

# Beacon Media Numeracy Assistant's course

## Presenter's notes

### What will you learn?

- How to teach Maths to students who are not succeeding
- How students develop in their number skills
- How to make and gather resources to assist children to progress in Maths
- How to plot the progress of each child you are working with in Maths.

### Maths in the early years

This program is based on the course called Early Mathematical Understanding developed by the Australian Catholic University. It has been adopted and adapted to Fiji by Beacon Media

### What is special about this program?

- It will train you to help children in HANDS-ON activities.
- Less "book-work" than general classroom maths
- More activities that are fun for the students

### Why is this program important?

- It builds a strong foundation in mathematics.
- It can lead to great opportunities in the future.

### Examples of activities:

- Number Games
- Working with practical materials like stones, sticks, beads, bottle tops

### Which areas of maths will we focus on?

- Counting
- Place Value
- Addition and Subtraction
- Multiplication and Division

### How will we teach our students?

- slowly
- with repeated practice and revision
- making sure they understand
- carefully following the Beacon Media program

### **How many students do I work with?**

- Two students at a time
- For approximately 20 minutes per session
- For a minimum of 3 sessions per week

### **Resources**

The Activities take you step-by-step through the activities you will do with the students.

The Activities are levelled from 1- 4.

The Progress Chart shows you the ORDER in which to do the activities.

The Resource Folder is a set of masters from which you can photocopy. You will also make resources during this course.

### **Other resources required for the training**

- Variety of counters like bottle tops, shells, stones, pop- sticks, beads
- Beads and string for bead threading
- Dice with 1-6 dots 4 per person
- Toothpicks – 6 per person
- Plastic containers like margarine or yoghurt
- 20 pop sticks to be painted on one side (paint)
- Pop sticks or straws (60 per person)
- Rubber bands
- Small zip-lock bags
- Paper plates – 4 per person
- Large sheets of cardboard – various colours if possible – kept flat if possible and not rolled (but can be cut in two)
- Scissors
- Markers
- Rulers and pencils, coloured pencils
- Laminator and laminating sheets – 7 per participant

## Resources to be made by Numeracy Assistants

at the numeracy workshop or for homework, and given an assessment score:

1. Number line 1-20 (large)
2. Number line 1-10 (small) and Number line 1 – 20 (small)
3. Number cards 1 – 100 (3 sets) Use 2 different coloured pencils to differentiate 1-50 and 51 – 100. Simply draw coloured lines across the existing lines.
4. Number cards 1-10 (3 sets) Differentiate 1 – 10 and 11 – 20 as above.
5. Number cards “zero” (5)
6. Signs +, -, x, ÷ and = (on individual cards the same size as the number cards)
7. Flashcards with word numbers one to twenty
8. Flashcards with word numbers twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety
9. Spinners
10. Bingo boards 3 x 3, 4 x 4, 5 x 5
11. Fruit (coloured)
12. Teddies (half to be coloured in one colour, the other half to be coloured in another colour)
13. Trains (coloured)
14. Dot cards
15. Target
16. Jigsaw (x2)
17. Tens frames 1-10
18. Tens frames sets of 10
19. Bead string to 50, with tens shown in different colours
20. Discs or pop sticks painted on one side for throwing game.

Score out of 20 (1 point off for anything missing, not done properly or incomplete).

### **The following will be laminated:**

- Number lines 1-10 and 1-20 (one sheet)
- Spinners
- Dot cards
- Number cards 1-20 (3 sets on one sheet)
- Number cards 1-100 (3 sets/3 sheets)

Total laminated sheets: 7

All other resources will be stuck to cardboard and cut up.

### **The following will be given to each Assistant as part of the kit?**

Pop sticks or straws – 60 per person and rubber bands; dice

**The following will have to be collected as part of the kit:** bottle caps – at least 20

# Counting

**Things to collect:** bottle tops, stones, seeds, beads

## Counting Development

1. Not yet able to say numbers 1-20
2. Can count to 10 using words, but can't tell you how many things in a group
3. Can count a group of objects accurately, to 10 first, then 20.
4. Can count forwards to 100, then from different starting points
5. Can count backwards from different starting points.

Can count by tens, fives and twos

7. Can count by threes, fours, sixes sevens
8. Counting is preliminary to learning times tables
9. Can count money and work out the change
10. Can count using fractions and decimals

## Begin with simple touch counting

- One-to-one correspondence is a basic skill.
- Use counters and bead strings
- Get children moving - pacing out steps, clapping, jumping.....

## Practical Work for Counting Level 1:

**Make the following resources ready for Counting Levels 1 & 2 Activities:**

- Large Number Line to 20 (quarter of an A4 sheet per number)
- Bead string to 50
- Have ready paper cups (or recycled containers), counters and dice

## Now go through the Counting Level 1 & 2 Activities

## Place Value

ones/units, tens, hundreds, thousands etc.

### Examples:

- 12 has a value of 10 and 2 ones (units).
- 364 – 3 hundreds, 6 tens, 4 ones

*Presenter - Draw a Place Value chart on the board showing columns for hundreds, tens and ones.*

**Things to collect:** straws or sticks, rubber bands to form bundles, containers for storing number cards

### **Place Value Development**

1. Understands numbers to 10
2. Can use bundles of ten to make numbers (11 to 99)
3. Can make numbers using hundreds, tens and ones (see "Block pictures" in your resources.)
4. Can make numbers thousands, hundreds, tens and ones using "Block Pictures".

### **Practical work for Place Value Level 1**

#### **Things to make or collect:**

- Make number cards 0-10 (2 sets)
- Make Dot cards 1-10
- Make the spinners
- Collect dice, counters and empty containers e.g. margarine, yoghurt

**Now go through all Place Value Level 1 Activities.**

## **Addition and Subtraction**

### **Addition and Subtraction Development:**

- Not yet able to add together two groups of things
- Can add together two groups of things by counting
- Can count on from one number to find the total in addition
- Can count back (or count down) to solve a subtraction sum
- Can double, add 10
- Can add 9
- Can solve simple addition and subtraction sums in their head
- Addition and subtraction with fractions and decimals

### **Practical work for Addition & Subtraction Level 1**

#### **Things to make or collect for Addition and Subtraction Level 1**

- Make painted sticks or disks, painted on one side
- Make small number lines 0-10 and 0 – 20
- Make number cards 0-20 (You can add to your 0-10 number cards and colour code 0-10 and 0-20)
- Collect dice and counters

**Now go through all Addition & Subtraction Level 1 activities**

# Multiplication and Division

## Multiplication and Division Development:

1. Not yet able to make groups of a given number
2. Can make groups and count the total. (Draw on the board and example - 3 groups of 2)
3. Can share objects to solve division problems, e.g. 15 buttons shared between 3 bags. How many in each bag?
4. Can skip count (Count by 2s)
5. Can solve multiplication & division without physically making groups
6. Uses times tables
7. Can solve problems using multiplication & division, e.g. money

## Problem solving is a lifetime skill.

Examples: (*Presenter - Draw pictures of the following on the board.*)

Three girls each had 2 cakes. How many cakes?

15 pencils shared between 5 children. How many pencils each?

## Practical work for Multiplication and Division Level 1

- Trains (colour and laminate)
- Teddies (colour with 2 colours and laminate)
- Get ready 0-9 number cards; spinners 1-6 or dice; spinners with numbers 2,4,6,8,10,12,14

**Now go through all Multiplication and Division Level 1 activities.**

## Monitor student Progress!

Use the Progress chart to keep a record of your students' progress.

To find out where to start with a student, use the introductory test.

## Stick to the program!

Some teacher might ask you to assist students with more difficult work, not in this program.

You will explain to the teacher that YOUR activities will get the students ready for more difficult work later on. The student is not READY for this!

**Now continue going through the activities from Counting Level 3. Work in small groups to work out the instructions then demonstrate to the large group.**

Make the following before doing the Counting Level 3 activities:

- Number cards 1-100
- Bingo boards – all
- Jigsaw

### **Place Value Level 2**

Make or collect the following before doing the Place Value Level 2 activities:

- Collect straws or sticks and rubber bands
- Make Tens Frames
- Make word cards one to ten
- Make word cards twenty, thirty ... to ninety

### **Addition & Subtraction Level 2**

Collect the following before doing the Addition & Subtraction Level 2 activities:

- 10-sided spinner
- Teddies and Train
- Number cards 10-20 and number line 1-20

Note: You shouldn't have to make anything for this one.

### **Multiplication & Division L2a**

Collect the following before doing the Multiplication & Division 2a activities:

- Collect paper plates & counters

### **Counting Level 4**

Collect the following before doing the Counting Level 4 activities:

- Paper strips
- Small number charts 1-120

### **Place Value Level 3a**

Make the following before doing the Place Value Level 3a activities:

- The target
- Block pictures
- Expanders

### **Multiplication & Division 2b**

Make the following before doing the Multiplication & Division 2b activities:

- Fruit pictures

Now continue with the activities to the end, (Multiplication & Division Level 4)

Continue working in groups to try out and demonstrate all the rest of the activities.

## **Practical resources in your kit:**

- Activity and Resource Files
- Progress charts for each student
- at least 10 - 10s frames
- a variety of number charts
- 3 types of number lines (large 1-20, small 1-10, small 1-20)
- Number cards – 2 sets 0-10; 1 set 0-100; 1 set 0-200
- Beads on strings & paper clips
- Disks or sticks painted on one side
- Bingo boards (3 of each kind)
- Jigsaw
- a variety of counters – bottle caps, dough disks, pop sticks or straws, stones etc
- yoghurt / margarine containers or paper cups
- 4 dice and spinners
- dot cards
- teddies, trains and fruit
- 2 sets of playing cards if possible
- writing materials including colouring pencils
- crayons or markers, ruler, scissors and sticky-tape
- rubber bands and straws
- paper for student and Assistant's use



**Activities selected for workshop**

**L1 Counting**

Activities 1,7,8,10, Test

**L2 Counting**

Activities 2,4,6,7,8,10,11, Test

**L1 Place Value**

Activities 1,3,4,5,6,7,8,9,10, Test

**L1 Addition & Subtraction**

Activities 1,2,4,6,7,8,9, Test

**L1 Multiplication & Division**

Activities 2,3,5,6,7, Test

**L3 Counting**

Activities 2,3, Discuss using number chart for counting, Test

**L2 Place Value**

Activities 1,3,4,5,6,7, 8, 10, 11 Test

**L2 Addition & Subtraction**

Activities 1,2,3,4,5,6,7,8,9,10 Test

**L2a Multiplication & Division**

Activities 1,2,3,4,6, Test

**L4 Counting**

Activities 1,2,4,6,7,8,9,10 Test

**L3a Place Value**

Activities 1,2,4,6,7, Test

**L3 Addition & Subtraction**

Activities 1,2,3,4,5,6,7,8,10,11,12,13,14,15,16, Test

**L2b Multiplication & Division**

Activities 1,2,3,4 Test

**L3b Place Value**

Activities 1,3,4,5,6 Test

**L4a Addition & Subtraction**

Activities 1,2,5,6,7,8,9,10,11 Test

**L3 Multiplication & Division**

Activities 1,2,3,4,5,6, Test

**L4b Addition & Subtraction**

Activities 1,2,3,4,5 Test

**L4 Place Value**

Activities 1,2,3,4,5 test

**L4 Multiplication & Division**

Discuss ways of learning times tables