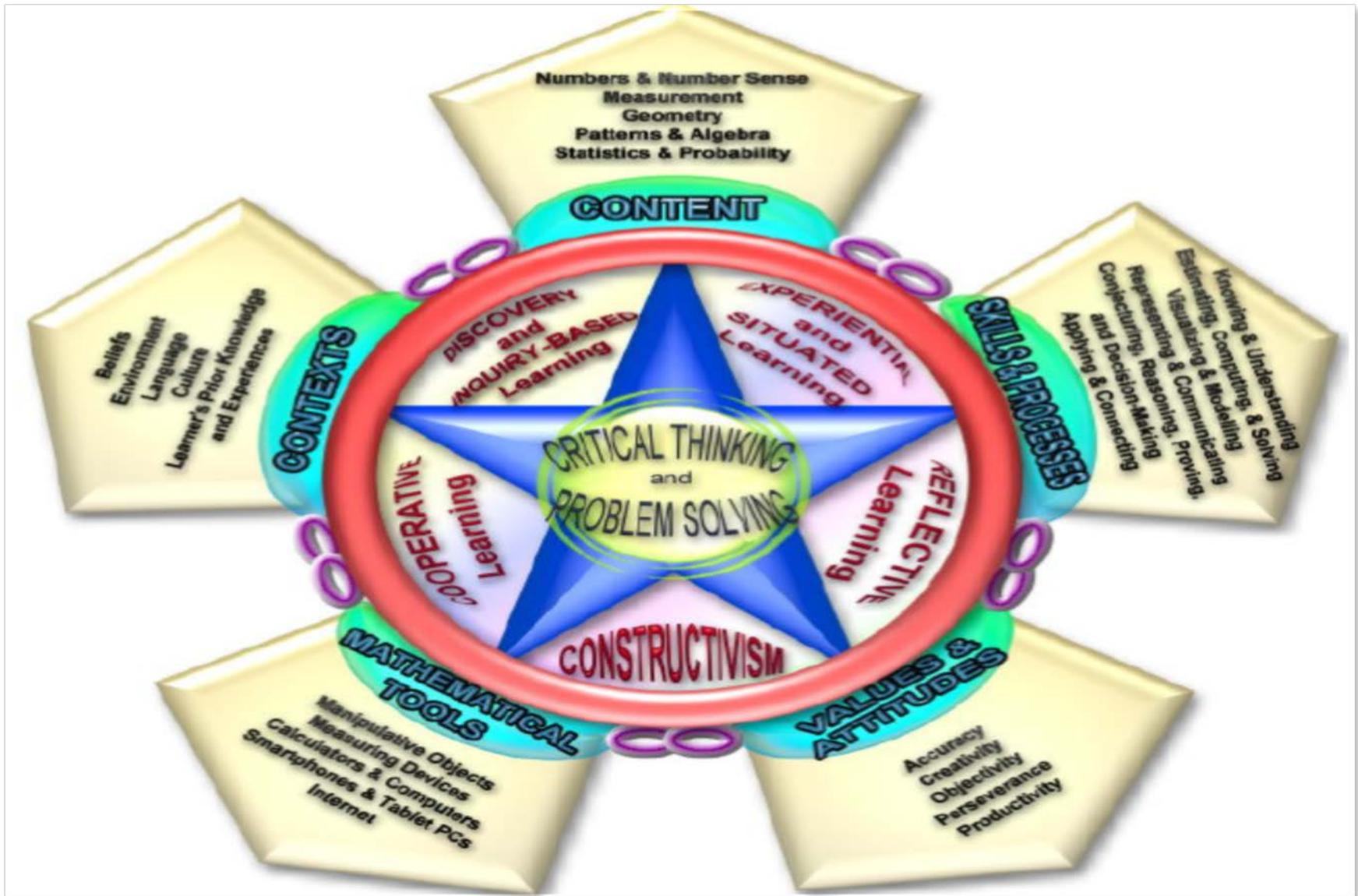




K to 12 Mathematics Curriculum

Department of Education, Philippines

A. Conceptual Framework



Features of the Curriculum Guide (CG)

A. *Conceptual Framework*

- Description
- Goals
- Content Areas
- Skills and Processes
- Values and Attitudes
- Mathematical Tools
- Context
- Theories and Principles

B. *Learning Standards*

- Learning Area Standard
- Key Stage Standards
- Grade Level Standards
 - Content/Strand
 - Content Standards
 - Performance Standards
 - Learning Competencies
(with codes and available learning materials)

Glossary

Code Book Legend

Key Stage Standards

K to 12 BASIC EDUCATION CURRICULUM

LEARNING AREA STANDARD: The learner demonstrates understanding and appreciation of key concepts and principles of mathematics as applied - using appropriate technology - in problem solving, critical thinking, communicating, reasoning, making connections, representations, and decisions in real life.

KEY STAGE STANDARDS:

K – 3	4 – 6	7 – 10
<p>At the end of Grade 3, the learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers up to 10,000 and the four fundamental operations including money, ordinal numbers up to 100th, basic concepts of fractions); measurement (time, length, mass, capacity, area of square and rectangle); geometry (2-dimensional and 3-dimensional objects, lines, symmetry, and tessellation); patterns and algebra (continuous and repeating patterns and number sentences); statistics and probability (data collection and representation in tables, pictographs and bar graphs and outcomes) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.</p>	<p>At the end of Grade 6, the learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers, number theory, fractions, decimals, ratio and proportion, percent, and integers); measurement (time, speed, perimeter, circumference and area of plane figures, volume and surface area of solid/space figures, temperature and meter reading); geometry (parallel and perpendicular lines, angles, triangles, quadrilaterals, polygons, circles, and solid figures); patterns and algebra (continuous and repeating patterns, number sentences, sequences, and simple equations); statistics and probability (bar graphs, line graphs and pie graphs, simple experiment, and experimental probability) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.</p>	<p>At the end of grade 10, the learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (sets and real numbers); measurement (conversion of units); patterns and algebra (linear equations and inequalities in one and two variables, linear functions, systems of linear equations, and inequalities in two variables, exponents and radicals, quadratic equations, inequalities, functions, polynomials, and polynomial equations and functions); geometry (polygons, axiomatic structure of geometry, triangle congruence, inequality and similarity, and basic trigonometry); statistics and probability (measures of central tendency, variability and position; combinatorics and probability) as applied - using appropriate technology - in critical thinking, problem solving, communicating, reasoning, making connections, representations, and decisions in real life.</p>

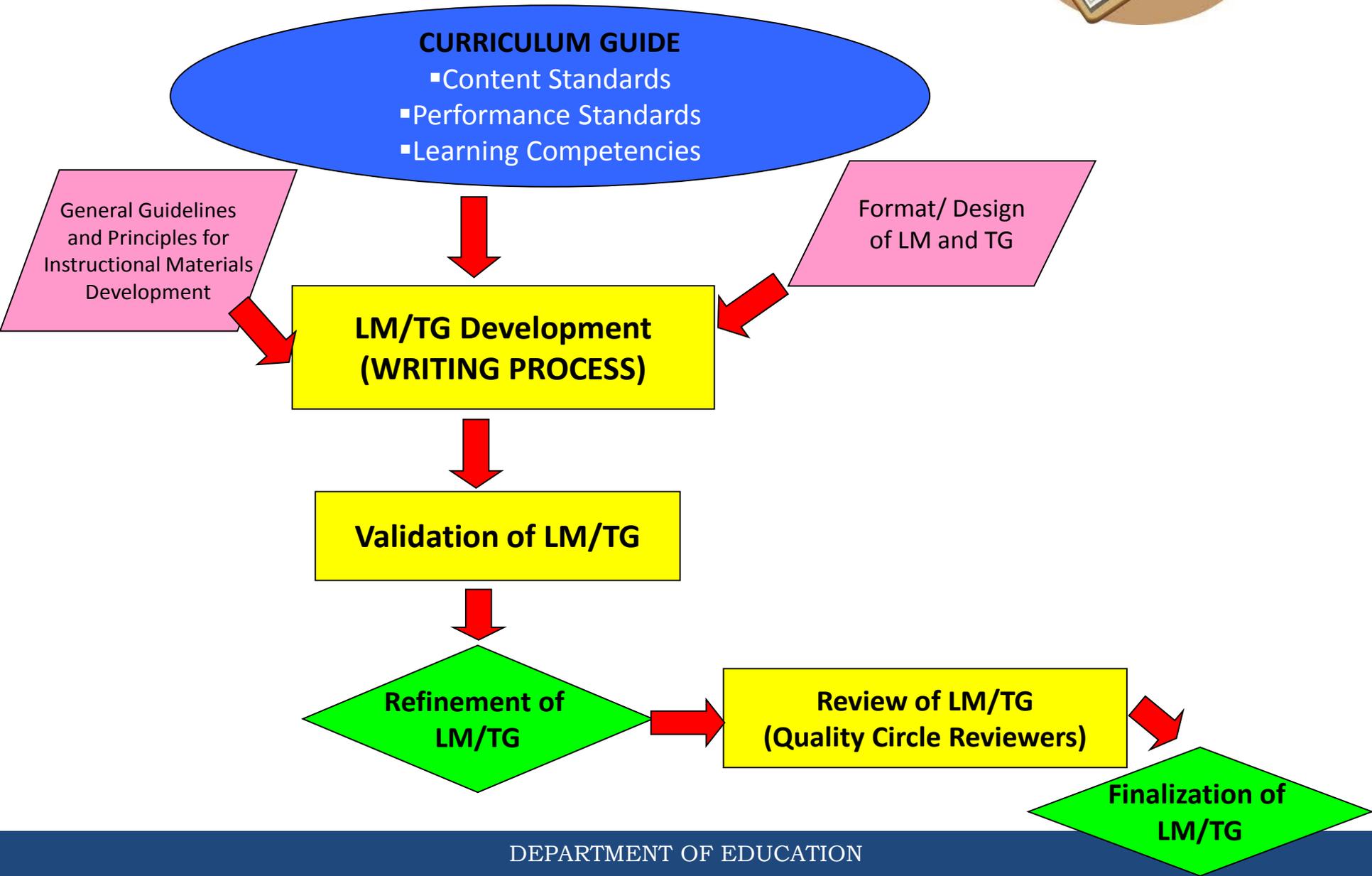
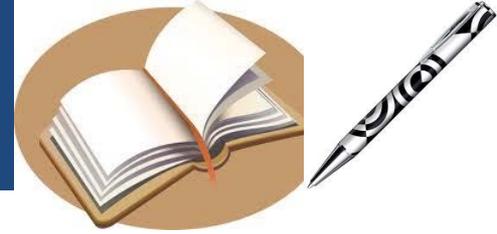
Grade Level Standards

K to 12 BASIC EDUCATION CURRICULUM

GRADE LEVEL	GRADE LEVEL STANDARDS
GRADE 6	The learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (divisibility, order of operations, fractions and decimals including money, ratio and proportion, percent, integers); geometry (plane and solid figures); patterns and algebra (sequence, expression, and equation); measurement (rate, speed, area, surface area, volume, and meter reading); and statistics and probability (tables, pie graphs, and experimental and theoretical probability) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.
GRADE 7	The learner demonstrates understanding of key concepts and principles of numbers and number sense (sets and real number system); measurement (conversion of units of measurement); patterns and algebra (algebraic expressions and properties of real numbers as applied in linear equations and inequalities in one variable); geometry (sides and angles of polygons); and statistics and probability (data collection and presentation, and measures of central tendency and variability) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.
GRADE 8	The learner demonstrates understanding of key concepts and principles of patterns and algebra (factors of polynomials, rational algebraic expressions, linear equations and inequalities in two variables, systems of linear equations and inequalities in two variables); geometry (axiomatic structure of geometry, triangle congruence, inequalities in a triangle, and parallel and perpendicular lines); and statistics and probability (probability of simple events) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.
GRADE 9	The learner demonstrates understanding of key concepts and principles of patterns and algebra (quadratic equations and inequalities, quadratic functions, rational algebraic equations, variations, and radicals) and geometry (parallelograms and triangle similarities and basic concepts of trigonometry) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.
GRADE 10	The learner demonstrates understanding of key concepts and principles of patterns and algebra (sequences, series, polynomials, polynomial equations, and polynomial functions); geometry (circles and coordinate geometry); and statistics and probability (combinatorics and probability, and measures of position) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.

Development of Learner's Materials (LMs) and Teaching Guides (TGs)

The Development Process



Format/Design

- I. Introduction
- II. Learning Competencies/Objectives
- III. Pre-/Diagnostic Assessment (*LM and TG*)
- IV. Reading Resources/Instructional Activities
 - A. What to KNOW?
 - B. What to PROCESS?
 - C. What to REFLECT or UNDERSTAND?
 - D. What to TRANSFER?
- V. Summative Assessment (*TG only*)
- VI. Summary/Synthesis/Feedback

Glossary of terms

References and other reading materials (Print and Non-print)

Development of LM/TG

PERSONS INVOLVED:

- Practitioners (DepEd teachers/ master teachers/ head teachers/supervisors and private school teachers)
- Content Consultants

Validation of LM/TG

PERSONS INVOLVED:

- Practitioners (DepEd teachers/ master teachers/ head teachers/supervisors and private school teachers)
- External reviewers (professors from different universities and colleges)

OUTPUTS:

- ✓ Comments
- ✓ Suggestions
- ✓ Recommendations (with justifications) (to further improve the LMs/TGs)

Refinement of LMs/TGs



PERSONS INVOLVED:

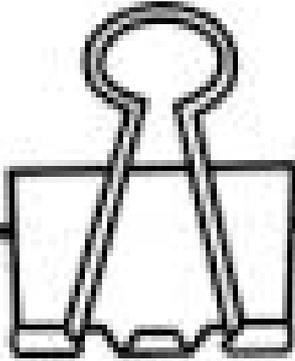
- Writers
- Consultants
- Representatives from the group of validators



Output:

- Revised LM/TG based on the comments/suggestions and recommendations of the validators/ reviewers upon agreement with the writers and consultants.

Review of LMs/TGs (Quality Circle Reviewers)



Persons Involved:

- **Quality Circle Reviewers (invited by IMCS)**
- **Language Editors (c/o IMCS)**

Outputs:

- ✓ **Comments/Suggestions/Recommendations on the Content of the LMs/TGs**
- ✓ **Language Edited LMs/TGs**

Finalization of LMs/TGs

PERSONS INVOLVED:

- Writers
- Consultants
- Illustrators
- Layout Artists

OUTPUTS:

- ✓ Final version of LMs/TGs (suggestions and recommendations of the QC reviewers and language editors incorporated)---“camera-ready”
- ✓ Layout and illustrations done (c/o IMCS)

Assessment

Classroom Assessment

- Tracks learners progress
- Feedback
- Report

Classroom Assessment

What is assessed in the classroom?

- Content Standards
- Performance Standards
- Learning Competencies
- Concept Development

Classroom Assessment

Types of Assessment?

- **Formative Assessment**
 - Before the lesson
 - During the lesson
 - After the lesson
- **Summative Assessment**
 - Written Work
 - Performance Task
 - Quarterly

National Assessment

National Achievement Test (NAT)

- Grades 6 and 10

National Career Assessment Examination (NCAE)

- Grade 9

Sample Curriculum Guide for Grade 7 - Mathematics

Grade 7 Mathematics

Content	Content Standards	Performance Standards	Learning Competency	Code
	The learner...	The learner...	The learner...	
Patterns and Algebra	demonstrates understanding of key concepts of algebraic expressions, the properties of real numbers as applied in linear equations, and inequalities in one variable.	is able to model situations using oral, written, graphical, and algebraic methods in solving problems involving algebraic expressions, linear equations, and inequalities in one variable.	1. translates English phrases to mathematical phrases and vice versa.	M7AL-IIc-1
			2. interprets the meaning of a^n where n is a positive integer.	M7AL-IIc-2
			3. differentiates between constants and variables in a given algebraic expression.	M7AL-IIc-3
			4. evaluates algebraic expressions for given values of the variables.	M7AL-IIc-4

Grade 7 Mathematics

Content	Content Standards	Performance Standards	Learning Competency	Code
			5. classifies algebraic expressions which are polynomials according to degree and number of terms.	M7AL-IIId-1
			6. adds and subtracts polynomials.	M7AL-IIId-2
			7. derives the laws of exponent.	M7AL-IIId-e-1
			8. multiplies and divides polynomials.	M7AL-IIe-2

Grade 7 Mathematics

Content	Content Standards	Performance Standards	Learning Competency	Code
			9. uses models and algebraic methods to find the: (a) product of two binomials; (b) product of the sum and difference of two terms; (c) square of a binomial; (d) cube of a binomial; (e) product of a binomial and a trinomial.***	M7AL-IIe-g-1
			10. solves problems involving algebraic expressions.	M7AL-IIg-2
			11. differentiates between algebraic expressions and equations.	M7AL-IIh-1

Grade 7 Mathematics

Content	Content Standards	Performance Standards	Learning Competency	Code
			12. translates English sentences to mathematical sentences and vice versa.	M7AL-IIh-2
			13. differentiates between equations and inequalities.	M7AL-IIh-3
			14. illustrates linear equation and inequality in one variable.	M7AL-IIh-4
			15. finds the solution of linear equation or inequality in one variable.	M7AL-IIIi-1

Grade 7 Mathematics

Content	Content Standards	Performance Standards	Learning Competency	Code
			16. solves linear equation or inequality in one variable involving absolute value by: (a) graphing; and (b) algebraic methods.	M7AL-III-j-1
			17. solves problems involving equations and inequalities in one variable.	M7AL-IIj-2

Issues and Challenges in Mathematics Curriculum Reform

- Creativity to think out of the box
- Spiral progression
 - Need to review and relearn mathematics strands
 - Support for capacity building
- Proper use of technology

**Suggestions on SEA-BES
Common Core Regional
learning Standards
(CCRLS)**

Suggestions on SEA-BES Common Core Regional Learning Standards (CCRLS)

1. Pilot test of the CCRLS among SEAMEO member countries at least for a year.
2. Benchmarking to share best practices.
3. Institutionalizing the use of CCRLS among SEAMEO member countries .



Thank you!