THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE
FACULTY OF EDUCATION

SOME TEACHERS' PERCEPTIONS OF TEACHING AND LEARNING MATHEMATICS AT THE PRIMARY LEVEL IN TRINIDAD AND TOBAGO

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OCCASIONAL PAPERS

Acknowledgement

We are grateful to the principals who allowed their staff to be engaged in this survey.

To all the teachers who kindly responded to the questionnaire which was administered, we offer our sincerest appreciation.

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Background

In 1984 the Faculty of Education initiated plans for the training of a cadre of teachers as teacher trainers. The training was part of a numeracy project to be implemented at the primary level. The project was in direct response to the low performance in mathematics throughout the system. It was felt that if remedial efforts were concentrated at the primary level, the effects would be seen at a later date at the secondary level. The project was intended, as the proposal stated, "to render the primary school leaver more numerate relative to the needs of the society, by initiating new approaches to the teaching and learning of mathematics".

A school survey was required, as an initial task, to determine those aspects of the mathematics syllabus that are "inadequately taught or learned". It was anticipated that a societal survey would have been conducted prior to the school survey to identify the numeracy skills which were important for functioning in Trinidad and Tobago. It was not possible to conduct the societal survey as originally proposed. A list of basic skills published by the National Council of Teachers of Mathematics in 1978 was used as the base for developing the questionnaire administered in the school survey. Even though this list was generated from research in North America, it seemed relevant to general mathematical functioning in Trinidad and Tobago. There is no indigenous research to support this position but an examination of the mathematics syllabuses at both primary and secondary levels revealed that the areas, listed as basic skills, form an integral part of the mathematics curriculum. This school survey therefore sought to investigate teachers' competence with and their perceptions of the teaching and learning of the skill areas listed in the questionnaire. (Appendix 1).

Traditionally, professional development programmes tend to ignore inputs from potential participants. However, there is no question that involvement in the process through needs and problems identification can make participants more positive towards training. Indeed the probability that the training would succeed in engendering self-satisfaction and stimulating improved performance is greatly increased.

Kaufman and Stakenas (1981) noted that the process of identifying gaps between what obtains and what is desirable reduces the chances of providing solutions which do not really solve the problems. In collecting data from teachers about their performance and their difficulties relative to their setting and task, programme planners can become sensitive to inputs that could be effective because the trainees desire them. Baird and Rowsey (1989) advised that "the needs of active science teachers should be a prime consideration for in-service planning." The results of their study of 797 secondary science teachers suggested that less than enthusiastic participation in in-service programmes could be due to a mismatch of the perceived needs of teachers with the elements of training. These statements are applicable, as well, to teachers of mathematics at any level of the school system. Research in adult education and staff development support such action and emphasize the benefits to be derived in having teachers as partners rather than adversaries in the process of developing programmes for professional improvement.

The survey attempted to collect data from teachers on
(a) mathematical skills taught to primary students;
(b) time spent in teaching these skills;
(c) difficulties students tend to have when acquiring these skills;
(d) levels at which topics should be taught;
(e) how students are coping with mathematics;
and (f) area(s) of teachers' competence.

Instrumentation

The list of basic skills presented by the National Council of Teachers of Mathematics (NCTM, 1978), including descriptions of the skills, was used as the base for assisting respondents in interpreting the different skills. This list was provided at the beginning of the questionnaire. Respondents were requested to refer to it to answer the ten (10) questions which followed.

As a substitute for observation, interviews and tests of achievement, the questionnaire limited the data, obtained about students, to teachers' perceptions. This was not considered a great disadvantage given that the teachers were experienced. Their answers were expected to reflect this.

Data Collection

The questionnaire was first piloted on thirty-two (32) teachers in six (6) schools and minor changes were made before the final administration. The two researchers visited the schools in the sample to administer the pilot questionnaires. A return visit was made, where necessary, to collect the completed forms. A similar procedure was followed for the final administration.

Sample

The sample comprised 188 teachers in 25 schools randomly selected from a stratified sample of the 8 Educational Districts into which the country is divided. Because of the uneven distribution of schools in the educational districts, stratification was used to ensure a fair representation from all districts. The proportion of schools chosen from a district was relative to its size as a percentage of the total schools in Trinidad and Tobago. The size of the teacher sample was determined by the number of classes in the schools selected. The sample size and distribution can be seen in Table 1.

Table 1: Sample size and distribution

	Infants	Std 1	Std 2	Std 3	Std 4	Std 5
n	20	30	32	25	31	50

Results

The data were analyzed by item for each group of teachers.

1. Which of the skills listed do you teach to your class?

Nine skills were listed in the questionnaire. Table 2 presents the responses for each group of teachers. The percent score indicates the number of teachers identifying the skill as one taught by them. Generally, the responses indicate that at all levels over 90% of the teachers in the survey teach COMPUTATION and provide opportunities for applying mathematics to everyday situations. On the other hand less than 50% of the teachers teach PROBABILITY which was defined in this questionnaire as "using mathematics to

make predictions". While 45% of the sample of infant teachers taught GEOMETRY to infants, as large a number as 55% does not teach this specific skill at this level. Throughout the system, PROBABILITY and GRAPHS have a low profile with teachers. At Std.5, however, students' exposure to these two skills is increased.

Table 2: Teachers' Responses (%) to Skills Taught

Skill	class n	Inf 20	Std 1 30	Std 2 32	Std 3 25	Std 4 31	Std 5 50
computation		90	90	100	100	100	100
apply maths		95	97	97	96	97	98
problem solving		65	90	94	92	100	98
measurement		75	90	91	96	84	96
estimation/approx		60	73	81	84	100	94
geometry		45	83	66	64	65	88
graphs		45	37	50	52	58	88
calculating devices		65	73	72	60	84	74
probability		30	30	38	40	45	66

2. What importance do you attach to each of the skills which you teach?

Although respondents could choose from "very much importance" "to no importance", all responses, except those for PROBABILITY at Std 3, were given as either of "very much importance" or of "some importance". From Table 3 the majority of the sample attached very much importance to COMPUTATION, APPLYING MATHEMATICS TO EVERYDAY SITUATIONS AND PROBLEM SOLVING. GEOMETRY, GRAPHS and PROBABILITY are not perceived as important.

Table 3: Importance attached to skills taught (%)

Skills	Rating	Infants	Std 1	Std 2	Std 3	Std 4	Std 5	Av
Computation	Very much	94	90	100	88	94	98	94
	Some	-	-	-	-	-	-	-
Est./Approx.	Very much	-	40	47	77	45	62	52
	Some	42	-	-	-	-	-	-
Measurement	Very much	-	57	59	70	81	74	64
	Some	44	-	-	-	-	-	-
Geometry	Very Much	50	-	-	-	-	-	-
	Some	-	50	34	63	52	52	50
Graphs	Very Much	-	-	-	-	-	46	-
	Some	50	17	22	67	47		41
Apply Maths	Very Much	89	83	88	96	80	74	85
	Some	-	-	-	-	-	-	-
Probability	* Some	57	20	13		64		42
	* Little	-	-	-	50	-	50	-
Problem Solving	Very Much	79	67	81	77	87	80	78
	Some	-	-	-	-	-	-	-
Cal. Devices	Very Much	55		56				
	Some		40		56	61	38	

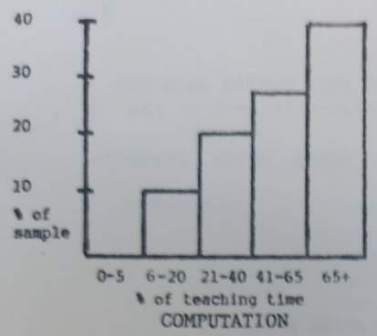
Indeed, about 50% of the sample indicated that GEOMETRY was of some importance. While approximately 42% attached some importance to PROBABILITY, Std 3 teachers (50%) felt it was of little importance. A similar analysis may be made of GRAPHS. Only Std 5 teachers (46%) rated GRAPHS as very important.

At the primary level, therefore, the data seem to suggest that children are not provided with opportunities, in a consistent manner, to develop many of the skills listed in the questionnaire and defined as basic to mathematical functioning.

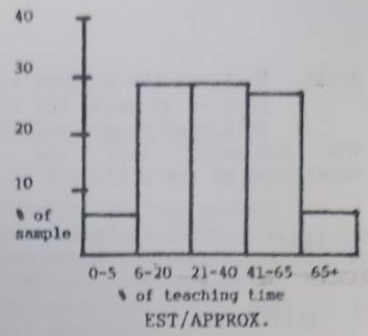
3. What percent of your teaching time is devoted to each of the skills which you teach?

The sample was divided on the amount of time to be devoted to teaching the different skills listed. For COMPUTATION 40% of the sample indicated that they devote more than 65% of teaching time to computational skills. Additionally, no one felt that they should spend less than 6% of teaching time on this skill. This is in clear contrast to responses given for the other skills. Generally, the lower and upper ends of the scale were rated low - suggesting that teachers will devote some minimal time but are unwilling to devote a great deal of time to some skills. The diagrams for PROBABILITY and GRAPHS demonstrate this quite clearly. On the other hand, recognition is given to the importance of PROBLEM SOLVING and APPLYING MATHEMATICS TO EVERYDAY SITUATIONS as indicated by the shape of the diagrams.

The time devoted to different aspects in the different classes varies from teacher to teacher because there is no teacher's guide to the interpretation of the syllabus. In part, this variability would seem to be determined by the teacher's philosophy about mathematics education and his/her competence in a specific topic. The graphs in Figure 1 illustrate how, on an average, time is devoted, throughout the primary level, to the different skills.



COMPUTATION



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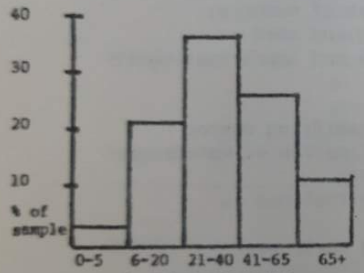
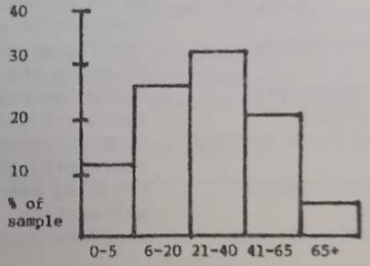
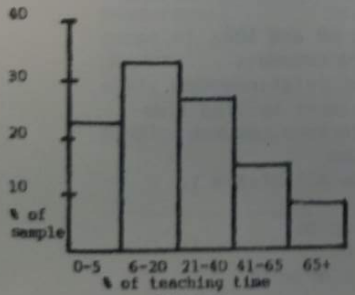


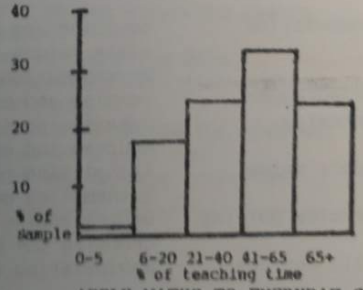
MEASUREMENT



GEOMETRY



GRAPHS



APPLY MATHS TO EVERYDAY SITUATIONS

4 (1). What are the difficulties that your pupils seem to have in studying the topics related to each of the skills which you teach?

The following list the problem areas which teachers identified at the different levels.

INFANTS

Skills	Problem Areas
computation	counting from a given number; finding the difference or the missing no.; shading diagrams to represent fractions; place value; concept of numbers; recognition of tens and ones
est/approx	looking at a length and approximating it by using the hands
measurement	using the ruler
geometry	recognizing and classifying shapes
problem solving	comprehension, application of knowledge; expressing themselves
apply maths	relating everyday situations to mathematics
cal. devices	students working on their own

STD 1

Skills	Problem Areas
computation	counting nos between 50 and 100; place value; the zero concept; decomposition; seeing relationships
measurement	reading and using rulers; telling time
geometry	identifying the difference between squares and rectangles
apply maths	translating real life situations to mathematics sentences
problem solving	understanding the problem; choosing the operation
cal. devices	manipulating concrete objects

STD 2

Skills	Problem Areas
computation	learning tables; the four basic operations; conceptual difference between tens and hundreds; representing a region given a fraction; place value; subtracting and dividing nos. when "0" is in the "tens position
est/approx	meaning of the words
measurement	reading and using the ruler
geometry	identifying shapes
graphs	reading and interpreting graphs
apply maths	interpreting information; understanding the language of maths; using data
problem solving	reading; working with unfamiliar situations involving more than one operation; separating what is given from what is required
cal. devices	using the time given efficiently

STD 3

Skills	Problem Areas
computation	no. facts; four basic operations; operating with different denominations
est/approx	time/distance using metric units
measurement	using metric units; measuring angles
geometry	drawing shapes
graphs	reading and interpreting data
apply maths	bills / translating real life problems to math sentences
problem solving	reading and understanding the problem; two and three step problems choosing the appropriate operation

STD 4

Skills	Problem Areas
computation	multiplying and dividing with decimals; dividing with a zero in the dividend; adding and subtracting fractions
est/approx	converting nos. to the nearest hundred; rounding off nos.
measurement	using instruments; measuring units of time, angle, temperature, volume, etc.
geometry	identifying shapes; concepts associated with rotation, translation and reflection; perimeter of irregular shapes
graphs	interpreting data; plotting points; translating info from a graph to real life
apply maths	relating real life situations to mathematical sentences
problem solving	reading and understanding the problem; writing statements; determining what is given or required; choosing the operation
cal. devices	using the aids

STD 5

Skills	Problem Areas
computation	place value; operations with zeros in number; multiplying and dividing decimals and fractions
est/approx	correcting nos. to the nearest tenth and hundredth; area formula
measurement	area of pathways and circles; using metric units
geometry	rotation, reflection; similar and congruent figures; identifying plane and solid figures;
graphs	plotting points; extracting info from graphs; scale drawing
apply maths	reading problems; transfering knowledge; relating maths to everyday situations
probability	understanding the problem
problem solving	comprehension of the problem deciding what the problem requires
cal.devices	using scales

The data suggest that throughout the levels teachers feel that students experience great difficulty with whole and rational numbers. Teachers identified the zero concept, introduced with each operation, to be very difficult for the students. From their rating, students were weakest in their ability to read and understand problems.

It was observable from the data collected that many of the skills which are not acquired at the lower levels continue to surface and be problematic for students at the upper level. Overall, poor strategies for problem solving reappeared and may be an important factor contributing to students' general low level of competence and confidence with mathematics generally.

4 (ii). For the class which you teach indicate the order of difficulty of the skills.

Table 4: Teachers' rating of order of difficulty of the skills

Inf	Std 1	Std 2	Std 3	Std 4	Std 5
p. sol	p. sol	p. sol	p. sol	p. sol	p. sol
apply maths	prob	apply maths	est/approx	prob	prob
graphs	graphs	est/approx	apply maths	est/approx	apply maths
meas	apply maths	meas	graphs	est/approx	geom
prob	comput	comput	meas	cal/dev	graphs
geom	meas	geom	cal/dev	geom	est/approx
est/approx	est/approx	graphs	comput	apply maths	meas
cal/dev	cal/dev	cal/dev	geom	meas	cal/dev
comput			prob	comput	comput

Table 4 shows the skills and the order of difficulty of the skills for the different levels as perceived by the teachers. PROBLEM SOLVING and PROBABILITY have been identified as the two most difficult areas for all levels. COMPUTATION and USE OF CALCULATING DEVICES are areas of least difficulty.

5. Which topic / topics presently taught to your pupils would you say should be taught immediately above or below your class ?

Topics listed by the teachers as appropriate below or above the class can be identified in the primary school syllabus. Becase of the spiralling nature of the topics in the syllabus it is possible to identify a hierarchy of the concepts/skills which can be associated with the topic at different levels. There are therefore, concepts immediately preceding and following a particular level and which provide support and focus for its teaching.

Responses to this item indicate that the teachers are aware of the hierarchy of learning associated with the topics. Much of the detailing given, however, relate to work with numbers and further reinforces the suggestion that teachers seem to emphasize computation and number work. In some cases, there is some consideration of other topics and concepts. Table 5 gives the teachers' responses to this question.

Table 5: Teachers' perceptions of topics to be taught

INFANTS	STANDARD I	STANDARD II	STANDARD III	STANDARD IV	STANDARD V
Above Recognition of numbers from 1-100, measurement, graph, probability simple fractions, numeration, carrying and borrowing problems.	Above Measurement, multiplying whole numbers, Roman numerals, time (hours and minutes) computation graphs	Above Computation, Probability, problems with the four rules, fraction, plane figures, area, volume, data representation, graphs.	Above Long multiplication, Probability, Geometry, Pie Charts, Fractions, L.C.M., H.C.F., Line and Bar Graphs, Long Division, Volume, Ratio/Proportion.	Above Graph, Geometry, Probability, Ratio/ Proportion, Simple Interest, Profit and Loss, Venn Diagram, Decimal Fractions, Long Division, Prime and Composite numbers, Volume, Percentage, Scientific Notation.	Above Probability, Rotation and Reflection Bases, Graphs, Statistics, Fractions.
Below Concept development practical activities in measuring	Below Problem solving, estimation/approximation sets, notation and numeration, number line, zero, time, bills and change computation, measurement, number bonds, operation with whole numbers less than 100.	Below Measurement, addition, subtraction and multiplication using different units, multiplication and division by 2, money, time, practised work with estimation and approximation, recognition of numbers 1-20, applying maths to everyday situation, place value.	Below Graphs, Problem Solving, Fractions Computation, Notation up to 10,000 Measurement, shapes, money, area, Bills, Time, Metric System, Geometry, Approximation, Speed	Below Computation, Decimal Fraction, Measurement Long Division, Long Multiplication, Value of the Digits, Problem Solving, Fraction, Odd and Even numbers, Profit and Loss, Time, Decimals.	Below Fractions, Decimal System, Metric system, Unitary Method, sets, Index Notation, Equations and Inequations, Number properties, Graphs, Measurement, Problem Solving, Percentage, the four operations, computation

6. List the new topics to which you introduce your class.

Infants	The four operations with tens and units, Number Line, Ordinals, Sets, Buying and Selling with cents, Geometry.
Std 1	Metric System, L.C.M., and H.C.F., Place Value, Decimal Fraction, Fractions, Notation and Numeration, Division with carrying, Money Profit and Loss, Square Root, Geometry, Graphs, Sets, Using Zero Measurement of Distance, Weight, Time,
Std 2	Money problem, Measurement, Metric System, The Number Line, Notation to 9999, Place Value, Reading and Writing Numbers, Area, Graphs, Statistics, Plane Figures, Estimation, Time, Capacity, Problem Solving.
Std 3	Long Multiplication and Division, Factors, Multiples, Square Roots, Decimals, Graphs, Percentage, Measuring Temperature, Cubes and Cuboids, Fractions (+,-), Use of Calculators, Prime Numbers, Area, Odd, Even and Composite Numbers, Metric System, Roman Numerals, Translation, Rotation and Reflection of Figures.
Std 4	Percent, Ratio and Proportion, Graphs, Decimals, Area and Volume, Simple Equation, Simple Interest, Profit and Loss, Average, Fraction, Area of a Circle, Scientific Notation, Venn Diagram, Metric System, Geometry, Probability, Multiplying and Dividing Numbers ending with zero, Changing Money, Property of Numbers.
Std 5	Sets, Set Notation Index Notation, Venn Diagrams, Algebra, Bases, Graphs, Ratio, Proportion, Percent, Profit and Loss, Probability, Square and Square Roots, Cube and Cube Roots, Addition and Subtraction of Integers, Area, Lines of Symmetry, Translation, Rotation, Simple Interest, Equations and Inequations.

The responses made here show a close match with the data obtained from the previous question. This suggests that teachers are familiar with the syllabus and the scope and sequence of the topics. To a large extent, the new topics identified for a class have been listed as areas that should be covered either below or above a specific level.

7. State any skill area(s) other than those identified in which the pupils should be competent.

Table 6: Other skills areas requiring Ccompetence

Infants	speech expressing their ideas coherently understanding zero
Std 1	reading skills
Std 2	reading skills application of the four rules
Std 3	reading skills notation, use of calculators
Std 4	tables, charts, fractions, twenty-four hour clock, reading, reasoning ability
Std 5	reading skills, analysis of data, conversion, number bases

The responses suggest that teachers are aware of the importance of reading in mathematics. For all classes this was seen as one supporting skill in which students must be competent. Schell (1982) described reading and mathematics as "learning partners". Like many other writers he recognized that effective reading is critical in mathematics where the occurrence of specialized symbols, abstractions and technical terminology is very high.

8. In your class give approximate percent of
   (a) pupils who cope with maths .... very well
   (b) pupils who cope with maths .... well
   (c) pupils who cope with maths .... average
   (d) pupils who cope with maths .... not so well
   (e) pupils who cope with maths .... not at all

Table 7: Teachers' perceptions of students' levels of coping with mathematics (%)

	Infant	Std1	Std2	Std3	Std4	Std5	All
very well	16	28	16	23	21	13	19
well	27	22	29	21	21	21	24
average	35	29	32	27	29	33	31
not so well	16	16	14	20	21	23	18
not at all	6	5	9	9	8	10	8

About 43% of children in all classes are perceived as coping very well or well with mathematics. On the other hand approximately 26% are not coping well or not coping at all. 31% of the sample is coping moderately well. These percentages are fairly stable throughout the classes.
The data show too that, generally, as students move upwards through the classes the coping levels become lower. A comparison of the data for Infants, or even Std 1, with those for Std 5 exemplifies the decrease in coping levels. While about 22% are not coping at the infant level, this percentage increases substantially to 33% at Std 5. In the early years, students seem to cope with the study of mathematics but this initial skill is not maintained to the end of primary school and the discrepancy is indeed discernible.

Teachers had indicated, in Question 7, that students experience difficulty in reading and comprehension. They are of the opinion that if reading skills are improved then students' competence with mathematical problems will improve. This supports very closely their rating of PROBLEM SOLVING as most dificult.

9. With what topics from the syllabus do you as a teacher feel confident?

Table 8: Teacher Confidence with content of syllabus

Infants	Computation, Measurement, Estimation, Approximation, Geometry, Building tables, Problem Solving, Applying Mathematics.
Std 1	Long Division, Fractions, Metric System, Money, Time, Computation with Whole Numbers, Measurement.
Std 2	Graphs, Computation, Calculating Devices, Measurement, Problem Solving.
Std 3	Measurement, Fractions, Computation, Area, Average, Four Rules, Percentage, Graphs, Geometry.
Std 4	Operations, Fractions, Graphs, Four Rules, Decimals, Ratio and Proportion, Computation, Metric System.
Std 5	Four Rules, Notation, Numeration, Decimals, Metric System, Fractions, Area, Ratio and Proportion, Graphs, Measurement, Probability.

A wide range of topics has been listed. Many of these are related to number skills. It is to be noted, however, that GEOMETRY has not been identified by teachers, at any level, as a topic with which they are confident.

10. With what topics related to skills in Question 1 do you as a teacher feel confident?

Table 9: Level of teacher confidence in skills related to topics

TOPICS	Infant	Std 1	Std II	Std III	Std IV	Std V	System
Computation	95	92	91	100	97	93	95
Estimation/ Approximation	57	63	63	63	52	61	60
Measurement	38	71	71	68	61	73	64
Geometry	38	58	49	47	45	63	50
Graphs	38	63	51	47	52	63	52
Apply Maths	48	63	46	47	52	46	50
Probability	29	46	34	32	35	39	36
Problem Solving	43	67	83	58	68	58	63
Calculating Devices	48	58	46	32	42	46	45

From Table 9, approximately 95% of the teachers in the sample said that they feel confident when teaching COMPUTATION. These results contrast very sharply with those for four of the other skills for which teachers indicated that they were not more than 50% confident. Teachers were not as confident for such skills as GEOMETRY, APPLYING MATHEMATICS TO EVERYDAY SITUATIONS, PROBABILITY and USING CALCULATING DEVICES. Although 85% indicated that they attached very great importance to APPLYING MATHEMATICS TO EVERYDAY SITUATIONS, 50% felt confident with this area. With the exception of COMPUTATION, all the other skills seem to share approximately the same time allocation. However, PROBABILITY and PROBLEM SOLVING are rated the most difficult. PROBABILITY and GRAPHS are taught by less than 50% of the sample while about 50% of the sample find difficulty in teaching topics such as GEOMETRY, APPLYING MATHEMATICS to EVERYDAY SITUATIONS, PROBABILITY and USING CALCULATING DEVICES.

Conclusion

This survey directs attention to the need for widening teachers' interpretation of the mathematical skills that students should develop at the primary level. Traditionally, numeracy has been equated with competence with numbers. Whereas in the past such a definition would have been adequate, today, skills required for basic mathematical functioning go beyond computation. Indeed, technological advances worldwide as well as developments within the setting of Trinidad and Tobago have reduced the need for the lengthy computations performed manually in previous years. Instead topics such as GEOMETRY, MEASUREMENT, ESTIMATION, APPROXIMATION and PROBLEM SOLVING which teachers seem to underplay for various reasons must be recognized for their impact on a person's daily encounters with mathematical situations.

The present Education Plan (1985/1990) recognizes that schools must prepare students to face the challenges of the twenty-first century. Such a policy must carry with it implementation strategies to achieve these goals. In the immediate future, these strategies must include a review of the preparation of teachers for teaching mathematics both in initial training programmes and continuing teacher development exercises. In addition, there should be ample support for classroom activities through curriculum guides and resources so that teachers could feel confident with both the entry skills and the developmental concepts appropriate to the specific classes in which they are functioning. The curriculum, its content, objectives, skills, materials and activities, will become relevant to the needs of the students and the society as a whole.

Indeed, if teachers actively participate in these curriculum development tasks, they are more than likely to view the wider range of mathematical skills positively. Furthermore, as they are involved at this level of curriculum development, proposals for reviewing the definition of numeracy on an ongoing basis are likely to obtain positive support from them. It should be pointed out that such reviews are essential because of the dynamic nature of numeracy which is determined by the skills deemed important at a point in time.

Finally, there should be a system of supervision and ongoing curriculum evaluation to ensure that levels of competence are established at various points in the primary school. In this way, both teachers and students will remain goal and task oriented and the identified levels of numeracy can be attained. A programme of diligent monitoring of the system within such a framework may be one strategy for minimizing, if not removing, the problems enunciated in this survey.

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THE UNIVERSITY OF THE WEST INDIES
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CERTIFICATE IN EDUCATION: THE TEACHING OF MATHEMATICS
NEEDS ASSESSMENT SURVEY

Read the following list of skills and related topics to aid you to answer the questions in this survey.

SKILLS	RELATED TOPICS
1. Computation:	operations (+, -, x, ÷) with (i) whole numbers (ii) decimals (iii) fractions
2. Estimation/ approximation:	estimate (i) length, distance (ii) time (iii) money totals (iv) size and weight (v) area and volume (vi) percent (vii) ratio and proportion (viii) budgets
3. Measurement:	measure (i) distance (ii) weight (iii) time (iv) capacity (v) temperature (vi) angles
4. Geometry:	recognize: (i) plane figures (square, rectangles triangles, circles) (ii) solids (cube, cuboid) (iii) patterns (iv) parallel and perpendicular lines (v) similar and congruent figures (vi) translation, rotation and reflection of figures.
5. Graphs:	draw, read and interpret (i) graphs (ii) maps (iii) tables (iv) charts
6. Apply maths to everyday situations	(i) translate real life situations into maths sentences (ii) solve (iii) interpret results
7. Probability:	using mathematics to make predictions
8. Problem Solving:	apply knowledge to familiar and unfamiliar situations.
9. Calculating Devices:	use simple aids in the teaching/learning process.

PLEASE TURN TO THE QUESTIONNAIRE

CERTIFICATE IN EDUCATION
THE TEACHING OF MATHEMATICS

Need Assessment Survey - Questionnaire

School: _____ Class: _____ Date: _____

Instruction: (i) Read page 1 before answering the questions.
(ii) In question 1 put a tick (✓) in the appropriate boxes
(iii) In questions 2 and 3 ring the letter to indicate your response.

1. Which of the skills do you teach to your class?

Computation	☐	Applying Mathematics to every day situation	☐
Estimation/ approximation	☐	Probability	☐
Measurement	☐	Problem Solving	☐
Geometry	☐	Using calculating Devices	☐
Graphs	☐		

2. What importance do you attach to each of the skills which you teach?

N - No importance
VL - Very little,
L - Little
S - Some
VM - Very much

Computation	N	VL	L	S	VM	Apply Maths etc	N	VL	L	S	VM
Est/approx.	N	VL	L	S	VM	Probability	N	VL	L	S	VM
Measurement	N	VL	L	S	VM	Pro/Sol.	N	VL	L	S	VM
Geometry	N	VL	L	S	VM	Cal/Devices	N	VL	L	S	VM
Graphs	N	VL	L	S	VM						

3. What % of your teaching time is devoted to each of the skills which you teach?

A - 0-5%
B - 6-20%
C - 21-40%
D - 41-65%
E - above 65%

Computation	A	B	C	D	E	Apply Maths etc	A	B	C	D	E
Est/approx.	A	B	C	D	E	Probability	A	B	C	D	E
Measurement	A	B	C	D	E	Pro/Sol.	A	B	C	D	E
Geometry	A	B	C	D	E	Cal/Devices	A	B	C	D	
Graphs	A	B	C	D	E						

4. (i) What are the difficulties that your pupils seem to have in studying the topics related to each of the skills which you teach?

CODE	THE SKILL(S)	EXAMPLE OF THE DIFFICULTIES
A	Computation	
B	Est/approx.	
C	Measurement	
D	Geometry	
E	Graphs	
F	Apply Maths etc.	
G	Probability	
H	Pro/Solving	
I	Cal/Devices	

4. (ii) For the class which you teach, indicate as in the example below the level of difficulty of the topics identified in 4 (i) above.

	Level of difficulty	Class X	Your Class
	1	C	
Most	2	E	
	3	F	
to	4	A	
	5	B	
Least	6	I	
	7	D	
Difficult ↓	8	H	
	9	G	

5. Which topic/topics presently taught to your pupils would you say should be taught immediately <u>above</u> or <u>below</u> your class?

Above: _____

_____

Below: _____

_____

6. List the new topics to which your class is introduced.

_____

_____

7. State any skill area(s) other than those identified in which the pupils should be competent.

_____

_____

8. In your class give approximate % on:

(a)	pupils who cope with Maths....	Very Well	
(b)	pupils who cope with Maths....	Well	
(c)	pupils who cope with Maths....	Average	
(d)	pupils who cope with Maths....	not so well	
(e)	pupils who cope with Maths....	not at all	
		Total	100%

9. With what topics from the syllabus do you as a teacher feel confident?

_____

_____

10. With what topics related to the skills in question 1 do you as a teacher feel confident?

_____

_____

THANK YOU VERY MUCH