

Inservice Units to Support the Implementation of the
Primary Reform Curriculum

Unit 4:
**Learning Areas: Mathematics
and Science**

**Module 1: Introducing the Mathematics
and Science Learning Areas**

Contents	Page/s
Module introduction	2
Module learning outcomes	3
Section 1: The Mathematics Learning Area	4
Section 2: The Science Learning Area	16
Section 3: Linking Mathematics and Science Learning Areas	28
Module Summary <i>(and additional space for your notes)</i>	31

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I have sighted this study guide as evidence of completion of agreed tasks by

.....(insert name)

Assessor: Date:

Module 1: Introducing the Mathematics and Science Learning Areas

Module Introduction

Welcome to *Module 1: Introducing the Mathematics and Science Learning Areas*

You need to have a sound appreciation of the contents and structure of the syllabuses and teacher guides that describe these two learning areas to understand the way reform curriculum documents are written, the way teachers are now expected to program and teach and the ways students in schools are expected to demonstrate their learning and be assessed.

This module begins with an exploration of the Mathematics Learning Area. It then takes you through both the mathematics syllabuses and teacher guides for lower and upper primary years.

Then the module provides an overview of the Science Learning Area through an exploration of the lower primary Environmental Studies syllabus and teacher guide and upper primary Science syllabus and teacher guide.

The structure of the curriculum documents carries many similarities. Their contents, however, identify knowledge, skills and attitudes important to each learning area.

Finally, this module helps you to make links between the lower and upper primary syllabuses within each learning area and then across the two areas.

To undertake this module you will need access to:

Mathematics, Lower Primary Syllabus, 2004

Mathematics Teacher Guide, Lower Primary, 2004

Mathematics, Upper Primary Syllabus, 2003

Mathematics, Teachers Guide, Upper Primary, 2003

Environmental Studies, Lower Primary Syllabus, 2004

Environmental Studies Teacher Guide, Lower Primary, 2004

Science, Upper Primary Syllabus, 2003

Science Teachers Guide, Upper Primary, 2003

These resources are already in your schools.

If you are seeking academic credit, make sure you have completed the *self-assessment* in the *Accreditation and Certification* section before you start this module. As you work through this module, keep a running record of sections, parts and pages of the module where you can identify evidence for particular unit outcomes. You may wish to record such information in your *Learning Contract*.

Module learning outcomes

When you have worked through this module, you, the learner, can (are able to):

1. compare the structure and contents of the Mathematics syllabuses with the Science syllabuses
2. identify the links between each Mathematics syllabus and the corresponding teacher guide
3. identify the links between the Science/Environmental Science syllabuses and the corresponding teacher guides
4. explain why these learning areas are included in the primary curriculum
5. describe the curriculum principles underlying the Mathematics and Science syllabuses
6. identify the focus areas in each syllabus and their links with each other
7. describe the way content is organised in each of the syllabuses
8. make links between the Mathematics and Science learning areas.

Section 1: The Mathematics Learning Area

The Mathematics learning area is developed through the Mathematics syllabuses and teacher guides. To complete this section you will need copies of the following documents.

National Curriculum Statement (2002)
Mathematics, Lower Primary Syllabus, 2004
Mathematics, Upper Primary Syllabus, 2003
Mathematics Teacher Guide, Lower Primary 2004
Mathematics Teacher Guide, Upper Primary, 2003

Part 1: The Mathematics Syllabuses

The best way to approach the activities in this section is to have the two Mathematics syllabuses open in front of you at the same section so you can quickly scan for similarities and differences.



Have both the lower primary and upper primary syllabuses open at the Secretary's message. The message from the Secretary is very useful advice.

- Take a few minutes to skim read both of them.
- What do the messages say about the role of mathematics for 'integral human development'?
- What do they say about how the first language of the students is to be used in the learning of mathematics?



Read the *Introduction* to the Upper Primary Mathematics Syllabus (pages 1-2) and make a list of the three ideas that link this *Introduction* to mathematics at other levels, and to other studies. An example is provided here.

1. English is the main language of instruction, but the vernacular language will be useful in helping students gain an understanding of the mathematical concepts
2.
3.

Hint: Consider the study of Mathematics as something that began in the elementary school and continues well beyond the upper primary years.

- Does the *Introduction* to the lower primary syllabus provide similar ideas? Make a comparative statement here.
- What is the time allocation recommended for mathematics in the lower primary and upper primary?
 - lower primary
 - upper primary

On page 1 of the lower primary syllabus, the strands of Mathematics are identified for elementary, lower primary and upper primary.

- What are the differences evident between lower and upper primary strands?



Page 3 (upper primary) and page 2 (lower primary) provides the *rationale* for teaching of mathematics.

There are two themes running through this statement in both syllabuses. They state that mathematical literacy is good for both the individual and for the nation of Papua New Guinea.



Read these sections carefully. Summarise the *rationale* in this table for both lower and upper primary Mathematics.

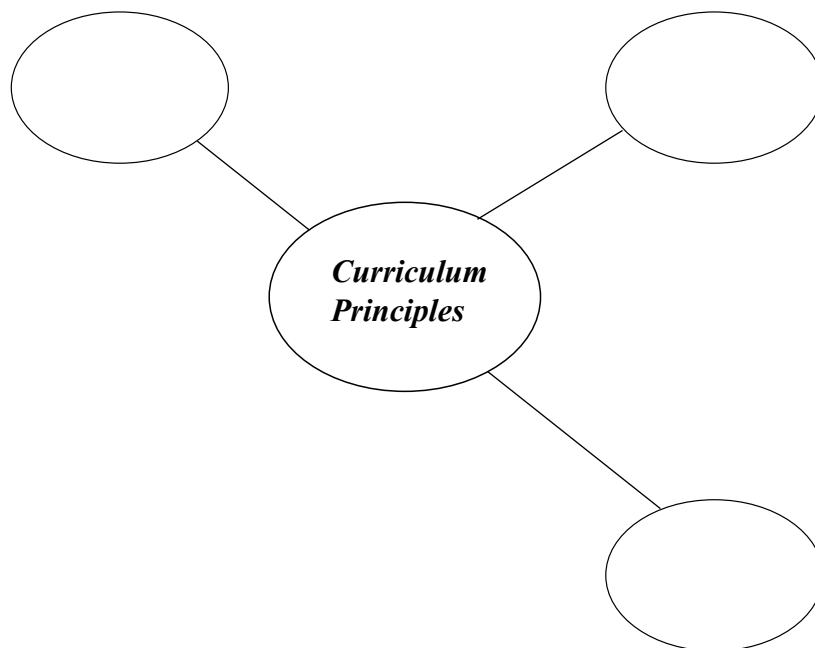
For the individual student	For the nation

The *curriculum principles* are identified and elaborated upon on pages 3-8 (lower primary) and pages 4-6 (upper primary). Try to understand what they mean, because they are critical to the thinking and practices of the reform. To help you, have a discussion with a colleague about them.



Read pages 3-8 (lower primary) and 4-6 (upper primary) and prepare a mind map of the *Curriculum Principles* for either the upper primary syllabus or lower primary syllabus.

- Use the structure given here or one of your own. Add other concepts and links.



Discuss it with a colleague.

- List two significant points raised during this discussion.

Hint: Look for things that are new to your thinking or existing practices.



The *Aims* of the Mathematics curriculum comes next. It is interesting to note that the *Aims* are very similar.

- Read page 9 (lower primary syllabus) and page 7 (upper primary syllabus). Then answer the following questions:
 - Which aim indicates that learning in Mathematics is built upon earlier years of schooling?

- Upper primary has three additional aims.
- What are they?
-
-
-
- Why are they important?

Hint: The subject aims are linked the aims of primary education in the National Curriculum Statement.



Now read the Mathematics strands as described in the *Content Overview*, pages 10-12 (lower primary syllabus) and pages 8 – 11 (upper primary syllabus).

For each content strand, a number of sub-strands are provided. These help organise and specify the learning outcomes.



List the sub-strands in the Number and Application Strand. (Grade 6)

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
- When you look across grades 6-8, the sub-strands are seen to vary slightly.
 - What are the differences?
 - What explanation could there be for these differences? Write your explanation here.
 - List the sub-strands for Space and Shape for grades 5 (lower primary) and grade 6 (upper primary).

Grade 5	Grade 6

- Identify any differences
- What explanation could there be for these differences? Write your explanation here.



Learning outcomes describe what it is that students know, can do and understand as a result of a learning experience, eg. a unit of work.

You'll find the learning outcomes for lower primary on page 13 and for upper primary on pages 12-16.

Take a moment to skim read these pages.

The numbering system being used to code the outcomes is described at the top of page 13 in the lower primary syllabus and top of page 12 in the upper primary syllabus. Three digits are used. An example is 3.1.2. The first digit refers to the grade level. The second digit refers to the strand and the third digit refers to the outcome in the strand. Thus 3.1.2 refers to grade 3, Strand 1 (Number and Application), Outcome 2. Similarly Outcome 6.2.3 refers to Outcome 3, Strand 2 (Space and Shape), for grade 6. Note that the numbering system is consistent within all lower and upper primary syllabuses.



Read each of the outcomes for the Measurement strand for grade 4 on page 12 of the lower primary syllabus.

- Make a note of the sub-strand to which they relate. The first one is done for you.

Outcome	Sub-strand	Outcome	Sub-strand
3.2.1	Length 3.2.4	3.2.2	
3.2.5		3.2.3	

Hint: The table on page 11 can assist.

- What do you notice as you read across a row, for example, 3.3.1, 4.3.1 and 5.3.1? (page 13, lower primary) What is the importance of this information?
- What do you notice as you read down a column, for example, 3.1.1, 3.1.2, 3.1.3 and 3.1.4 (page 13, lower primary) What is the importance of this information?

Pages 15-16 list the learning outcomes for the Chance and Data Strand for upper primary.

- Read each of the outcomes for grade 6 and make a note of the sub-strand of Chance and Data to which they relate. The first one is done for you.

Outcome	Sub-strand	Outcome	Sub-strand
6.4.1	Statistics	6.4.5	
6.4.2		6.4.6	
6.4.3		6.4.7	
6.4.4			

Hint: The table on pages 10-11 can assist.

- What do you notice as you read across a row, for example, 6.4.6, 7.4.6 and 8.4.6? (page 16) What is the importance of this information?
- What do you notice as you read down a column, for example, 6.4.1, 6.4.2, 6.4.3.....? (pages 15-16) What is the importance of this information?
- What do you notice as you read across a row from lower primary to upper primary for a particular sub-strand? An example is provided below for Strand: Space and Shape, Sub-strand: Area.

3.2.2 Estimate and measure areas using informal regular units	4.2.2 Estimate and measure areas of surfaces using standard units of area	5.2.2 Use appropriate metric units to measure and calculate area	6.2.4 Find the area of composite shapes	7.2.4 Compare areas by estimation	
			6.2.5 Investigate and use area rules for triangles and rectangles	7.2.5 Investigate area rules for quadrilaterals	8.2.5 Investigate the area of circles

- What are the ideas or concepts that show growth and progress?
- Make a comment on the overall progress from grade 3 to grade 8.

Hint: One indicator of progression is that students are expected to progress from informal units to standard units. What are the other indicators?

- Record the set of outcomes progressing from grade 3 to grade 8 for Strand: Patterns (and Algebra)

- What is the importance of this information? What are the implications for practice?

Hint: Think of what the syllabuses are indicating to you. How may this affect the way you plan?

You have explored the Secretary's message and the first five sections of the Mathematics syllabuses.

- List the other sections of the syllabuses you are yet to explore, in the following table.

Lower Primary Syllabus	Upper Primary Syllabus

These sections will be explored in Module 2 of this unit.

Part 2: The Mathematics Teacher Guides

To complete this section you will need a copy of the teacher guides listed below. The best way to approach the activities in this section is to have both teachers guides open in front of you at the same section so you can quickly scan for similarities and differences.

Mathematics Teachers Guide, Upper Primary, 2003

Mathematics Teachers Guide, Lower Primary, 2004



Open both guides and browse through them, noting similarities and differences.

Both guides contain information about the in-service units, the Secretary's message and an introduction.

On page (iv) you will find some information about the 'In-service units' for lower primary and upper primary teachers and other practitioners. In recent times a decision was made to amalgamate the lower and upper primary in-service units into one set for primary schools. This unit you are working through is one of the amalgamated units.

Read the last two paragraphs of the Secretary's message in both teacher guides.



Summarise the recommendations in these two paragraphs into 4-6 dot points.

One example is provided – teachers should:

- read the guide carefully
-
-

-
-
-



Read the *Introduction* in the lower primary teacher guide, pages 1-3 and upper primary teacher guide, pages 1-4.

The first part of the *Introduction* explains the purpose of the guides.

- What information would you highlight if you had to explain the purpose of the guides to a colleague who hasn't seen them before?



Using this teacher guide section of the guides say: when you receive this book, you need to do a number of things.

- Read this section.
- Now rewrite these as a step-by-step guide on a chart, for either lower primary or upper primary, to put up in your staffroom or office.
- The common topics covered in the *Introduction* of both teacher guides are listed in the table below. They provide consistent information. Write a brief note about each one.

Topic	Notes
Nature of mathematics	
Links with other subjects	
Links with other levels	

- Identify two occasions from your past practice when you integrated Mathematics learning with other subjects.



Use your examples to explain to a colleague how Mathematics can contribute to learning in other subjects and how the content of other subjects can be used for Mathematics topics.

The lower primary teacher guide identifies two additional topics. Write a brief note about each one. One is done for you.

Topic	Notes
Bilingual education	using two languages for instruction bridging to English
Integration	

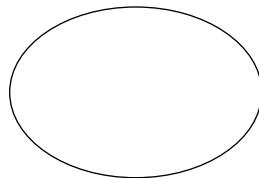


Both teacher guides contain a section that outlines the *key features of the subject*. Find this section in both teacher guides – lower primary (pages 4-8); upper primary (pages 5-8).

- Skim read these sections.



Construct a mind map of the key features identified in one teacher guide.



- Now compare it with the key features in the other teacher guide.
- List any differences.



Both teacher guides contain a section that outlines the *Teaching and learning strategies*. Find this section in both teacher guides – lower primary, pages 10-17; upper primary, pages 9-11.

- Skim read both sections.



Skim read these sections to get an overview of the teacher guides.

The above listed sections come into focus in modules 2, 3 and 4 of this in-service unit.



Assess your learning by reflecting on the following:

Can you now explain to someone else:

- the structure of the syllabuses and teacher guides?
- why curriculum principles are identified in each syllabus?
- how to use the teacher guides?
- the links between the teacher guides and the syllabuses?
- how the learning area of Mathematics is being developed for schools?

If you are not sure, you may wish to go back over the appropriate sections and reflect on the difficulties and/or seek help.

Section 2: The Science Learning Area

The Science Learning Area is developed through the subject Environmental Studies in the lower primary and Science in the upper primary.

To complete this section you will need copies of the syllabuses and teacher guides listed below.

Environmental Studies, Lower Primary Syllabus, 2004

Science, Upper Primary Syllabus, 2003

Environmental Studies Teacher Guide, Lower Primary, 2004

Science Teachers Guide, Upper Primary, 2003

National Curriculum Statement (2002)

Part 1: Science/Environmental Studies Syllabuses

The best way to approach the activities in this section is to have both the Environmental Studies Syllabus and the Science Syllabus open in front of you at the same section so you can quickly scan for similarities and differences.



Read the Secretary's message on page iv (of both lower and upper primary)

Paragraphs 4 and 5 of this message highlight the importance of this subject in the overall curriculum for the primary years of schooling in Papua New Guinea.

- Read the *Introduction* on page 1 of both lower and upper primary syllabuses.

The Environmental Studies Syllabus talks about education in the environment, about the environment and for the environment (paragraphs 3, 4 and 5).



Write in your own words your understanding of:

- Education in the environment
- Education about the environment
- Education for the environment

The *Introduction* in the Upper Primary Science Syllabus talks about learning outcomes and indicators.



Write an explanation of outcomes-based education based on information provided here.



Share your explanation with a colleague. Write down what they think about it.

Hint: They may not be enthusiastic. They may be overwhelmed or confused. If they are, find out why they feel so.



Read the *rationale*, page 2 of both lower and upper primary syllabuses.

You will note that the place of science in the total curriculum for primary students has been challenged in the upper primary syllabus.

- Answer the following questions:
 - Why can it be argued that science should not be included? (upper primary)

- What justifications are given to have science/environmental studies included in the curriculum of primary schools?

- What is your own opinion on this matter?

- What are the challenges in linking science to real life situations (paragraph 3, upper primary)?



Read pages 3-7 (lower primary) and pages 3-6 (upper primary) on *curriculum principles*.

- With reference to the *curriculum principles* show whether the following statements are true or false. If they are false, give a brief explanation as to why you think it is so. Then correct the false statement.

Statement	True/False and why?
Parents should be involved with the school in the planning and implementation of the Science/Environmental of Studies syllabuses.	
Environmental sustainability is so complex, difficult but important that it requires unique and additional attention.	
All children will be naturally interested in science and apply themselves to it.	
The differences between children, their range of prior experiences and their enthusiasm to learn will make the job of teaching science easy.	
Students with special needs may need to be excluded from the Science Syllabus.	
It is possible to link the teaching of Science with the teaching of language.	
It is not wise to link Science with Mathematics.	
A good source of learning in Science comes from the resources of the local community.	
Schools without science laboratories will be disadvantaged in the teaching of Science.	
Teachers of Science will need to be well prepared to spend lots of time in giving high quality demonstrations from which students will learn.	

Hint: Focus on the essence of lower and upper primary curriculum principles here, not your personal beliefs, values and feelings.

The *curriculum principles* here include *Teaching and Learning* (lower primary, pages 6-7; upper primary, pages 5-6).

The upper primary syllabus (page 6) makes a special point in discussing four important issues for science education.



Read page 6 carefully.

- Make a comment about each of the following statements found on page 6:
 - *We can teach a practical Science without a laboratory.*

 - *Learning Science is something that students do, not something that is done to them.*

 - *Science must be relevant to the purposes and interests of all students regardless of their age, sex, cultural background, disability, aspirations or interests.*

 - *The nature of working scientifically can involve risks.*

Both the lower primary and the upper primary syllabuses focus on student-centred learning and language development across the curriculum.

With reference to language development across the curriculum, the syllabuses have this to say:

Science uses particular vocabulary and language forms. A conscious effort should therefore be made to use and teach the language of science. (Upper primary, page 5)



Do you agree? Do you practise this?



The lower primary syllabus says:

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. (page 7)



Do you agree? Do you practise this?

This is a much broader statement than the one above from the upper primary syllabus.

The two statements show how the Science in the upper primary becomes more differentiated as a discipline. It is important that you become aware of this and other differences particularly if you teach a multi-grade class.



Read the *aims* of the Science Syllabus, page 7 and those of Environmental Studies, page 8.

There are seven aims in each syllabus. All the aims for lower primary relate to the environment whereas only two aims in the upper primary relate to the environment and the others to the knowledge, processes and habits of science.

- Do you think these differences between the lower and upper primary aims are justified?
- Refer to the *Aims of Primary Curriculum*, page 12, *National Curriculum Statement* (2002). Write a statement about the match between the lower and upper primary aims and the aims of primary curriculum.

Hints: Do the aims of Science and Environmental studies contribute to the achievement of the aims of primary curriculum?



Read the *content overview* on pages 8-10, upper primary, and pages 9-11, lower primary.

There are four stands and six sub-strands in upper primary Science. *Working Scientifically* is described as a process strand.

- What is meant by a process strand and how is it different to the other three strands?

There are two strands and five sub-strands in lower primary Environmental Studies. A process strand is not identified here. However, an Environmental Studies process is identified and explained in the teacher guide (page 7).



Use the table below to show the structure of the Science and Environmental Studies syllabuses.

Upper Primary Science		Lower Primary Environmental Studies	
Strands	Sub-strands	Strands	Sub-strands

Syllabus writers use process and/or content/concept strands and sub-strands to organise the scope of the subject. They take each of these organisers and then develop learning outcomes on the basis of which teachers derive their content – knowledge, skills and attitudes. Teachers use outcomes to develop the content of their lessons.



The *Learning Outcomes* for lower primary are found on page 12 and those for upper primary are found on pages 11-13.

- Without reading any further at this point, suggest some content that you imagine could be included in the following strands and sub-strands. What you are being asked here to do is to walk in the shoes of a syllabus writer. You have already explored the *rationale*, *aims*, *curriculum principles* and the *content overview*, even though you may not fully understand everything you have read yet.

Strand: Living Things Sub-strand: Nature of Living Things Outcome: 8.2.1	Possible content
Strand: Science in the Home Sub-strand: Energy at Home Outcome:6.3.3	Possible content
Strand: Earth and Beyond Sub-strand: Space Exploration Outcome:7.4.2	Possible content
Strand: What's in my environment? Sub-strand: Links in the environment Outcome: 4.1.3	Possible content
Strand: Caring for my environment Sub-strand: Managing wastes Outcome: 3.2.2	Possible content

Hint: There are no right or wrong answers here. The area of science is so huge that almost anything can be included; however, a syllabus writer is restricted by a number of factors and makes decisions about what to include and what to exclude. When you turn the next few pages of the Science Syllabus it will be revealed. In doing this process, you will begin to understand the complex task of syllabus writers.



Read through the upper primary *Learning Outcomes* on pages 11-13 and the lower primary *Learning Outcomes* on page 12. Use the following checklist to ascertain whether you have noticed the following.

Checklist	Yes/No
Working Scientifically, as a process strand, impacts each of the other three strands for upper primary	
Some learning outcomes are developed across the grades 6, 7, and 8 and some across the grades 3, 4 and 5. Give an example to support your answer.	
Some learning outcomes are unique to grade 6, unique to grade 7 or unique to grade 8. Give an example to support your answer.	
No process strand is evident in the Lower Primary Environmental Studies Syllabus	

Remember *Working Scientifically* is a process strand and is not to be taught on its own (Science syllabus, page 8). Instead, it is suggested that the content/concept outcomes are to be taught, learned, applied and assessed through this process strand. However, you are expected to make judgements about student achievement of the *Working Scientifically* outcomes. There is one *Working Scientifically* outcome for each upper primary grade.

The numbering system for the Science outcomes (top of page 11) and Environmental Studies outcomes (top of page 12) follows the same pattern as all other syllabuses.

The rest of the sections in the syllabuses – Learning outcomes and Indicators, Assessment and Reporting, References and Appendix (in lower primary only) - will be dealt with in modules 2, 3 and 4.

Part 2: Science/Environmental Studies Teacher Guides

To complete this section you will need a copy of the teacher guides listed below. The best way to approach the activities in this section is to have both teachers guides open in front of you at the same section so you can quickly scan for similarities and differences.

Environmental Studies Teacher Guide, Lower Primary, 2004

Science Teachers Guide, Upper Primary, 2003



Open both guides and browse through them, noting similarities and differences.

Both guides contain information about the in-service units, the Secretary's message and an introduction.

Read the last two paragraphs of the Secretary's message in both teacher guides.



Working with a colleague, compare the message in these two documents with that in the Mathematics teacher guides.

- Are they the same?
- If not, identify the differences.



Read the *Introduction* in the Environmental Studies Teacher Guide, pages 1-4 and Science Teacher Guide, pages 1-3.



The purposes of the two teacher guides are very similar and also similar to the purposes of the Mathematics teacher guides.

Using this teacher guide section of the guides say: when you receive this book, you need to do the following.

- Read this section.
- The other topics covered in the *Introduction* of the teacher guides are listed in the table below. They provide useful information. Write a brief note about each of them.

Science	Brief notes	Environmental Studies	Brief notes
Nature of Science in the upper primary		Bilingual education - bridging to English	
Links with different levels		Integration	
Links with other subjects		Nature of Environmental Studies - links with other levels - links to other subjects - links across grades and strands	
Links across the Science strands Units of work from one outcome			

- What do you think are the reasons for these differences?
- Why are bilingual education, bridging to English and integration important at lower primary?
- Why does the Science Teacher Guide talk about ‘units of work from one outcome’?



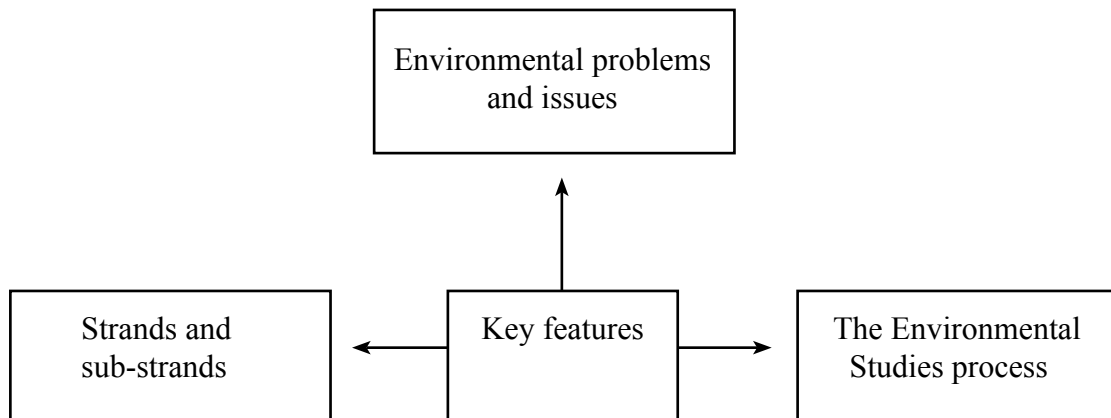
Both teacher guides contain a section that outlines the *key features* of the subject.

Find this section in both teacher guides – Environmental Studies (pages 5-7); Science (pages 4-7).

- Skim read these sections.

**Construct a mind map of the key features identified in the Environmental Studies Teacher Guide.**

Below are the beginnings of the mind map. Complete it by adding more boxes and links as you need them.





Skim read these sections to get an overview of the teacher guides.

The above listed sections come into focus in modules 2, 3 and 4 of this in-service unit.



Assess your learning by reflecting on the following questions:

Can you now explain to someone else:

- the structure of the syllabuses and teacher guides?
- why curriculum principles are identified in each syllabus?
- how to use the teacher guides?
- the links between the teacher guides and the syllabuses?
- how the learning area of Science (Environmental Studies/Science) is being developed through for schools?

Hint: If you are not sure, you may wish to go back over the appropriate sections and/or seek help.

Section 3: Linking Mathematics and Science Learning Areas



Mathematics and Science are developed in the primary school curriculum as two separate learning areas; however, they do share some common features – processes, knowledge and attitudes.

In the *Unit Introduction* (pages 9-10) you'll find some extracts from the *National Curriculum Statement* (2002) about these two learning areas.



Re-visit pages 9-10 of *Unit Introduction*.

- Read also pages 37-38 and 40-41 of the *National Curriculum Statement* (2002).
- Take notes on some common features found in the descriptions of the two learning areas.
- One example is done for you. Find two more common features.

Mathematics	Science
Through a study of mathematics, students will explore <u>ways of solving problems</u> and to conduct day-to-day dealings.	Science offers a <u>system of thinking to solve problems</u> .

- Re-visit pages 3-7 (lower primary) and pages 3-8 (upper primary).
- Take notes on how these learning areas are said to contribute to multiculturalism, integral human development and language development across the curriculum.

Curriculum Principles	Mathematics	Science
Multiculturalism		
Integral human development		
Language development across the curriculum		

- Do Mathematics and Science make different (from other learning areas) and significant contributions to Multiculturalism, Integral human development and Language development across the curriculum, in your view? Comment
- Read page 3 of the Science Teachers Guide and pages 2-3 of the Upper Primary Mathematics Teachers Guide. These pages feature two linking diagrams.

Both the Environmental Studies teacher guide and the Mathematics teacher guide provide advice on ‘links to other subjects’, but not necessarily with each other.

Now that you are familiar with the strands, sub-strands and outcomes of Mathematics and Science /Environmental Studies syllabuses, use the model on page 3 of Science teacher guide to:

- construct a diagram linking two mathematics and two science sub-strands for upper primary

- construct a diagram linking two mathematics and two environmental studies sub-strands for lower primary.

Hint: In order to see links, read elaborative information provided in the teacher guides.

The links you make here will be explored further in Module 4.

Module Summary

Congratulations! You have come to the end of this module. The focus here has been the preliminary sections of the Mathematics and Environmental/Science syllabuses and teacher guides for both lower and upper primary.

In the context of vernacular language development and bridging to English in the lower primary and the generalist and integrated approaches being recommended in the upper primary, it is important for practitioners to explore the subjects individually and in relation to each other.

You have seen how similar the four syllabuses are in their structure. The four teacher guides are also structured in similar ways.

Through the study of this module you would have developed some insights into and knowledge and skills in each of the learning areas and an understanding of how they are being shaped for the lower primary and upper primary years.

At this point let us review your progress by assessing the extent to which you can now demonstrate each outcome.

The outcomes of this module are copied here. For each of the outcomes how do you assess yourself - Yes, No or Not sure?

Can you:	Yes/No/ Not sure
1. compare the structure and contents of the Mathematics syllabuses with the Science syllabuses?	
2. identify the links between each Mathematics syllabus and the corresponding teacher guide?	
3. identify the links between the Science/Environmental Science syllabuses and the corresponding teacher guides?	
4. explain why these learning areas are included in the primary curriculum?	
5. describe the curriculum principles underlying the Mathematics and Science syllabuses?	
6. identify the focus areas in each syllabus and their links with each other?	
7. describe the way content is organised in each of the syllabuses?	
8. make links between the Mathematics and Science learning areas?	

If you answered ‘Yes’ to all of them, then you have done very well. Think about the kinds of evidence that will support the achievement of each of the outcomes. If you have said ‘No’ or ‘Not sure’ to some, then it may be worth your while to go over the appropriate sections of the module again and have another go at repeating the tasks, and/or reflecting on your difficulties and seeking help.

Remember these *modules outcomes* help you achieve the outcomes of the unit. Refer back to the outcomes of the unit in the *Unit Introduction* and reflect on where you are in relation to those outcomes.

If you are seeking academic credit, you were advised to keep a running record of any evidence you may have for particular unit outcomes. If you have not been doing this go back over the module and jot down, in your *Learning Contract*, what you might consider to be evidence for the unit outcomes for which you have agreed to provide evidence.

Additional space for your notes

Additional space for your notes