Report & Minutes of workshop

On

Review of Curriculum for Mathematics

Grade VI-VIII

12-14, December 2014

Prepared by:

Bureau of Curriculum and Extension Wing Sindh Jamshoro

Minutes of the Workshop

A three day workshop was held on November 12-14, 2014 at the Government Elementary College of Education (men) Hyderabad, regarding the review of the Curriculum for Mathematics Grade VI-VIII.

The following member of **'Sub-Committee of Provincial Review Committee on Curriculum and Textbook'** were participated in the meeting.

1. Mr. Muhammad Saghir Shaikh (Chairperson)
   Consultant (TPM)
   Reform Support Unit (RSU) Karachi
   0345-3562211

2. Mr. Haroon Laghari (Member)
   Principal
   GECE (M) Qasimabad Karachi
   0300-2201836

3. Mr. Syed Afaq Ahmed (Member)
   Assistant Professor
   DETRC, Karachi
   0336-2715375

4. Miss Attia Bhutto (Member)
   Lecture, Govt. Zubeda Girls College, Hirabad, Hyderabad
   0300-3038013

5. Mr. Aftab Ali (Secretary/Member)
   Deputy Director
   Bureau of Curriculum and Extension Wing Sindh Jamshoro
   0333-2653528

The committee adopted the following strategies.

a. Read the curriculum document thoroughly
b. Check the linkage among standard, benchmarks and SLOs
c. Study the material on logical and reasoning thinking in mathematics
d. Identify the gaps in content & scope and Students Learning out comes/skills
e. Identify the linkage between the key area 'Reasoning and Logical Thinking' with other key areas
f. Review the Assessment Guide line
g. Review the Guideline for Textbook author
h. Identify the teaching resources

Observations:

1. Committee does not propose any change in the framework of the mathematics curriculum VI-VIII, may be adopted as it is, Key Learning Area (Competency) → Standards → Benchmarks → Students Learning Outcomes.

2. A reference to the mathematics course revision for IX-X done during 1960 may also be highlighted in the National Curriculum for Mathematics at Page no. 1

3. The curriculum does not contain aims and objective of teaching mathematics at VI-VIII. So a set of objectives for teaching mathematics at grade I-XII may be added at the 'Introduction Chapter (Draft attached)

General objectives (Draft)

- Satisfy the mathematical needs and interest of the child throughout his development so that he may act effectively in his personal and social life.
- Provide the basic groundwork for the understanding of scientific reasoning and calculation
- Provide opportunities for the guided discovery and creation of patterns.
- To develop skills in the application of numbers and other Mathematical structures in relevant situations.
- To enable the child to develop the ability to measure and construct geometric figures.
- To develop the ability to present, read and interpret quantitative data in tabular and graphic forms.
- To develop sound basis for studying Mathematics at higher stage.
- To enable the student to apply mathematical concepts specifically in solving computational problems other disciplines.

4. The curriculum describes 'Reasoning and Logical Thinking' as one of the Key Learning Area separately, where as it should be embedded in each key learning area. The committee is of the view that this should be reflected in each key learning area separately.

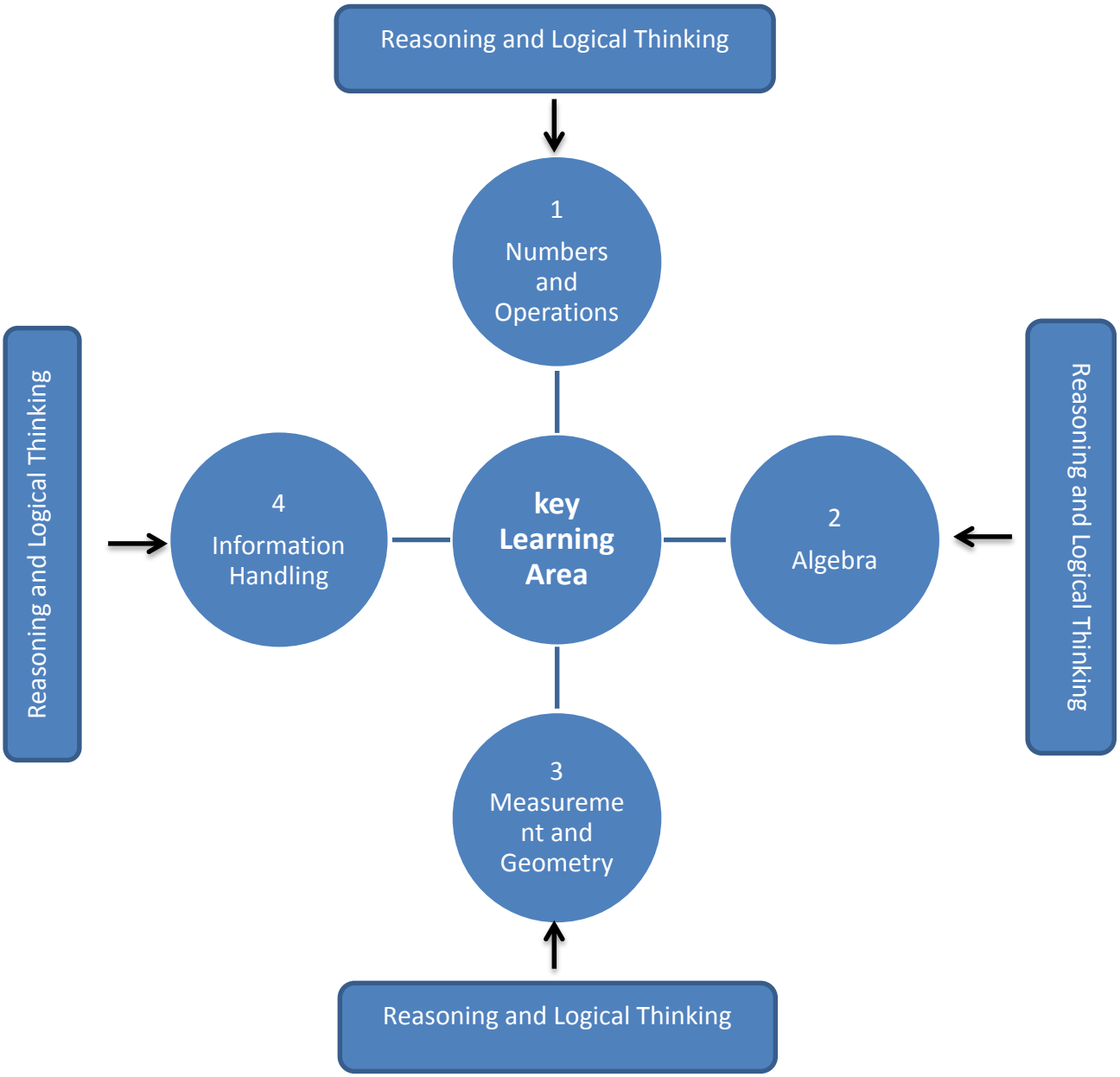
5. A draft of sample SLOs based on 'Reasoning and Logical Thinking' at relevant Key Learning Area. It is needs further validation.

6. The matter given from page 4-7 be titled as: **'Root chart of Key Learning Area (Competency), Standards, Bench Marks and SLOs**.

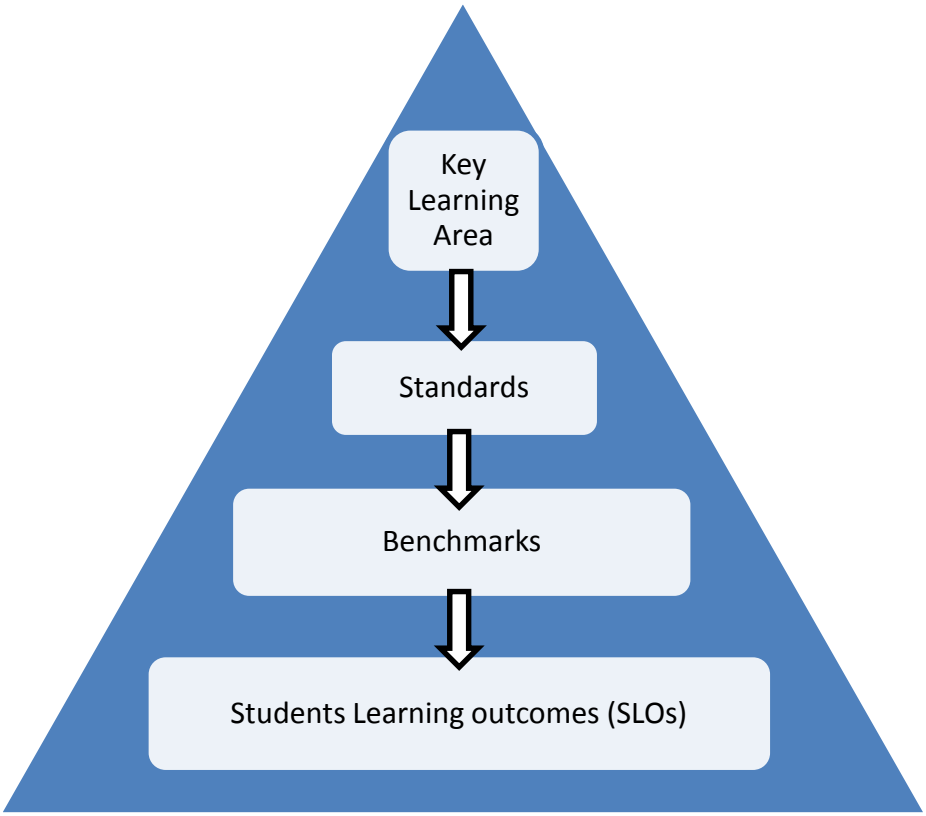
7. The **'Introduction'** on the page 3 of the National Curriculum for the Mathematics for Grade I –XIII, given under heading **'Standard and Benchmarks'** does not indicate the framework clearly. It may be revised as proposed below

Introduction:

National Curriculum for Mathematics is comprised of four Key Learning Areas (competency), which are Numbers and operations, Algebra, Measurement & Geometry and Information.



Each 'Key Learning Areas (competency)' is further classified into standards, benchmarks, Students Learning Outcomes (SLO) the figure below indicates there linkage is given as under:



The benchmarks, thereafter, serve as a guide indicating how competencies at a particular developmental level are to be attained in order to meet the standards. They provide indicators of expectations from students at completion of each of five developmental stages: grade I to II, III to V, VI to VIII, IX to X and XI to XII.

8. **Number** given with standards at page 4-7 be deleted, i.e. **'Standards-1, … 'Standards-5,** may be deleted and may be written as **'Standards'** only.

9. **Key Learning Area no 5** (Reasoning and Logical Thinking) may be deleted and reflected in each Key Learning Area and Committee proposes that insertion of 'Logical & Reasoning Thinking' be made in each unit keeping in view the scope as given in the curriculum.

SLOs to be incorporated at each unit are given as under:

Grade-VI

3.6 Solve real life problems by using HCF and LCM, and explain logically the reasoning to find HCF and LCM from the given word problem.

5.1 (v)	Solve real life problems involving operations in using fractions and decimals and explain logical reasons in converting word problems in to mathematical form and their solution.
6.2 (iii)	Solve word problems by using direct and inverse proportions, and can give logical reasons to use these concepts for the problems
7.1 (vi)	Solve real life problems of percentages through different methods and reason logically their use in solving the problems
7.2 (ii)	Solve real life problems involving calculations of profit, loss and discount and give logical reasons to use the methods
9.2 (iv)	Solve real life problems by converting the word problems into linear equations and give logical reasons for converting word problems in this form
11.1 (iii)	Solve real life problems and use mathematical relationships related to using perimeter and area of square and rectangular shapes and explain logical reasons for steps taken
12.1 (iv)	Solve real life problems by using mathematical relationship related to use volume and surface area of solid shapes and explain the logical reasons for the solution

GRADE-VII

5.2 (iii)	Solve real life problems involving computation of square root and explain logically the reasons for the steps adopted
6.1 (ii)	Solve real life problems (involving direct and inverse proportion) by unitary method and explain logically the step taken in solving the problem
6.2 (iv)	Solve real life problems (in time, distance) by using variations and explain the logical reasons for the steps taken
7.1 (ii)	Solve real problems related to the computation of tax and explain logically the method adopted for solution
7.2 (ii)	Solve real problems involving profit/markup and explain logically the reason for the steps adopted for solution
9.2 (ii)	Solve real life problems involving linear equations and explain logically the reasons for the steps adopted
12.2 (iii)	Solve real life problems involving computation of:-

- circumference and area of circle, and

- Surface area and volume of cylinder and construct arguments for the steps adopted for solution

13.1(i) Demonstrate the organization and presentation of data and explain logically the reasons of selecting axis and type of presentation

Grade-VIII

2.3 (iv) Solve real life problems by using square roots, and explain logically the reasoning to find square roots from the given word problem.

4.2.5 (vii) Solve real problems related to banking and finance and explain logically the reason for the steps adopted for solution

4.3 (iii) Solve real problems involving successive transactions to find percentage profit, percentage loss and percentage discount and explain logically the reason for the steps adopted for solution

4.4 (ii) Solve real problems regarding life and vehicle insurance and explain logically the importance of insurance

4.5 (ii) Solve real life problems related to individual income tax assesse and explain logically the reasoning in given word problem.

6.5 (ii) Solve real problems involving two simultaneous linear equations in two variable and explain logically the reason for the steps adopted for solution

6.3 (iii) Solve real problems involving surface area and volume of sphere and cone and explain logically the reason to find area and volume for the steps adopted for solution

11.2 (vi) Solve real problems to find height and explain logically the reason for the steps adopted for solution

12.2 (iii) Solve real problems involving mean, weighted mean, median and mode and explain logically the reason to calculate mean, weighted mean, median and mode for the steps adopted for solution

10. **'Learning outcomes/skills'** be written as **'Student Learning Outcomes'** from page 8 to 131.

11. Under the **Benchmarks** in grades VI-VIII at page 6, the matter related to circle is missing, it may be inserted as under.

- ***Draw a circle, its various segments and find circumference and area by using formula.***

- ***Define the demonstrative Geometry its axioms, postulates and theorem, apply them to solve appropriate problems.***

Guide line for Textbook Authors (page no. 142)

The key learning area (competency) of reasoning and logical thinking should be included in all key areas through problem solving approach

The examples may be based o the following process

1. Understanding the problem

- State the problem in own words
- Identify what your trying to **find** or **do**
- Which information is given in the problem
- Which information is missing and is to be found
- What are unknown
- Which information is not needed

2. Devising the plan

- Look for a pattern
- Examine related problem and determine, if the technique used to solve the can be applied to solve this problem
- Examine other simple or special cases to gain inside into the solution to solve the original problem
- Make a table to represent data.
- Make a diagram
- Write a equation in the mathematical form
- Use a guess and check it
- Work backward to review and verify
- Identify a strategy
- Apply and direct reasoning for each step

3. Carry out the plan

- Implement the strategy or strategies and perform necessary action or computation
- Check each step of the solution as you processed
- Keep an accurate record of each step, to have formal prove of each step taken

4. Looking back word

- Check the result as required by the original problem .this will be used as prove
- Interpret the solution in term what was required in original problem. Check :
  - ✓ Is your answer is the required one?
  - ✓ Is it reasonable?
  - ✓ does it answer the question it was asked
- Determine whether there is another method of finding the solution
- If possible determine other related or more general problem for which the technique (method cam work)

Guide line for Assessment (page no. 138)

1. Introduce SLO based assessment and summative and formative assessment
2. Delete the first paragraph under the heading part-II
3. Introduce the teacher made test at the level of I-VIII
4. Instructions for SSC and HSC Examination, it suggested that:

Difficultly level	**Weightage**
Easy	20 %
Average	60 %
Difficult	20 %