MANIPULATIVES ARE NOT TOYS, USE WITH CAUTION: EXTRACTS FROM HEADSTART SERIES FOUNDATION PHASE

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TARGET AUDIENCE: Foundation Phase Educators

DURATION: 1 hour

MAXIMUM NUMBER OF PARTICIPANTS: 30

MOTIVATION

Number, Number operations and relationships at Foundation level (Grade R-3), constitutes on average 60% of the Mathematics curriculum. Thus this it is indeed the main focus of mathematics teaching, learning and assessing at this level. As they learn mathematics learners need to be exposed to numerous mathematical experiences that will enable them access mathematical concepts and understandings of these concepts. Therefore manipulatives are invaluable in this regard as they are used to:

- build understanding and clarify concepts. That is to say learners are assisted in broadening their conceptual understanding of mathematics ideas. Manipulatives offer a variety of ways of dealing with the same concept. For example one may use counters, a number line or folding of paper to teach the fraction concept.
- engage learners in doing mathematics.
- communicate mathematics concepts and multisensory experiences.
- and recording their findings and conclusions.

They are enabled by these manipulatives to experiment with various ideas, "trying things out" and by making observations demonstrate their method at arriving at a solution or justifying or checking a solution of their own or that of their peers. They may also, their clarify 'own thinking' doing mathematics, talking the language of mathematics and recording their learning of mathematics.

However many a time, learners are not aware of the educational value of the manipulatives and the reasons why teachers use them to teach particular concepts, so they become "just things to play with when the teacher is not looking" these manipulatives are just toys to keep them entertained or to keep them busy. To an extent that when faced with challenging sums children will not take an aid to assist them to find the solution.

It is hoped that by the end of the work shop, teachers will be able to answer the following questions:

Tshongwe, T. (2013). Manipulatives are not toys, use with caution: extracts from *Headstart Series Foundation* Phase. In Z. Davis & S. Jaffer (Eds.), *Proceedings of the 19th Annual Congress of the Association for Mathematics Education of South Africa*, Vol. 2. (pp. 65 - 70). Cape Town: AMESA.

- Why do we as teachers use manipulatives to teach Mathematics?
- How do we choose a particular manipulative for teaching a particular concept at a particular grade level?

WORKSHOP CONTENT

Item	Content	Time (min)
Introduction : Vocabulary for Manipulatives {The Abacus: Historical types}	Teaching materials Concrete materials Teaching aids/tools Manipulatives Teaching equipment	5
B. Teachers in grade groups. {6 groups of 5.}	General discussion using an example: Cuisenaire rods (6 sets) This discussion will focus on the following instructions: Explore the rods, and writing down your own observations. Describe a set of rods. Design a wall chart, to post on a wall for learners to see and discuss. (Group task which is grade specific) Make suggestions for storage in the class. Suggest how these rods may be used to teach a particular piece of content. (Group task and grade specific content. Choose from CAPS overview document) {Number, and Number operations grade 3} Suggest substitute manipulatives for the same task.	25

A. Work stations: Station 1: Number Charts Station 2: Counters Station 3: Abacus Station 4: Beads Station 5: Diens Blocks Station 6: Number Lines	Each group will be require to only visit two stations, where particular sets of materials are displayed. They then have to repeat task 2 above. Here they will also find displayed pages from Foundation Phase (Headstart: reference pages.)	20
D. Conclusions and Summary	a. See handout b. What have we learnt regarding the use of concrete materials in our classroom? How do we then going to use choose materials for various topics, to assist learners learn mathematics?	10

CONCLUSION HANDOUT

In your groups: Answer the following Questions:

1. When learners explore the manipulatives, what should they observe? List

2. Make a few Class Rules for using, handling and storage of manipulative.

Using	Handling	Storage

3. List points that you will discuss with learner to make them aware of the utility of the manipulatives in learning Mathematics.

4. Design one simple assignment you could give to learners on the usage of the manipulative. (This could take the form of solving a simple problem/sum)

5. Suggest ways by which you can inform parents of current and future manipulatives that you will be using with your class.

The HS Foundation Phase series makes use of a numerous manipulatives, for mathematics activities. At times it may not be obvious to the users, namely educators and learners, that a lot of thought was given to deciding which manipulative is most suited for which particular activity, content area, topic and the grade level.

This workshop will provide an excellent opportunity for educators that are using the series or those that require further information regarding the series to get acquainted with vital and essential information relating to the series, i.e. issues about the series that may have not found expression beyond just using the textbook to teach mathematics.

Also, many teachers do use particular manipulatives for addressing various topics and activities without asking questions like: Is this the best tool to address the activity, what are alternative offerings, for how long should I use the tool, what are its advantages and disadvantages going forward is it going to distract learners from learning the content – the mathematics or is the tool really worth all the trouble in the learners journey towards mastery of the content?

Using a textbook for learners at FP level is indeed a new phenomena and therefore it is our considered view that one needs to follow particular strategies to how best to use the resource:

- that enable teachers to engage with the textbook.
- familiarise themselves with its underpinnings and approaches.
- the choice of learning aids their usage and limitations,
- and the fact that not all content can be addressed by simply using a singular textbook.

This we believe will assist educators to unravel some of the complexities of the Foundation Phase Caps which is in its 2nd year of implementation.

WORKSHOP EXEMPLAR

Grade 3

Topic Pages	Term 1 LB	Term 1 WB	Term 2 LB	Term 2 WB	Term 3 LB	Term 3 WB	Term 4 LB	Term 4 WB
Place Value	6	5	29	21	54	36	76	49
Addition	8/9	7	31/32	23	55/57	38/40		51
Subtraction	11	9	35/36	25	55/60	38		53
Multiplication	15/17	11/13	39	27	62/63	41		55
Division	19/21	15	41/43	29/31	65/67	43	87/88	58

Assessment Pages: 26, 51, 74, 95.