193
FAX: 301 3544
Email: luke_taita@educationpng.gov.pg

FINCORP HAUS
P.O. Box 446
WAIGANI 131
PAPUA NEW GUINEA

File: PR1-1-2
Date 9th February 2010

Joseph Lingawa
37 May Street
HAMILTON EAST 3216
HAMILTON
New Zealand

Dear Mr. Lingawa

SUBJECT: APPROVAL OF RESEARCH IN PRINCIPLE

Your research proposal titled: "***Investigating national curriculum implementation in Papua New Guinea***" has been approved in principle prior to Research and Evaluation Steering Committee (RESC) next meeting.

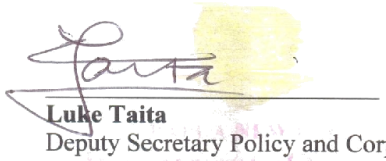
The approval in principle is given due to the urgency of your data collection and presentation of final report for the award of your nominated degree program. Use this letter as an approval for your data collection in your appointed institutions and provinces.

While your research is approved in principle to collect data in educational institution/s it is also subject to approval by the Provincial Research Committee (where applicable) and/or the Provincial Education Advisor or the principals or head teachers of your nominated institutions. It is your responsibility to ensure such is obtained prior to the field work.

In serious case of breach of ethical issues and DOE research guidelines the Department of Education reserves the right to inform the researchers home institution or sponsors directly and take necessary actions as deem necessary.

Failure to observe the above conditions may lead to the withdrawal of research approval.

I thankyou and wish you good luck in your study



Luke Taita
Deputy Secretary Policy and Corporate Services
and Chairman of Research and Evaluation Steering Committee

cc. Director - REU

Appendix V: Letter of approval from the Madang Provincial Education Division to conduct research in two schools in Madang Province.

MADANG PROVINCIAL ADMINISTRATION
Division of Policy, Coordination & Implementation
EDUCATION SERVICES

Office of the Senior Professional Assistant

Telephone: (675) 8523207 /1652
Facsimile: (675) 8523207/8521874

P O Box 2070
MADANG 511
PAPUA NEW GUINEA

Joseph Lingawa
37 May Street
HAMILTON EAST 3216
HAMILTON
New Zealand

Date: 12/02/2010
Ref:
Action Officer:

Subject: **Approval to conduct research in two primary schools in Madang Province, Papua New Guinea**

Your letter of consent dated 2nd October 2009 seeking approval to conduct research in two of our primary schools in Madang Province is hereby approved. You can make your arrangements to conduct the study as soon as you arrive in Madang province. On behalf of the provincial government, I wish to take this opportunity to thank you for choosing Madang province to conduct your important research. I believe your findings and recommendations in the issue of out-come based curriculum implementation in PNG upper primary schools will at least ease certain doubts in our mindsets in the way schools implement the curriculum contents.

The education reform in the country started in 1993 and Madang province was one of the provinces which implemented this reform. There are a lot of debates at the political and bureaucratic level about the whole concept of the out-come based curriculum implemented in the country. Many supported the change (out-come based curriculum) while others don't support it at all. The question is how can we make it work at our levels as individual teachers and learners? Despite all these differences, the schools are effectively implementing the concept over the last years.

Meanwhile, thank you for choosing Madang and God bless your studies.

Sincerely,

JIMMY UGURO
SPA Education & Care taker Advisor

Appendix W: Letter of approval from the Principal of Banipul Primary School

BANIPUL PRIMARY SCHOOL

[redacted]
MADANG
Madang Province

Date: 16th February, 2010

Mr. Joseph Lingawa
37 May Street
Hamilton East 3216
Hamilton, New Zealand

Dear Mr. Lingawa

Re: Approval of Research

Thank you for your letter dated 2nd October, 2009 seeking consent to conduct your PhD research in BANIPUL Primary School, Madang Province.

On behalf of the School's Board of Management (BOM) I hereby grant you permission to carry out your research titled **'Investigating national curriculum implementation in Papua New Guinea'** with upper primary grades six, seven and eight.

The teaching staff has been informed of your research in our staff meeting and is pleased to meeting you.

Thus, thank you for choosing Banipul Primary School as one of your research sites and we are delighted to have you in our school.

Yours Sincerely

[redacted]
Head Master

Copies
- Chairman School's BOM
- School File

Appendix X: Letter of approval from the principal of Alowale Primary School

Alowale PRIMARY SCHOOL

[redacted]

20th February,2010.

Joseph Lingawa
37 May-Street,
HAMILTON EAST 3216,
HAMILTON,
New Zealand.

Dear Sir;

RE: CONSENT GRANTED TO CONDUCT RESEARCH.

Thank you for your letter dated 2nd October,2009 in seeking consent to conduct research in my school.
I sincerely approve and grant you the permission to conduct research here at Alowale Primary School as of the date mentioned in your letter for your PhD Research Project. The teaching staff will be informed in a staff briefing and they will be please to meeting you.
Should you need more information, please ring me on mobile number 71673725.

Thank you for your attention.
Yours faithfully,

[redacted]

MR. ARTHUR KEP
(Head teacher)

Appendix Y: Information for teachers

Dear teacher,

My name is Joseph Lingawa and I am a doctoral (PhD) student from the University of Waikato in New Zealand. I have chosen your school as the context for conducting my field study. Therefore, I would like to invite you to be a participant in this research.

This letter is seeking your consent to carry out the field study that is estimated to take six months and is scheduled to take place between February and July, 2010. Four students will be selected in your class including 2 boys and 2 girls. The grade six students who are at the age of 13 or 14 will be selected to take part in the study. In grade seven students who are at the age of 14 or 15 will be selected. The grade eight students who are at the age of 15 or 16 will be selected. My proposed research topic is: *Investigating national curriculum implementation in Papua New Guinea*.

As you are aware, the development of the national outcome-based curriculum is based on the goal of the Integral Human Development (IHD). The goal of Integral Human Development means the empowerment of every student's cognitive, emotional, spiritual, physical and social aspects of development in teaching and learning processes.

To achieve this goal you are asked to plan and provide teaching and learning programmes that contain appropriate knowledge, skills, attitudes and values for quality student learning. You are also required to integrate PNG indigenous knowledge, skills, attitudes and values with other appropriate international knowledge, skills, attitudes and values in your teaching plans, and make these accessible to the students so that they could become productive members in the society after the primary cycle of education in PNG.

Therefore, this study is examining how you are interpreting the national outcome-based curriculum, and planning and providing teaching and learning programmes for the students in your class. The study is also seeking to gauge your views, experiences, knowledge and understanding of how your students are learning. The study will also provide an opportunity for you to voice your views and experiences in implementing the national outcome-based curriculum.

The study will involve three methods of data gathering. The first method of data collection strategy is a semi-structured interview. You will be interviewed on an individual basis that will take about 30 to 40 minutes. The interviews will be tape recorded, transcribed and presented to you for verification purposes. Also, students will be interviewed using a focus group approach that will take about 20 to 30 minutes.

The second method of data collection will involve observation strategy. Data will be obtained by video-taping your classroom teachings and learning episodes. Note that many lessons are expected to be observed as you teach the upper primary subjects.

The final method of data collection will involve document analysis. Your texts and documents like teaching programs, work samples, copies of students' assignments, projects and other policies in your school will be collected and analysed. You will crosscheck the analysis of the texts and documents for verification purposes. Students' texts and documents like assignments, projects and classes exercises will be collected and analysed. Student will cross check the analysis of the texts and documents for verification purposes.

Your full consent will be sought before the interviews and videoing of the lessons commence, and obtaining of the texts and documents. Also, the full consent of the parents/caregivers will be sought for students who will be invited to participate in the study in your class.
During the study process, you, your school and the participating students will be very much respected at all times. A mature approach to data collection and relationships will be maintained throughout the study. The data collected will be treated as strictly confidential and will not be disclosed to any person other than my research supervisors during the study. The use of pseudonyms will be used for the names of the school and participants in the final study report. All information collected for the study will be stored securely by the researcher in a safe locked cupboard. Your intellectual property will be respected in the study.

Participation in this study is voluntary and you may withdraw from this research at any time. If you have any queries regarding this research, please direct them to me or my chief supervisor:

Dr. Anne Hume
Chief Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 07856 2889

Email: annehume@waikato.ac.nz

Please sign and return the attached Informed Consent form if you agree to participate in this study.
Thank you.

Yours faithfully,

.....
Joseph Lingawa
Researcher/PhD Candidate
School of Education
The University of Waikato
New Zealand

.....
Dr. Anne Hume
Chief Supervisor
School of Education Research Centre
School of Education
The University of Waikato,
New Zealand

Appendix Z: Information for students

Dear student,

My name is Joseph Lingawa and I am a doctoral (PhD) student from the University of Waikato in New Zealand. For my research project, I have chosen your school and would like to invite you to be a participant in this research.
This letter is seeking your consent to carry out the field study that is estimated to take six months and is scheduled to take place between February and July, 2010. My proposed research topic is: *Investigating national curriculum implementation in Papua New Guinea*.

You are studying different subjects in your class. In the different subjects, you learn and do different activities. Therefore, this study is seeking to find out your views, experiences, knowledge and understanding of the different subjects you study in your class.

The study will involve three methods of data gathering. The first method of data collection strategy is a semi-structured interview. You will be interviewed as a group that will take about 20 to 30 minutes. The interviews will be tape recorded. The second method of data collection will involve lesson observation. You will be video-taped when your teacher is teaching a 30 to 40 minute lessons. The final method of data collection will involve document analysis. I will collect your assignments, projects and class activities you have done and analysis them. You will cross check the scripts of these documents later.
Your full consent will be sought before the interviews and videoing of the lessons commence, and collecting of the texts and documents. Also, the full consent of your parents/caregivers will be sought for you to participate in the study. If your parent/caregiver does not give full consent, you will not be allowed to participate in the study.

During the study, you and your school will be very much respected at all times. This means, I will at all times maintain good relationships with you and your school throughout the study. The data collected will be treated as strictly confidential and will not be made known to any person other than my research supervisors during the study. Your names and school will not be used in the final study report. All information collected for the study will be stored securely by the researcher in a safe locked cupboard.
Participation in this study is voluntary and you may withdraw at any time. If you have any queries or questions regarding this research, please direct them to me or my supervisor.

Dr. Anne Hume
Chief Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 07856 2889

Email: annehume@waikato.ac.nz

Please sign and return the attached Informed Consent form if you agree to participate in this study.
Thank you.
Yours faithfully,

....
Joseph Lingawa Dr. Anne Hume
Researcher/PhD Candidate Chief Supervisor
School of Education School of Education Research Centre
The University of Waikato School of Education
New Zealand The University of Waikato,
New Zealand

Appendix ZA: Interview and video consent form for teachers

Instruction: If you feel conformable to take part in this study, then do the following.

1. Put a tick (√) to the boxes below.
2. Sign and date this consent form.

☐ I give my full consent to tape-record my verbal interview responses.

☐ I give my full consent to video tape my teaching and learning episodes.

☐ I allow the use of videotexts, interview transcripts and use of the document scripts for the researcher's doctoral thesis, publication, seminars and conferences purposes only.

☐ I understand and agreed to take part in the study, I can withdraw Consent at any time and is voluntary.

☐ I understand that my name will not be revealed in any parts of the research or written report of the research.

☐ I understand that the data will be reported in a way to protect my confidentiality and the data will be stored securely.

Signature: _____

Date: _____

Appendix ZB: Interview and video consent form for students and parents/caregivers

Instruction: If you feel conformable or your child to take part in this, then do the following.

1. Put a tick (√) to the boxes below that appropriates you.
2. Write your full name, sign and date this consent form

☐ We have read and fully understood the information provided by the researcher about this study.

☐ We understand and agree to take part in the study; we can withdraw consent *at any time.*

☐ We understand that taking part in this study is voluntary.

☐ We/I give full consent to tape-record my child's verbal interview responses/ video tape the child's learning behaviour episodes. Also I give full consent that the videotexts, interview transcripts and use of the document scripts for the researcher's doctoral thesis, publication, seminars and conferences purposes only. (For students involved in both interview & videoing only)

☐ We/I give full consent to video tape my child's learning behaviour episodes. We/I also give full consent that videotexts can used for the researcher's doctoral thesis, publication, seminars and conferences purposes only. (For students involved in videoing only)

☐ We/I understand that the child's name will not be revealed in any parts of the research or written report of the research. We/I also understand that the data will be reported in a way to protect the child's confidentiality and the data will be stored securely.

Student name:.....sign:.....Date:.....

Parent/caregiver name.....sign.....Date.....

Appendix ZC: Invitation to participate in an interview session for teachers and students

Dear teacher/student,

I would like to invite you to participate in an interview session that is part of my research project. The purpose of this interview is to gain an in-depth insight of your views, experiences, understanding in the implementation of the national outcome-based curriculum in your class.

If you decide to volunteer to participate in this research, I will ask you to do these things:

Participate in a 30 to 40 minutes oral interview for teachers and 20 to 30 minutes for students.

Your interview will be audio-recorded for later reference.

Your name will not be disclosed.

Teachers will get the transcripts of these interviews for confirmation and amendment.
Any information obtained from this interview will be disclosed only with your permission.
Please indicate your preference for an interview session.

☐ At lunch

☐ When school ends (between 3:00 pm to 4:00 pm)

I agree to participate in this interview.

Name : _____

Signature : _____

Date : _____

Appendix ZD: Interview and video information for parents/caregivers

Dear parent/caregiver,

My name is Joseph Lingawa and I am a doctoral (PhD) student from the University of Waikato in New Zealand. For my research project, I have chosen..... **Primary School** to conduct my field study. Your child has been chosen as a participant to involve in this research.

This letter is seeking your consent for your child to participate in the field study that is estimated to take six months and is scheduled to take place from February to July in 2010. My proposed research topic is: *Investigating national curriculum implementation in Papua New Guinea.*

The aim of this research is to investigate how teachers are interpreting the national curriculum and the factors that are influencing their interpretation of the national outcome-based curriculum and the planning and delivery of the student experienced curriculum in contemporary PNG upper primary schools. The study also seeks to investigate *how* and *what* students are learning.

The research will focus on the implementation of the upper primary (Grades 6, 7 & 8) subjects and will investigate perceptions and experiences of the students during the implementation. The study will provide an opportunity for your child to voice her or his views on how he or she experiences the outcome-based national curriculum.

The study will involve three methods of data gathering. The first method of data collection strategy is a semi-structured interview. The participating students will be interviewed as a group for 20 to 30 minutes. The interviews will be tape recorded and transcribed. The second method of data collection will involve observation strategy. Data will be obtained by video-taping classroom teachings and learning episodes. 30 to 40 minute lessons will be video-taped when teachers are teaching the upper primary subjects. If you do not give full consent for your child to be video-taped your child will be asked to move to another class when a 30 to 40 minutes lesson is videoed without the students' interests being affected. This will be arranged with the class teachers. The final method of data collection will involve document analysis. Texts and documents like students' assignments, projects, class activities, remedial and enrichment activities will be collected and analysed. Your child's permission will be sought to collect these documents and he or she will crosscheck the analysis data for verification purposes.

During the study process, the school and the study participants will be very much respected at all times. A mature approach to data collection and relationships will be maintained throughout the study. The data collected will be treated as strictly confidential and will not be disclosed to any person other than my research supervisors during the study. The use of pseudonyms will be used for the names of the schools and participating students in the final study report. All information collected for the study will be stored securely by the researcher in a safe locked cupboard.

Participation in this study is voluntary and your child may withdraw at any time. If you have any queries or questions regarding this research, please direct them to me or my chief supervisor:

Dr. Anne Hume
Chief Supervisor
The University of Waikato
School of Education Research Centre
Private Bag 3105
HAMILTON
New Zealand
Phone: 07 856 2889

Email: annehume@waikato.ac.nz

Please sign and return the attached Informed Consent form if you agree to have your child participate in this study.
Thank you.
Yours faithfully,

.....
Joseph Lingawa
Researcher/PhD Candidate
School of Education
The University of Waikato
New Zealand

.....
Dr. Anne Hume
Chief Supervisor
School of Education Research Centre
School of Education
The University of Waikato,
New Zealand

Appendix ZE: Integrated outcome model of the micro-curriculum plan – Case Study One

(i) Betty and Maria

Overview of integrated outcome unit of work

Subjects	Strands	Sub-strands
Language	1.Speaking and Listening 2.Reading 3.Writing	Production
Social Science	1.Organization 2.Culture	1. Social and Economic Organization 2. Cultural Expression
P/Development	1.Relationship	1. Integrations in relationships and groups 2. Managing relationships.

Integrated learning outcomes

Subject	Learning outcomes
Language	6.1.1: Communicating for different purposes locally relevant ideas to a variety of audiences 6.2.1: Read and respond to a range of texts about real and imaginary worlds 6.3.1: Plan and produce arrange of literacy and factual texts for a range of purposes and audiences
Social Science	6.2.2: Appraise the relationship between groups and the contributions they make to the local society and economy. 6.3.1 Identify and describe the basic features of local culture and cultures.
Personal Development	6.1.1: Identify groups to which they belong such as family, friends and tribe. 6.1.2: Identify different types of relationships and how people interact with each other. 6.1.5: Demonstrate sharing and cooperative skills.

Duration: 3 weeks
***Theme of unit title*: Family Relationship**
Purpose of unit of work (Make explicit what students expected to know and do to demonstrate the learning outcomes): Students can identify and describe different groups people belong to and relationship between the family groups with what they do in the group as they grow. In doing so, they can communicate between the groups and develop a good relationship between their families, friends and tribes and community as a whole.

Elaboration of integrated learning outcomes

Knowledge	Skills	Attitude
Personal Development: Groups to which Individuals belong • Family, tribe, village, sports team, peer groups, religious group, friendship, classmate clubs. • Behaviour and dressing in a particular way. • Involvement of females in decision-making.	• Research and gather information. • Analyze different groups and their influences. • Team work and cooperation. • Communicating	• Appreciate and take pride in their involvement with various groups. • Accept the various groups they have relationship with. Accept correction

• Different types of relationship. • Parent, teacher, peer groups, siblings, coach, doctor, boyfriend, girl friend, employer, employee. • Behaviours that affect relationship. • Cultural differences, thinking positively or negatively, sharing or selfish, listening or not listening.	with others. • Solving problems. Peacefully.	from others.
Social Science: Contribution made by various Groups • Family income, bringing fresh foods to market. • Families originate from various clans/tribes. • Different types of families are: nuclear, extended, polygamy, polyandry, single parent.	• Collecting stories from news papers. • Interviewing • Explaining/drawing . • Discussing	• Appreciate own and other's families.
Language • To develop the understanding of texts and how texts are structured in explanation of relationships of various families/people. • Descriptive writing (family) - Correct structure - Correct tenses - Types of different adjectives	• Reading and discussing. • Use adjectives, tenses and vocabulary and grammars in written texts.	• Appreciate and take pride in own work.

Content

Learning and teaching activities	Strategies	Resources
1.Personal Development • Students will list the groups they belong to and the influences it has on them. • Explore how names are used to identify individuals and their relationships with others. • List the different groups they (students) belong to and what do they get from those groups (positive or negative). • List reasons for change in relationship. • Students will list positive and negative behaviours. • Describe how these behaviours affect their friendships with others.	• Teacher modeling • Group work. • Discovery learning.	• P/Development Teachers 'Guide/Syllabus. • P/Development Students' Book. • P/Développent Teachers' Resource book
1.Social Science • Definitions of words/terms such as: family, parents, nuclear family, extended, marriage, etc. • Draw their own family tree. (Assessment) • Describe similarities and differences in various families. • Discuss and list family values and state how these values assist the community. • Find/collect pictures from newspapers magazines about different types of families.	• Discovery learning. • Demonstration. • Teacher modeling	• S/S Teachers' Guide/Syllabus. • S/S Students Book. • S/S Teachers' Resource Book. • Pupils BK Gr7 'Families'

1.Language • In pairs orally describe their individual family. (The number of children and adults, who is living with them etc). • Write up some family words such as parents, mother, brother, sister, cousin, niece, uncle, aunty, sibling, grandparents. • Define the above words and write a sentence each for each of the words. • Read and study a text sample on "My Life Stay". • Students will write a descriptive writing about their family.	• Teacher modeling • Guided learning • Group work.	• Lang Teachers' Guide and Syllabus. • Teachers Resources Book • Students' Book

Assessment Plan

Assessment Method	Assessment Task	Assessment Criteria	Record Method
1. Personal Development • Analysis of students written 1.Assessable Activity	• Students will complete a given passage in class. They will choose the correct word from groups of given words to complete the passage. (Passage will be provided on A4 size paper.	• I mark will be awarded for the correct answer given. Total: _____/10mks	Marks will be recorded on the SAPS SAPS Class list (SAPS)
2.Group work	• In groups, students will classify behaviours into those that help to solve problems and those that do not help to solve problems.	• Behaviours are correctly classified under the correct headings. Total: _____/10mks	
3.Assignment	• Students will individually draw their family tree showing the relationship between their parents and their parents'	1.Diagram must be correctly drawn showing the relationship between your parents and their siblings in (a) Written/words __/6mks (b) Diagram ___/10mks (2) Diagram must be neatly drawn __/4mks Total ____/20mks	
2.Social Science • Analysis of students written products 1.Illustration of students family tree	1. Individually, students will draw their own family tree similar to the teacher's sample. 1. The family tree can be from the mother or father's family. Total: _____/20mks	(1) Family tree must clearly show the following information A. Your great grand parents ___/2mks B. Your grandfather form either your mum/dad __/5mks C. Your mum/dad with their siblings. ___/5mks D. Your place in the	

		family. ____/5mks 2. Neatly and clearly drawn ___3 marks	
2.Analysis of students written work	2 Written test • Students will write written responses to given questions.	• 1 mark each for multiple choice questions. 1 or 2 marks respectively for short answer Qs Total: _____/20mks	
3. Language • Analysis of students written responses	**1. Spelling test** • Students will correctly write a short spelling test	• 1 mark each for words spelt correctly Total ___/15mks	
	2. Dictation Passage • Students will write a dictation passage read by the teacher.	• Words spelt correctly __7mks • Punctuation ___/3mks • Tenses ____/2mks • Grammar ___/3mks Total: ___/15mks	
	3. Essay Writing • **Genre:** Descriptive writing. Students will individually write a description of their small family.	Areas of assessment a. Relevant title: ___/1mks b. Purpose of the essay. __/4mks (What is it about?) c. Correct use of adjectives ___/5mks d. Relevant descriptions ___/5mks e. Clear and readable. ___/5mks f. Neat and tidy. ___/2mks Total: ___/20mks	

Appendix ZF: Single outcome model of the micro-curriculum plan – Case Study One

(i) Evelyn

Language overview

Term	Strands	Sub-strands	Learning outcomes	Assessment
1	• Speaking & Listening • Reading • Writing	Production	8.1.1, 8.2.2, 8.1.4, 8.1.3, 8.1.2, 8.3.1, 8.3.4, 8.2.4	3 Tests 2 Assignments
2		Skills & Strategies	8.1.2, 8.3.1, 8.2.3, 8.2.2, 8.1.3, 8.2.1, 8.1.1	3 Tests 2 Assignments 1

				Presentations
3		Context & Text	8.1.3, 8.2.3, 8.3.1, 8.2.2, 8.3.4, 8.2.1	3 Test 1 Project 1 Presentation
4		Critical Literacy	8.1.4, 8.2.4, 8.3.2, 8.3.4, 8.3.3, 8.1.3, 8.2.3, 8.2.2, 8.3.1	2 Tests 1 Assignment

Reference/Resources Materials	Others
• Students/teachers resources book –Gr.8 • Upper Primary Language teachers guides and syllabus • English for Melanesia Book 2 • Create and Communicate • Library Skills guide Gr.7	• Encyclopedias, Dictionaries, comics, reading books, etc. • Newspapers, magazines, reference books (library). • Guest speakers etc.

Term One (1) Language Plan /2010

Week	Learning outcome	Suggested activities	Assessment
Orientation week			
1 2 3	8.1.1. Communicate in create ways, a range of complex issues of local, national, and international importance to a variety of audiences. 8.2.2, 8.2.4, 8.3.1 <u>S/Strand</u> • Production • Skills and strategies • Context and text, C/L	• What is communication? • Use metaphors & similes • Creating imaginative means of communication • Use vocabulary • Arguments/opinions • Writing compositions • Dialogues/speeches/debates • Identifying present information on communication. • Concern e.g smoking • Verbs/answering questions.	• Test (20 marks) • 1 assignment (20marks)
5 6 7	8.2.2: Analyze how a range of literary and factual texts can inform, affect and manipulate the responses of the reader. 8.1.3, 8.1.1, 8.3.1	• Skills of reading (skimming, scanning • Discussing • Questions/questionnaire • Vocabulary • Opinion (non-biased) • Cartoons, comics • Letters-argumentative/editor • Verb tenses/punctuations	• Assignment (15marks) • Test (25 marks)
8 8 10	8.1.4 Evaluate how ideas and information have been structured in a range of complex oral texts to meet the purpose and shape the understanding of audiences. 8.3.1, 8.3.3, 8.2.2 S/Strand	• Conventions – grammar • Use of verbs • Tenses (past & present) • Using tenses in writing/compositions • Adverb and their usage • Punctuations (apostrophes, commas, quotation marks, and other speech marks.	• Test (20 marks) Total = 100mark

	Critical Literacy, C/L		s

(ii) Evelyn

Unit of work – Single outcome

Grade 8 Subject Language Strand: Speaking & Listening, Reading and Writing
Sub-strand: Skills and strategies. Duration: 3 weeks (6,7,8)

Outcome: 8.2.2: Analyze how a range of literary and factual texts can inform, affect and manipulate the responses of the reader. (8.1.3, 8.1.1, 8.3.1).

Purpose: In this unit of work, the student will creatively use reading skills, analyze texts, use cartoons to convey meanings effectively with the correct usage of verb tense and punctuation. Also discussing the importance of letters to the editor.

Unit of work

Knowledge	Skills	Attitude
• Skills of reading – skimming, scanning etc • Verbs, adverbs, tenses, past, present, future, past participles, etc. • Punctuations – capital letters, full stops, commas, questions marks exclamation marks etc. • Reading comprehension. • Letters to the editor. The process (writing) notes. • Issues, arguments, solutions • Usage of puns, irony, metaphor. • Cartoons, vocabulary, dictation.	• Discussing texts. • Reading and analyzing. • Reasoning, identifying. • Writing, scanning & skimming. • Analyzing cartoon types. • Defining meaning of words	• Appreciating language. • Sharing ideas. • Respecting others point of view. • Marking independently.

Content

Teaching and learning Activities	Strategies	Resources
• Define the words: scanning, skimming, verbs, adverbs, cartoons. • Punctuation – capital letters – copy notes –end marks –full stops, do exercises, question marks, exclamation • Vocabulary activity – (Punctuations) • Grammar & usage (verb –types & eg writing process • Letters to the editor (review) samples –write own letter • Dictation exercise/cloze passage.	• Individual • Group/pair work • Brainstorming • Demonstration	• C & C p.11-12, 51 -52 • Vocabulary p. 33/34. • Diet passage – p.29 • Dictionary of grammar & Usage –p.315 - 333. • CUBK 1 (Wr.proccess p.9)

Assessment Plan

Assessment Method	Assessment Task	Assessment Criteria	Record Method
• 1 x assignment (20 marks) • 1 x test (written test on punctuations, verbs, tenses - 25 marks)	• Reading and comprehension task on a letter to editor – (read and then answer questions.	Correct answers	SAPS

(iii) Sharon

Unit of work – Single outcome.

Grade 7 Subject Social Science Strand: Environment and Resources
Sub-strand: People and Environment. Duration: 2 weeks

Outcome: 7.1.2. Describe how national physical features influence human settlement patterns in PNG and the neighboring regions.

Purpose: Discuss reasons for human settlement understands the two main types of settlement in Papua New Guinea.

Unit of work

Knowledge	Skills	Attitude
Settlements • Houses. • Villages • Towns and cities Transport. • Air, sea and land. Air transport is most expensive. Road is a cheap form of transport but is limited due to mountainous country. Sea is also cheaper but it is slow.	• Identifying • Reading • Interpretation • Calculating • Reporting	• Actively with clear understanding, sensitive, confidently, accuracy.

Content

Teaching and learning Activities	Strategies	Resources
1. Filling blank spaces 2. Map reading and calculation. 3. Survey of transport 4. Oral questions 5. Written exercises	• Brainstorming. • Graphic Organizers. • Remedial Exercises. • Homework	• Grade seven s/s Trs Guide and S/S syllabus. • PNG its land and resources

Assessment Plan

Assessment Method	Assessment Task	Assessment Criteria	Record Method
• Questionnaires (worksheet survey)	•Written questionnaires. Survey on different types of transport in your area and formulate a bar graph on different types of transport used daily.	1. Questions 1 x 20. 2. Tally -10 mks 3. Graph – 20mks	SAPS

Appendix ZG: Integrated outcome daily weekly lesson plans – Case Study One

(i) Betty

Grade 6 Subject: Language Week: 8 Strand: Speaking & Listening, Reading, Writing. Sub strand: Production. Theme: Family Relationship Resources: English for Melanesia, Lang OBE Teachers & Students book

Teaching steps	Monday [22/03/2010]	Tuesday [23/03/2010]	Wednesday [24/03/2010]	Thursday [25/03/2010]	Friday [26/03/2010]
Introduction	• Students spell some family words they've learnt last week.	• Students will tell each other about themselves. Who Am I? My nose is like my dad. My hair is my mum's.	• Teacher will read the passage on the given text and students check their answers.	• Students play the game 'Father says" • Father says comb your hair.	• Students say and spell some family words they've learnt
Body	• Go through the spelling test and the dictation passage done on Friday. • If possible, write the correct passage on the board and allow them to copy it into their bks.	• Teacher will read a short text after the students have finished drawing and filling the information in the circles. Con board. • They will listen for first time. • They will fill out the missing words when that tr reads the second time slowly.	• Write out the instructions on the task (Descriptive writing) • Students will copy the instructions plus the marking criteria into their bks. • Explain the task and do emphasize on the criteria.	• Check the students to see who has started on the task and stress on any areas of difficulty. (describe your family as on example). • Continue with the task.	• Check the students progress and allow them time to complete their easy. • Assist and supervise them.
Conclusion	• Do some finger plays to wind up the lesson.	• Correct the written information.	• Assist anyone who is still in doubt.	• Stress on points mentioned in the criteria.	• Collect all completed tasks for marking.

(ii) Maria

Grade 6 Subject: Personal Development Week: 8 Strand: Relationships. Sub strand: Managing Relationship. Theme: Family Relationship Resources'/D Stds Res.BK.

Teaching steps	Monday [22/03/2010]	Tuesday [23/03/2010]	Wednesday [24/03/2010]	Thursday [25/03/2010]	Friday [26/03/2010]
Introduction	• Students respond to various revision questions based on last week's lesson.	• Correction will be done based on yesterday's activity.	Students respond to revision questions based on the previous day's activities.		• Stds will answer oral revision questions based on the week's activities.

Body	• Together read and discuss notes on pg 16 (Stds bks). • Brainstorm on the board some behaviours that help retain relationships and those that destroy relationship. • Make a table and let stds to copy the behaviours on pg 17 into their bks.	• Students will work on task # 2 in groups. They will; classify given behaviours under those that helps to solve problems and those that don't help to solve problems in a table. • Assist each group.	• Read together pages 14-15 and discuss the relationship from the family tree. • Students will copy down the instructions and marking criteria on the task. They will use the sample as example to do their family tree.	• Stds will write answers to revision questions. • List 3 groups you belong to. • With whom do we have relationship with? Sister, cousin etc. • How do people interact with each other? • List some changes that occur in relationships
Conclusion	• Read through the list and make sure that stds have done that activity correctly.	• Collect all the completed tasks for marking and recording.	Emphasize that the task will be done at their own time.	• Collect and mark stds exercise bks.

Appendix ZH: Single outcome daily weekly lesson plans – Case Study One

(i) Evelyn

Grade 8 Subject: Language Week: Three (3) Strand: Speaking & Listening, reading, writing Sub strand: Skills & Strategies Resources: UP Syl, C & C GR 8 Std, Newspaper. Pacific Series

Teaching steps	Monday [15/02/2010]	Tuesday [16/02/2010]	Wednesday [17/02/2010]	Thursday [18/02/2010]	Friday [19/02/2010]
Introduction	Students brainstorm the theme 'Communication'.	Revision on previous activity.	• Revise on words and meaning already learnt. (irony, pun, etc)	• Brainstorm modes of communication. • Emphasize words and meanings.	Class brainstorms the importance of a newspaper.

Body	• List down the different means of communication. • Create a mind map • Stds also discuss the advantages and disadvantages of each mode they've listed down. • C & C. p.13 – Asking someone on the telephone.	Define words • Communication • Imaginative • Creative, amuse • Puns, issues • Irony, jokes • Subtle, humor • Metaphors, smiles • Modes • Do activities (1-3) • Discuss and formulate notes for stds to copy (stds Bk p.3-4).	• Discuss what a pun is and give examples. • (Act 3-4) • Formulate notes • Set additional activity • Do activity on subject – verb – agreement – C & C p.21 -22 • Set homework.	• Individual std identify a mode preferred and state views on its usefulness, advantages as well as any disadvantages of it. (Paragraph writing) • Supervise stds work • Also do activity 5 & 6.	• Discuss what a newspaper is? • The different parts of a newspaper. • Identify letters to the editor and discuss the purpose of it. • Cut out a sample (article letter) and set questions based on the letter for stds to answer.
Conclusion	• Class discussion on certain modes. • Continues as H/wk.	• Summarize notes.	• Correct activities • Summarize notes/activities.	• Summarize lesson (main ideas)	• Copy letter sample on p.205 – Melanesia Bk1 • Do correction • Summarize notes.

(ii) Sharon

Grade 7 Subject: Social Science Week: 3-4 Strand: Social and Economic Organization Sub strand: Organization. Theme: Services: Resources: Government in PNG

Teaching steps	Monday [/03/2010]	Tuesday [/03/2010]	Wednesday [/03/2010]	Thursday [/03/2010]	Friday [/03/2010]
Introduction	- Introduce the strand and the sub-strand.	-Groups that provide services around your community.	-Revise government services	-Ask students. "What are community services?" Students brainstorm answers.	-Ask general knowledge questions to draw student attention.

Body	Outline the purpose and stress the definition of the keywords. • Identify • Contributions • Development • Obtain • Information • Services • Provide	Discuss government services provided in your community and list them. Eg Hospital, school and the advantages of having those services provided in your area or community.	• Commercial Services are provided by private business. • People pay directly for the services or for what they are buying. E.g shipping companies, shops, newspapers, banks, private doctors, airline companies.	• Write the definition of commercial services and their examples •Community services are provided by church groups and other organizations . Usually they are provided free to the public. E.g, women's groups, youths, sports groups	Revision exercise. • What are government services? • What are the other two types of services? • Discuss and write down why community service organizations are very important in PNG.
Conclusion	• Find out about groups that provide services in and around your community.	-Government services are provided by the government. They are funded by money collected by taxes.	-Students find out and name some of the commercial companies for home work.	• Students copy notes.	• Collect students' books for marking.

Appendix ZI: Sample teachers' constructed summative test activity – Case Study One

(i).Ruth

Banipul Primary School
Social Science Test # 1 Term One 2010

Name …….Class…….. Date……. -----/18

Instruction: Read each question carefully before attempting. The test consists of multiple choice, short answers, explanation and vocabulary

Part: A- Multiple choices

1. A quarter of a circle (earth from the equator to the north and South Pole is how many degrees?
A) 90 degrees B) 360 degrees C) 180 degrees D) 60 degrees
2. If the earth was closer to the sun what would have happened?
A). Heat could blow away the atmosphere and water.
B). Have the right physical environment to support life.
C). The earth would be too cold.
D). the earth would be rotating on its axis.
3. What is one of the most important factors in making climate zone?
A). Land and water. B). atmosphere C). Earth surface D). Wind.
4. Which region is often dry and sometimes temperature varies?
A). Sub-tropical B). Temperate C). Polar D. Tropical
5. Which of the following zones have four (4) seasons: autumn, winter, summer and spring?
A). Polar B). Tropical C). Temperate D). Sub-tropical

Part B: Short Answers

Write down short answers for the following questions.

6 How long does it take the earth to orbit the sun? _____
7. Locations on the map are measured in _____
8. How many hours does it take the earth to rotate on its axis as it turns around the sun? _____
9. What are the two main features on the earth's surface? a) _____b)_____
10. List 3 main functions of the atmosphere or the importance of the atmosphere
a)._____b)._____c)._____
____
11. Who studies how people interact with each other and how they interact with the physical word?
_____

Part C: Vocabulary
Match the following words with their most correct meanings. Write letters in front of their meanings.

Words **Meanings**
A) Prime Meridian ____all of space to include our world, the sun, stars and beyond; also called cosmos.
B) Hemisphere _____the location of a place east or west of the Prime Meridian.
C) Latitude _____a navigational line that runs from North to South Poles through Greenwich, England.
D). Longitude ___ the two halves of the planet Earth.
E). Universe ____ the location of a place north or south of the equator.

End of test

Appendix ZJ: Sample teachers' constructed assignment activity – Case Study One

(i). Maria

Personal Development Task # 1: Term 2
Strand: Health of Individuals and Populations
Sub-strand: Community Health
Theme: Healthy Living
Task Title: Designing a poster

Instructions
1. You will work in groups to do this task
2. You will design a poster or some other awareness campaign to get people to do the right thing.
   e.g. -- get people to use toilets properly
   - wash hands with soap and water after using the toilets or before eating.
   - put rubbish in the right place.
   - keep food covered at all times
   - avoid drinking dirty water.
3. The task is weighed 15 marks and is due on Friday.

Marking criteria

No	Areas to assess	Marks awarded			Total
		Very Good-3	Good-2	Satisfactory-1	
A	Poster must be correctly designed				
B	Must present a powerful message				
C	Phrases or words must support the diagrams.				
D	Diagrams must be coloured				
E	Neat and tidy				
Total		**15**	**10**	**5**	**---/15**

Appendix ZK: Upper primary class timetable - Case Study One

(i) Grade six class timetable

Time	Mon	Tue	Wed	Thurs	Fri	Time analysis		
8:00-8:40	Assembly	Christian Life Studies (CLS)			Assembly	Subject	# of lessons	Total
8:40-9:20	Language					Assembly	2 x40	80
9:20-10:00	Mathematics					CLS	3 x40	120
10:00–10:30	RECESS					Language	8 x40	320
10:30-11:10	Language	Math	Language	Math	Language	Math	7 x40	280
11:10-11:50	Science	Social Science		Science	S/Science	Science	5 x40	200
11:50-12:30	S/Science	MAL	Science	PD	Science	S/Science	5 X 40	200
12:30-1:30	LUNCH					PD	1 x 40 2 x 50	140
1:30-2:10	Art	Science	Art	S/Science	Art	MAL	1 x 40 2 x 50	140
2:10-3:00	MAL	PD	MAL	MAL	PD	Art	3 x40	120
						Total	1650	1650

(ii) Grade seven and eight master time table

Time	Period	Mon				Tue				Wed				Thurs				Friday			
		R	B	G	Y	R	B	G	Y	R	B	G	Y	R	B	G	Y	R	B	G	Y
8:00-840	1	Assembly				Christian Life Study												Assembly			
8:40-9:20	2	Ma	La	MAL	S/S	La	Ma	Sci	S/S	S/S	Sci	Ma	La	PD	S/S	La	Ma	Ma	PD	S/S	Sci
9:20-10:00	3	La	Sci	Ma	MAL	Ma	MAL	PD	La	Sci	S/S	La	Ma	La	PD	Ma	S/S	Sci	La	PD	Ma
10:00-10:30		RECESS																			
10:30-11:10	4	Sci	MAL	S/S	PD	S/S	Sci	Ma	MAL	MAT	Art	Sci	PD	Ma	MAL	Sci	La	PD	Ma	La	S/S
11:10-11:50	5	S/S	PD	La	Sci	PD	S/S	MAL	Ma	La	PD	Art	S/S	MAL	Sci	S/S	PD	La	MAL	Ma	PD
11:50-12:30	6	MAL	S/S	Sci	Ma	Sci	La		PD	Art	Ma	S/S	Sci		Ma	PD	Sci	S/S		Sci	
12:30-1:30		LUNCH																			
1:30-2:10	7	PD	Arts	Mal	La	Arts	PD	La	MAL	Ma	La	MA	Art	S/S	MAL	PD	Arts	PD	S/S	Arts	MAL
2:10-2:50	8			PD	Mal			S/S	Sci	Work parade				Sci	La			La	Sci		
2:50-3:00		Patron's time																			

Appendix ZL: Integrated outcome model of micro-curriculum plan - Case Study Two

(i). Roger & Peter

Subjects: Personal Development and Science
Document: Outcomes Based integrated Planning and programming

Yearly Overview 2010

Term	Subject	Outcomes	Themes	Duration	Weeks
One	Personal Development	8.3.1, 8.3.2	Culture, values and lifestyles	4	1, 2, 3, 4
		8.4.1, 8.4.2, 8.4.3	Factors that influences growth and development in animals and plants	4	5, 6, 7, 8
		8.3.2		3	9, 10, 11
	Science	8.2.1, 8.3.1		6	1, 2, 3, 4, 5
		8.3.2, 8.3.3	Different culture	5	6, 7, 8, 9, 10, 11
Two	Personal Development	8.1.1, 8.5.4, 8.5.5, 8.4.9, 8.4.2	Behaviors of individuals and groups in community	5	1, 2, 3, 4, 5
		8.1.5, 8.2.1, 8.2.2, 8.2.3, 8.2.4	Environmental issues	5	6, 7, 8, 9, 10
	Science	8.3.2, 8.1.1	Managing Resources	5	1, 2, 3, 4, 5
		8.2.2, 8.3.4	Relationship	5	6, 7, 8, 9, 10
Three	Personal Development	8.5.1, 8.5.4	Community Development	4	1, 2, 3, 4
		8.5.3	Leadership	2	5, 6
		8.1.4, 8.5.4, 8.5.5	Government	4	7, 8, 9, 10
	Science	8.3.3, 8.4.2	Interaction	5	1, 2, 3, 4, 5
		8.3.2, 8.4.2	Promote Health	5	6, 7, 8, 9, 10
Four	Personal Development	8.2.6	Communication	3	1, 2, 3
		8.1.2, 8.1.3	Trade	3	4, 5, 6
		8.2.6, 8.3.1, 8.3.2	Money	4	7, 8, 9, 10
	Science	8.3.5	Feeding	3	1, 2, 3
		8.2.2	Association	2	4, 5

Unit of work
Theme 2: Factors that influence growth and development in animals and plants
Term 1 Duration: 4 weeks (weeks 5-9)

Subject	strand	Sub-strand	Outcomes
Personal Development	Health of individuals and population	Growth and Development	8.4.1: Identify and describe behavior that promotes growth and development, taking into account heredity and environment. 8.4.2: Outline issues arising from differences in rates of growth and development and how individuals manage the changes. 8.4.3: Identify different cultural beliefs and values about sexuality

Purpose: In this unit of work the students will compare and contrast about the development of living things like plants and animals including human beings. They will identify the influential factors like heredity and environment and some of the process they go through

development. They do so by respecting themselves as human beings with appreciation and values of their lives.

Content

Knowledge	Skills	Attitudes
Students will demonstrate understanding of: • Behavior that promotes growth and development of a child (personal development) • Different stages about child development • Responsibilities of parents for balanced diet, addressing drug issues, caring for young. • Issues and how individual manage changes	Students will develop the skills to: • Research information by interviewing parents and pastors. • Demonstrate the responsibility of parents. • Making connections between different ideas • Read a news item to present related information about child development • Identify and describe issues regarding adolescents. • Modeling skills for handing the different issues.	• Taking pride in talking about plants and animals • Respecting human growth and animals. • Respecting the religious beliefs about child birth. • Respect cultures that we have. • Concern about our growth. • Demonstrate responsibility for handling adolescence at their stage. • Take pride in reading.

Teaching and learning activities

Weekly lesson overview	
Week	Teaching and learning activities
5	• Identify the characteristics that determine boy or a girls • Cooperative discussion and name some of the plants and animals that respond to stimuli
6	• Group discussion and draw a flow chart about a child's development from 6 months – 5 years old. Add some information about the physical and language development at that time (assessment)
7	• Research-based and list different behaviors and conditions that promote or lessen growth and development (PD) • Cooperative group discussion on how families and cultural groups influence growth and development (PD) • Cooperative discussion on the roles and responsibilities of parents and how they help promote the development of children (PD).
8	•

Resources: Upper Primary Teachers Guide for Personal Development, Science.

Assessment plan

Assessment methods	Assessment task	Marking criteria	Record method
Analyses of students written work	Students will draw a flow diagram showing the ages from 6 months -3years old. Link the flow diagram; provide information of the physical growth, language development and some of the influential factors including parental inputs.	• Well presented information on clean A3 paper. • Neatly drawn flow diagrams showing ages. • Neat and correct printed details on physical development. • Neat and correct details of parental input (5mks)	Checklist
Analyze students written work	Write some issues concerning adolescent life and how environment influences.		

Unit of work

Theme: Factors that promote individual growth and development

Term 1: Duration 4 weeks (4-7)

Learning outcomes

Subject	strand	Sub-strand	Outcomes
Science	Living things	Nature of living things	8.2.1: Describe and explain the process of reproduction in living things and how the environment influences these process

Purpose:

In this unit of work the students will compare and contrast about the development of living things like plants and animals including human beings. They will identify the influential like heredity and environment and some of the process they go through development. The do so bet respecting themselves as human beings with appreciations and values of their lives.

Content

Knowledge	Skills	Attitudes
Student will demonstrate understanding of: • Structure and function of male and female reproductive system (Science) • Environment and reproduction – sexual behaviors and patterns depend on the type of environment (Science) • The right seasons that plants pollinate flowers and animals to reproduce. • How human beings develop (Science)	Students will develop the skills to: • Identify and describe patterns of reproduction in an animal or plant and compile a folio of how it reproduces and when, reasons why and competitions for mates • Analyze information and find out about human life cycle; birth, growth, death and other animal life cycles such as butterfly. • Research information by interviewing parents and pastors • Demonstrate the responsibility of parents. • Making connections between different ideas. • Read a news item to present related information about child development. • Identify and describe issues regarding adolescents. • Modeling skills for handling the different issues.	• Taking pride in talking about plants and animals • Respecting human growth and animals. • Respecting the religious beliefs about child birth. • Respect cultures that we have. • Concern about our growth. • Demonstrate responsibility for handling adolescence at their stage. • Take pride in reading.

Teaching and learning activities

Weekly lesson overview	
Week	Teaching and learning activities
1	• Researched based and design and conduct fair test to distinguish the materials that biodegradable and non-biodegradable • In cooperative groups collect substances like plastic, glass, metals, strings, clothes and other substances to list them in tables on their effects
2 3	• In Cooperative groups conduct survey to classify the material in their categories • In Cooperative group make poster to make awareness in the community.

Assessment plan

Assessment methods	Assessment task	Marking criteria	Record method
Analyzing students work sample	Students design and list the differences of materials which are biodegradable and non-biodegradable	• Students work evidence	Checklist
Observation	Students present their poster	• Creativity, neatness, relevance, participation	Checklist

Appendix ZM: Single outcome model of micro-curriculum plans – Case Study Two

(i) Duma

Yearly Overview
Grade: 6 Subject: Science Term One Year 2010

Terms	Weeks	Strands	Sub-strands	Learning outcomes	Resources
1	**11**	Science in the Home	Learning about substances	6.3.1 & 6.3.2	Science syllabuses & Teachers' guides.
			Using energy in the home.	6.3.3, 6.3.4 & 6.3.5	
2	**10**	Living Things	Nature of Living Things	6.2.1	
			Ecology relationship and Interactions	6.2.2	
		Working Scientifically		6.1.1	
3	**11**	Working Scientifically			
		Earth and beyond	Our Earth and its Origin	6.4.1	
4	**11**	Earth and beyond	Space Exploration	6.4.2	

Term Overview
Grade: Six A Subject: Science. Year 2010

Week	Strand	Sub-strand	Outcomes	Indicators	
1	**Registration, clean up and Orientation**				
2	Science in the Home	Learning about substances	6.3.1	2	30 lessons) 20
3					
4					
5			6.3.2	3	
6		Using energy in the home.	6.3.3	6	
7					
8			6.3.4	6	
9					
10			6.3.5	2	
11					

Teaching Program
Unit of work – Single outcome
Term One Week 5-6 Grade Six Subject: Science
Strand: Science in the Home. Sub-strand: Learning about substance

Learning outcome: 6.3.1: Identify and organize common substances into groups according to physical properties.

Purpose: For every student to identify and or know common substances in the home and their physical properties.

Unit content

Knowledge	Skills	Attitudes

• Common substances used in industries, eg grease oil etc. • Substances used in the home like soap etc. • Common national substances-Palm oil.	•Identify common substances in the home. •Classify common substances, properties, solids, liquids, gases.	•Most common substances are useful in the homes. • Most common substances are used in factories, industries. • Day to day use of these substances. • Properties of common substances.
Teaching and Learning activities		
Gathering information	**Analyzing information**	**Action**
• Grouping of substances. • Looking at supplies of substance from home.	• In cooperative groups classify the substances from home, natural and industries. • Researched and look at the properties of substances.	•List down substances under solid, liquid, gas. • Consider properties.
Assessment Plan		

Method	Task	Criteria	Record
Written responses on activities given.	• Answering questions associated to the topic.	•Correct written answer.	Individual performance

(ii) Peter

Grade: **8**
Subject: **Mathematics**
Document: **Outcomes Based single outcome planning and programming**

Yearly overview
Grade 8 Subject: Mathematics Year 2010

Term	Week	Strands	Sub-strands	Learning outcome	Reference or Materials
1	1	Number and Application	Orientation – general clean up		• Upper primary Math Syllabus and Teachers Guides • Upper Primary worked example for Mathematics
	2		Fractions	8.1.1	
	3				
	4		Decimal	8.1.2	
	5		Fractions and decimals	8.1.3	
	6		Percentage	8.1.4	
	7		Ration and rates	8.1.5	
	8			8.1.6	
	9		Directed numbers	8.1.7	
	10		Indices	8.1.8	
2	1	Space and Shape	Area	8.2.5	Secondary School Mathematics • 7A • 7B • 8A • 8B Concrete Materials, ie Man-made - Natural
	2				
	3		Volume and Capacity	8.2.6	
	4			8.2.7	
	5		Shape	8.2.9	
	6		Tessellations	8.2.10	
	7		Angles	8.2.11	
	8		Nets	8.2.14	
	9		Maps and Coordinates	8.2.16	
	10		**Grade 8 Mock Exam – 2007 Papers**		
3	1	Measurement & Change & Data	Weight	8.3.1, 8.3.2	Other resources such as: • Dictionaries • People etc
	2		Temperature	8.3.3	
	3		Time	8.3.4, 8.3.5	
	4		Statistics	8.4.1	
	5		Sets	8.4.2	
	6		Probability	8.4.3	
	7		Accuracy and Error	8.4.4, 8.4.5	
	8		Estimation	8.4.5, 8.4.6	

	9				
	10		**Grade 8 Mock Exam – 2008 Papers**		
4	1	Pattern & Algebra	Packing	8.4.7, 8.5.1	
	2		Algebra	8.5.2, 8.5.1	
	3		**General Revision and Coaching**		
	4		**Grade 8 – Final Mock Exam -2008 Papers**		
	5		Coaching		
	6		COBEE		
	7		Career week		
	8		Evaluation and Report writing		
	9		Graduation Preparation		
	10		Graduation and Conferencing - Goodbye		

Term one overview
Grade 8 Subject: Mathematics Year 2010

Term	Week	Strands	Sub-strands	Learning outcome	Reference or Materials
1	1	Number and Application	Orientation – general clean up		• Upper primary Math Syllabus and Teachers Guides • Upper Primary worked example for Mathematics
	2		Fractions	8.1.1	
	3				
	4		Decimal	8.1.2	
	5		Fractions and decimals	8.1.3	
	6		Percentage	8.1.4	
	7		Ration and rates	8.1.5	
	8			8.1.6	
	9		Directed numbers	8.1.7	
	10		Indices	8.1.8	

Unit of work: Grade 8: Term 1 – 2010
Subject: Math Strand: Number & Application Sub-strand: Fraction

Outcome: 8.1.1: Apply fractions in problem solving
Context (s): objects/things, people.
Duration: 2 Weeks (Weeks 5 & 6)
Purpose (s): To revise rules/ steps for decimal addition, substation, in solving real-life problems relating to fractions.

Unit content

Knowledge	Skills	Attitudes
• Meaning of fraction • Types of fractions. • Calculation steps/rules in solving different types of fraction problems. • Understanding of fraction word problems • The four (4) operations and the function of each one	• Drawing of diagrams to show fractions. • Comprehension of word problems. • Interpreting and analyzing of fraction problems • Correct application of steps/rules.	• Comprehensive. • Analytic • Showing interest in or during lesson times.

Teaching and Learning activities

- Defining fractions
- Identifying different types of fractions.

- Drawing diagrams to illustrate different types of fractions
- In cooperative discussion on the rules/steps for addition, subtraction, multiplication and division of fractions and solve fraction number calculations.
- And real-life problems relating to fractions.
- In group discussion on important points to remember.

Assessment Plan

Assessment Method	Assessment Task	Assessment Criteria	Record Method
Test (written)	• Students choose the best/correct alternative; give short answers; and show full calculation steps in getting the answer.	• Follow each and every instruction and answer each question correctly. Total 30 marks	• Test papers are marked and marks to be recorded in the SAPS.

Resources

- CRIP materials –teachers guide and syllabus for Math – Upper primary. Upper primary worked examples for Math 7A & 7B SSM.

Appendix ZN: Integrated outcome weekly daily lesson plans – Case Study Two

(i) Roger

Week/Daily Teaching Programs 2010

Grade	8	Teacher	Roger	Term	1	Weeks	5	Days	Mon-Fri	Dates	3/3 -12/10
Subject	Personal Development		Strand	Health of individuals and population		Sub-strand			Growth and Development		
Learning outcome	8.4.1: Identify and described behaviour that promotes growth and development, taking into account heredity and environment.										

Days	Indicators	Teaching notes	Sample activities	Resources	Comments
Monday	• Identify the characteristics that determine boy or girl	• Copy notes on behaviours that promote growth and development as a boy and girl.	• List common behaviour patterns of boy and girl. • List common physical changes in both boy and girl. • Pin point to changing patterns and behaviours encounter by boy and girl.	-Syllabasses -Teachers Guides-PD & Science	
Tuesday		-physical change-sex, facial appearance -Emotional change – attitude and behaviour			

Wednesday-Friday	• Discuss and name some of the plants and animals that respond to stimuli	• Different plants that can adopt to different weather patterns-wet, dry, cold, soil condition, adopt. • Animals and men survive and respond to different environments for surviving. • Different environments affect their growth and developments.	• Write names of plants that can survive in coastal climates, but not in the highlands and likewise. • Describe their survival conditions. • Describe different food plants that promote and affect boy and girl growth and development. • Write how climates affect the environments and then environments affects human growth and developments.		

(ii) Peter

Week/Daily Teaching Programs 2010

Grade	8	Teacher	Peter	Term	1	Weeks	1	Days	Mon-Fri	Dates	2/27 -3/10
Subject	Science		Strand	Living things		Sub-strand			Nature of living		
Learning outcome	8.2.1: Describe and explain the process of reproduction in living things and how the environments influence these processes.										

Days	Indicators	Teaching notes	Sample activities	Resources	Comments
Monday Tuesday	• Identify the structure of male and female reproductive systems.	• Copy notes on structures and functions of patterns of reproduction in an animal or plant.	• Compile a folio of how it reproduces and when, reasons why and competitions for mates. • Draw structures of male and female reproductive systems.	- Syllabuses, -Teachers Guides PD & Science	
Wednesday Thursday	• Identify individual functions of male and female reproductive system.	• Analyze information and find out about human life cycle, birth, death and other animal life cycles such as butterfly.	• Draw a time line of human and animal life cycle and write descriptions of each stage. .		
Friday	• Explain the importance of caring for both male and female reproductive system.	• Discuss 'why' and 'how' to care for the male and female reproductive systems and their parts.	• Give general questions as a summary of the structure and functions of human and animal reproductive systems		

Appendix ZO: Single outcome weekly daily lesson plans – Case Study Two

(i) Duma

Week/Daily Teaching Programs 2010

Grade	6	Teacher	Duma	Term	1	Week	5	Days	Mon-Fri	Dates	01/3 -05/3
Subject	Science		Strand	Science in the Home		Sub-strand			Learning about substances		
Learning outcome	6.3.1: Identify and organize common substances into groups according to physical properties.										

Days	Indicators	Teaching notes	Sample activities	Resources	Comments
Monday	• Collect materials and show that substances can be classified into groups' solid, liquid, gases.	• Show substance to students for information. • Copy and complete notes from the board.	• List down common substances used in factories. • Manufactured substances.	- Syllabuses, -Teachers Guides -Sample of substances	
Tuesday		• Notes on uses of common substances.	• List of common natural substances and their uses.		
Wednesday		Brief notes on common natural substances such as crude oil, herbs, palm oil, rubber, etc.	• Distinguish the importance of these common natural substance		
Thursday		• Describing the properties of common substances.	List substances under each column Gas Liquid Solid		
Friday		• Identify common substances in the house and discuss their properties.	• Classify common substances to their properties.		

(ii). Peter

Weekly/Daily overview

Subject: Mathematics Week 2 Term One Year 2010 Strand: Number & Application Sub-
Strand: Fraction Addition & Subtraction Outcome: 8.1.1 – Apply fraction in problem solving

Days	Indicator (s)	Teaching notes	Material	Comments
Monday	-Revise grades 6 & 7 notes on fractions. -Define fraction -State and explain the types of fractions and in each case give two examples	Investigate and understand the nature of fractions.	- Dictionaries, Grades 6 & & Math exercises books -B/board -SSM -7B -worked example for Math Upper Primary	
Tuesday	-Draw diagrams to represent fractions	-To enable students to apply addition rules/steps correctly in addition problems		
Wednesday	-Revise rules/steps for addition and add different types of fractions			
Thursday	-Whole class correction of the fraction addition problems	-To enable students to make self assessment and evaluation of own work.		
Friday	-Revise rules for subtraction different types of fractions.	- For revision and understanding of subtraction rules/steps and correct application of steps in problem solving.		

Appendix ZP: Sample teachers' constructed summative test activity – Case Study Two

Alowale Primary School
Grade 7: Social Science Test No: 2:2010
Name _____Class _____Date _____Marks____
This test is divided into three (3) parts.

Part A: Multiple choice (1-10)
Part B: Short answers (11-14)
Part C: Extended response (15)

Part A: Multiple choice (1-10)

Circle letters A, B, C or D for the correct answer

1. Papua New Guinea is a _____ country.

(a) Mountainous (b) beautiful (c) volcano (d) lowland

2. Geographers use the word _____ to mean the shape of the land.

(a) mountains (b) landforms (c) island (d) environment

3. A fault is best described as:
(a) layers of the crust
(b) a crack in the crust of the earth
(c) the movement of melted rock inside the earth's surface
(d) the folding of layers of rock inside the earth.

4. When melted rock comes out to the surface we say that the volcano is:

(a) earthquake (b) faulting (c) folding (d) erupting

5. The washing away of soil is known as:

(a) alluvium (b) erosion (c) deposition (d) swamp

6. The mud and soil deposited in rivers are called:

(a) river works (b) swamp (c) alluvium (d) deposition

7. The landforms of PNG can be described using:

(a) maps (b) photographs (c) sketches (d) all of them

8. What is the solid surface layer of the earth called?

(a) Solid inner core (b) Crust (c) melted rock (d) Outer core

9. Areas where water cannot be drained away quickly are called:

(a) Swamp (b) island (d) mud (d) savanna

10. Mountains and valleys are caused by folding and this happens when the melted rock inside the earth make:

(a) cracks (b) folds (c) eruption (d) crust bends

Part B: Short answers (11-14)

11. List the four (4) processes in which mountains and valleys are formed. (4mks)

(a) _____
(b) _____
(c) _____
(d) _____

12. List four (4) landforms of PNG. (4mks)

(a) _____
(b) _____
(c) _____
(d) _____

13. Why are swampy areas not good places to live? (1mk)

_____

14. List one reason on why rivers are useful to people.

_____

Part C: Extended Response

15. Draw the structure of the earth and label the diagram (5mks)

Marking criteria
Diagram – 1mk
Labelling -3mks
Neatness – 1mk
Total = 5mks

End of Test!

Appendix ZQ: Sample teachers' constructed assignment activity – Case Study Two

Alowale Primary School
Grade eight: Art assignment 1: Making models

Make a model of your choice
Assessment criteria

Part A

No	Area	Points
1	Creativity (Finish Product)	3
2	Quality of product	3
3	Portrays a modern, traditional or national features	3
4	Own construction	2
5	Capture man's imagination, thoughts or interests	3
6	Showing interest	3
7	Time and effort	3
Total		/20

Task 1: Part B: Explanation of product

Write a paragraph explaining where the product common only found or used. What it is used for, where or how. Also state what you have interest to construct this product. ___/6 points

Part C: Exhibition of products

The models made are to be exhibited for the whole school to see. After school exhibition, each and every student must hang up his/her product in the classroom.

Grade 7: Social Science assignment # 1:

Name _____ Class _____ Date: _____

Task

- Collect two newspaper clippings about events that happened in some areas of PNG.
- Paste the clippings on the A3 paper given.
- Explain how the event effected the people in that area in not more than one paragraph

Marking criteria

- Neatness = 2 mks
- Clippings = 2mks
- Own work = 3mks
- Explanation = 4 mks

Total = 15 mks

Appendix ZR: Upper primary class timetable - Case Study Two

(i) Grades six, seven and eight master time table

Time	Period	Mon		Tue		Wed		Thurs		Fri		Subjects	Time allocation	No of lessons/min	
		A	B	A	B	A	B	A	B	A	B				
8:00-840	1	Assembly		Lan	Mat	Mat	Lan	Lan	Mat	Assembly		Language	180	5 x 40 1x 30	200 30
8:40-9:20	2	Lan	Mat	Mat	Lan	Lan	Mat	Mat	Lan	Lan	Mat	Mathematics	180	5 x 40	200
9:20-10:00	3	Mat	Lan	Sci	S/S	CRE		Sci	S/S	Mat	Lan	Science	180	5 x 40	200
10:00-10:30		RECESS										Social Science	180	5 x 40	200
10:30-11:10	4	Sci	S/S	S/S	Sci	S/S	Sci	S/S	Sci	Sci	S/S	Making a Living	360	5 x 40	200
11:10-11:50	5	PD	Arts	PD	MA L	Arts		PD	PD	PD	Sci	Personal Development	240	5 x 40	200
11:50-12:30	6	S/S		MA L	PD			S/S	Lan	S/S	PD	Arts	180	5 x 40	200
12:30-1:30												CRE	6o	1 x 60	60
1:30-2:10	7	MA L	Sci	MA L	PD	Sci	MA L	PD		Arts		Sports	60	1 x 60	60
2:10-2:50	8		PD			PD						Block Time	5	1 x 5	5
2:50-3:00		Block time										Assembly	110	3 x15 2 x40	45 80
												Total time	1650	1650	1650

Appendix ZS: Letter of permission to use a diagram – Allen and Unwin Pty Ltd

Joseph Kekeya
4 Litter Place
Hillcrest, Hamilton
New Zealand
Email:jl315@students.waikato.ac.nz

Allen & Unwin Pty Ltd
Publicity Department
9 Atchison Street,
St Leonard, NSW 2065
Australia

Date: 23rd November, 2011

Subject: Seeking permission to use a diagram.

My name is Joseph Kekeya and I am a PhD student from the University of Waikato in New Zealand. I write to seek your permission to use a diagram in my PhD thesis. The details are as follows:

Book Title: Curriculum development and design (2nd Edition).
Author: Murray Print
ISBN: 1 86373 362 0
The imprint: Allen & Unwin.
Title of the diagram: Model of curriculum development
Figure: 3.8
Page: 84
Proposed thesis title: Investigating national curriculum implementation in Papua New Guinea.
Publisher of the thesis: The University of Waikato, Hamilton, New Zealand.
Proposed data of publication: 2013
Territories of distribution for which you require permission: Australian and New Zealand theses Data base.

Please find attached a photocopy of the diagram.

Thank you.

Yours Sincerely,

.....
Joseph Kekeya
PhD student
Faculty of Education
The University of Waikato, New Zealand.

Appendix ZT: Letter of approval from Allen and Unwin Pty Ltd

On Mon, Dec 5, 2011 at 4:42 PM, Katy McEwen <KatyM@allenandunwin.com> wrote:

Dear Joseph

We are happy to grant you permission to use the diagram as requested in your PhD thesis without need for formal permission, as long as the diagram is referenced.

Thank you for your enquiry.

Kind regards

Katy McEwen

……..

Dear Allen and Unwin Pty Ltd,
Please find attached a letter seeking permission to use a diagram from the book titled 'curriculum development and design' by Murray Print of 1993, for research purposes.
Your response is very much appreciated.
Thank you
Joseph Kekeya
PhD scholar
School of Education
The University of Waikato, New Zealand

Appendix ZU: Map of PNG showing the four regions