PARTICIPANT'S HANDOUT

2015 TRAINING WORKSHOP NO.2

MATHEMATICS

FOUNDATION PHASE

PILO
IMPROVING LEARNER PERFORMANCE

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Foundation Phase
Training Workshop 2: February 2015

Participants' Handout

Maths

Endorsed by:

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what I do matters

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Foundation Phase JIT Workshop 2
Mathematics
February 2015
Workshop guide for participants

In this workshop you will find out more about the way in which assessment works when you use the Jika iMfundo FP Maths materials. You will also find out more about how to teach place value in the Foundation Phase.

Work in groups on all of the activity questions. Time guidelines are given and your facilitator will interact with you while you work. You will have many group discussions in which you can share what you have found. Suggested times are given below. If you have more time and want to continue the discussions for longer you are free to do so.

Workshop plan
8.00 – 8.30 – Arrival and distribution of materials for the workshop
8.30 – 10.30 – Session 1: Assessment (2 hours = 120 min)
10.30-11.00 – Tea
11.00-13.30 – Session 2: Place value in FP (2 ½ hours = 150 min)
13.30-14.30 - Lunch

Activity 1: Lesson Plans and assessment – what's in the package and how to use it?

In this discussion you will refer to the *Tracker* and the *Lesson and Assessment Plans and Resources*.

This activity involves sets of questions to guide the discussion for about 120 minutes. Your facilitator will guide you as you break into groups and have large group discussions throughout this time.

1. Make a list of the planning for assessment that is included in the toolkit and where is it found (give page refs.). (20 min)

2. What is included in the *Assessment Term Plan*? (20 min)

3. How will you use the *Suggested Mark Record Sheet*? (10 min)

4. How does the toolkit support teachers to do *continuous assessment*? (30 min)
    a. Look back at question1 – which elements support CASS?
    b. Expand on the weekly assessment activities provided – what do they consist of and how do they offer support?

5. How will teachers use the toolkit assessment material on a daily basis? (40 min)
    a. Refer to the notes on assessment in the introduction to the Lesson Plans (p.3) and in the lesson plan outline (p.6). What guidance do they give?

    b. How will you manage to assess all learners ever week? Discuss the use of grouping.

Activity 2: Teaching place value in the Foundation Phase

In this discussion you will refer to the *Lesson Plans* but you will also do hands-on activities related to the teaching of place value in the FP. These will give you experience on how to work with the lesson plan activities relating to the teaching of place value.

You will make your own manipulatives using the cut-outs in the attached hand-out. These are two of the Term 1 printable resources that were included in the full lesson plan set.

This activity involves sets of questions to guide the discussion for about 150 minutes. Your facilitator will guide you as you break into groups and have large group discussions throughout this time.

Teaching place value in FP

FP number work gives teachers the opportunity to teach a thorough understanding of the way in which our numeration system works. This can be expanded to higher number ranges very easily, once the basics are in places.

To use place value properly learners need to know about grouping into tens (because we use a base 10 number system) and they need our ten symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. They need to know the names of the places for recoding ever increasing numbers.

Establishing basic number concept – place value in the number range 0-30

Once basic counting from one to nine is established, we move on to the need for an understanding of place value to write the numerals for the numbers we are talking about. We will now discuss the use of various apparatus to aid the teaching of an understanding of base ten numeration.

Activity 10 min

Activity 1

1. Why might a learner think that 12 sweets are less than 8 sweets?

2. What could we do to rectify the error in his/her understanding?

The idea of grouping according to a base of ten needs to be explained. Sucker sticks (or toothpicks), elastic bands and base ten Dienes' blocks (base ten blocks) can be used as an aid.

You need to make yourself the flard cards and base ten blocks using the hand-outs for the activities that follow.

Activity
30 min

Activity 2

1. Cut out the base ten blocks and flard cards.
2. How would you expect a learner to group the sucker sticks below, to reveal the number of sucker sticks as a base ten numeral?

3. How could they represent the same number using base ten Dienes' blocks?

4. Set out 19 sucker sticks. Group them in base ten. Add 1 sucker stick. Regroup. What property of our number system is illustrated by working with sucker sticks in this way?

5. Use base ten blocks to show the same exchange, from 19 to 20, in a concrete display. How are the base ten blocks more effective in showing the displays?

6. Draw displays of 17 and 27 using base ten blocks. Which represents the biggest number? How do you know?

Consolidating basic number concept and moving on – place value in the number range 0-999

Once grouping into tens is established, we need to extend learners' understanding of place value into the hundreds.

Activity 25 min

Activity 3

1. Is it still reasonable to expect learners to use unit counting to work with numbers in the range 0-99 or 0-999?

2. How could learners represent the number 68 using base ten Dienes' blocks? How does this compare to doing the same display using sucker sticks?

3. How could learners represent the number 154 using base ten Dienes' blocks? How does this compare to doing the same display using sucker sticks?

4. Set out 79 using base ten blocks. Add 1. Regroup. What property of our number system is illustrated by working with sucker sticks in this way?

5. Draw displays of 257 and 275 using base ten blocks. Which represents the biggest number? How do you know?

You could work with Dienes' blocks as you work through the following type of activity, to demonstrate the relationship between units in different places.

Activity
20 min

Activity 4

Complete the following:

1. 60 tinies can be exchanged for __ longs, so 60 units = __ tens.
2. 480 tinies can be exchanged for __ longs, so 480 units = __ tens.
3. 40 longs can be exchanged for __ flats, so 40 tens = __ hundreds.
4. 500 longs can be exchanged for __ flats, so 500 tens = __ hundreds.
5. 33 longs can be exchanged for __ tinies, so 33 tens = __ units.
6. 33 longs can be exchanged for 330__ tinies, so 33 tens = _330_ units.
7. 42 longs can be exchanged for __ tinies, so 42 tens = __ units.
8. 8 flats can be exchanged for __ tinies, so 8 hundreds = __ units.
9. 7 flats can be exchanged for __ longs, so 7 hundreds = __ tens.
10. 9 flats can be exchanged for __ longs, so 9 hundreds = __ tens.
11. 765 tinies can be exchanged for __ tinies, __ longs, and __ flats, so 765 units = __ units, __ tens, and __ hundreds.
12. 299 tinies can be exchanged for __ tinies, __ longs, and __ flats, so 299 units = __ units, __ tens, and __ hundreds.
13. In what way do the Dienes' blocks clarify the ideas of face value, place value and total value?

We may think of the number 439 as written on three separate cards, which could be placed one behind the other to look like this (these are known as place value cards or Flard cards).

Using these cards we can say that 400 is the total value of the first digit in the numeral that has a face value of 4 in the 100s place.

Activity
20 min

Activity 5

Use Flard cards to display the following numbers. In each case talk about the face value, place value and total value of the digits that make up the number.

1. 24

2. 60

3. 97

4. 202

5. 499

6. 870

7. 919

Our apparatus is limited, and our time and patience would also be limited in the working with large numbers using concrete material. However, learners need to be able to read and work with large numbers and so it is worth every minute spent working with the apparatus if good place value concept is established through this activity. Learners need to learn how to read and write number names, and how our number system is used to do this.

Your learners ultimately need to be able to answer questions relating to the understanding of the relative positioning of numerals, involving whole numbers up to 999 (in term 4 Grade 3). Expanded notation is a notation that reveals what is hidden behind the numerals that we see. It is thus a useful exercise for learners to write out numbers in expanded notation to show their understanding of the total values of the digits that make up a number.

Remember the use of Flard cards to assist learners to write numbers in expanded notation.

Activity
15 min

Activity 6

1. Write out both of the following numbers in expanded notation in three different ways:
   a. 27

   b. 90

   c. 456

   d. 305

2. In the number 566 the 6 on the left is __ times the 6 on the right.
3. In the number 202 the 2 on the left is __ times the 2 on the right.
4. In the number 111 the 1 in the middle is __ times the 1 on the far right.
5. In the number 733 the 3 on the right is __ times the 3 on the left.
6. In the number 442 the 2 on the right is __ times the 4 on the left.
7. In the number 111 the 1 in the middle is __ times the 1 on the far right.
8. In the number 387, the face values of the digits are _ , _ and _; the place value of the digits (from left to right) are _ , _ and _; and the total values represented by the digits (from left to right) are _ , _ and _.

Place value is taught over the 3 year Foundation Phase in a sequenced and progressive manner. In the Jika Imfundo lesson plans, this teaching unfolds according to the CAPS pacing so that learners are exposed to content in the appropriate order and at the right time.

Activity
20 min

Activity 7

1. Look through the Grade 1, 2 and 3 lesson plans to find out which lessons in the first 4 weeks deal with place value.

2. How are the concrete apparatus we have used today used in the lesson plans?

3. What vocabulary is developed in the lessons that relate to place value? How does the dictionary help you to build the understanding of the maths terminology?

Activity 10 min

Activity 8

A calculator game that can be used to consolidate place value is called "ZAP".

One player calls out a number for the other players to enter onto their calculator displays (e.g. 789). The player then says "ZAP the 8", which means that the other players must replace the 8 with the digit 0, using one operation (i.e. to change it into 709). The player who is the quickest to decide on how to ZAP the given digit is the "winner" of the first round and could call out the next number. The "winner" chooses a new number to call, for example calls 324 and says "Zap the hundreds". (The correct call is – 300). And so the game continues, with learners calling out numbers and indicating which digit should be eliminated.

1. Play the game for 10 minutes (or so).
2. What property of number does this calculator game exercise?

Reflection 5 min

What went well?
What did not go well?
What was difficult or easy to understand/do?
What will you do to support or extend learners?
Did you cover all the work set for the workshop? If not, how will you get back on track?
What would you change for next time? Why?

Acknowledgement: The following resource was used in the preparation of this workshop. Sapire, I. (2010). *Mathematics for Primary School Teachers*. Saide and the Wits School of Education, University of the Witwatersrand, Johannesburg.

Flard cards

Cut out all of the number blocks to make a set with the units, tens and hundreds up to 1 000.

1	1	0	1	0	0
2	2	0	2	0	0
3	3	0	3	0	0
4	4	0	4	0	0
5	5	0	5	0	0
6	6	0	6	0	0
7	7	0	7	0	0
8	8	0	8	0	0
9	9	0	9	0	0
		1	0	0	0

Base ten blocks (Dienes)

Cut out all of the big squares. Keep two of the big squares.
Cut the other two squares into ten strips with ten blocks in each. Keep 26 strips.
Cut the remaining four strips into small squares. You will make 40 small squares.

You have made a base ten block set (Dienes) with:
2 hundred squres (flats), 26 ten strips (longs), 40 unit squares (tinies)