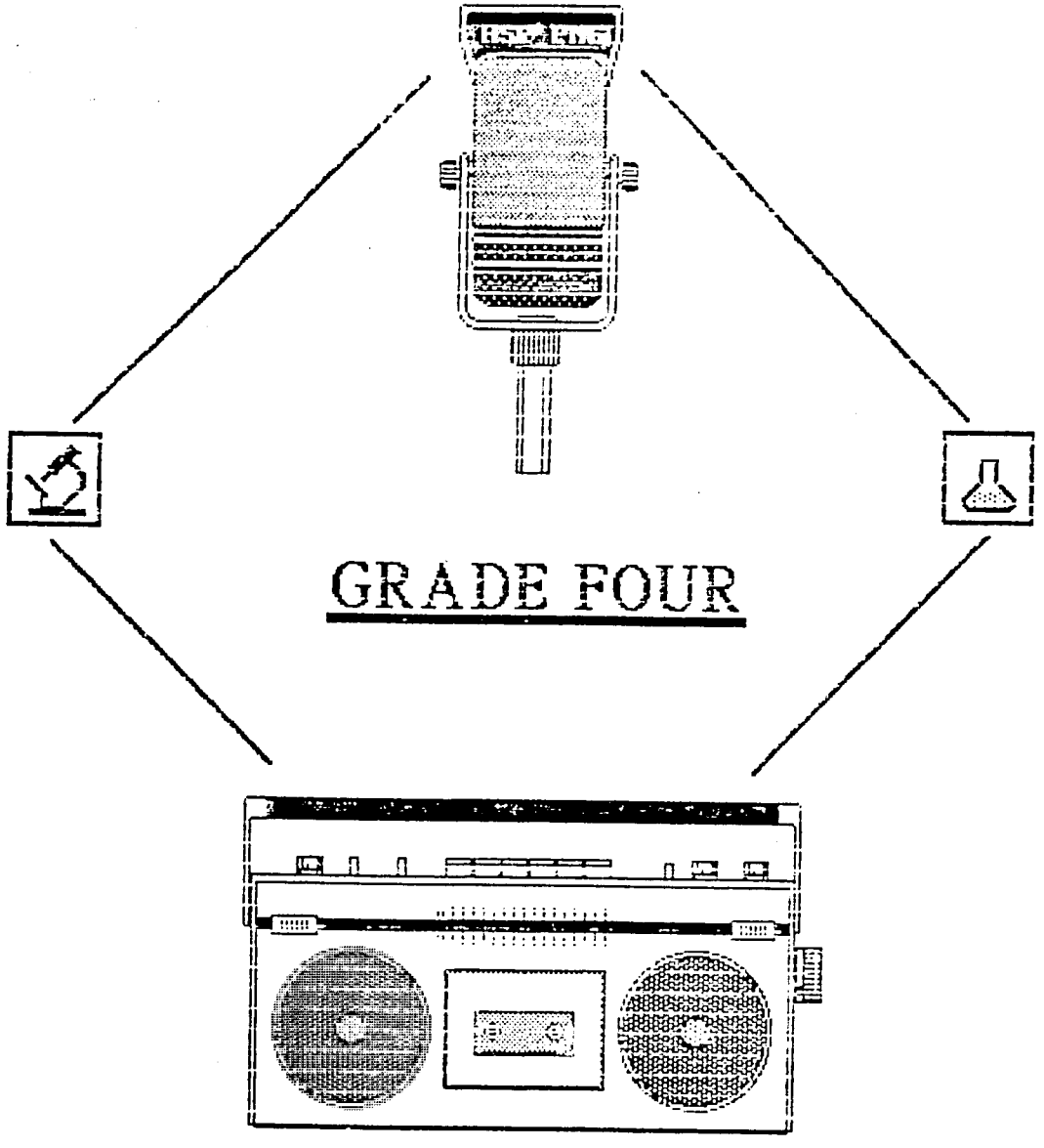
RADIO SCIENCE PILOT PROJECT



GRADE FOUR

Papua New Guinea

Department of Education

BACKGROUND INFORMATION

RADIO SCIENCE PILOT PROJECT

BOX 3655
Boroko NCD
Papua New Guinea
21-3488 or 24-6447

National Department of Education
Curriculum Unit
Ward's Strip, Waigani
Papua New Guinea

Funded By: United States Agency For International Development (AID) contract to Education Development Center, Newton, MA, USA. 1987-1991

Purpose: Develop and test a radio-based science curriculum for children in garades 4-6 of the community schools of Papua New Guinea. The radio science lessons are based on the offical community school science guide and also include aspects of health, agriculture and community life. The radio lessons use the concept of interactive radio instruction (IRI) that calls for maximum student participation during the broadcasts. The lessons consist of a 20 minute broadcast segment that is followed by a 10 minute teacher post-broadcast segment.

Schedule: 1988 ---- Development and testing grade 4 lessons.

1989 ---- Final testing of grade 4 lessons.
1989 ---- Development and testing grade 5 lessons.

1990 ---- Final testing of grade 5 lessons.
1990 ---- Development and testing grade 6 lessons.

1991 ---- Final testing of grade 6 lessons.

The first test of materials is in schools in the National Capital District, the Central and Eastern Highlands Provinces. The grade four final testing will be in schools in the East Sepik Province.

Materials: The radio science lesson scripts are being written in English by Papua New Guinean writers and produced by Papua New Guinean studio actors and actresses. The materials include:

Interactive Radio Science Lessons
(20 minutes per lesson, 60 lesson per year)

Radio Science Lesson Worksheets
(at least one per lesson, reuseable)

Notes for the Teacher
(teacher's guide for the 10 minute teacher post broadcast lessons - 60 per year.)

Science Kits for Lessons
(simple materials to support selected lessons)

Teacher Support Broadcasts
(10 minute broadcast twice a week to teachers using the materials)

RADIO SCIENCE PILOT PROJECT STAFF

Michael Popo	Professional Associate School Liaison and Evaluation
Kipa Maleva	Professional Associate Science Education
Paul Mungui	Professional Associate Production and Script Writing
Pius Ripason	Professional Associate Materials Development
John Khambu	Professional Associate Evaluation
Roland Katak	Head of Evaluation
Patrick Ori	Radio Engineer and Studio Technician
Igo Poa	Secretarial Associate
Isabelle Aihi	Secretary
Tazi Rom	Driver and Materials Development
Sylvia Oa	Scriptwriter
Pia Kila	Scriptwriter
Gwen Moide	Scriptwriter and Studio Actress
Lydia Elloit	Scriptwriter and Studio Actress
Timothy Gaemate	Scriptwriter and Studio Actor
Joyce Hill,	Chief Script Writer and Producer
Anne E. Watson	Writing Consultant
Frank Watson	Science Educator and Director

RADIO SCIENCE PILOT PROJECT SCHOOLS

The following schools used the project materials in 1988:

National Capital District

* St. Francis - Koki Community School
* Waigani Community School

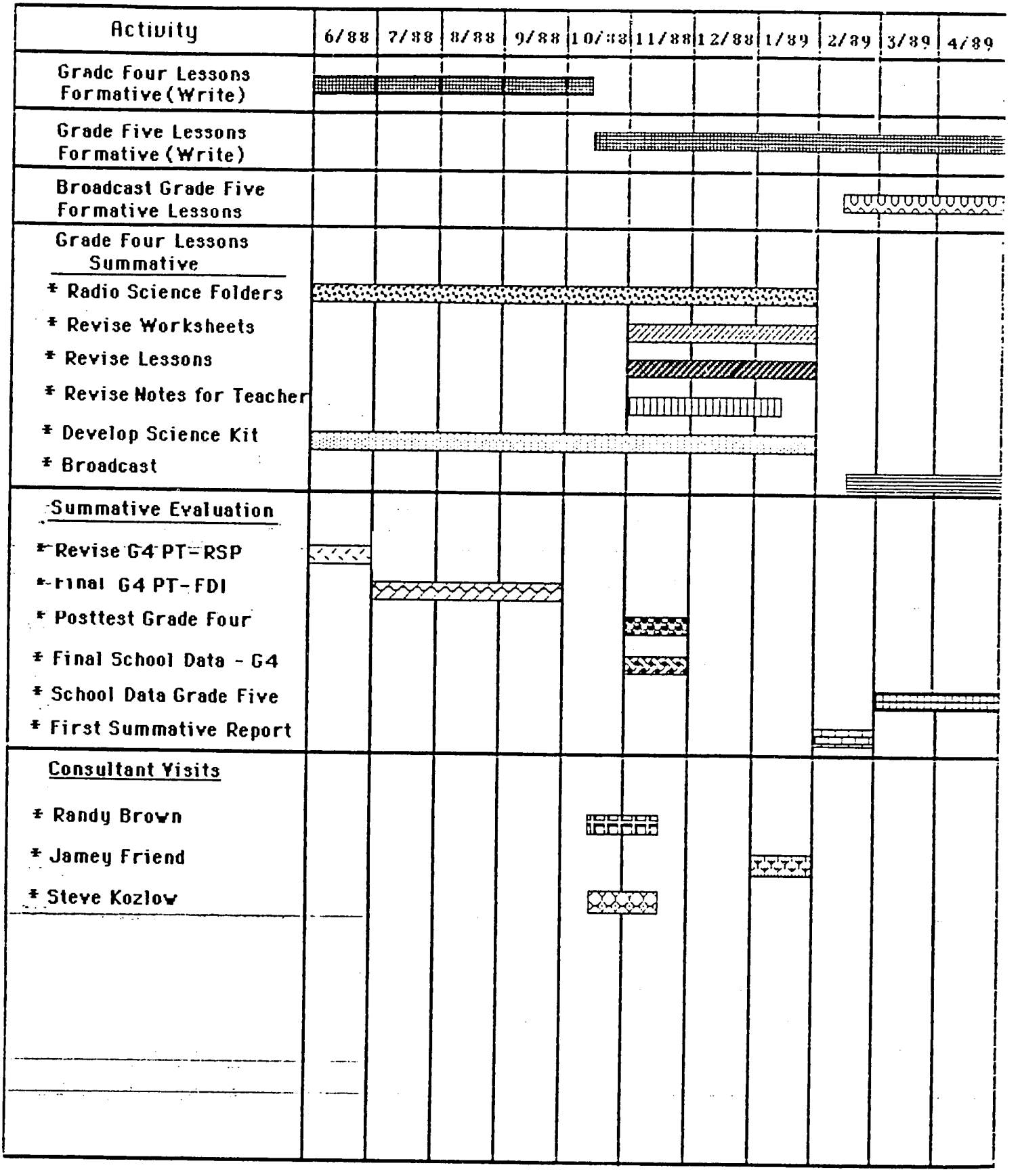
Central Province

* Avabadina Community School
* Brown River Community School
* Gaire Community School
* Hisiu Community School
* Kuriva Community School
* Porebada Community School
* Sogeri Community School

Eastern Highlands Province

* Asaroka Community School
* Faniufa Community School
* Korofeigu Community School
* Manto Community School
* Okiufa Community School
* Omborda Community School
* West Goroka Community School

Radio Science Pilot Project Activities



GRADE FOUR
RADIO SCIENCE CURRICULUM

RADIO SCIENCE PILOT PROJECT
GRADE FOUR PRIMARY SCIENCE

CONTENT OVERVIEW

UNIT	CONTENT
LIVING THINGS -- ANIMALS	Distinguished between living and non-living based on observation. Identifying animals according to certain criteria -- size, movement, behavior, body covering, reproduction, growth, environment and life cycle.
ECOLOGY	Describing and classifying animals and plants according to the environments in which they live (seashore, grassland, rainforest). Describing the interdependency of livings. Identifying a a simple food chain.
HEAT	Identify and give examples of the three forms of matter: solid, liquid, and gas. Describe what happens when a solid, liquid, and gas is heated and cooled.
LIGHT	Observe the chatracteristics of light. Light travels in straight lines, bounces off things, passes through some things and is blocked by some things. Shadows are caused by things blocking light. Natural light can be broken up into colors.
SOUND	Identiying how sound is caused and what materials it will travel through. Sound travels through solids, liquids, and air. Recognizing that sound travels through solids better than air.
ELECTRICITY AND MAGNETISM	Classify things that magnets will pick up and things that magnets won't pick up. Use a wire, torch battery, lamp to make a simple electrical circuit. Classify things that allow electricity to go through and that do not. Identify how a switch works in a simple circuit

RADIO SCIENCE PILOT PROJECT

GRADE FOUR CURRICULUM

UNIT 1: INTRODUCTION TO RADIO SCIENCE LESSONS

1. Introduction 1
2. Introduction 2
3. Observation 1
4. Observation 2

UNIT 2 : LIVING THINGS - ANIMALS AND PLANTS

5. Living and Non-Living Things
6. Characteristics of Animals
7. All Living Things Need Food to Live
8. Coverings of Animals
9. Animals Differ in Many Ways
10. Animals Move in Different Ways
11. Some Special Animals
12. Animals Reproduce
13. How Animals Grow and Change
14. Animals Can Be Grouped According To Characteristics
15. Animals Without Bones
16. Animals With Bones
17. Human Bones
18. Human Muscles
19. Characteristics of Plants
20. Parts of Plants ---- *Seed Kit*
21. Growing Seeds ---- *Seed Kit*
22. How We Use Plants - *Seed Kit*

UNIT 3: ECOLOGY

23. How a Human Community works
24. How A Natural Community Works
25. How a Natural Community Can Be Changed
26. A Small Natural Community - A Pond
27. Large Natural Communities of PNG

28. The Seashore
29. Food Chains and Problems of the Seashore
30. The Rainforest
31. Food Chains and Problems of the Rainforest
32. The Grasslands
33. Natural World Communities
34. School Yard Ecology

UNIT 4: HEAT

35. Material Objects
36. What is Heat? ---- *Heat Kit*
37. Heat Changes Things ---- *Heat Kit*
38. Controlling Heat or Temperature ---- *Heat Kit*
39. Using Heat
40. The Weather

UNIT 5: LIGHT

41. Sources of Light
42. Light Motion
43. Mirrors ---- *Light Kit*
44. Shadows ---- *Light Kit*
45. Rainbows --- *Light Kit*
46. Making Things Bigger ---- *Light Kit*

UNIT 6: SOUND

47. What is Sound? - *Sound Kit*
48. How Sounds Differ - *Sound Kit*
49. How Sounds Travel - *Sound Kit*
50. Sound Travels - Water
51. Mystery Sounds
52. Sound Revision

UNIT 7: ELECTRICITY

53. Batteries and Bulbs - *Electricity Kit*
54. What is Electricity? - *Electricity Kit*
55. Electric Circuits - *Electricity Kit*
56. What Things Will Carry Electricity? *Electricity Kit*
57. How Does A Torch Work? - *Electricity Kit*
58. Magnets - *Electricity Kit*
59. Putting Electricity to Work

UNIT 8: RADIO SCIENCE REVISION

60. Science, Science

RADIO SCIENCE PILOT PROJECT

GRADE FOUR CURRICULUM

UNIT 1: INTRODUCTION TO RADIO SCIENCE LESSONS

1. Introduction 1

Practice in listening and responding to the radio science teachers. Answering orally yes/no and multiple choice questions. Use of the teacher cue. Practice using the right hand and writing response.

NOTES FOR THE TEACHER: Exercise Book Drawing from Worksheet.

2. Introduction 2

Continued practice in listening and responding. Using the Radio Science Book. Using the left hand. Answering riddles orally.

NOTES FOR THE TEACHER: Revise Right/Left

3. Observation 1

Practice in the process skill of observation. Using the right and left hand. Using arrows to indicate direction and practicing visual observation.

NOTES FOR THE TEACHER: Visual Observation Puzzle

4. Observation 2

Continued practice in observation. Listening to sounds. Following directions. Sorting objects and using right - left in pictures and diagrams.

NOTES FOR THE TEACHER: Outside Observation Search

5. Living and Non-Living Things

Living things have characteristics by which they can be described and distinguished from non-living things. They take in food, give off wastes, grow, respond to stimuli, and reproduce their own kind.

NOTES FOR THE TEACHER: Search For Living/Non-Living Things.

6. Characteristics of Animals

Animals have characteristics by which they can be described and identified. Children can easily see the differences in size, shape, color, coverings, and structures of animals.

NOTES FOR THE TEACHER: Animal Characteristics Chart

7. All Living Things Need Food to Live

All living things need food to live. Animals depend upon plants for food. Plants use non-living materials (air, sunlight, water, minerals) for energy necessary to live.

NOTES FOR THE TEACHER: What Do Animals Eat?

8. Coverings of Animals

The bodies of animals are covered in different ways -- fur, skin, scales, feathers, shells, hair.

NOTES FOR THE TEACHER: Coverings Of Animals Chart

9. Animals Differ in Many Ways

Animals differ in size, color, body parts, coverings, where they live and what they eat.

NOTES FOR THE TEACHER: How Animals Eat Chart

10. Animals Move in Different Ways

Animals have different ways of traveling from place to place. They swim, run, walk, hop, crawl, or fly.

NOTES FOR THE TEACHER: Word Collecting - Animal Movement Body Parts

11. Some Special Animals

An investigation of the appearance, food getting, and movement of lesser known living things.

NOTES FOR THE TEACHER: Revise the Polar Bear, Elephant, and Humpback Whale

12. Animals Reproduce

One of the characteristics of living things is that they are able to reproduce their own kind. Living things reproduce in many different ways.

NOTES FOR THE TEACHER: Animal Reproduction Chart

13. How Animals Grow and Change

All living things change in appearance and behavior as they grow.

NOTES FOR THE TEACHER: Animal Change Chart

14. Animals Can Be Grouped According To Characteristics

The many different kinds of animals have characteristics and behavior by which they can be described, identified, and classified.

NOTES FOR THE TEACHER: Grouping The Class -- A Graph

15. Animals Without Bones

Many animals have soft bodies with no bones for an internal support system. This feature is used to classify animals.

NOTES FOR THE TEACHER: Grouping Living Things - Animals Without Bones

16. Animals With Bones

Some animals have bones as an internal support system for their bodies.

NOTES FOR THE TEACHER: Grouping Living Things - Animals With Bones

17. Human Bones

The human skeleton is made of many bones the joined together to provide support and protection to the human body.

NOTES FOR THE TEACHER: Human Bone Chart

18. Human Muscles

The human skeleton is covering with muscles. These muscles enable the bones to move and to move the body.

NOTES FOR THE TEACHER: Moving Your Muscles

19. Characteristics of Plants

Plants are living things. Most plants need air, water, soil, and sunlight to live. They differ from animals that they can't move from place to place.

NOTES FOR THE TEACHER: Kinds of Plants - Word Collecting

20. Parts of Plants

Most plants have roots, stems, leaves, and flowers. These structures all have special functions that help the plant live.

NOTES FOR THE TEACHER: Plant Part Search

21. Growing Seeds

The seeds of plants are formed by the flowers of plants. The seed of the plant contains a tiny baby plant. This tiny baby plant will grow into a new plant if conditions are correct.

NOTES FOR THE TEACHER: Growing Seeds

22. How We Use Plants

Plants are very valuable to us. We use plants for food, clothing, shelter, making paper, and building things. It is very important that we protect this important resource.

NOTES FOR THE TEACHER: Revise The Seed Experiment

UNIT 3: ECOLOGY

23. How A Human Community Works.

Living and non-living things live together in communities. People have developed special communities to meet their needs. Humans are the only living thing that can shape the place their live to their own needs.

NOTES FOR THE TEACHER: Village Word Collecting

24. How A Natural Community Works.

Natural communities are made up of living and non-living things that live in the same place and depend on each other for live.

NOTES FOR THE TEACHER: Where Do I Live Game

25. How a Natural Community Can Be Changed.

Natural communities are changed by natural forces and those produced by people. It is important to understand the balance in natural communities so we can help maintain them.

NOTES FOR THE TEACHER: Helping The Environment

26. A Small Natural Community - A Pond

A pond is a good example of a group of living and non- living things living together in the same place. A pond community shows how animals and plants depend on each other and how they both depend on non-living things for life.

NOTES FOR THE TEACHER: Word Collecting- The Pond

27. Large Communities of PNG

Papua New Guinea has many distinctive and contrasting environmental areas. It has three major areas, the seashore, the rainforest and the grassland.

NOTES FOR THE TEACHER: The Landforms Of Papua New Guinea

28. The Seashore

The seashore community provides an ideal environment for living things. There is wide range of animals and plants that live in and around the sea. People also find the seashore a good place to live.

NOTES FOR THE TEACHER: People and Animals of the Seashore

29. Food Chains and Problems of the Seashore

The seashore is rich source of food for living things. There are many different food chains in and out of the water. People can change the nature of the seashore by the ways it is used.

NOTES FOR THE TEACHER: Word Collection -- Use Of The Seashore

30. The Rainforest

The great rainforests of Papua New Guinea are a huge and valuable resource. They result from heavy rainfall and hot temperatures. There is a rich variety of plants and animals in the rainforest community.

NOTES FOR THE TEACHER: Revise Animals and Plants of the Rainforest

31. Food Chains and Problems of the Rainforest

The rainforest is possibly the most complex environment in the world. It has more kinds of plants than any other, therefore more possible food chains. Rainforest are endangered because people are cutting too much timber without re-planting trees.

NOTES FOR THE TEACHER: Food Chains of the Rainforest

32. The Grasslands

Large areas of Papua New Guinea are covered by grasslands. There are over 300 different kinds of grasses that grow in the grasslands. The grasslands have few trees and are usually hot and dry.

NOTES FOR THE TEACHER: Revise Animals and Plants of the Grassland

33. Natural World Communities

There are many different natural communities in the world. Papua New Guinea has some of the natural communities but lacks others. It doesn't have very cold areas or arctic communities. It also lacks very dry and hot areas known as deserts.

NOTES FOR THE TEACHER: Where In The World -- Animals and Plants

34. School Yard Ecology

The school yard is an an excellent place to look for living and non-living things and to practice the skills of observation and recording.

NOTES FOR THE TEACHER: Observation Around The School

UNIT 4: HEAT

35. Material Objects

Identification of objects as natural or man made and description and classification of the objects as solid, liquid, or gas.

NOTES FOR THE TEACHER: Material Objects

36. What is Heat?

Heat comes from many differerent sources. Our skin is the main organ of the body that senses heat and that heat is essential to living things.

NOTES FOR THE TEACHER: Sources of Heat
HEAT MATERIALS KIT

37. Heat Changes Things

When objects are heated they change. Some of these changes are easy to see. If water is heated until it boils it changes to steam. Some changes are harder to see.

NOTES FOR THE TEACHER: Heating Water
HEAT MATERIALS KIT

38 Controlling Heat or Temperature

Heat travels from place to place and through objects. Some objects allow heat to move faster than others. Some objects trap the heat and hold the heat.

NOTES FOR THE TEACHER: Heating Air
HEAT MATERIALS KIT

39. Using Heat

We use heating and cooling in many different ways in our daily lives. In many areas in the world it important to control heat either for heating or cooling purposes. Heat is often used to do work and run machines.

NOTES FOR THE TEACHER: How We Use Heat

40. The Weather

The weather of the world results from the heating and cooling of the earths surface, water and the air around it.

NOTES FOR THE TEACHER: Different Kinds of Weather

41. Sources of Light

Heat and light from the sun warms and brightens the sky of earth. The sun is our main source of heat and light. The sun is not our only source of light. We get light from many other sources.

NOTES FOR THE TEACHER: A Model of Light

42. Light Motion

Light travels very fast. It travels in straight lines until it strikes something. It travels through space, air and water. It bounces off somethings and passes through others.

NOTES FOR THE TEACHER: Folding and Tearing Objects

43. Mirrors

Objects with smooth surfaces will reflect more light from their surfaces than rough objects. Mirrors have very smooth and polished surfaces. Mirrors form images by the reflection of light from their surfaces.

NOTES FOR THE TEACHER: Mirror Fun
LIGHT MATERIALS KIT

44. Shadows

Shadows are caused by light being blocked by an object. If an object is placed in light, it may block the light and cause a shadow to be formed. Shadows are formed whenever and wherever there is a source of light.

NOTES FOR THE TEACHER: Making Shadows
LIGHT MATERIALS KIT

10

45. Rainbows

Sunlight is a mixture of different colours, the colours of the rainbow. Most people think they can see seven different colours. Whenever we see coloured, we are seeing one of those seven objects.

NOTES FOR THE TEACHER: Making a Rainbow
LIGHT MATERIALS KIT

46. Making Things Bigger

Water drops can be used to make things look bigger. When light passes through a drop of water, the speed of light is slowed down and the light is bent. If the water drop is the right shape it will make things look larger when you look through the drop.

NOTES FOR THE TEACHER: Water Drop Magnifiers
LIGHT MATERIALS KIT

UNIT 6: SOUND

47. What is Sound?

The world is filled with many interesting sounds. Everyday we hear sounds from different things around us. Sound is caused by objects moving. The sound travels through the air and is heard by our ears. Humans and animals use sound to communicate information.

NOTES FOR THE TEACHER: Making Sounds

48. How Sounds Differ

Sound differ in many ways. They can be loud or soft, high or low. They can be happy or sad. They can tell us of danger. Sound communicate information to us.

NOTES FOR THE TEACHER: Making More Sounds

49. How Sounds Travel

Sound travels in straight lines like light. When the sound waves or vibrations strike an object they bounce off, cause the object to vibrate, travel through the object or are absorbed or held by the object.

NOTES FOR THE TEACHER: Sound Travels

50. Sound Travels - Water

Although most sounds we hear are carry by air, water can carry sounds. Water carries sound better than air. Sound traveling in the water is used by boats to measure the depth of water.

NOTES TO THE TEACHER: Sound Goes Through Water

51. Mystery Sounds

The world is full of sounds. Some can be pleasant and beautiful like music others can be noisy and unpleasant. A world without sound would be a very difficult in which to live.

NOTES TO THE TEACHER: More Mystery Sounds

52. Sound Revision

Sound is made by objects moving. Sound can travel from place to place through the air, water and solids. We hear sounds with our ears. Through sound, people and other animals are able to communicate with each other.

NOTES TO THE TEACHER: Revise Sound

53. Batteries and Bulbs

Torch batteries and wire can be used to light a torch light. When the battery, wire and bulb are connected correctly a simple or closed circuit is formed.

NOTES FOR THE TEACHER: Revise Bulb Lighting
ELECTRICITY MATERIALS KIT

54. What is Electricity?

Electricity is difficult to explain. We can't see it. We can't hear it. We know it is present only because of the effects it produces. It can be used produce light, sound and heat. We can make electricity in many different ways.

NOTES FOR THE TEACHER: Making Battery and Bulb Holders
ELECTRICITY MATERIALS KIT

55. Electric Circuits

When torch batteries and torch bulbs are connected with wire an electrical circuit is produced. Switches can be added to the circuit so the circuit can be opened and closed.

NOTES TO THE TEACHER: What Circuits Work?
ELECTRICITY MATERIALS KIT

56. What Things Will Carry Electricity?

Electricity will travel or flow through some materials and not through other materials. Most metals will allow electricity to travel or flow through them easily. Most things which are not metals will not let electricity flow through easily.

NOTES TO THE TEACHER: What Things Will Carry Electricity?
ELECTRICITY MATERIALS KIT

57. How Does A Torch Work?

An electric torch uses batteries, a bulb and switch. If a torch is taken apart it is possible to see how the batteries, switch and bulb are connected when the switch is turned on.

NOTES TO THE TEACHER: Making An Electric Torch
ELECTRICITY MATERIALS KIT

58. Magnets

Magnets are materials that will pick other materials that are made of iron. A compass uses a magnet to show direction. Electricity can be used to make very powerful magnets. Magnets are used in many places: motors, radios, television sets, airplanes.

NOTES TO THE TEACHER: What Will A Magnet Pick Up?
ELECTRICITY MATERIALS KIT

59. Putting Electricity to Work

The uses of electricity are many. Practically all its uses are a result of it making heat, light and magnetism. The magnetic effect is the basis of motors, while the heating effect is the basis for lights, ovens, heaters, and toasters.

NOTES TO THE TEACHER: How We Use Electricity

UNIT 8: RADIO SCIENCE REVISION

60. Science, Science

A revision of what science is about and why science is important to us.

NOTES TO THE TEACHER: Why Science Is Important

GRADE FOUR
RADIO SCIENCE KIT

RADIO SCIENCE PILOT PROJECT SCIENCE KIT

The following lessons have science materials supplied by the project:

UNIT 2 : LIVING THINGS - ANIMALS AND PLANTS

20. Parts of Plants ---- *Seed Kit*
21. Growing Seeds ---- *Seed Kit*
22. How We Use Plants - *Seed Kit*

UNIT 4: HEAT

35. What is Heat? ---- *Heat Kit*
37. Heat Changes Things ---- *Heat Kit*
38. Controlling Heat or Temperature ---- *Heat Kit*

UNIT 5: LIGHT

43. Mirrors ---- *Light Kit*
44. Shadows ---- *Light Kit*
45. Rainbows --- *Light Kit*
46. Making Things Bigger ---- *Light Kit*

UNIT 6: SOUND

47. What is Sound? --- *Sound Kit*
48. How Sounds Differ --- *Sound Kit*
49. How Sounds Travel --- *Sound Kit*

UNIT 7: ELECTRICITY

53. Batteries and Bulbs --- *Electricity Kit*
54. What is Electricity? --- *Electricity Kit*
55. Electric Circuits --- *Electricity Kit*
56. What Things Will Carry Electricity? --- *Electricity Kit*
57. How Does A Torch Work? --- *Electricity Kit*
58. Magnets --- *Electricity Kit*

The Radio Science Grade Four Science Kit is based on two factors:

* some materials are supplied for pairs of children in the test classrooms;
* some materials are supplied for groups of children in the test classrooms.

SEED CLASS KIT

special Notes For The Teacher
paper plates for 5 groups of children
roll of paper towels
seed collection -- 15 seeds - 6 different kinds
plastic bags

HEAT CLASS KIT

special Notes For The Teacher
5 plastic containers
plastic straws for 5 groups of children
modeling clay for 5 groups of children
food coloring for class
matches for class
candles for 5 groups of children
balloons for the class
thermometers for 5 groups of children

LIGHT CLASS KIT

special Notes For The Teacher
mirrors for pairs of children
waxed paper
clear plastic squares
plastic straws for 5 groups of children
candles for 5 groups of children

SOUND CLASS KIT

special Notes For The Teacher
rubber bands for each child
plastic straws for each child

ELECTRICITY AND MAGNETISM CLASS KIT

special Notes For The Teacher
torch batteries and bulbs for every four children
wire for every four children
torch for 5 groups of children
magnets for 5 groups of children
teacher's kit (extra batteries, bulbs, wire, magnets, nails)

NOTES FOR THE TEACHER

NOTES FOR THE TEACHER

RADIO SCIENCE PILOT PROJECT

GRADE 4
UNIT 2 LIVING THINGS - ANIMALS
LESSON 10 THE WAYS ANIMALS MOVE

TIME FOR THE LESSON: 10 MINUTES

SCIENCE NOTES FOR THE TEACHER

Animals move in many different ways. They swim, climb, hop, crawl, walk, jump, run, fly, glide. Many animals have body parts that are specialized for movement. The wallaby uses its strong tail and legs to jump and run. Birds have wings with feathers for flying and gliding. Some turtles have legs that are called flippers that help them swim. Fish use fins and their bodies to move through the water. Animals move to protect themselves, get food and reproduce. Plants are not able to move from place to place on their own. They do move their roots, stems and leaves toward water, the sun and the pull of gravity.

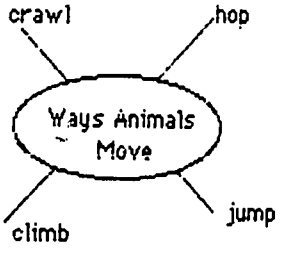
Collecting words or "clustering" is a way to think about ideas. The collecting of words about an idea or a subject can be used to introduce an idea or revise ideas that have been taught. Later lessons will ask children to make "word trees" using the collected or clustered words.

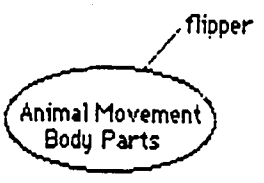
YOU WILL NEED:

* Radio Science Book page 10
* A pencil, a ruler, and your exercise book or a clean sheet of paper.

DO THIS BEFORE THE RADIO LESSON:

* Have the children sit in pairs so that two children can share one Radio Science Book.
* Hand out page 10 of the Radio Science Book.
* Copy these charts on the chalkboard.





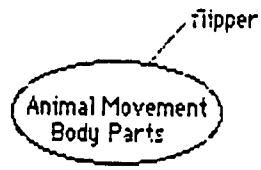
DO THIS AFTER THE RADIO LESSON:

1. Tell the the children that they are going to collect words. They will collect words that tell what parts of the body animals use to move.

2. Revise with the children how during the radio lesson the radio science teachers, John and Rena collected words about the ways animals can move.

3. Ask the children to think about the parts of the body an animal uses when it moves.

4. Write the words Animal Movement - Body Parts on the chalkboard and draw a circle around the words. Add the word flipper.



5. Have them look at the chart Animal Movement - Body Parts. Ask them what a flipper is. Ask them to name an animal that has a flipper. (turtle, dolphin, dugong)

6. Ask one child to give you one word that names the body part used when a animal moves. Write the word on the chalkboard and draw a line from the word to the circle around the words Animal Movement - Body Parts. Tell them this is word collecting.

7. If the children have trouble thinking of a word, help them by naming an animal and asking what part of the body does that animal use to move. " What part of the body does the bird use to fly?" " What part of the body do we use to run?"

8. Keep asking children until you have a collection of words. Some words they should get are, paw, claws, fin, hand, foot, wing.

CONCLUDE THE POST-BROADCAST LESSON:

1. Have the children copy the collected word diagrams from the radio lesson and the post broadcast lesson in their exercise books or on a clean sheet of paper.

2. Revise both diagrams.

RADIO SCIENCE BOOK

MIRROR FUN

Use your mirror to complete the pictures in the boxes

1

2

3

4

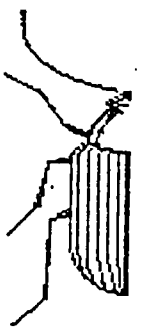
5

6

7

8

9



10

11

12

The Ways Animals Move

1

Ways Animals Move

2

crawl

Ways Animals Move

climb

3

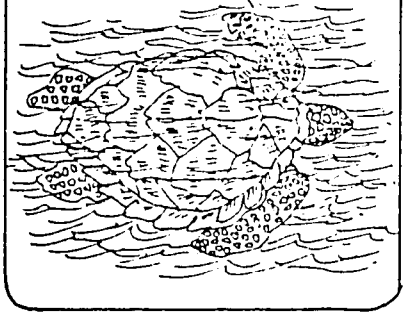
crawl hop

Ways Animals Move

climb jump

4

Flipper



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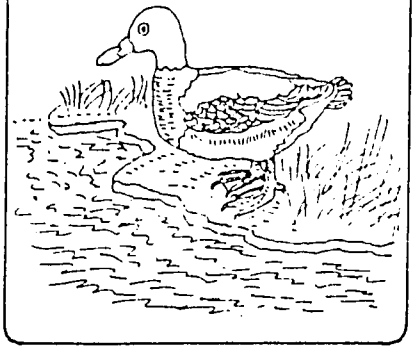

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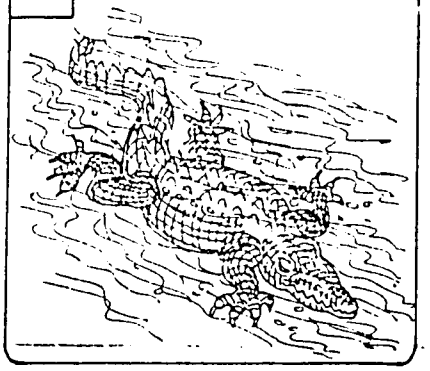

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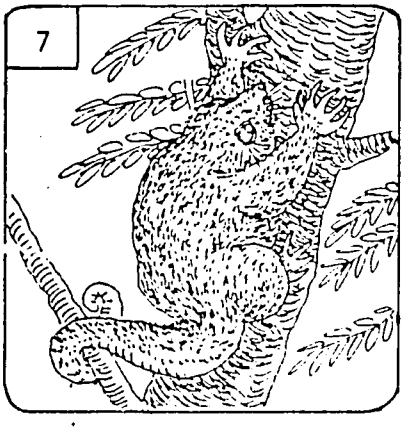

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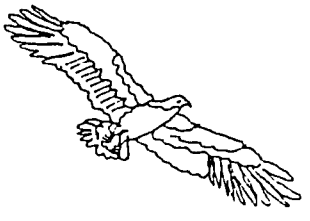

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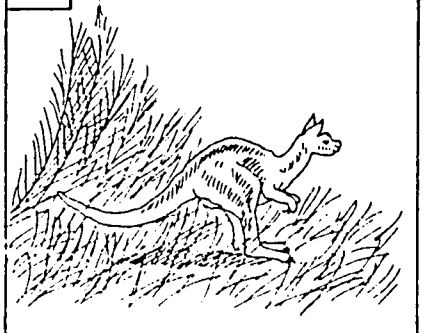

10

Animal Movement Song

A fish swims.
A horse runs.
A snake crawls.
A bird flies.
A wallaby hops.
And people walk.
That's the way we all move.

11

Flipper

Animal Movement Body Parts

OBSERVATION CYCLE

RADIO SCIENCE PROJECT
P.O.BOX 3655
BOROKO NCD.

OBSERVATION REPORT
LESSON 10

1.1 Lesson ten was cassette trialed in five grade 4 classrooms in the Eastern Highland Province, Central Province and the National Capital District on the 21st April 1988. The post observation meeting was held on 22nd April. The total of 152 children participated in the lesson.

1.2 Five onservers observed lesson ten, on observer for each class. The observers used a prepared observation form to make comments regarding the volume and the confidence in response, science content, student concentration and involvement, subject understanding, lesson clarity etc.

1.3 The following people observed lesson ten in the following schools:-

School	Observer
Waigani (NCD)	Michael Popo
Roku (CP)	Frank Watson
Porebada (CP)	Ken Rouse
Faniufa (EHP)	David Knox
Omborda (EHP)	Ken Knox

2. BEFORE THE LESSON

2.1 Before the tape is to be played teachers has ten minutes in which he has to organise the children to sit in pairs, distribute Radio Science Book page 10 and review lesson nine.

2.2 Most observers reported a good Pre Broadcast lesson.The teachers had done necessary preparations and reviewed lesson nine except one teacher who failed to revise lesson nine and no preparation was done. In this class the substitute teacher took the lesson because the class teacher was sick.

3. DURING THE BROADCAST LESSON.

3.1 There are seven segments in this lesson. The segment have basically the same timing except segments one Intro and segment seven Outro which have a minute each. The segments are:-

Segment 1: Introduction
Segment 2: Why Animals Move
Segment 3: Ways Animals Move (Word Collection)
Segment 4: Body Parts Animals use to Move
Segment 5: Animal Movement Song
Segment 6: Animal Riddle
Segment 7: Outro

3.2 Segment 1: Introduction

This is a very short segment where radio teachers say hello to the children. The segment went well. However one teacher did not say hello to the radio teacher.

3.3 Segment 2 Why Animals Move

3.3.1 This segment is in a form of drama in which the two radio children walking through the forest discusses the movement of the animals they see. This is followed by children giving oral responses to the questions asked by the radio teachers.

3.3.1 Most observers reported that the drama was good, children listened attentively and resonded correctly. One observer was not quite sure whether children liked the drama or not. Only half of the children answered questions in this school. Another observer thinks that the conclusion of the drama is bit too long. The conclusion should be shorter.

3.4 Segment 3: Ways Animals Move (Word Collecting)

3.4.1 In this segment the two radio children and the science class learn new way of recording notes (word collecting).

3.4.2 Most observers reported that this segment worked very well. In one school children named the animal in Box 9 as 'kangaroo' while only four children said 'wallaby' in another school. One teacher repeated the word 'webb' to clear up doubts.

3.5 Segment 4 Body Parts Animals Use to Move

3.5.1 In this segment children are to give oral responses to question refering to the pictures in Boxes 4 to 9

3.5.2 All the observers reported that this was a perfect segment. The children gave strong responses and the segment went well.

3.6 Animal Movement Song. Segment 5

3.6.1 This is a relaxation segment in which children learn the animal movement song

3.6.2 This segment worked very well in most of the schools. Two of the observers reported that the children were not very confident in singing the song. Few teachers suggested that the song should be taught line by line and children need to sing the song at least twice.

3.7 Segment 6 Animal Riddles

3.7.1 In this segment children are to give oral responses in unison on the riddles. The riddles are on the animals treated in this lesson.

3.7.2 Most observers reported that the riddles are quite easy. In two schools many children said 'duck' for the 'chicken' and 'cuscus' for 'pig'.

3.8 Segment 7 Outro

3.8.1 This is a short segment in which radio teachers say Goodbye' to the children. The chidren respond back and sing the Science song.

3.8.2 Strong responses were reported by the observers. The children said goodbye and sang Science song.

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4. POST BROADCAST LESSON

4.1 After the proper broadcast lesson the teacher has another ten minutes for the Post Broadcast lesson, in which he/she revise main teaching points taught in the lesson. The teacher is given guided activities in the 'Notes to Teacher' which he can use or use those as guide to plan his/her post broadcast lesson.

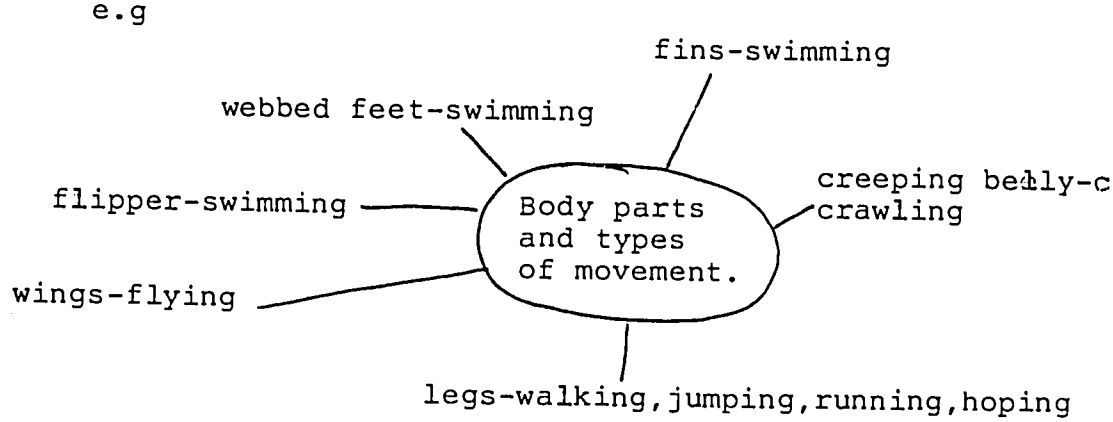
4.2 Most observers reported good Post Broadcast lesson. Some of these post broadcast lessons lasted more than required ten minutes.

5. GENERALCOMMENTS.

5.1 Some observers have made the following observations.

5.1.1 Circular diagrams in box 1 as well as in boxes 3 and 11 should be drawn before the lesson instead of during the broadcast. This should be included in the 'Notes to Teachers'.

5.1.2 Cluster diagram linking body part and type of movement should have been included:-
e.g



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6. CONCLUSION

6.1 Apart from the problems mentioned in 3.6.2, 3.7.2, 5.1.1 and 5.1.2, the observers reported a good lessons in general.

MICHAEL POPO
ASSOCIATE EVALUATOR.