Environmental Studies

Lower Primary

Syllabus

DEPARTMENT OF EDUCATION

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Secretary's Message

Education Reform has been in progress since 1992. The Education Reform has emphasised community-based schooling, the use of bilingual education and bridging to English from vernacular languages, the introduction of Elementary schools, the expansion of Primary schooling to Grade 8 and increased access to Secondary schools at Grades 9 and 10.

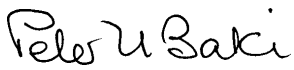
This syllabus is to be used by teachers to teach Grades 3, 4 and 5 students throughout Papua New Guinea. The syllabus builds upon concepts, skills and attitudes from Elementary and links to concepts, skills and attitudes in Upper Primary. Environmental Studies focuses on understanding, appreciating and responsibly developing the physical environment of our students.

Students' language abilities, already gained in their home environments and during the previous years of schooling, must be respected, built upon and extended. Vernacular languages have a large part to play in our students' formative years and their first language should be used to promote a deeper understanding of difficult concepts when this is appropriate.

Students should develop inquiring minds and caring attitudes, showing concern for all living things in their environment. They should have a sense of empowerment about their ability to act to protect their environment. As teachers you are encouraged to assist in changing the behaviour and attitudes of our students towards their environment. You are required to use this syllabus as a guide to develop units of work for teaching Environmental Studies that best suit your school and its surrounding environment.

You are encouraged to use your teaching skills and the environment itself as the basis and context to bring your students' learning closer to nature. This will help them to respect and protect the environment of Papua New Guinea, of which they are a part, now and in the future.

I commend and approve this syllabus as the official curriculum for Environmental Studies to be used in all schools with Grades 3, 4 and 5 students throughout Papua New Guinea.



PETER M. BAKI, CBE
Secretary for Education

Introduction

This syllabus makes explicit the knowledge, skills, attitudes and values that students should achieve for Grades 3, 4, and 5 in Environmental Studies. These are expressed as learning outcomes and indicators.

Environmental Studies provides an education that assists students to understand the elements in their environment, the interdependence of living things and the impacts that humans have upon environments. Environmental education recognises the importance of the approach to teaching and learning in this area, which focuses on concepts in, about and for the environment. These concepts are recognised internationally.

Education in the environment emphasises the importance of providing experiences for students out in the environment, whether it be the bush, rainforest, mangroves or beach. It is these types of experiences that assist students to develop and enhance their awareness and appreciation of environments.

Education about the environment enables students to make informed decisions and to act in environmentally responsible ways. They develop sound knowledge and understanding of the environment through an integrated approach that emphasises the importance of natural, built and social environments.

Education for the environment encourages students to take action to initiate positive change in attitudes and personal lifestyles. It builds upon the experiences and knowledge developed in education in and about the environment and assists students to promote a sustainable use of their environment.

Environmental Studies is to be timetabled for 180 minutes per week for Grades 3 and 2 10 minutes per week for Grades 4 and 5.

Key links between the Elementary, Lower Primary and Upper Primary learning areas, subjects and strands are shown in the table below.

Key links between Elementary, Lower Primary and Upper Primary

	Elementary	Lower Primary	Upper Primary
Learning Area	Science	Science	Science Culture and Community
Subject	Culture and Community	Environmental Studies	Science Making a Living
Strands	Me and My Community	What's in My Environment? Caring for My Environment	**Science** Living Things **Making a Living** Managing Resources Better Living

Rationale

The environments of Papua New Guinea are remarkably diverse and rich in animal and plant species. Some of the species of forests and coral reefs are among the richest in the world. These diverse environments, which include forests, grasslands, mangroves, swamp and coastal marine environments, support all forms of life, including people. People are dependent upon their environment for food, shelter, water and air. Their traditional lifestyles and spiritual beliefs are often built around their environment, such as beliefs that spirits of ancestors live in the tallest trees or caves and certain animal or insect behaviours are used to foretell certain occurrences.

The country is rich in natural resources that support economic development, such as abundant forests and large reserves of minerals like gold, copper, oil and gas. Marine resources are also plentiful and diverse, including tuna, barramundi, prawns and lobsters. These resources must be used wisely for the benefit of the whole community now and in the future.

Students observe things in their environment and sort them into groups. They draw conclusions from what they see, and work out what effects changing one thing in their environment might have on other things. They increasingly understand how applying these skills can lead to rewarding and sustainable management of resources. They also develop practical skills that are needed in these activities. Environmental Studies helps students to understand that the place in which they live is closely related to their values and their long-term standard of living. This is very important at a time when the environment in Papua New Guinea is being permanently damaged for short-term benefits. By starting with simple, practical activities in their local environment and then building on their skills and knowledge, students begin to learn that there are better ways of managing their environment.

Papua New Guinea is currently at a crossroad. Its people can choose to continue to undertake development that is not sustainable and damage the environment or try to encourage a change in individual and community attitudes and behaviour towards the environment to promote sustainable development. This country's development depends directly upon the way in which its resources are used and managed. Students need to understand that sustainable development depends upon a healthy environment. Students need to make informed decisions and be motivated to act upon them if the environment in Papua New Guinea is to retain its richness, diversity and health.

Curriculum Principles

The following curriculum principles are important for teaching and learning in Environmental Studies.

Our Way of Life

Cultural relevance

The way of life in Papua New Guinea is closely linked to the environment. Cultural beliefs and myths are closely related to certain things in the environment. For example, the story of creation describes how tribes or clans originated from certain living or non-living things such as plants, rocks, sea, water and mountains. There are also beliefs that direct communication with these natural elements can bring good luck or heal diseases.

Teachers need to be aware that some cultural or religious beliefs may exclude students from participating in planned environmental studies activities so that individual students are not disadvantaged. Discussion with parents should play an integral part in modifying or formulating alternative experiences.

Bilingual education

There are over 800 different spoken languages across Papua New Guinea. Most Papua New Guinean students do not speak English as their first language.

Bilingual education: *the regular use of two languages for instruction.*

Bilingual education is the regular use of two languages for instruction. Papua New Guinea's *Language Policy in All Schools* (NDOE 1999) requires a bilingual approach to education that incorporates bridging to English in Grades 3, 4 and 5. This policy states:

> At the Lower Primary level (Grades 3–5) the learning and teaching will be conducted in a bilingual situation, in which there is planned, gradual bridging from vernacular (or the lingua franca) to English. Oral and written vernacular language development will continue throughout Lower Primary. Oral and written English development will gradually be introduced and established as the major language of instruction by the end of Grade 5…
>
> At the Lower Primary level, while English is being learned, the language mostly used for teaching and learning should be the same language that the children used in Elementary school.
>
> Where a number of active languages exist in one community, the main language of interaction between the language groups and of commerce in the community should be the language selected, that is the local lingua franca.
>
> (Ministerial Policy Statement no. 38/99, NDOE,1999)

Lower Primary uses a bilingual education approach because current international educational research indicates that there are academic benefits for students from being bilingual. Students continue to learn in their first language because learning only in English as a second language can limit their learning and social development. As students become confident in thinking, reasoning, problem solving and decision making in their vernacular, they are more able to learn another language such as English. It is important to continue to develop, expand and enhance vernacular language to that used by adults in and out of the classroom.

Bridging to English

Bridging to English: *the gradual change from vernacular to English instruction during Grades 3 to 5.*

Students complete Elementary education in their vernacular. Bridging to English is the gradual change from vernacular to English instruction during Grades 3 to 5. Bridging while maintaining vernacular language helps students retain their identity, culture, self-confidence and self-esteem.

The table below shows the gradual progression from vernacular to English. It is anticipated that as students become more confident in their English skills, the time allocation for vernacular instruction will be reduced. The percentages presented in this table are suggestions only to help teachers see the expected progression.

Suggested Percentage of Teaching, Learning and Assessment in Lower Primary in Vernacular and English

Grade 3		Grade 4		Grade 5	
vernacular	English	vernacular	English	vernacular	English
60%	40%	50%	50%	30%	70%

Using vernacular language for continued learning and development, while English is being learned, is an effective way for Papua New Guinean students to develop their full potential.

Bridging to English strategies will be explained further with examples in the Teacher Guide.

Multiculturalism

As a multicultural society, we must protect, promote and respect our many cultures and languages. The diversity of our cultures is the source of our knowledge, skills, attitudes and Melanesian values. These values will be promoted and language and literacy knowledge will enable students to share understanding of these with the rest of the world. In the same way, students will learn to exchange understanding from stories and knowledge from the past relating to their communities and environments. In this way, multiculturalism will be maintained and enjoyed whilst learning experiences will be enriched.

Integral Human Development

Sustainability

The natural environment of Papua New Guinea is as diverse as its cultures. It is often a harsh natural and physical environment that places challenges on its people through extreme climatic conditions and natural disasters. This means that at times people place heavy demands on the few resources that are available. The risk of these practices means that the environment can be damaged without people realising the long term effects. The environment of Papua New Guinea is currently under threat from rapid population expansion and misuse of resources through over logging and abuses associated with mining, over fishing, dynamiting reefs and dumping toxic wastes.

Environmental Studies guides students to appreciate, respect and value their natural environment. It gives them the skills and knowledge to identify problems and issues and to take action to sustain the manageable use of resources in Papua New Guinea.

Catering for diversity

Gender

All Lower primary syllabuses are designed to cater for the educational needs and interests of both girls and boys. The Department of Education *Gender Equity in Education Policy* (NDOE, 2003) recommends that no student in the education system of Papua New Guinea will be disadvantaged on the basis of gender.

To implement the policy, teachers have responsibility to use and promote gender equity practices in their classrooms and with the wider community. This means they will provide:

- a curriculum that caters for the educational needs of girls and boys
- a safe, challenging learning environment which is socially and culturally supportive
- programs that recognise the contributions to society of both women and men.

In Papua New Guinea, there is a need for sensitivity to local cultural practices and values, with respect to traditional roles for males and females. In Environmental Studies students will be given equal opportunities to participate in all class and assessment activities regardless of their gender. Environmental Studies will enable students to develop positive attitudes towards sensitive cultural issues about gender.

In gender-sensitive classrooms students:

- take turns in being the leader, reporter, and taking other roles in group work
- share and participate in activities involving different students
- show respect for other students and their contributions.

Students with special needs

Many students have special needs. This includes students who are gifted and those who are disadvantaged. Gifted students should be given opportunities to extend their learning. Students with physical or intellectual impairments and emotional or learning difficulties need special support in the classroom. Teachers have a responsibility to ensure that the learning needs of these students are met. All students are individuals and all have the right to quality education in order to reach their full potential.

Teaching and Learning

In Primary schools teachers often prefer to use an integrated approach to teaching and learning. The teacher creates a program that is meaningful, appropriate, engaging and motivating to students.

The use of learning outcomes provides opportunities to integrate the curriculum. Teachers should map out the learning outcomes for those parts of the syllabus that they are intending to teach in the coming term or year. Where there is more than one teacher across a grade, this should be done as a small team. Teachers in the school with leadership responsibilities should be invited to support this planning process. While carrying out this process, links between learning outcomes for different subjects should be noted so that an integrated approach can be used. For example, an Environmental Studies outcome might refer to investigating consequences of major change in the environment. The processes used throughout the investigation such as questioning, reading and summarising ideas will link closely with outcomes in Language. In this way evidence of achievement of these outcomes can be provided in more than one subject.

Inclusive curriculum

All students are individuals and all have the right to quality education in order to reach their full potential. An inclusive curriculum uses content, language and teaching methods that takes account of all students. All Lower Primary syllabuses value the experiences and knowledge of all students, regardless of gender, ability, geographic location, religious and cultural background, or socioeconomic status.

Teachers must ensure that the teaching, learning and assessment activities include all students when interpreting and implementing the syllabus learning outcomes. The following statement identifies important requirements of an inclusive curriculum.

- All students have fair access to resources such as time spent with the teacher, space in the classroom, books, equipment and playground space.
- All students have equal opportunity to participate fully in teaching, learning and assessment activities.

- The curriculum includes and addresses the needs and interests of all students: girls as well as boys, gifted students, students with disabilities and students from different cultural and religious backgrounds.
- The experiences and knowledge of all students are valued by teachers and are reflected in classroom practice.
- Teaching and learning methods cater for different learning styles by allowing students opportunities to learn in different ways.
- Teachers use a variety of assessment methods that give students opportunities to demonstrate achievement of learning outcomes.

Teachers have a responsibility to ensure that the curriculum they teach and the classroom practices they use give all students the opportunity to reach their full potential.

Student-centred learning

Some students learn best by observing and listening, others learn by doing things and there are also those who learn by reading, thinking and understanding. Most students use a combination of these and other learning styles. A student-centred approach means that teachers must use a variety of teaching and learning methods that will help all students to learn best about their environment. They should provide opportunities for students to work individually, with a partner, in a variety of group situations and with the whole class. Activities must be relevant and meaningful to the students' lives.

Language development across the curriculum

Language development across the curriculum should be encouraged because all subject areas provide meaningful contexts for real purpose learning. Specific subjects have different language requirements such as vocabulary and language features. The conventions and differences must be explicitly taught in relevant contexts across the curriculum.

Aims

The aims of the Lower Primary Environmental Studies curriculum are to:

- promote the approach of education in, about and for the environment
- develop an understanding of the importance of sustainable development
- understand that living things are dependent upon one another and the environment
- value the environment and have a sense of environmental stewardship
- use investigative and communicative skills to find out about and deal with local environmental issues
- acquire the skills and knowledge required to use technology which is appropriate to the Papua New Guinean environment
- promote continuing interest and pride in investigating and caring for the environment.

Content Overview

Environmental Studies provides students with opportunities to develop an understanding about their environment, the importance of caring for it and taking positive action to conserve it. Students develop a range of attitudes, values and behaviour that will assist them to sustain the environment.

Strands and Substrands

The content for this syllabus is organised into two strands. A strand such as What's in My Environment? is a useful way of organising the learning outcomes for a subject. Each Strand identifies a particular aspect of a subject or a particular theme or a set of processes and shows a typical progression of learning from one grade to the next. Each Strand is further organised into a number of Substrands to allow the content to be specific and described as learning outcomes.

The Lower Primary Environmental Studies Syllabus has two Strands What's in My Environment? and Caring for My Environment. These have been further organised into five Substrands.

What's in My Environment?

In this Strand students develop knowledge, skills, attitudes and values about the natural and built environment. Students have opportunities to learn about the functions and roles of living and non-living things within environments and how these are all dependent upon each other. They recognise the importance of interdependence between elements in the environment and that humans are an integral part of this. Students become aware of the impact that human beings have on the environment and are able to make informed decisions to solve problems and address relevant environmental issues. Students appreciate that they are part of the environment and that they must actively participate in protecting environments now and in the future.

There are three Substrands:

- Plants and animals
- Changes in my environment
- Links in the environment.

Caring for My Environment

In this Strand students develop understandings and skills to care for the environment. Students recognise the importance of natural resources, investigate ways of managing resources effectively and consider how they can promote sustainability. They examine environmental issues and are encouraged to consider how they can make a difference by undertaking environmentally friendly actions. Students develop the skills necessary for them to act and live in sustainable ways.

There are two Substrands:

- Managing resources
- Managing wastes.

Strands and Substrands for Environmental Studies

Strand	Substrands		
	Grade 3	Grade 4	Grade 5
What's in My Environment?	Plants and animals Changes in my environment Links in the environment	Plants and animals Changes in my environment Links in the environment	Plants and animals Changes in my environment Links in the environment
Caring for My Environment	Managing resources Managing wastes	Managing resources Managing wastes	Managing resources Managing wastes

Learning Outcomes and Indicators

The Strands and Substrands are expressed as learning outcomes and indicators.

Learning outcome: *a specific statement that identifies the knowledge, skills, attitudes and values all students should achieve or demonstrate.*

A learning outcome is a specific statement that identifies the knowledge, skills, attitudes and values all students should achieve or demonstrate.

These statements are student-centred and written in terms that enable them to be demonstrated, assessed or measured. For example, 4.1.2 Explain relationships between individuals and groups in the wider community.

Indicators are examples of the kinds of things students should be able to do, know and understand if they have achieved an outcome.

Indicators:
are examples of the kinds of things students should be able to do, know and understand if they have achieved an outcome

Each learning outcome is accompanied by a set of indicators. Indicators are what students do, know and understand if they have achieved the learning outcomes. Learning outcomes help teachers to determine the standard expected of students at particular grades in particular subjects. Indicators are examples only and should not be used as checklists.

The learning outcomes and indicators will:

- give teachers, individually or collaboratively, the flexibility to write programs and units of work. These can be developed to suit local conditions and individual student needs
- help teachers assess and report students' achievements in relation to the learning outcomes
- allow student achievement of the outcomes to be described in consistent ways
- help teachers to monitor student learning
- help teachers plan their future teaching programs.

Learning Outcomes

Numbering Learning Outcomes

Each learning outcome is numbered with three-digits, such as **3.1.2.**

The first number refers to the Grade level. The second number refers to the Strand. The third number refers to the outcome in the Strand.

Thus, **3.1.2** refers to an outcome at Grade **3**, Strand number **1** and outcome number **2**.

Strand	Grade 3	Grade 4	Grade 5
What's in my environment?	**3.1.1** Identify different species of plants and animals found in the environment	**4.1.1** Describe features of plants and animals that live in the environment	**5.1.1** Investigate and apply ways of using, protecting and conserving certain plants and animals
	3.1.2 Identify natural and built changes and their impact on the environment	**4.1.2** Describe the impact of changes to the environment and identify solutions to potentially harmful changes	**5.1.2**. Investigate consequences of major changes and make informed decisions to conserve the environment
	3.1.3 Identify and describe links between living and non-living things in the environment	**4.1.3** Explain how living things interact with the environment to meet basic needs	**5.1.3** Investigate the relationships between living and non-living things
Caring for my environment	**3.2.1** Identify useful resources in the environment and describe ways to use them wisely	**4.2.1** Describe effects of mismanaging land, sea, water and air resources and apply ways to care for them	**5.2.1** Design and apply good practices to sustain the environment
	3.2.2 Identify types and sources of wastes and their impacts on the environment	**4.2.2** Investigate the consequences of wastes and apply ways to minimise environmental damage	**5.2.2** Develop and implement action plans to manage waste production and disposal

Learning Outcomes and Indicators

Strand: WHAT'S IN MY ENVIRONMENT?

Substrand	Grade 3	Grade 4	Grade 5
Plants and Animals	**3.1.1** Identify different species of plants and animals found in the environment	**4.1.1** Describe features of plants and animals that live in the environment	**5.1.1** Investigate and apply ways of using, protecting and conserving certain plants and animals

All indicators are listed as bullet points after each outcomes. The list of indicators always begins with the statement: students will be achieving the above learning outcomes in vernacular and/or English, when they for example:

Indicators
Students will be achieving the above learning outcomes in vernacular and/or English, when they, for example:

Grade 3

- record different species of plants and animals they observe during visits to sites such as beaches, gardens
- talk about the similarities and differences between species of plants and animals
- discuss how to identify different species of animals such as by colour, shape and body covering
- draw and label pictures of endangered plants and animals such as bird of paradise, flame of the forest
- name and sort different animals found in the local environment according to what they eat, where they live and their physical features
- draw and label pictures of useful plants and animals in the environment.

Grade 4

- record types and features of plants and animals found in selected environments such as grasslands, forests, rivers,the ocean
- write stories or poems about animals or plants they have observed on an excursion to a local environment
- discuss physical features of plants and animals that enable them to survive in the environment such as shallow roots, hard beaks, fibrous roots
- write a summary of why certain plants and animals live in specific environments after listening to a guest speaker
- sort plants and animals into groups according to their habitat and physical features
- write a report about endangered and endemic plants and animals and how to protect them.

Grade 5

- gather information about certain plants and animals from a range of sources such as the natural environment, library or from people
- make posters on how to protect and conserve endemic and endangered plants and animals
- discuss local ways of using plants and animals such as banana for cooking, aloe vera for medicinal purposes
- write reports to explain how certain plants and animals are conserved for special purposes such as plants for traditional bilas
- participate in activities such as growing useful plants around the home or school
- discuss traditional rules for conserving plants and animals after listening to a community elder such as setting restrictions on fishing and hunting grounds.

Strand: WHAT'S IN MY ENVIRONMENT?

Substrand	Grade 3	Grade 4	Grade 5
Changes in My Environment	**3.1.2** Identify natural and built changes and their impact on the environment	**4.1.2** Describe the impact of changes to the environment and identify solutions to potentially harmful changes	**5.1.2**. Investigate consequences of major changes and make informed decisions to conserve the environment
	Indicators Students will be achieving the above learning outcomes in vernacular and/or English, when they, for example:		
	• draw or collect pictures of how people change the natural environment such as by making gardens, cutting down trees, building homes and roads • give examples of built changes such as construction of new classrooms or roads, and give reasons for these changes • list natural changes such as floods, soil erosion and landslides and describe how they change the environment • role play how changes in the environment affect living things • keep records of aspects of weather such as rainfall, temperature, cloud cover, wind direction and discuss the changes • discuss changes to the environment after visiting selected sites such as a mine, logging area, a reef.	• discuss natural changes such as Rabaul volcanoes in 1994, Aitape tsunami in 1998 and droughts throughout PNG in 1997 • illustrate the effects of natural disasters on the environment such as the effect of droughts on living and non-living things • locate the areas of common natural disasters on a map of Papua New Guinea and describe the disasters • list examples of developments such as road building and fish farming and describe their benefits • gather and present information about damaged environments such as burnt out bush or grassland, polluted rivers and sea and suggest possible solutions • dramatise what happens to living things when the environment is changed.	• write about the effect of major changes to the environment caused by land slide, floods, tribal fights, droughts, mining, logging • gather information about changes occurring on a selected site in their community and suggest ways to deal with these changes • carry out research on a developed site such as tuna fish factory, abattoir, or meatworks, recycling factory or community market and suggest actions to conserve the environment • write a report on the effects of developments in their community after listening to guest speakers such as farmers, conservationists, developers, resource owners • predict the effects of development in their area after researching information from the media.

Strand: WHAT'S IN MY ENVIRONMENT?

Substrand	Grade 3	Grade 4	Grade 5
Links in the Environment	**3.1.3** Identify and describe links between living and non-living things in the environment	**4.1.3** Explain how living things interact with the environment to meet basic needs	**5.1.3** Investigate the relationships between living and non-living things
	Indicators Students will be achieving the above learning outcomes in vernacular and/or English, when they, for example:		
	• select a plant and list all plants and animals that depend on that plant for food, shelter and protection • observe and record living things that grow or live on a tree such as caterpillars, birds, creeping plants and explain the links • draw and label pictures to show how plants depend on soil and sunlight to grow and how the soil depends on plants for nutrients • make posters to show parts of plants and their functions such as roots absorbs nutrients and water from the soil and leaves trap sunlight • draw a chart to show functions of different parts of plants and animals • write a report about how people use certain plants and animals such as seeds for food, sago leaves for shelter or shade and bird of paradise feathers for decorations.	• observe and explain how living things depend on the environment for food, shelter, clothing and protection • compare how people have used the environment in the past and present for gardening, fishing, hunting, water supply and for building materials and predict what might happen in the future • write rules for people to use resources such as land, sea, water and air wisely • build a model of a food chain to show how plants and animals depend on each other in a selected environment such as grassland, • draw a picture or make a model of a food web and food pyramid • carry out a case study of how people are using the environment to meet their basic needs.	• predict what might happen when an element of the food chain is removed such as what happens when trees are cut down • classify animals according to what they eat and where they live • draw the water cycle to show the movement of water between land and atmosphere • explain how plants and animals protect themselves from danger by using camouflage or protective parts such as thorns or poisonous leaves • perform and report on experiments that show how living things respond to stimuli such as plants respond to sunlight by growing towards the light • draw diagrams to show the movement of energy from the sun to plants and to animals • apply good practices to care for plants such as weeding, watering, mulching, drainage.

Strand: CARING FOR MY ENVIRONMENT

Substrand	Grade 3	Grade 4	Grade 5
Managing Resources	**3.2.1** Identify useful resources in the environment and describe ways to use them wisely	**4.2.1** Describe effects of mismanaging land, sea, water and air resources and apply ways to care for them	**5.2.1** Design and apply good practices to sustain the environment
	Indicators Students will be achieving the above learning outcomes in vernacular and/or English, when they, for example:		
	• discuss and list examples of renewable and non-renewable resources and explain the difference • write rules for protecting and conserving resources such as fresh water, traditional herbs and native plant and animal food sources • describe traditional ways of protecting endangered species such as dugongs, green snails and ebony plants • sketch useful resources in the local environment such as cane, clay, coral reefs and explain how to use them wisely.	• gather information about the mis-use of resources such as cutting down trees and excessive fishing and explain the impacts on the environment • plan and participate in projects to use land or sea resources wisely such as controlling soil erosion, crop rotation and using appropriate fishing techniques • explain the benefits of managing renewable and non-renewable resources • make and apply simple environmental rules for the wise use of resources such as coral reefs, forests, water wells and rivers.	• debate the advantages and disadvantages of using resources such as timber, minerals and fish • set up and maintain small projects to conserve, protect or sustain local resources such as the school garden or water well • promote a healthy, productive environment through community awareness activities such as drama, posters, public speeches • investigate local environmental issues and write letters to relevant authorities suggesting ways to address the issues • explain the consequences of using resources excessively such as over-fishing, mining, deforestation • describe ways to control the population of introduced species that harm the natural environment such as salvinia, cane toads and starfish.

Strand: CARING FOR MY ENVIRONMENT

Substrand	Grade 3	Grade 4	Grade 5
Managing Wastes	**3.2.2** Identify types and sources of wastes and their impacts on the environment	**4.2.2** Investigate the consequences of wastes and apply ways to minimise environmental damage	**5.2.2** Develop and implement action plans to manage waste production and disposal
	Indicators Students will be achieving the above learning outcomes in vernacular and/or English, when they, for example:		
	• make posters to show different types of wastes and where they come from • list and describe the types of wastes produced in the home, at school and by industries such as factories, mines and oil fields • discuss the impact of different types of wastes on the environment such as food scraps, broken glass and plastic bags • discuss health risks associated with waste disposal practices that may cause sicknesses such as typhoid and diarrhoea from contaminated food and water • sort wastes from products into groups such as glass, metals, plastics, papers and food scraps and discuss their impact on the environment • discuss advantages and disadvantages of burning rubbish, and how it affects the environment.	• discuss the effects on the environment of chemical wastes such as battery acid, oil and spray paint • write rules on how to dispose of different types of wastes such as glass, metals, plastics papers and food scraps • explain appropriate ways to minimise wastes such as recycling paper, empty cans and plastic, re-using plastic bags and using coconut husks for mulching gardens • develop and apply rules and plans to control wastes at home and school • list traditional ways of managing waste products after listening to a guest speaker from the community.	• discuss the environmental impact of wastes such as plastics on marine life and pesticides in the river systems • identify waste disposal problems in the community and develop strategies to control these • gather and present information from various sources about how to safely dispose of different types of wastes • design simple processes for recycling different types of wastes at home and school • design and display posters and sign boards in community sites to prevent damage to the environment • identify local problems caused by waste such as littering or contaminated water and take actions to restore the environment to a healthy state.

Assessment and Reporting

Assessment and reporting practices described here are detailed further in the *National Assessment and Reporting Policy (2003)* for Papua New Guinea and in other support materials produced by the Department of Education.

Assessment

Assessment: *the ongoing process of identifying, gathering and interpreting information about students' achievement of the learning outcomes.*

Assessment is the ongoing process of identifying, gathering and interpreting information about students' achievement of the learning outcomes described in the subject syllabuses.

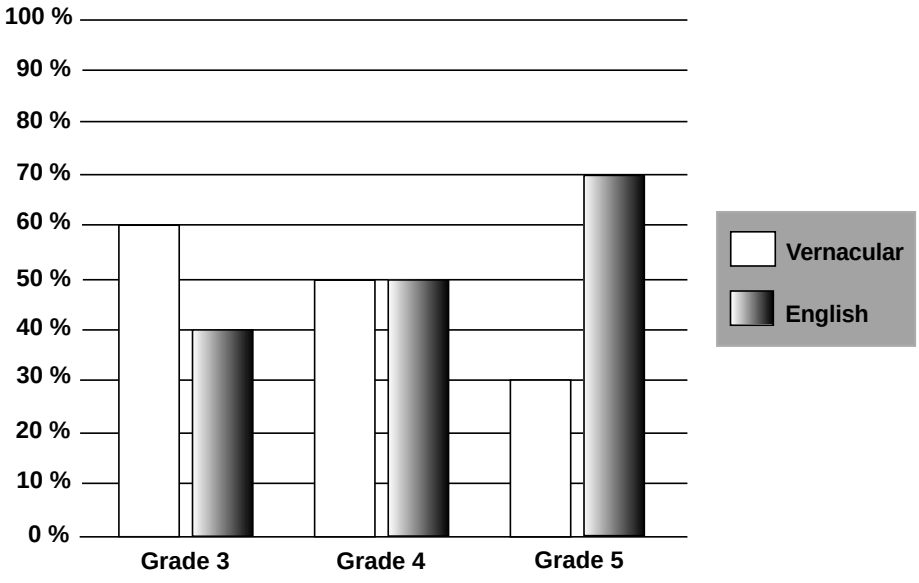
Teachers record evidence of students' learning and use this to make judgements about their achievements of the learning outcomes. To ensure that assessment is fair and balanced, teachers must use a range of assessment methods including:

- observing and recording details of students' performance on particular tasks
- conferencing or talking and questioning the students about their work and how they are thinking and feeling: their attitudes towards work
- analysing students' products
- setting written assignments, projects and practical work
- setting and marking written tests.

Teachers should provide opportunities for students to assess their own learning (self assessment) and the learning of others (peer assessment) according to set negotiated criteria. The overall purpose of assessment is to improve student learning.

Assessment in vernacular and English

The suggested percentage of assessment, teaching and learning in vernacular and English is shown below:



Teachers will need to apply the principles described in the *National Assessment and Reporting Policy (2003)* to ensure that students are treated fairly and given many opportunities to demonstrate their achievement of the learning outcomes in each subject. When assessing students' achievements teachers should be clear about:

- which language best enables students to demonstrate their learning
- whether they are assessing subject content or language skills and knowledge or both
- whether the percentages of assessment in vernacular and English are similar to those suggested in the graph on the opposite page.

Assessment in Lower Primary

Assessment in Lower Primary schooling is the continuous process of finding out if students have achieved the learning outcomes. Assessment at Lower Primary should:

- be predominantly integrated into teaching and learning activities as students bridge from vernacular to English
- use a range of assessment methods
- use local cultural approaches to assess and report students' achievements where appropriate
- be used for diagnostic purposes only.

Assessment in Environmental Studies

Assessment methods used in Environmental Studies should provide a clear picture of each student's learning development, their strengths and suggested areas for improvement over a period of time. Teachers should use a range of assessment methods to gather evidence of the students' achievement of the outcomes. Detailed information about assessment in Environmental Studies appears in the Teacher Guide.

Recording

Teachers must keep accurate records of students' achievement of the learning outcomes. They must report these achievements in fair and accurate ways to parents, guardians, teachers and students. Examples of recording methods include:

- anecdotal notes in a journal or diary
- checklists
- portfolios of students' work
- progressive records
- work samples with comments written by the teacher.

Reporting

Reporting: *communicating clearly to students, parents, guardians, teachers and others, the information gained from assessing students' learning.*

Reporting is communicating clearly to students, parents and guardians, teachers and others, the information gained from assessing students' learning.

Students' reports should be based on assessment information collected from ongoing assessments. Schools will decide on how reports will be presented to best suit the needs of their communities. Methods will include interviews and written reports. Written reports should include:

- a written record of learning outcomes achieved by students since the previous report
- a written record of the learning outcomes the student is now working towards
- information about students' attitudes, values and other additional information that is specific to individual students.

(*National Assessment and Reporting Policy 2003,* NDOE, 2003, p. 6)

Evaluation

Teachers will use assessment information to evaluate the effectiveness of their teaching, learning and assessment programs and to make improvements to their teaching practice in order to improve student learning.

Schools may use whole school assessment data to evaluate the effectiveness of teaching and learning in a particular subject or at particular grade levels and make decisions on how to improve student learning.

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Appendix

MINISTERIAL POLICY STATEMENT

Language Policy In All Schools

The authority of this Ministerial Policy Statement is Section 27 (1) (h) of the Education Act (Chapter No. 163) as amended.

The purpose of this circular is to advise authorities of all institutions within the National Education System regarding the use of languages in schools. This statement should be read in conjunction with the Ministerial Policy Statement No. 1/91 and Secretary's Instruction No. 1/91.

The future direction for language use in the formal school system as stated in Secretary's circular No. 1/91 is that the language of the community, together with its cultures, spiritual and work practices will form the basis for the activities of the school.

In practice, using the language of the community as the basis for the school activities means the use of vernacular or a language spoken by both the students and the teacher in the school system for teaching and learning. The use of vernacular languages establishes strong culture bonding between children and their community. This is one of the aims of the education reform in Papua New Guinea. Research findings also support the use of vernacular languages in schools.

The findings indicate that:

- there are academic achievement benefits for the student from being bilingual
- to stop students learning in their first language and forcing them to learn only in a new language can be harmful and obstructive to their development
- it usually takes an English language learner five or more years to develop the ability to use English for learning complex concepts
- beginning schooling in the children's first language and using this language for continued learning and development while the English language is being learned, is the best way for children to develop their full potential in schooling.

On the basis of this information, the reform curriculum calls for a program of bilingual education in Primary Schools. Children who graduate from Elementary Schools will enter this new bilingual program in Grade 3.

1. At the Elementary School level (Prep to Elementary 2), this means that the language of instruction is completely in the children's vernacular language, or the community lingua franca, with an introduction to oral English at the end of Elementary 2. Children will leave Elementary School literate in their first language.

The community through their Parents and Citizens Association (P&C) and the Board of Management (BOM) will decide the language to be used at the Elementary level of education.

In practice, the community must be informed in order to make the decision on what language should be used at Elementary level. The language chosen should be the language that is shared in the community and used for most communication in that community.

2. At the Lower Primary level (Grades 3-5) the learning and teaching will be conducted in a bilingual situation, in which there is planned, gradual bridging from vernacular (or the lingua franca) to English. Oral and written vernacular language development will continue throughout Lower Primary. Oral and written English development will gradually be introduced and established as the major language of instruction by the end of Grade 5, using "Teaching English to Speakers of Other Languages" (TESOL) methodology.

   At the Lower Primary level, while English is being learned, the language mostly used for teaching and learning should be the same language that the children used in Elementary school.

   Where a number of active languages exist in one community, the main language of interaction between the language groups and of commerce in the community should be the language selected, that is the local lingua franca.

   Every effort must be made to appoint vernacular speaking teachers to the Lower Primary grades, particularly those who have received inservice in bilingual education strategies.

3. At the Upper Primary level (Grades 6-8), class activities will be conducted with English as the main language of instruction, but students should still be provided with opportunities to further develop their oral and written vernacular (or lingua franca) skills.

4. At the Secondary level and Provincial High School level including Vocational School, lessons will be conducted in English. But advantage should be taken where opportunities arise for students to further develop their oral and written vernacular (or lingua franca) skills or if a concept can be better explained using the vernacular or lingua franca.

   Whereas children must be encouraged to learn and use English, all schools at all levels should not discourage free communication in vernacular languages that the children speak in and out of school grounds. This will establish confidence in students to use vernacular in academic learning.

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