# Surveys of Enacted Curriculum

Approach and methods
Data generation process – Coding & Rating
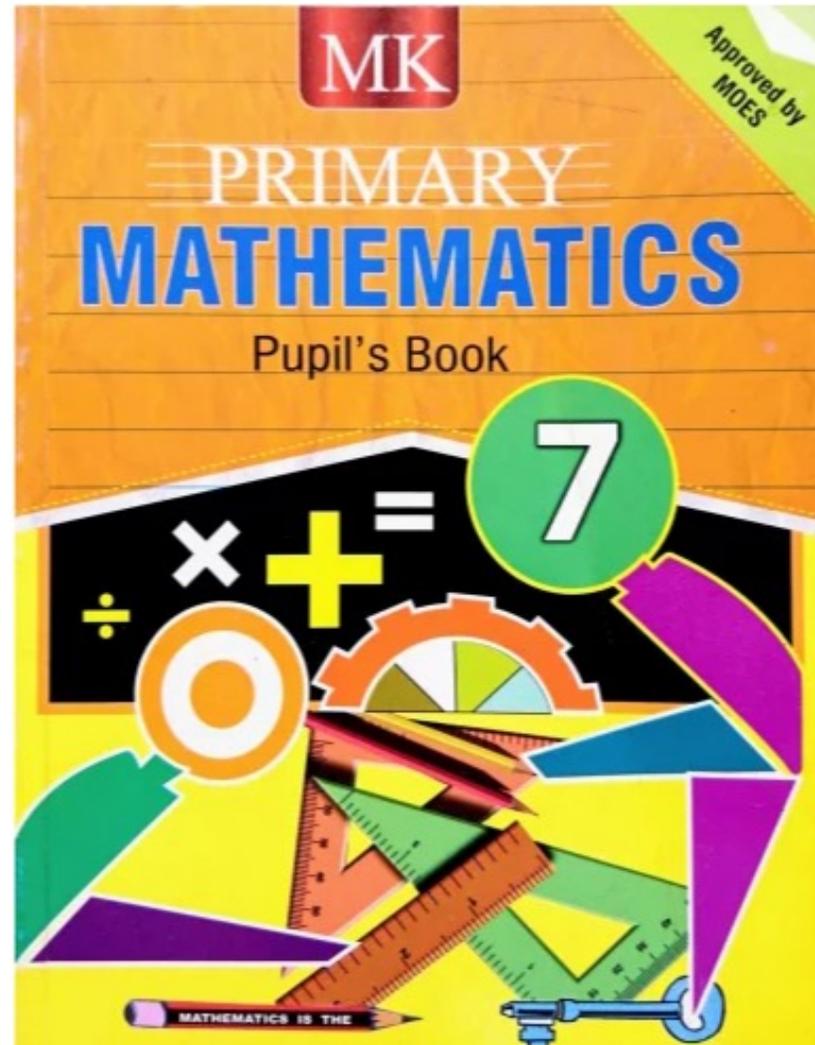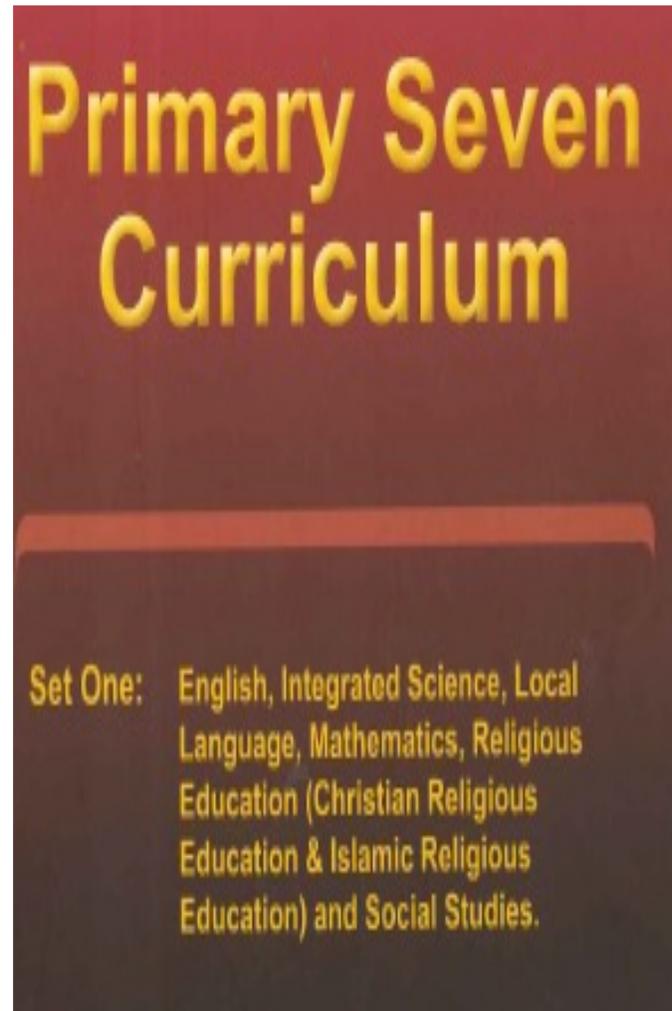
May 2022

Surveys of Enacted Curriculum (SEC)

- Tools for academic content analysis, alignment analysis, and teacher support (Blank, Porter, & Smithson, 2001; Smithson, 2013)

- Systematic analysis, quantification of academic content embedded in curriculum resources.

- Map academic content on three dimensional displays that reveal relative emphases across different curricula content areas.

- Describe coverage, sequence and pace of curricula and diagnose sources of misalignment within and between curricula components.

- Produce a set of indicators to guide policy on educational curriculum development, review and reform.

- Facilitate teacher reflection, professional development and review of classroom instructional content and practices.

About the SEC methods

- Quantitative analyses with qualitative interpretations

- Descriptive and diagnostic

- Cognitively engaging

- High visual impact

- Encourage expert/teacher reflection

- Valid and reliable

- Predictive of learner achievement

Taxonomy as a comprehensive coding/classification document that systematically lists/categorizes all relevant subject-specific educational content (to be covered during a learning cycle) under topics and subtopics intended to facilitate the teaching and learning process.

Coding system

100	**Phonemic awareness**		**500**	**Fluency**
101	Phoneme isolation(e.g.,the distinct sounds /c/,/a/,and /t/		501	Prosody (e.g., phrasing, intonation, and inflection)
102	Phoneme blending (e.g., c/a/t = cat)		502	Automaticity of words and phrases (e.g. sight and decodable words)
103	Phoneme segmentation			
104	Onset-rime		503	Speed and pace
105	Sound patterns		504	Accuracy
106	Rhyme recognition		505	Independent reading (e.g. repeated/silent reading for fluency)
107	Phoneme deletion, substitution, and addition			
108	Identify Syllables		590	Other
190	Other		**600**	**Comprehension**
200	**Phonics**		601	Word meaning from context
201	Alphabetic principle (includes alphabet recognition and order)		602	Phrase
			603	Sentence
202	Consonants		604	Paragraph
203	Consonant blends		605	Main idea(s), key concepts, and sequence(s) of events
204	Consonant digraphs (e.g., ch, sh, th, etc.)		606	Descriptive elements (e.g., detail, color, condition)
205	Diphthongs (e.g., oi, ou, ow, oy [as in "boy"], etc.)		607	Narrative elements (e.g., events, characters, setting, and plot)
206	R-controlled vowels (e.g., farm, torn, turn, etc.)			
207	Patterns within words		608	Persuasive elements (e.g. propaganda, advertisement, and emotional appeal)
208	Vowel letters (a, e, i, o, u, y)			
209	Vowel phonemes (15 sounds)		609	Expository or informational elements (e.g., explanation, lists, and organizational patterns such as description, cause-effect, and compare-contrast)
210	Sound and symbol relationships			
211	Blending sounds			
290	Other			
300	**Vocabulary**		610	Technical elements (e.g., bullets, instruction, form, Side bars, etc.)
301	Compound words and contractions			
302	Inflectional forms (e.g., -s, -ed, -ing)		611	Electronic elements (e.g., hypertext links, animations)
303	Suffixes, prefixes, and root words		612	Strategies (e.g., activating prior knowledge, questioning; making connections, predictions; inference, imagery, summarization, re-telling)
304	Word definitions (including new vocabulary)			
305	Word origins			
306	Synonyms, antonyms, homonyms		613	Self-correction strategies (e.g., monitoring, cueing systems, and fix-up)
307	Word or phrase meaning from context			
308	Denotation and connotation		614	Metacognitive processes (e.g., reflecting about one's thinking)
309	Analogies			
			615	Interpreting maps, graphs, charts

Coding system

100	Nbr. sense /Properties/ Relationships
101	Place value
102	Whole numbers and Integers
103	Operations
104	Fractions
105	Decimals
106	Percents
107	Ratio and proportion
108	Patterns
109	Real and/or Rational numbers
110	Exponents and scientific notation
111	Factors, multiples, and divisibility
112	Odd/even/prime/composite/square numbers
113	Estimation
114	Number Comparisons (order, magnitude, relative size, inverse, opposites, equivalent forms, scale or number line)
115	Order of operations
116	
117	Relationships between operations
118	Number Theory (e.g. base-ten and non-base-ten systems)
119	Mathematical properties (e.g., distributive property)
190	Other
200	**Operations**
201	Add/subtract whole numbers and integers
202	Multiply whole numbers and integers
203	Divide whole numbers and integers
204	Combinations of operations on whole numbers or integers
205	Equivalent and non-equivalent fractions
206	Add/subtract fractions
207	Multiply fractions
208	Divide fractions
209	Combinations of operations on fractions

300	Measurement
301	Use of measuring instruments
302	Theory (arbitrary, standard units and unit size)
303	Conversions
304	Metric (SI) system
305	Length and perimeter
306	Area and volume
307	Surface Area
308	Direction, Location
309	Angles
310	Circles (e.g., pi, radius, area)
311	Mass (weight)
312	Time and temperature
313	Money
314	Derived measures (e.g., rate and speed)
315	Calendar
316	Accuracy and precision
317	Capacity
318	Distance
390	Other
400	**Consumer Applications**
401	Simple interest
403	Rates (e.g., discount and commission)
490	Other
500	**Basic Algebra**
501	Absolute value
502	Use of variables
503	Evaluation of formulas, expressions, and equations
504	One-step equations
505	Coordinate Planes
506	Patterns
507	Multi-step equations
508	Inequalities
509	Linear and non-linear relations
510	Rate of change/slope/line

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Subject-specific group activity: Develop a taxonomy

Group task:

a) Working within your subject team and focusing on three content areas (topics) of your choice, develop a comprehensive primary-level content coding or classification system.

b) Give examples of specific learning objectives or competencies to be developed under each of the chosen content areas.

RISE
RESEARCH ON IMPROVING
SYSTEMS OF EDUCATION

Rating system: Performance expectations

o What learners should be able to do.
o Teachers' expectations of their learners' performance.
o The expectations teachers have for their learners with the content.
o The type & level of thinking & doing intended by the teacher for the learner to sufficiently engage with the task as a result of instruction.

Level of cognitive demand	Illustrative definition
Memorize/Recall	Recognize, identify, or recall facts, definitions, or formulas
Explain/Perform Procedures	Perform procedures, solve routine problems, do computations, make observations, take measurements
Generate/Demonstrate understanding	Communicate ideas, explain findings from analysis, explain reasoning
Analyze/Conjecture	Make and investigate conjectures, infer and predict
Evaluate/Apply to non-routine problems	Apply and adapt strategies, solve novel problems, make connections

Rating system: Performance expectations

	Math	Science	English Language	Social Studies
B	Memorize Facts, Definitions, Formulas	Memorize Facts, Definitions, Formulas	Memorize, Recall	Memorize, Recall
C	Perform Procedures	Conduct Investigations, Perform Procedures	Perform Procedures, Explain	Process Information, Investigate
D	Demonstrate Understanding of Mathematical Ideas	Communicate Understanding of Science Concepts	Generate, Create, Demonstrate	Demonstrate Understanding, Apply
E	Conjecture, Analyze, Prove	Analyze Information	Analyze, Investigate	Analyze, Hypothesize
F	Solve Non-routine problems, Make Connections	Apply Concepts, Make Connections	Evaluate, Integrate	Synthesize, Evaluate, Make Connections

Learner Performance Expectation Categories for English Language Arts / Reading

B	C	D	E	F
Memorize / Recall	**Perform Procedures / Explain**	**Generate / Create / Demonstrate**	**Analyze / Investigate**	**Evaluate/Integrate**
Reproduce sounds or words	Follow instructions	Create / develop connections among text, self, world	Categorize / schematize information	Determine relevance, coherence, internal consistency, logic
Provide facts, terms, definitions, conventions	Give examples	Recognize relationships	Distinguish fact and opinion	Assess adequacy, appropriateness, credibility
Locate literal answers in text	Check consistency	Dramatize	Compare and contrast	Test conclusions, hypotheses
Identify relevant information	Summarize	Order, group, outline, organize ideas	Identify with another's point of view	Synthesize content and ideas from several sources
Describe	Identify purpose, main ideas, organizational patterns	Express new ideas (or express ideas newly)	Make inferences, draw conclusions	Integrate with other topics and subjects
	Gather information	Develop reasonable alternatives	Predict probable consequences	Critique
			Generalize	

Learner Performance Expectation Categories for Mathematics

B	C	D	E	F
Memorize Facts, Definitions, Formulas	**Perform Procedures**	**Demonstrate Understanding of Mathematical Ideas**	**Conjecture, Analyze, Generalize, Prove**	**Solve Non-Routine Problems / Make Connections**
Recite basic mathematical facts	Use numbers to count, order, denote	Communicate mathematical ideas	Determine the truth of a mathematical pattern or proposition	Apply and adapt a variety of appropriate strategies to solve non-routine problems
Recall mathematics terms and definitions	Do computational procedures or algorithms	Use representations to model mathematical ideas	Write formal or informal proofs	Apply mathematics in contexts outside of mathematics
Recall formulas and computational procedures	Follow procedures / instructions	Explain findings and results from data analysis strategies	Recognize, generate or create patterns	Apply to real world situations
	Solve equations/formulas/ routine word problems	Develop/explain relationships between concepts	Find a mathematical rule to generate a pattern or number sequence	Synthesize content and ideas from several sources
	Organize or display data	Show or explain relationships between models, diagrams, and/or other representations	Make and investigate mathematical conjectures	
	Read or produce graphs and tables		Identify faulty arguments or misrepresentations of data	
	Execute geometric constructions		Reason inductively or deductively	
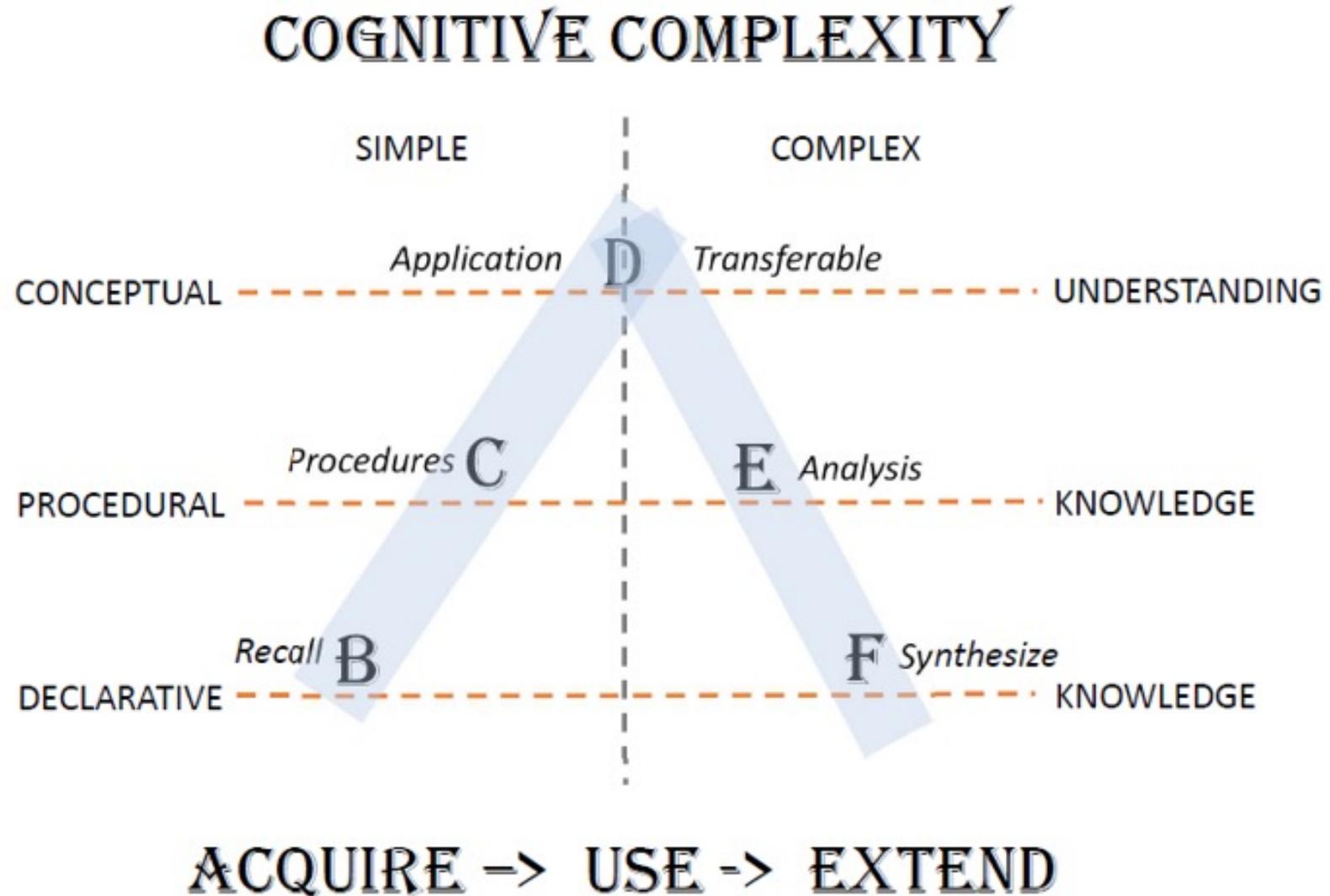
Three frameworks: Bloom, SEC, DoK

Bloom's taxonomy	Remember	Understand	Apply	Analyze	Evaluate	Create
SEC	Memorize	Perform procedures	Demonstrate understanding		Analyze	Integrate
Webb's DoK	Recall	Concept		Strategic thinking		Extended thinking

Task1. **Using flash cards with a partner to practice reading and explaining short sentences.**
Cognitive demand_____

Task 2. **Comparing and contrasting two stories in English Language.**
Cognitive demand_____

Task 3. **Using a graphic organizer to outline and organize ideas prior to writing research.**
Cognitive demand_____

Task1. **Using flash cards with a partner to practice memorizing multiplication facts.**
Cognitive demand_____

Task 2. **Solving one-step equations in mathematics class, such as**
3x = 18, what is x?
y - 14 = 20, what is y?
Cognitive demand_____

Task 3. **Solving real world math problems using multiple strategies.**
Cognitive demand_____

Study component	Main Activities	Key actors	Comments
A. Initial trainings	1. Orienting CSEA focal persons 2. Training panel of experts 3. Finalize study delimitation 4. Developing/Adapting taxonomy	RISE CSEA Panel of Experts	- <u>Delimitation aspects</u>: subjects, grades (standards, assessments, teachers to be surveyed, child performances), geography, period (pre vs. post-CV19 closures), etc. - Taxonomy lays the foundation for all subsequent activities.

B. Content analysis	5. Coding & Rating workshops
	   - Curriculum syllabuses
	   - Assessments
		Panel of experts
		CSEA
			- Individual coding followed by group discussions
			- CSEA to facilitate group discussions
			- Assessments: NECO, NALABE, LEARNigeria, etc.
			- C&R to be done by 3-4 experts per subject.

C. Teacher survey	6. Survey tools adaptation 7. Tools' pre-testing 8. Teacher sample composition 9. Teacher orientation on SEC 10. Survey of teachers' instruction 11. Teachers' reflections & feedback 12. Panel of experts' reflections & feedback	RISE, CCA CSEA Panel of experts State partners Survey host instns Schools & hd tchrs Teachers	- Clarity of goals for conducting the teacher survey, esp. not to be used to evaluate teacher performance. - Full day orientation for teachers with a lot of practical group activities around the concept of "Cognitive Demand". - Panel of experts as main facilitators of teacher orientation sessions, leveraging their prof. expertise.
D. Data processing	13. Survey data entry 14. Child performance data 15. Data Input & processing 16. Content viewer development 17. Research analysis outputs 18. Results interpretation	CSEA CCA RISE	- Item-level child performance data. - Aggregation across children is okay, but not across items.
E. Reporting & disseminations	19. Project implementation report 20. Results reporting 21. Results dissemination 22. Working papers & research articles	CSEA RISE, CCA	All done & dusted by 30th Nov.

Required resources

Player	Key resources: Data, Time, Skills, etc.	Comments
Panel of Experts (3 – 4 per subject)	- Time for the in-person workshops. - Ability to work on cognitively engaging tasks. - Ability to see others' view and willingness to give/take constructive criticism. - Ability to work with MS Excel. - Subject-specific expertise.	- Individual C&R work must be done. - Group discussions are not targeted at generating consensus or agreement across experts.
Teachers	- Literacy and Numeracy teachers. - Currently practicing teacher, not retired teacher.	- When completing the survey, teachers must have a specific class they teach at the back of their minds. when completing the survey tools.

Curriculum document	Subject matter to be Coded and Rated
Syllabus standards	- Performance objective
Assessments	- Assessment task or question

Procedures, Conventions, Norms for C&R

o Develop 2D descriptions:
- Topic (subtopic) codes: fine-grain level coding
- Cognitive demand rates: broad category coding

o Both sub-topic number and cognitive demand letter (B-F)

o Clear identification required for each coding form

o Use standard excel template

o Separate cells for sub-topic code and cog. dd rate

o At least 1 content code per item/competence

RL.7.9. Compare and contrast a fictional

portrayal of a time, place, or character

and a historical account of the same

period as a means of understanding how

authors of fiction use or alter history.

Circle all the verbs: These identify the skills we expect the students to be able to do.

Underline all the nouns: These identify concepts they need to know.

Box the prepositional phrases: These provide context clues.
Place the words into a table making sure to capture the various combinations of terms as necessary.

RL.7.9 Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.

What will students do? (Verbs)	With what knowledge or concepts? (Nouns)	In what context? (Prepositional phrase)
Compare and Contrast		
Compare and Contrast		
Compare and Contrast		

	B	C	D	E	F
	Memorize/ Recall	Perform Procedures/ Explain	Generate/ Create/ Demonstrate	Analyze/ Investigate	Evaluate/ Integrate
	Reproduce sounds or words

Provide facts, terms, definitions, conventions

Locate literal answers in text

Identify relevant information

Describe | Follow instructions

Give examples

Check consistency

Summarize

Identify purpose, main ideas, organizational patterns

Gather information | Create/ develop connections among text, self, world

Recognize relationships

Dramatize

Order, group, outline, organize ideas

Express new ideas (or express ideas newly)

Develop reasonable alternatives | Categorize/ schematize information

Distinguish fact and opinion

Compare and contrast

Identify with another's point of view

Make inferences, draw conclusions

Predict probable consequences

Generalize | Determine relevance, coherence, internal consistency, logic

Assess adequacy, appropriateness, credibility

Test conclusions, hypotheses

Synthesize content and ideas from several sources

Integrate with other topics and subjects

Critique |

RESEARCH ON IMPROVING SYSTEMS OF EDUCATION

Subject-specific individual/group activity: Rating learning tasks

Task - literacy

Que. Rate the following competencies/tasks using the 5-level SEC categories of cognitive demand.

a) The learner expresses his/her feelings in simple present tense.
b) The learner uses words with alternative dictionary meanings from a thesaurus correctly.
c) Even though Alice was sick during the examination, she got a first grade. (Re-write this sentence using: …but…)

Task - numeracy

Que. Rate the following competencies/tasks using the 5-level SEC categories of cognitive demand.

a) The learner matches number names to number symbols.
b) The learner applies the use of formulae for circumference, area, volume and capacity in real life situations.
c) Today Monday the workers on the farm are paid their salary. What day of the week will the workers' next pay be, 30 days from today?

26a	Using a ruler, a pencil and a pair of compasses only: Construct a parallelogram ABCD such that line AB = 7 cm, BC = 5 cm and angle ABC = 120°	P47.31	707	C		
	ii) Drop a perpendicular from D to meet AB at M.	P47.32	709	C		
26b	Measure the line DM	P47.33	316	C		
27a	The time table shows how a pupil spent his time one Saturday. How long did he take playing?	P47.34	312	D	204	C
27b	If he dug maize garden at a rate of 2 rows in every 30 minutes, find the number of rows he dug that day.	P47.35	314	D		
28	The exchange rate for Kenya Shillings (K sh.) to Uganda (Ug Sh. and the United states dollars (Us$) to Uganda shillings are shown below. Ksh 1 = Ug sh. 30. Us$ = Ug. sh. 2580. How many United states dollars will one get from 21,500 Kenya shillings?	P47.36	303	C	313	F
28b	If the cost of a new bicycle is 90 United States dollars, how much would this be in Uganda shillings	P47.37	303	C		
29	At Kampala Bus Park, buses travelling to Arua and Mbarara leave after every 40 minutes and 50 minutes respectively. The first buses to the two towns leave together at 6:00am. At what time will buses to the two towns leave Kampala together again?	P47.38	312	F	312	E
30a	The mean of numbers 7,9,5,x+2 and 6 is 8. Find the value of x	P47.39	1001	D	503	D
30b	In a bag there are 15 pens. Out of these 4 are red and the rest blue. What is the probability that a pen picked at random from the bag is blue?	P47.40	1101	C		
31a	Nanziri has two children a son and a daughter. If the son is half her age, the daughter is a third of her age and the total age of the two children is 30 years. Find Nanziri's age	P47.41	507	F	503	F
31b	How old is the daughter	P47.42	507	D	503	D
32 a	A school wants to fence a circular flower garden of diameter 14 m using poles placed at intervals of 80 cm. How many poles are needed to fence the flower garden? (Take Pi = 22/7).	P47.43	310	D	503	F
32b	If each pole costs sh. 3000, how much money will the school spend on the poles?	P47.44	202	D		

... | P3-Math | P4-Math | P5-Math | P6-Math | P7-Math | PLE-2013 | **PLE-2014** | PLE-2015 | ⊕

Taxonomy of topics/subtopics

Performance expectations for students learning

Expert/teacher judgement of content & practices – "data set"
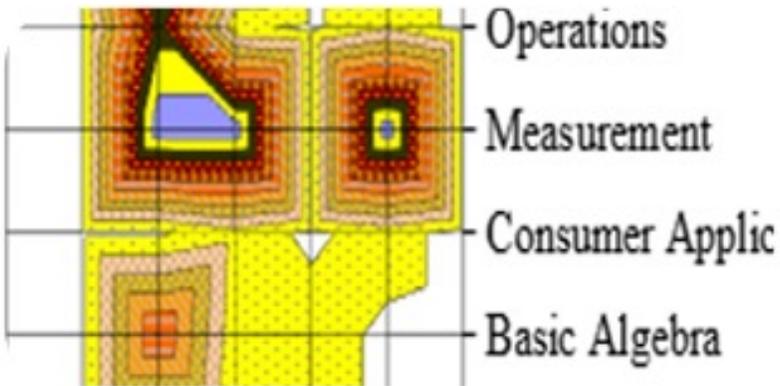
Descriptive contour maps
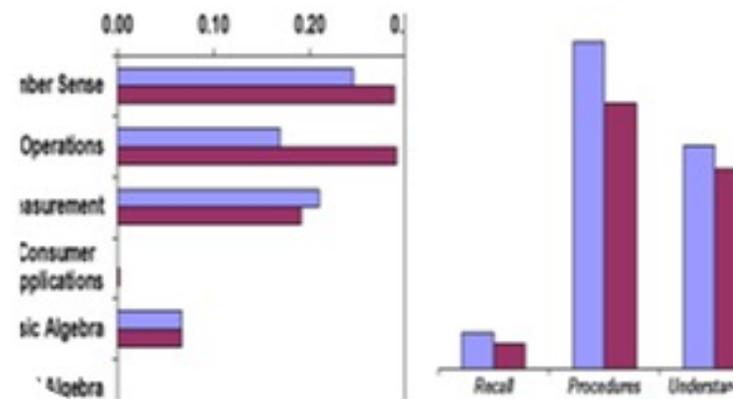
User-friendly marginal charts

Alignment tables & indices

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