

Science

Upper primary

Teachers Guide

2003



Papua New Guinea
Department of Education

Issued free to schools by the Department of Education

Published in 2003 by the Department of Education, Papua New Guinea

© Copyright 2003 Department of Education, Papua New Guinea

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the publisher.

Developed by the Curriculum Development Division of the Department of Education

ISBN 9980-930-10-1

Acknowledgements

This Teachers Guide was coordinated and written by Mr John Kakas, Acting Senior Curriculum Officer, Primary, Science

Teachers and officers of the following schools, colleges, institutions and the Science Subject Advisory Committee contributed to the development of this document through workshops and consultation meetings.

Central

Ioubuma, Kouba, Sogeri.

Eastern Highlands

East Goroka, West Goroka, North Goroka, Okiufa

East New Britain

Kerevat, Malaguna, Napapar, Vunairoto, Kalamanaguan.

Madang

Bahor, Holy Spirit, Megiar, Sagalau, Bogia, Jomba,
Lutheran Day, Gum, Dangsai, Dor

Manus

Kari, Kawaliap, Lombrum, Buyang, Mokoreng, Naringel, Lundret,
Lorengau East, Pombrut, Dungomashi, Worei, Sohoneriu, Ahus,
Ndrolokou,

Milne Bay

Alotau, Ladava, Rabe, Divinai, Siasiada, Sideia, Logeia, Fife Bay, Naura,
Lelehoa, Goilanai, Hagita, Bwagoia, Eaus, Liak

New Ireland

Namatanai, Lelet, Langenia, Djaul, Kasalok, Carteret, Pinikidu, Eli
Wanera, Sacred Heart, Livitua

Institutions

PNG Education Institute, Gaulim Teachers College, Goroka University,
Balob Teachers College

Individuals

Bob Tombe (UOG), Otto Wrangian (PNGEI), Amy Baiwapa (Goilanai
Primary), Wilhemina A'afa (Ioubuna Kouba Primary), Charles Nicky
(Carteret primary), Asaku Openg (Balob Teachers College)

This document was developed with the support of the Australian Government through the Curriculum Reform Implementation Project.

Contents

Introduction	1
Key features	4
Teaching and learning strategies	8
Assessment	19
Programming	30
Elaboration of outcomes	33
Units of work	48
Resources	57
Glossary	62
Appendix (Time allocations)	64

Inservice Units

A set of inservice units have been written to support the implementation of the upper primary reform curriculum.

These units are:

- self-instructional, so you can access them according to your needs when and where suits you,
- self-paced, so you can study at your own pace,
- outcomes-based, so you can experience outcomes-based approaches to education,
- based on adult learning principles of learning, doing, sharing and reflecting,
- practical and related to your daily work as a teacher or a supervisor,
- collegial, so you can learn together in small groups, whole school or cluster settings,
- accredited with PNG Education Institute, so you can improve your qualifications,
- designed to promote best practice, so you can effectively implement the curriculum,
- applicable across Upper Primary Syllabuses.

These units integrate principles contained in the *National Curriculum Statement (2002)* and the *National Assessment and Reporting Policy (2003)*.

These units can be used in conjunction with this Teachers Guide.

Secretary's Message

Primary teachers are generalist teachers and this Teachers Guide is for all teachers in Upper Primary schools. It is one of a set of seven guides written for teachers of Upper Primary, Grades 6 to 8.

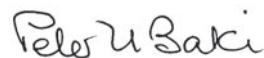
The Upper Primary syllabuses identify the learning outcomes. The Teachers Guides give more information about what to teach and describe ways of implementing the syllabuses. The Teachers Guides are supported by the Inservice Units that have been written to assist the implementation of the Upper Primary syllabuses and provide valuable information about teaching.

I also encourage teachers to work closely with members of their school communities to ensure that local community needs are met.

Important reforms to our education system will only be successful with the support and understanding of teachers. Every Teachers Guide contains detailed information about appropriate subject content, a broad range of ideas and strategies to help teachers use and understand the subject syllabuses. Each Guide is written for a particular subject but many of the ideas and strategies can be used with different subjects or when using an integrated approach to teaching and learning.

Teachers should read each Guide carefully and become familiar with the content of each subject as specified in the Elaborations of outcomes section in each guide.

I encourage teachers to try out the ideas and strategies that they believe will be effective in their schools with their students. Teachers have the right to modify and amend these ideas to suit their local circumstances.



Peter M Baki
Secretary for Education