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Abstract

The system-wide curriculum development and instructional improvement (ESEA Title III) project concerned itself in the first phase with mathematics; emphasis in the 18-month second phase will be in social studies. In spring 1968, committees were formed representing the primary, middle, junior high and high school levels, and college consultants and specialists were selected to assist them in preparation of inventories (for identification of basic problems in mathematics) and of attitude surveys and diagnostic tests (for use in preparing and conducting inservice classes). All committees followed the approach presented in a 3-day July workshop on Systems Analysis Application to Curriculum Development. Four inservice classes were held during the spring of 1969 with 145 teachers participating; results of pre-and posttests indicated a gain in knowledge of mathematics processes and concepts at all levels. Students in grades 5-8 were pretested and will be posttested and compared to control groups. During the summer continuous progress flow charts are being developed for grades 1-8, curriculum materials reviewed and selected (or designed and developed), and curriculum guides prepared. Basically the same procedures are proposed for curriculum planning, inservice training, and materials and media development in the social studies field during the coming year. (Included are committee reports, measurement instruments with results, and outlines

APPLICATION FOR CONTINUATION GRANT
TITLE III PROJECT IN PROGRAM DEVELOPMENT
AND IN-SERVICE TRAINING
FOR IMPROVEMENT OF CURRICULUM, ORGANIZATION AND INSTRUCTION
CARTERET COUNTY SCHOOLS
Beaufort, North Carolina 28516

Project Number: OEG-3-8-685322-0025(056)

July 5, 1969

Submitted To

Dr. John Good
State Director E.S.E.A. Title III
North Carolina State Board of Education
Raleigh, North Carolina

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PART II - NARRATIVE REPORT

Introduction

The Title III Program Development and Inservice Training for Improvement of Curriculum Organization and Instruction Project of Carteret County Schools is now approaching its second fiscal period of operation. This report is submitted in compliance with the Elementary and Secondary Education Act of 1965 as a continuation grant application for the second fiscal period of the Project beginning September 1, 1969 and ending February 28, 1971. In this report an attempt will be made to describe and document activities to date and to outline plans and objectives for the continuation of the project. The report will also analyze the evaluation to date and outline and explain future evaluation.

All grades, one through twelve, in Carteret County Schools have been involved in the project which in the first phase concerned itself with mathematics. Mathematics will continue to be emphasized throughout the project; however, for the remaining eighteen months emphasis will be placed on strengthening and enriching the social studies curriculum.

Procedures

Planning Phase

In the Spring of 1968, under the direction of M. D. James, associate Superintendent and Shirley J. Babcock, General Supervisor, committees were formed representing the Primary, Middle, Junior High and High School levels. College consultants and specialists were selected to assist in their special areas. These consultants also assisted in preparation of inventories, attitudinal surveys, and tests as well as conducting in-service classes.

The Central Committee, with recommendations from the sub-committees began compiling a mathematics curriculum library for which a bibliography has been compiled. This bibliography has been made available to all teachers administrators, college consultants, and interested patrons.

The first function of the total mathematics committee was to participate in a three-day workshop on Systems Analysis Approach to Curriculum Development. The workshop was held July 17, 1968 through July 19, 1968 and conducted by Dr. Leslee Bishop, Executive Secretary, Association for Supervision and Curriculum Development, N.E.A. Consultant. The approach developed during this workshop has been followed by the committees in pursuing their investigations. (This plan will follow the Narrative Report.)

Implementation

The committees working sometimes singly and sometimes in groups began to identify the basic problems regarding mathematics. Their first step, in co-operation with their consultants, was to prepare questionnaires for teachers, students, and parents. Copies and results of these questionnaires are included in this report.

Simultaneously with the committee work and upon the request of the committees and the administration, Dr. Thomas Reynolds, Professor of Mathematics at Duke University, Durham, North Carolina, in co-operation with David Singleton, Professor of Mathematics at St. Andrews College, Lauringburg, North Carolina, began preparation of a Mathematics Diagnostic Test for teachers. It was felt that this test would be helpful in designing in-service classes in mathematics that would be meaningful to Carteret County teachers. Plans were to administer this test before and after in-service training classes. Mr. David Singleton also designed

a mathematics attitudinal scale for teachers to be administered before and after in-service training. Copies of the diagnostic tests and attitudinal surveys and their results are included in this report.

The committees continued to meet and implement the plan adopted in the workshop, submitting periodic reports to the central office.

The committees agreed that there was a need to visit exemplary, innovative, and experimental mathematics programs in other school systems. Reports on these visits will be attached to this report.

In-Service Training

From the beginning there appeared to be a definite need for in-service training for all teachers of mathematics. Indeed, this was a recommendation, without exception, from each committee. In order to plan effectively for these classes, teachers were surveyed as to their needs and desires. Mr. Singleton, and the other college consultants, after reviewing the teacher diagnostic tests and surveys prepared a course of study for the classes. Dr. Olan Petty, Mathematics Professor, Duke University, Durham, North Carolina, also reviewed the course of study before it was adopted.

Four in-service classes were held during the Spring of 1969 with one hundred forty-five (145) teachers participating. One class is currently underway.

During the current school year two (2) Carteret County schools, Beaufort Elementary and White Oak, have used Greater Cleveland Mathematics materials with selected students. These materials had seemed to be effective when used in a co-op Step E.S.E.A. Title III program in the summer of 1968. It was believed that experimentation with these materials in two schools might prove usefull.

Summer Activities

The committees—Primary through Junior High School—also recommended that mathematics flow charts be developed for grades 1 - 8. Three committees will work June 16 through July 28 in preparation of these charts. They have been and will continue to be assisted by John Ogle, associate State Supervisor of Mathematics and Eloise Scott, Wilmington College.

These committees will also review and select materials to recommend for use in Carteret County Schools.

The high school committee working this summer will be involved primarily in preparing over-head transparancies and lesson plans for selected areas of high school mathematics courses.

Evaluation

Teachers—The pre and post diagnostic test for teachers, designed to ascertain the effectiveness of in-service classes, was administered to participating teachers, as was the attitudinal survey. Results of the tests and survey, will be included in this report. A cursory examination of the test results indicates a gain in knowledge of mathematics principles and concepts was evidenced at all levels. The gain was particularly noticable for the middle grade teachers.

Subjective evaluation of the in-service classes reveals that the instructors were well pleased with the participation of teachers and felt there was much success. Teachers interviewed expressed the same opinion.

Students

Students grades 5 - 8 were pre and post tested in mathematics with the Iowa Test of Basic Skills. Since the in-service classes were not

held until this Spring, their effect on the students' achievement would not be evidenced; however, this same test will be administered in the fall and spring of the next school year (1969-1970) and an analyzination will be made. A control group consisting of classes of teachers who did not participate in in-service classes will be set-up.

This same instrument (Iowa Test of Basic Skills) will also be employed to measure over-all impact of this project.

Dissemination

Copies of the Title III project were made available to all school personnel and interested persons at the outset.

Other interested school systems have inquired and received information about this project. Copies of the proposal, bulletins, and results of the workshop have been made available when requested.

The news media have been informed of activities concerning the project and have given full coverage to it.

An E.S.E.A. Title III evaluation team visited Carteret County and reviewed and expressed their interest in the project. Members of the State Department of Public Instruction have also visited and assisted with the project.

Methods and Procedures to continue project

It is believed that after the project has been completed the effects of the curriculum planning, in-service training, materials and media development, etc. will insure the realization of the project objectives without the outlay of additional funds.

Budget Prior to Narrative Report

$ 87,520 Total cost.

$ -- Total non-Federal support.

$ 87,520 Total Federal support under Title III, P. L. 89-10.

$ -- Total Federal support other than Title III, P. L. 89-10.

PLAN FOR THE MATHEMATICS TITLE III PROJECT

As a result of a three-day workshop in July, studying the "Systems Analysis Approach to Curriculum Development" under the direction of Dr. Leslee Bishop, former Executive Secretary of Association for Supervision and Curriculum Development, NEA, and now professor of Curriculum Development, University of Georgia, the Mathematics Study Committee adopted the following system or plan to follow in evaluating and improving our mathematics program.

1. SITUATION —What general factors, situations, conditions significantly affect any improvement we wish to make.

2. PROBLEMS —What are the basic educational problems regarding mathematics.

3. OBJECTIVES —What specific behavorial objectives or outcomes do we wish to achieve.

4. RESOURCES —What resources are available to help us achieve stated objectives.

5. STRATEGY —What plan(s) do we propose to meet our objectives.

6. EVALUATION —What evaluative procedures, instruments, etc, would be most appropriate to compare results with objectives.

During the month of October, 1968, the committee will be working on Step 2, attempting to identify the basic problems affecting the mathematics achievement of our students.

MATHEMATICS PROJECT
TEACHER QUESTIONNAIRE

Please circle the grade you teach. 1 - 2 - 3 - 4 - 5 - 6

1. Do you feel prepared to teach new mathematics on your presently assigned grade level?
YES_____NO_____

2. Do you feel at ease teaching the new mathematics?
ALWAYS_____SOMETIMES_____SELDOM_____

3. Would you be interested in attending an in-service workshop on mathematics on your grade level?
YES_____NO_____

4. Do you feel that grouping for mathematics similar to grouping for reading would increase student mastery, understanding and achievement?
YES_____NO_____

5. Are the objectives, purposes, and reasons for the adoption of new mathematics clearly understood?
YES_____NO_____

6. Do you feel that new mathematics is designed to meet the needs of all students?
YES_____NO_____

7. Do you feel there is a need for consumer and/or general math to be included in the curriculum to meet the needs of certain students?
YES_____NO_____

8. Are there enough mathematics materials in your classroom for each child to use?
YES_____NO_____

9. Is there an urgent need for consumable materials?
YES_____NO_____

10. Are student progression records kept, filed and made accesible to the next teacher for evaluation, planning, grouping and instruction?
YES_____NO_____

11. Do you think that the recommendations in the new mathematics manuals are too fast_____too slow_____satisfactory_____?

12. Are follow-through procedures made and mathematical activities arranged so as to make diagnostic recommendations worthwhile?
YES_____NO_____SOMETIMES_____

13. Do you have adequate mathematics manuals to meet the needs of yours?
YES_____NO_____ If no, explain.

14. How do you help your students make up work that has been missed because of illness or other reasons?
DRILL_____EXTRA WORK_____AFTER SCHOOL_____SEND WORK HOME_____
OTHER_____

15. If it were possible to provide planning time, would you prefer it to be provided without children before student arrival_____during school day_____after student dismissal_____?

16. Do you have a good understanding of the mathematics curriculum structure, grades 1 - 6?
YES_____NO_____

17. Do you feel that all students progress through the mathematics curriculum structure, grades 1 - 6, at their own rate regardless of grade level assigned?
YES_____NO_____

If you asnwered no, please give your recommendations.

18. Please state, in your opinion, (3) weaknesses of our mathematics program, grades 1 - 6.

(1)

(2)

(3)

19. Please state, in your opinion, (3) strengths of our mathematics program, grades 1 - 6.

(1)

(2)

(3)

20. Please give three recommendations to improve our mathematics program, grades 1 - 6.

(1)

(2)

(3)

(PRIMARY) TEACHER QUESTIONNAIRE

Grades 1	YES	18	NO	8		
2		14		7		
3		18		1		
TOTAL		52		16		

Grades 1	ALWAYS	10	SOMETIMES	11	SELDOM	5
2		11		9		1
3		10		10		0
TOTAL		31		32		6

Grades 1	YES	24	NO	2
2		15		5
3		11		7
TOTAL		52		14

Grades 1	YES	25	NO	1
2		21		0
3		18		2
TOTAL		66		3

Grades 1	YES	6	NO	19
2		11		9
3		9		10
TOTAL		12		40

Grades 1	YES	3	NO	23
2		4		17
3		4		16
TOTAL		12		57

Grades 1	YES	23	NO	3
2		20		0
3		19		1
TOTAL		63		4

Grades 1	Yes	5	NO	21
2		5		16
3		1		19
TOTAL		12		57

Grades 1	YES	23	NO	3							
2		20		0							
3		19		0							
TOTAL		63		4							
Grades 1	YES	7	NO	18							
2		7		14							
3		11		8							
TOTAL		25		42							
Grades 1	TOO FAST	20	TOO SLOW	0	SATISFACTORY	6					
2		14		1		8					
3		5		5		7					
TOTAL		40		6		22					
Grades 1	YES	10	NO	10	SOMETIMES	5					
2		7		7		7					
3		9		5		7					
TOTAL		27		22		20					
Grades 1	YES	20	NO	6							
2		17		3							
3		15		4							
TOTAL		54		13							
Grades 1	DRILL	5	EXTRA WORK	12	A.S.	7	S.H.H.	19	OTHER	2	
2		6		9		1		13		6	
3		6		7		2		12		6	
TOTAL		17		28		10		44		15	
Grades 1	B.S.A.	5	D.S.D.	1	A.S.D.	1					
2		4		7		14					
3		7		6		11					
TOTAL		16		6		8					
				20		34					
Grades 1	YES	5	NO	2							
2		6		21							
3		12		15							
TOTAL		23		7							
				45							
Grades 1	YES	2	NO	16							
2		5		7							
3		13		8							
TOTAL		12		31							
		32									

(1) No way to get work that was assigned home, if student does not do it. Student goes to another class after math.

(1) Too much time to solve one little problem. It causes a child to use a whole sheet of paper to solve just 2 or 3 problems.

(6) Children do not know their facts.

(2) Children do not listen or think through problems.

(2) Children do not learn as quickly as with older math.

(19) Very confusing to the slower child.

(8) No manuals.

(12) No workbooks.

(23) No individual books or sheets on grade level.

(15) Levels of state adopted texts are too high.

(5) Lack of grouping.

(8) A great need for more planning time.

(4) Some teachers are not prepared adequately to teach math on the grade level assigned.

(4) No repetition.

(5) Inadequate in-service training.

(5) Classes are to large.

(7) Too much to be covered.

(4) Lack of time for each class or group.

(4) Second grade book is too difficult.

(1) Lack of knowledge by parents.

(1) Lack of math supervisor.

(1) Too easy for grade level. No challenge.

(2) Encourages counting on fingers and other objects.

(2) Too much repetition.

(2) Vocabulary too difficult.

(3) Lack of visual aids.

(7) Grouped according to ability.

(4) Clear perception of the number system.

(4) Greater Cleveland Program is used.

(1) Metropolitan Tests are given.

(9) A more meaningful situation.

(8) Challenges the more able students.

(5) Grouping for mathematics.

(1) Review is given in each lesson of the proceeding lesson.

(4) Teacher awareness of the gaps in math achievement.

(6) Concern of the teacher and desire for in-service training workshops.

(5) Basic math program is good. (laidlaw Series)

(10) Student interest.

(2) More time with slower students.

(3) More matherial.

(4) The program can be related to other subjects in the curriculum.

(1) Homeroom teacher could let child do what needs to be done, if she had him all day.

(6) Flash cards for all teachers. More visual materials in supply room.

(7) More filmstrips on math and a projector for each teacher.

(15) Provide teachers with more workshops to help give the proper teaching methods on his or her grade level.

(3) Provide classes for parents to attend.

(3) Combine some of the new math with more of the old math to give a thorough understanding.

(4) Teacher manuals.

(9) Individual workbooks and sheets on grade level.

(10) Have ability grouping.

(8) Need primer level of state adopted text for <u>first</u> grade.

(13) Smaller classes.

(11) More planning time.

(1) Trips to show child need and use of math.

(1) Geared more to children and their needs.

(34) Use of consumable texts.

(4) Group children in math as in reading.

(1) More adequate records kept of student progress.

(1) An easier way to introduce new math terms.

(1) Extra seatwork.

(1) Greater Cleveland Series.

(1) New text—Addison-Wesley very good.

(MIDDLE GRADES) TEACHER QUESTIONNAIRE

Grades 4	YES	14	NO	4			
5		17		1			
6		13		3			
TOTAL		44		8			

Grades 4	ALWAYS	5	SOMETIMES	10	SELDOM	1	
5		6		10		1	
6		6		8		2	
TOTAL		17		28		4	

Grades 4	YES	12	NO	4			
5		12		4			
6		10		5			
TOTAL		34		13			

Grades 4	YES	17	NO	1			
5		14		4			
6		11		5			
TOTAL		42		10			

Grades 4	YES	4	NO	14			
5		11		7			
6		5		11			
TOTAL		20		32			

Grades 4	YES	2	NO	16			
5		5		13			
6		1		15			
TOTAL		8		44			

Grades 4	YES	16	NO	1			
5		10		7			
6		14		0			
TOTAL		40		8			

Grades 4	YES	2	NO	14			
5		5		13			
6		5		11			
TOTAL		12		38			

Grades 4	YES	13	NO	3			
5		11		6			
6		10		5			
TOTAL		34		14			

Grades 4	YES	7	NO	11					
5		10		8					
6		3		12					
TOTAL		20		31					
Grades 4	TOO FAST	5	TOO SLOW	3	SATISFACTORY	9			
5		3		2		13			
6		5		0		8			
TOTAL		13		5		30			
Grades 4	YES	4	NO	1	SOMETIMES	12			
5		8		3		8			
6		2		5		8			
TOTAL		14		9		28			
Grades 4	YES	17	NO	1					
5		15		2					
6		10		4					
TOTAL		42		7					
Grades 4	DRILL	4	EXTRA WORK	4	A.S.	2	S.W.H.	6	OTHER 7
5		5		6		3		9	8
6		1		7		4		7	3
TOTAL		10		17		9		22	18
Grades 4	B.S.A.	5	D.S.D.	4	A.S.D.	10			
5		5		8		5			
6		4		6		5			
TOTAL		14		18		20			
Grades 4	YES	7	NO	9					
5		11		7					
6		8		8					
TOTAL		26		24					
Grades 4	YES	11	NO	4					
5		10		8					
6		11		5					
TOTAL		32		17					

(15) Not enough math materials in the classroom for each child to use.

(10) New math is not designed to meet the needs of all students. It does not have enough practice work.

(5) Class load to large.

(2) Some children complain of book skipping about too much before they understand.

(21) Children are not getting many fundamentals (thoroughly) before fourth grade. We have to delay and give remedial so long that we are slowed down.

(6) Too much material for one grade.

(2) Not enough teacher aides.

(1) Drill workbook not furnished.

(5) Work too difficult for slow learners.

(1) Vocabulary sometimes cumbersome.

(4) The book is poorly organized.

(3) New math should have begun in grade one and followed through.

(2) No time for individual instruction.

(1) Poor skills in language arts presents a language bearer in math.

(1) We do not have books written for the slower learner.

(2) We need a math in-service course taught by a college professor to help in the teaching methods and materials.

(1) Greater Cleveland Program.

(1) Go back to old math.

(6) Help the children to understand problems better.

(9) Good beginning in grouping this year.

(1) A follow through from grade to grade.

(1) Going to use Greater Cleveland Program.

(2) Use visual aids have available.

(4) Let children progress at their own rate regardless of grade level.

(1) Desire to learn math.

(1) Use math in our daily living.

(1) Enough materials.

(1) Good help in textbook for teacher.

(4) Method of solving problems good.

(2) Background in Algebra.

(9) Good resource for teaching the workings of "word problems."

(3) Smybols and associations based on reasoning.

(1) Our children now understand why 2 + 2 = 4. They are not just shown and told to accept it.

(1) Enrichment exercises and problems are provided for the above average student.

(1) Teachers include a paper in the cumulative folder stating the child's weaknesses, and strengths in math.

(4) Teachers seem to be well qualified to teach math.

(2) Regular amounts of time set aside—1 1/2 hour.

(2) Teachers are sincerely trying.

(1) Slow enough and easy enough for all.

(1) Good terminology.

(2) Children gain a better understanding of math.

(9) Lower class load.

(5) Strive for grouping according to ability within rooms.

(2) Introduce true-to-life situations as much as possible.

(1) Get materials already made up to use for individuals when needed.

(15) More materials to help children.

(4) Easier materials for slower students.

(1) More teacher aides.

(2) Drill in basic facts.

(5) Use more visual aids.

(6) Use materials suited to math grade level of students.

(1) In-service training programs.

(6) Teachers should be organized so each grade level will know how far one teacher has been able to go.

(4) Practice workbooks are needed for more drill.

(1) More materials for accelerated child.

(2) More planning.

(5) Go back to the old books.

(1) Retain children at lower grade level who do not master basic number facts and concepts.

(1) More study on the part of the children.

(1) All textbooks should have answers without answers, children assume that they are right.

(1) Have them show their work to prove their answers.

(4) Have in-service course taught by college professor.

(1) Re-write the whole program.

(1) Greater Cleveland Series.

ESEA TITLE III, MATHEMATICS PROJECT
STUDENT QUESTIONNAIRE

Please circle your grade level. 2 - 3 - 4 - 5 - 6

1. Do you enjoy the new mathematics?

Very Much	1404	(53%)
Fair	898	(34%)
Do Not Like It	345	(13%)

2. What part of the new mathematics do you like best?

Equations	774	(16%)
Number Line	481	(10%)
Number Men	529	(11%)
One to One Correspondence	393	(7%)
Matching	481	(10%)
Expanded Notation	445	(9%)
Problem Solving	1001	(21%)
Sets	444	(9%)
Shapes	207	(4%)
Others	141	(3%)

3. Do you talk about mathematics with parents and other members of your family at home and with other students?

Always	415	(16%)
Sometimes	1667	(64%)
Seldom	540	(20%)

4. Would you be willing for your parents to come to school and observe your mathematics class?

Yes	2068	(79%)
No	547	(21%)

5. Are there enough mathematics materials in your classroom for each student to use?

Yes	1570	(60%)
No	1027	(40%)

6. What would you like to use to help you understand the new mathematics better?

(172)	Workbooks	(17)	Counting clocks
(150)	Number lines	(17)	100's Table chart
(138)	Number men	(17)	Old Math books
(110)	Flash cards	(14)	Counting frames
(51)	Different books	(13)	Play money
(38)	Charts	(13)	Addition cards
(38)	Filmstrips	(11)	Time's table
(33)	Work harder	(10)	A quieter place to study
(22)	Abacus	(10)	Dart Board
(22)	Machines	(8)	More time for math

7. Do you have a good, quiet, well-lighted place at home for study?

Yes	1981	(79%)
No	516	(21%)

8. Do you feel that your mathematics homework helps you better understand the mathematics studied at school?

Yes	2144	(82%)
No	463	(18%)

9. Would you prefer to work in a small mathematics group similar to reading groups or work with the whole class?

Group	1161	(44%)
Whole Class	1457	(56%)

10. How does your teacher help you make up work that has been missed because of illness or for other reasons?

Drill	594	(22%)
Extra Work	629	(24%)
After School	155	(6%)
Send Work Home	1293	(48%)

11. Do you make good grades in mathematics?

Yes	1935	(78%)
No	542	(22%)

12. Will you please list reasons why you like or dislike the new mathematics?

	LIKES		DISLIKES
(237)	It is fun.	(116)	Too hard.
(176)	It is easier.	(63)	Problems too long.
(49)	Better understanding.	(37)	Do not understand.
(48)	You learn more.	(19)	Parents cannot help.
(36)	It is interesting.	(13)	Confusing.
(36)	Problem solving.	(12)	Have too much to do.
(33)	I think better.	(12)	Reading problems.
(31)	I like all math.	(11)	Not anything.
(23)	I listen.	(11)	Do not understand directions.
(18)	It is more understandable.	(5)	Dislike math.
(17)	I study.	(4)	Text not good.
(11)	Sets.	(4)	Too much homework.
(10)	I like to work.	(3)	Too boring.
(10)	Understanding teacher.	(3)	Sets.
(7)	Tells the whys of math.	(2)	Too much repetition.
(7)	Expanded notation.	(2)	Not explained by teachers.
(6)	Good experience.	(1)	Too easy.
(6)	Learn to use numbers.		
(5)	Number line.		
(5)	Not anything.		
(4)	It functions better.		
(3)	Helps education.		

TITLE III, MATHEMATICS PROJECT
JUNIOR HIGH STUDENT QUESTIONNAIRE

Please check the following questions as accurately as you can.

1. Do you like mathematics?

Yes	859	(76%)
No	272	(24%)

2. Do you know enough mathematics to do what your teacher expects you to do?

Yes	786	(71%)
No	319	(29%)

3. Does your math teacher go too fast for you?

Yes	47	(4%)
No	660	(59%)
Sometimes	422	(37%)

4. Does your math teacher go too slowly for you?

Yes	79	(8%)
No	695	(70%)
Sometimes	221	(22%)

5. If you learn slowly, do the faster students hinder you?

Yes	164	(16%)
No	621	(63%)
Sometimes	204	(21%)

6. If you learn rapidly, do the slower student hinder you?

Yes	193	(18%)
No	659	(61%)
Sometimes	233	(21%)

7. Would you prefer being grouped according to ability in mathematics?

Yes	676	(61%)
No	424	(39%)

8. Do you think field trips would be useful in mathematics?

Yes	678	(60%)
No	215	(19%)
Sometimes	243	(21%)

9. Would you like smaller math classes?

Yes	513	(46%)
No	609	(54%)

10. Would you like extra help in mathematics?

Yes	759	(69%)
No	341	(31%)

11. Can you get extra help in mathematics when you need it?

Yes	736	(68%)
No	85	(8%)
Sometimes	264	(24%)

12. Do you study for a grade 484 (45%) or do you study for understanding of the subject 598 (55%) ?

13. Do you understand how your teacher arrives at your math grade?

Yes	835	(77%)
No	256	(23%)

14. Would you work just as hard if you did not get a grade?

Yes	773	(71%)
No	322	(29%)

15. Had you rather have one teacher for all subjects 162 (16%) or different teachers for different subjects 854 (84%) ?

16. Which do you learn the most mathematics from?

Textbook	291	(22%)
Teacher	883	(66%)
Audio visual aids (such as films, filmstrips, overhead projectors, etc.)	88	(6%)
Programmed Instruction	21	(1%)
Workbooks	52	(5%)

17. Are you satisfied with the mathematics program in your school as it is set up now?

Yes	820	(76%)
No	257	(24%)

18. How does the teacher give extra help to you? (Specify ways:)

(154) After school.
(130) Individual help at my desk during class.
(70) Goes over and over material. (Patience)
(36) Answers my questions.
(35) Before School.
(34) Gives examples.
(31) Explains thoroughly.
(30) During study period.
(16) Give tests every week.
(13) Gives extra homework when needed.
(12) Answers questions simply.
(10) Works problems several ways.
(7) Supervises much assignment preparation.
(7) Helps in any way.
(7) Goes over the problem again.
(3) Reviews before tests.
(3) Common sense.
(1) Using the overhead projector.
(1) Explains on board.

19. Write any suggestions below for improving the mathematics program in your school.

(51) Have 3 groups in each room.
(33) Use more audiovisual aids.
(28) Grouping.
(22) Do homework in class.
(17) Provide smaller classes.
(17) Workbooks.
(15) New blackboard.
(14) Longer periods.
(9) Spend more time on math.
(9) New books.
(8) Go back to old math.
(7) More field trips.
(4) Better textbooks.
(3) More individual help.
(3) Extra classes for weaker students.
(3) Less homework.
(1) Students select basic or modern math.
(1) Overhead projectors.
(1) More homework.

TITLE III, MATHEMATICS PROJECT
STUDENT QUESTIONNAIRE

Please circle class level. 9 - 10 - 11 - 12

1. Do you understand why the new mathematics program was put in the school program?

Yes	450	(44%)
No	569	(56%)

2. Do you feel prepared to do the math at your present level?

Yes	715	(70%)
No	301	(30%)

3. Do you think you have been given adequate individual help in the mathematics program?

Enough	330	(32%)
Some	619	(60%)
None	84	(8%)

4. Do you have a suitable place for home study?

Yes	931	(90%)
No	99	(10%)

5. Do you have a time set aside each night for study?

Yes	576	(58%)
No	424	(42%)

6. If answer is "yes" to No. 5 above, check amount of time for study below.

1 Hour	257	(42%)
1 1/2 Hours	150	(24%)
2 Hours	109	(17%)
More	109	(17%)

7. Do you go out on school nights except for school activities?

Frequently	122	(12%)
Occasionally	396	(39%)
Rarely	500	(49%)

8. Do you feel that the mathematics program provides you with the mathematics background necessary for your future?

(A) As a citizen. Yes 597 (73%) No 221 (27%)

(B) In higher education. Yes 666 (78%) No 190 (22%)

(C) Employment after high school. Yes 663 (75%) No 225 (25%)

TITLE III, MATHEMATICS PROJECT
PARENTAL QUESTIONNAIRE

Please circle the grade levels of your children. 1-2-3-4-5-6-7-8

1. Do you have a good understanding of why the new mathematics program was put in the schools?

Very Satisfactory	184	(10%)
Satisfactory	917	(50%)
Unsatisfactory	732	(40%)

2. Do you have an understanding of the mathematics skills and ideas that your child will need to learn as he goes from one grade to the next?

Good	443	(24%)
Fair	842	(45%)
No	566	(31%)

3. Do you feel that your child has made satisfactory progress so far in the new mathematics?

Very Satisfactory	372	(20%)
Average	880	(48%)
Fair	451	(25%)
Poor	123	(7%)

4. Do you think that your child has been given adequate individual help in the new mathematics program?

Enough	545	(30%)
Some	1163	(64%)
None	109	(6%)

5. Do you feel that your child understands the new mathematics on his grade level?

Always	355	(19%)
Sometimes	1320	(73%)
Seldom	123	(7%)
Never	22	(1%)

6. Do you feel that it would be a problem for your child to adjust to the mathematics program in his new school if he transferred from the Carteret County School System?

Great Difficulty	158	(9%)
Average	607	(33%)
No Difficulty	253	(14%)
Do Not Know	816	(44%)

7. Have you attended any classes concerning new mathematics that was designed for parents?

Yes	250	(13%)
No	1605	(87%)

8. Would you, as an interested parent, be willing to attend training sessions for parents in order to help you understand the new mathematics?

Yes	1267	(71%)
No	519	(29%)

9. Does your child have a suitable place at home for study?

Yes	1712	(94%)
No	100	(6%)

10. Do you require your child to do a certain amount of home study each day?

Yes	1405	(76%)
No	89	(5%)
Sometimes	351	(19%)

11. Do you feel that the new mathematics program provides your child/children with the basic mathematics background needed

(A) As an adult citizen? Yes 1215 (82%) No 271 (18%)

(B) In preparation for high school and college? Yes 1189 (82%) No 265 (18%)

12. List three things you like about the new mathematics program.

(70) New math is the best help.
(64) It explains more clearly.
(50) Do not know anything about it.
(45) Children learn more in a shorter period.
(37) Teaches child to think.
(26) All for it, like it.
(22) More simple approach to math.
(22) In the long run, it is easier the old way.
(13) Helps children go into Algebra and later college.
(12) Creates more math interest.
(12) Each child is placed at his learning level.
(6) Seems more advanced.
(5) Math now is Algebra.
(4) Applies to present society.
(4) Children learn more in a shorter period.

13. List three things you do not like about the new mathematics program.

(77) It is difficult for higher grades to understand.
(57) Confuses child.
(57) Do not understand, cannot help.
(42) Long problems, children lose interest.
(42) Parents need training.
(34) Do not like it.
(33) Too complicated.
(18) Number facts should be stressed more.
(9) Better trained teachers for new math.
(9) It does not include skills or facts needed.
(5) Classes too large.
(2) Is this program universal?

14. What one thing do you suggest that the school or teachers do to improve your child's understanding, interest and appreciation for mathematics?

(68) Give more individual attention.
(56) Should go slower.
(35) Better trained teachers.
(24) Would like to go back to simpler proven method.
(24) More workbooks.
(16) New math very confusing.
(12) Need smaller grouping.
(8) My children are enthusiastic about it.
(7) Teachers dislike of new math communicates to child.
(3) Projectors used to teach visual parts of new math.
(2) Need more basic math study.
(1) Teach parents new math.

15. List any other comments that you have for the improvement of the new mathematics program.

(49) Needs to be taught more slowly.
(39) Better trained teachers.
(30) Confused parent, unable to comment.
(30) Teacher needs more planning time.
(26) More individual help.
(24) More small groupings.
(17) What was the reason for new math?
(13) Need to learn number facts.
(12) Have a class for parents.
(10) Parent unable to help.
(6) Do not know much about the program.
(6) Too much homework.
(6) Homework too hard, children cannot do it.
(6) Children cry over math and math grades.
(4) Go back to old system.
(4) Very satisfied.
(4) Children now are being made dependent on objects to aid in simple addition not to mention multiplication and division.
(4) Wish I had had it in school.
(4) Parents need to understand before they critize.

TITLE III, MATHEMATICS PROJECT
PARENTAL QUESTIONNAIRE

Please circle the grade levels of your children. 9 - 10 - 11 - 12

1. Do you have a good understanding of why the new mathematics program was put in the schools?

Yes	217	(48%)
No	239	(52%)

2. Do you feel that your child has made satisfactory progress so far in the new mathematics? (If your answer to No. 1 was "Yes", then answer No. 2.)

Very Satisfactory	64	(16%)
Average	222	(56%)
Fair	82	(21%)
Poor	29	(7%)

3. Do you think that your child has been given adequate individual help in the new mathematics program?

Enough	143	(30%)
Some	277	(58%)
None	58	(12%)

4. Have you attended any classes concerning new mathematics that was designed for parents?

Yes	79	(16%)
No	409	(84%)

5. Would you, as an interested parent, be willing to attend training sessions for parents in order to help you understand the new mathematics?

Yes	242	(51%)
No	236	(49%)

6. Does your child have a suitable place at home for study?

Yes	456	(95%)
No	26	(5%)

7. Do you require your child to do a certain amount of home study each day?

Yes	368	(77%)
No	110	(23%)

8. Do you allow your child to go out on school nights except for school activities?

Yes	120	(25%)
No	357	(75%)

9. Do you feel that the new mathematics program provides your child/ children with the basic mathematics background needed?

(A) As an adult citizen. Yes 244(67%) No 122(33%)

(B) In preparation for higher education. Yes 300(79%) No 82(21%)

PROGRAM DEVELOPMENT PROJECT

MATHEMATICS DIAGNOSTIC TEST FOR TEACHERS

General Information: The purpose of this test is to show what you already know about Mathematic topics to be covered in the In-Service course that is being planned. The test results will be used by the In-Service instructors in designing course content to better meet the needs of teachers in Carteret County. Separate In-Service courses in Mathematics content will be designed for Primary, Middle Grades and Jr. High level teachers.

Please fill in the following blanks before starting the test.

Number Assigned _____ Grade Level Assigned _____

Certificate Status: Kind _____ Class _____

Units of Credit received in In-Service teaching course in Mathematics in last 5 years. _____

Semester hours of credit received from college courses in Mathematics in last 5 years beyond Bachelors degree. _____

Number of years teaching experience. _____

GENERAL INSTRUCTIONS: In most instances you are to fill in a blank; in other cases the form of the response is specified. The time allotted for the test is 80 minutes.

1. What is the base of the numeration system ordinarily used for doing arithmetic in classroom? _____.

2. Is the product of two odd integers always an odd integer? (Circle your answer)

   Yes No

3. The symbols $=$, $\neq$, $<$ and $>$ are useful in comparing the relative magnitude of numbers. In the following set of examples one of the symbols is used incorrectly. Circle the incorrect example, and rewrite it on the line beneath using the symbol correctly.

   $3 \neq 4$ $3 \quad 0$ $7 = 7$ $6 < 5$

   _____ _____ _____ _____

4. Consider the two sets [3,5,7,9] and [4,5,9] . If these sets are operated on, other sets may be obtained. The operation which results in the set [5,9] is written [3,5,7,9] $\cap$ [4,5,9] = [5,9] . The operation is called _____.

   The operation which results in the set [3,4,5,7,9] is written [3,5,7,9] $\cup$ [4,5,9] = [3,4,5,7,9] . The operation is called _____ _____.

5. If one integer is divided by another integer which is not zero, is the result always an integer? (Circle one) Yes No.

6. Circle the irrational number in the following set:

   $\frac{5}{2}$ $\sqrt{1}$ 7 1.3 $\sqrt{2}$ 1.321 $\frac{1}{10}$

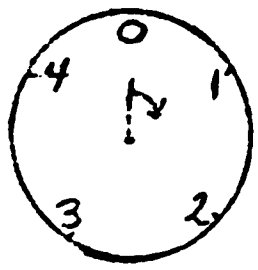
7. Which property of the integers assures us that $7 + 8$ is the same as $8 + 7$?

   _____.

8. Express 6,354 in expanded numeral form on the line below.

   _____.

9. Modular arithmetic is often called "clock" arithmetic. On the following "clock" the hand moves in the direction shown by the arrow.



Starting from zero perform the addition 2 + 4 + 2 = _____ with reference to the clock.

10. Is the set of natural numbers closed with respect to the operation of subtraction? (Circle one) Yes No

Give an example to verify your answer. _____.

11. What geometric figure is formed by the union of two rays which have a common endpoint but which do not lie on the same straight line? _____.

12. Which property of the rational numbers is illustrated by

$$\left(\frac{4}{7} + \frac{2}{3}\right) + \frac{5}{4} = \frac{4}{7} + \left(\frac{2}{3} + \frac{5}{4}\right)$$

13. In writing number sentences, particularly in what is called frame arithmetic, symbols such as △, □, and ○ are used to represent definite but unspecified numbers which are called variables or unknowns. Translate the following verbal sentence into a number sentence in which the symbol stands for the variable: "The sum of three and the variable is greater than seven."

_____,

_____.

14. Which property of the real numbers is illustrated by

$$5\left(7 + \frac{3}{4}\right) = 35 + \frac{15}{4} \quad ?$$

_____.

15. Find the solution to the following stated problem:

John lives between Taborville and Maple City. John lives five times as far from Maple City as from Taborville. The distance between Taborville and Maple City is 103 miles. How many miles is it from the place where John lives to Taborville? (Please show your computations in the space provided.)

16. Simplify the following: (-3) + (-7) = _____.

17. Using the graph paper provided, draw the graph of y = 2x - 1. (Please use the space below for computation.

18. The following is an addition table for base four addition:

+	0	1	2	3
0	0	1	2	3
1	1	2	3	10
2	2	3	10	11
3	3	10	11	12

Perform the following base four addition: 3 + 3 + 1 = _____.

19. In the above table the symbol 10 appears. What does the symbol 10 mean?

_____.

20. On the following lines draw number lines which will illustrate the sets of numbers listed below. Ten entries on each line should be ample for this purpose.

The set of natural numbers _____

The set of real numbers _____

The set of rational numbers _____

The set of integers _____

21. Which of the points listed below would <u>not</u> lie on the graph of

$$Y = X^2 - 2 \ ?$$

You need not draw the graph. (Circle your answer or answers).

(-2, 0) , (0, 0) , (2, 0) , (2, 2)

22. Solve the following system of equations

$$2x + y = 5$$

$$3x - 2y = 4$$

(Please show your computation in the space below).

x = _____, y = _____

23. Express in interval notation the set of x , where x is an element of the reals, for which the following inequality is true.

$$|x - 3| < 5$$

(Please show your computations in the space below.)

---

24. Fine the length of the line segment with end points (2, -3) and 6, 5).

(Please show your computations in the space below.)

25. What is a circle?

RESULTS OF PRE AND POST DIAGNOSTIC TEST FOR TEACHERS

With reference to the diagnostic test reliability coefficient, the Pearson Product-Moment Correlation is 0.859. This reliability coefficient is significant using the t-Test, at the .001 level.

Results of pre and post tests are as follows:

Pre Test	Post Test
Grades 1 thru 3 MEAN= 7.909089E+01 STD DEV=5.44353E+00	Grades 1 thru 3 MEAN= 1.493170E+02 STD DEV= 8.70427E+00
Grades 4 thru 6 MEAN= 9.064814E+01 STD DEV= 6.80952E+00	Grades 4 thru 6 MEAN= 1.724666E+02 STD DEV= 1.20248E+01
Grades 7 thru 8 MEAN= 2.154545E+02 STD DEV= 1.59445E+01	Grades 7 thru 8 MEAN= 2.340000E+02 STD DEV= 1.83105E+01
Grades 1 thru 6 MEAN= 8.429165E+01 STD DEV= 4.28006E+00	Grades 1 thru 6 MEAN= 1.590985E+02 STD DEV= 7.17297E+00
Grades 1 thru 8 MEAN= 9.857142E+01 STD DEV= 7.51202E+00	Grades 1 thru 8 MEAN= 1.616666E+02 STD DEV= 8.93036E+00
Grades 4 thru 8 MEAN= 1.117692E+02 STD DEV= 8.52989E+00	Grades 4 thru 8 MEAN= 1.841080E+02 STD DEV= 1.09419E+01

Mr. David Singleton will, upon completion of analysis of the tests taken by the last group of teachers to receive in-service training, compile a more complete analysis of both the pre and post test for teachers and survey of teacher's opinion. A cursory examination of the mean scores of teacher tests (pre and post) indicates significant gain.

The mean score of the first administration of the survey of teacher's opinion was 71.9, while the mean of second administration was 77.9--an increase of 6.0.

SURVEY OF TEACHERS' OPINION I

Teacher Number _____ Date _____

Grade Level Assigned _____

DIRECTIONS: Read the statements below. Decide whether you strongly agree (SA), agree (AG), are undecided (UND), disagree (DIS), or strongly disagree (SD). Then circle the signle answer corresponding most to your view for each of the statements.

1. I enjoy making teaching aids for use in my mathematics classes.

   SA AG UND DIS SD

2. My principal is very interested in the new programs in mathematics.

   SA AG UND DIS SD

3. I feel confident that I can teach any kind of mathematics, new or old, to the children in my class.

   SA AG UND DIS SD

4. It is important for you to read articles in professional journals about mathematics so that you stay current.

   SA AG UND DIS SD

5. Word problems are frustrating.

   SA AG UND DIS SD

6. Sometimes you feel as though you will never be able to teach the new math.

   SA AG UND DIS SD

7. Younger children generally like new mathematics better than the older ones.

   SA AG UND DIS SD

8. There are too many rules to learn in modern mathematics.

   SA AG UND DIS SD

9. Most children dislike new mathematics.

   SA AG UND DIS SD

10. I want to learn more about modern mathematics.

    SA AG UND DIS SD

11. Drill in addition and multiplication is boring.

SA AG UND DIS SD

12. The new mathematics is more fun to teach than the old program.

SA AG UND DIS SD

13. Discovering the solutions to new mathematics is rewarding.

SA AG UND DIS SD

14. More in-service courses in modern mathematics are needed to prepare elementary school teachers to teach modern mathematics.

SA AG UND DIS SD

15. Mathematics was my favorite subject in college.

SA AG UND DIS SD

16. I don't understand what is wrong with the traditional program in mathematics.

SA AG UND DIS SD

17. One cannot use new mathematics in common everyday usage.

SA AG UND DIS SD

18. I wish that I didn't have to study any more mathematics.

SA AG UND DIS SD

19. There are too many steps needed in modern mathematics in getting the answer to a problem.

SA AG UND DIS SD

20. Mathematics is necessary in daily life.

SA AG UND DIS SD

21. Methods courses in modern mathematics for teachers are of little value in teaching modern mathematics at the elementary level.

SA AG UND DIS SD

22. Modern mathematics is just another fad. In a few years the emphasis will again be on drill on the fundamentals of arithmetic.

SA AG UND DIS SD

23. I am certain that my students will like the modern approach to mathematics.

SA AG UND DIS SD

24. I have always lacked confidence in my mathematical ability.

SA AG UND DIS SD

25. New Math is logical.

SA AG UND DIS SD

26. Modern mathematics is good because it makes you think.

SA AG UND DIS SD

TO: All High School Mathematics Teachers

FROM: M. D. James, Associate Superintendent

DATE: February 6, 1969

SUBJECT: Mathematics In-Service Training

To enable us to plan effectively for the in-service training course for high school teachers, we need your suggestions and recommendations. Please give your response to the questions below as well as making further comments.

A. What do you feel should be included in the in-service course to benefit you most?

_____

_____

_____

_____

B. What approach/s would you suggest the instructor use to obtain maximum participation and benefit?

_____

_____

_____

_____

C. How many contact hours do you feel is needed? _____16 hours (1 unit credit)
_____32 hours (2 units credit)

D. What other suggestions or recommendations do you have?

_____

_____

_____

_____

We are currently planning for the in-service course to take place during the spring, possibly beginning in March. Each participate will be paid $3.50 per contact hour. Certificate renewal credit may be obtained if applicable to your renewal needs.

Please return the form to your department head by Friday, March 14, 1969.

TOPICAL OUTLINE OF PROGRAM OF INSTRUCTION

I.

A. Elementary Set theory

1. Equivalence
2. Number
3. Order
4. Counting
5. Film for methods *

B. Non-metric geometry

1. Point
2. Space
3. Straight line as subset of space
4. Straight line segment
5. Ray
6. Angle
7. Geometric figures in the plane

II.

A. The decimal numeration system

1. Historical development of number systems
2. Position in a numeral
3. Grouping, shorthand, and numerals
4. Place value
5. Standard and extended form of numerals
6. Extend place value to 1/10, 1/100,...
7. Film for methods *

B. Addition and properties of whole numbers

1. Union of sets
2. Addition defined
3. Commutative property
4. Associative property
5. Identify element
6. Film for methods *

III.

A. Multiplication and properties of whole numbers

1. Cross product
2. Union of disjoint equivalent sets
3. Properties of multiplication
   a. Measure of perimeter, area, and volumes
4. The numbers 0 and 1
5. Film for methods *

IV.

A. Subtraction of whole numbers

1. Subtraction defined
2. Properties of subtraction
3. The role of zero
4. Shifting of terms
5. Film for methods *

B. Number line exercises using whole numbers

V.

A. Division of whole numbers

1. Division defined
2. Properties of division
3. Zero and one
4. Film for methods *

B. The set of integers

1. Whole numbers are not closed under subtraction
2. Conventions for direction on integer number line
3. Number line exercise using integers
4. Properties of integers

VI.

A. The set of rational numbers

1. Integers are not closed under division
2. Define rational numbers
3. Number line exercises using rational numbers
4. Properties of rational numbers

B. The set of irrational numbers

1. Define irrational numbers
2. Informally discuss

C. The set of real numbers

1. Define real numbers
2. Number line exercises using real numbers
3. Properties of real numbers

VII

A. Addition and subtraction algorithms for whole numbers

1. Operations and computations in base 10

2. Operations and computations in base 5 and base 2
3. Film for methods *

B. Modular arithmetic

1. Systems without order property
2. Twelve hour clock (properties of arithmetic modulo twelve)
3. Five hour clock (Properties of arithmetic modulo five)

VIII.

A. Multiplication algorithms and the distributive property

1. The distributive property and its use
2. Extend multiplication algorithms and the distributive property to other number bases
3. Film for methods *

IX.

A. Division algorithms

1. Inverse relationship of division and multiplication
2. Film for methods *

B. Key ideas in the whole number system

1. Set
2. Properties of operations
3. Renaming
4. Reasoning and proof
5. Correspondence
6. Order
7. Film for methods *

X.

A. Introduction to graphing

1. Ordered pairs of numbers
2. Relationship between two sets of numbers using two parallel number lines
3. Cartesian coordinate system
4. The graph of a first degree equation
5. The graph of a first degree inequality

COURSE OUTLINE
TEACHING MODERN MATHEMATICS IN THE JR. HIGH SCHOOL

I. Mathematical Systems

- A. Definition of a mathematical system
- B. Properties of a mathematical system
- C. Examples of a mathematical system

II. Sets

- A. Identifying sets
- B. Matching sets
- C. Number
- D. Order
- E. Operations with sets
- F. Properties of these operations

III. System of Whole Numbers

- A. Natural numbers
- B. Addition of whole numbers
- C. Properties of addition
- D. Multiplication of whole numbers
- E. Properties of multiplication
- F. Ordering of whole numbers
- G. Subtraction and division of whole numbers
- H. Properties of subtraction and division
- I. The number line and whole numbers

IV. Numeration Systems

- A. Counting
- B. Symbols
- C. Place value
- D. Expanded form
- E. Converting from one base to another

V. Algorithms for operations in Numeration Systems

VI. Elementary Number Theory

- A. Divisibility
- B. Primes and composites
- C. Greatest common divisor
- D. Least common multiple
- E. Fundamental theorem of arithmetic

VII. System of Integers

- A. Addition defined
- B. Multiplication defined
- C. Properties of the system of integers

D. Order relations for integers
E. Subtraction of integers
F. Division of integers

VIII. Equations and Inequalities

IX. Fractions and Rational Numbers

A. Definition of rational numbers
B. Properties of rational numbers
C. Addition of rational numbers
D. Multiplication of rational numbers
E. Subtraction of rational numbers
F. Division of rational numbers

X. Decimals and real Numbers

A. Terminating decimals
B. Repeating decimals
C. Approximations and rounding
D. Irrational numbers
E. Computing square roots
F. Division of rational numbers

XI. Geometry

A. Non-metric geometry
1. Points
2. Lines and their subsets
3. Planes
4. Space
5. Angles

B. Metric Geometry
1. Congruence
2. Linear measure
3. Closed curves
4. Polygons and special quadrilaterals
5. Perimeter of polygons
6. Two-Dimensional measure
7. Area of two dimensional regions
8. Three dimensional measure
9. Volume of space regions
10. Angular measure

C. Special triangles
1. Similar triangles
2. Right triangles

XII. Some concepts from algebra

A. Ordered pairs as solution sets
B. Functions
C. Systems of equations solved graphically

TO: All High School Mathematics Teachers

FROM: M. D. James

DATE: March 17, 1969

SUBJECT: In-Service Training Program

As a result of the survey made recently, plans have been made to offer the following in-service training program for high school mathematics teachers. The course, entitled "Teaching Algebra and Other Mathematics in the Secondary School" will begin on Wednesday afternoon, March 26, 1969 at 3:45 p.m. at the Beaufort Central School, and will be conducted by Mrs. Wilma Reusch, Math and Chemistry Instructor, East Carteret High School.

Participants will be paid $3.50 per contact hour and may receive two units of certificate renewal credit if applicable for this 32-hour course. The schedule and course outline are as follows:

Schedule

Session	Date	Time
1	March 26	3:45 - 5:45
2	March 29	9:00 - 12:30
3	April 9	3:45 - 5:45
4	April 12	9:00 - 12:30
5	April 16	3:45 - 5:45
6	April 19	9:00 - 12:30
7	April 23	3:45 - 5:45
8	April 26	9:00 - 12:30
9	April 30	3:45 - 5:45
10	May 3	9:00 - 12:30
11	May 7	3:45 - 5:45
12	May 10	9:00 - 12:30

Course Outline	Activity
Session 1	Discussion and Interaction on "The most common deficiencies of Students entering Algebra I."
Session 2	(a) Discussion and Interaction on "The most common deficiencies of students entering Algebra II." (b) Discussion and determination of the most difficult concepts to teachers in Algebra I.
Session 3	Each participant will give a 15 minute teaching demonstration on developing a concept, proving a theorem, or working a problem of the participants choice drawn from the discussions of the two

	previous sessions. <u>All demonstrations will be video-taped.</u>
Session 4	Continuation of demonstrations.
Session 5	Play back video-tape demonstrations, make evaluations and provide for self-criticism.
Session 6	Continuation of activity under Session 5.
Session 7	Discussion and determination of distinction to be made in the concepts to be covered in Algebra I classes with students with average achievement and those with above average achievement.
Sessions 8 & 9	(a) Study the use of the "student learning center concept" as it is applicable to enhance the mathematics instructional program. (East and West Carteret High Schools are currently developing learning centers). (b) Study ways in which teachers must design the instructional program to instigate students "self-directed" activity and usage of the learning center. (c) Evaluate current resource materials in mathematics available for usage in the learning centers and determine additional materials needed. (d) Demonstrations on use of materials and equipment.
Session 10	Study of concepts in Algebra II dependent upon concepts developed in Algebra I.
Session 11	Algebra I - Review.
Session 12	Algebra II - Review

PRIMARY SUB-COMMITTEE
FINAL REPORT

OBJECTIVES - TEACHER

1. Improve teacher knowledge of concepts and skills of new mathematics, thus changing teacher attitude.
2. Alleviate existing need for appropriate mathematics materials.
3. Lower teacher-pupil ratio.
4. More time, in so far as possible, for mathematics instruction.
5. Teachers' awareness of the differences which may exist among students's cultural background.
6. More time for planning.
7. More diagnostic materials with instruction in the interpretation of the results.
8. Administration of achievement test in the spring.
9. Greater individual mathematical achievement.
10. A more comprehensive readiness program.
11. Evaluation and reorganization of the mathematics program.
12. Proper placement of students in the sequential mathematics program.
13. A comprehensive mathematics curriculum to meet the needs of all students.
14. Constructive use of teaching tools and visual aids.
15. Reduction of the non-professional duties performed by teachers.
16. Mutual understanding by teacher and student.

OBJECTIVES - STUDENT

1. Improved attitudes toward instruction.
2. Adequate mathematics materials.
3. An atmosphere at home which makes studying easier.
4. Improved self concepts.

OBJECTIVES - PARENTS

1. Improvement of adult understanding of new Mathematics.
2. Parental awareness of the importance of a home study place.
3. Strengthened communication between the home and the school.

PROBLEMS - TEACHER

1. Teacher preparation for new mathematics is inadequate. This results in a negative attitude toward mathematics by the teachers.

2. Mathematical teaching materials and tools are inadequate.

3. Insufficient provision is made for individual instruction.

4. Insufficient amount of time is allowed for mathematics instruction.

5. Teachers are sometimes unaware of the socio-economic differences which may exist among students in their classes.

6. Inadequate planning time impairs instruction.

7. Diagnostic materials are not provided.

8. Time for the administration of achievement tests needs to be rescheduled.

9. Student mathematics achievement falls below national norms.

10. Many children lack a readiness for formal education.

11. Lack of organization and continuity exists within the mathematics program.

12. Teachers have little knowledge of the achievement level of students when they move from one grade level to the next.

13. Children fail to understand concepts on one level before being moved on to another level.

14. Inadequate use is made of visual aids and other teaching devices.

15. Non-professional duties interfere with instruction.

16. Language presents a barrier to instruction.

PROBLEMS - PARENT

1. Lack of understanding of new mathematics by adults is evidenced.

2. Inadequate atmosphere for home study prevails in many homes.

3. Inadequate communication exists between home and school.

PROBLEMS - STUDENT

1. Parental attitudes affect instruction.

2. Mathematic materials are inadequate.

3. Home study atmosphere is not conducive to learning.

4. Self-concepts need improvement.

STRATEGY - TEACHER

1. To provide in-service training for teachers.

2. To determine the appropriate materials needed by students on all grade levels.

3. To provide for a lower teacher-pupil ratio, which should result in more planning time for teachers.

4. To allow more time for mathematics instruction. A revision of the daily/weekly schedule might be in order.

5. To encourage and make allowances of time for home visitations.

6. To provide more time for planning by the budgeting of time and the wise use of teachers aides.

7. To recommend that diagnostic materials be made available and that instruction in the interpretation of such devices be provided.

8. To recommend to the County Administration that achievement test be given in April.

9. To provide instruction that will increase mathematical achievement according to individual capabilities.

10. To recommend that public school kindergartens be established to improve readiness for formal education.

11. To employ (?) a mathematics coordinator to aid in the organization and implementation of the mathematics program.

12. To prepare and use flow charts which show individual pupil progress.

13. To recommend that a study of the mathematics curriculum be made paying attention to the skills,concepts, goals, objectives on each level. Study should also be given to the pacing of the program.

14. To instruct teachers in the use of mathematical teaching instruments.

15. To reduce non-professional duties performed by teachers by providing aides to assume the clerical and other non-professional duties.

16. To study the problem of language barriers.

STRATEGY - STUDENT

1. To investigate the various possibilities for parent-teacher conferences and for home visitations to help improve attitudes.

2. To supply more visual and manipulative devices for teaching mathematics.

3. To aid the student in realizing the importance of a suitable home-study atmosphere.

4. To create situations and opportunities for developing a better self-concept within each student.

STRATEGY - PARENT

1. To provide appropriate opportunities for adult improvement in mathematics.

2. To encourage parents to provide an atmosphere conducive for learning. This may be done through home visitations, teacher-parent conferences, or through the child.

3. To develop a better teacher-pupil-parent rapport in order to strengthen home-school communication.

MIDDLE GRADES SUB-COMMITTEE
FINAL REPORT

Problems

1. Some teachers have developed a negative attitude toward the modern approach to mathematics.

2. Some parents have negative attitudes toward the use of modern math.

3. Some teachers and parents do not have an understanding of why the modern approach to mathematics became a part of the elementary school work.

4. Some teacher fail to have a clear understanding of the sequential skills to be taught on different grade levels.

5. The idea of new mathematical concepts, vocabulary and procedures are not entirely understood by middle grade teachers.

6. It has been found that classes are to large to give adequate individual help, especially in the area of mathematics.

7. There is a lack of adequate teaching aids to help develop mathematical understanding in the county schools.

8. There is insufficient time in the daily schedule to develop the basic and necessary mathematical skills.

9. The state adopted textbook does not provide sufficient exercises for factual development.

10. There appaars to be too much mathematics instruction in large groupings on the middle grade level.

11. There is an inadequate supply of consumable and non-consumable materials and supplies for mathematic instruction.

12. It has been noted by both parents and teachers that the current state adopted mathematics textbook does not meet the needs of all students.

13. Among the parents there is a lack of parental ability to be able to communicate effectively with the child in mathematical work.

14. It has been noted that students need and show a desire for a variety of material in their mathematical work.

2

Objectives

1. To help develop a positive and improved attitude of mathematics and mathematical instruction through appropriate in-service training on the middle grade level.

2. To help develop a better attitude and a better understanding of the new mathematical approach for the parents of middle grade students.

3. To inform both the teachers and parents of the reasons for and the advantages of the modern approach to mathematics.

4. To inform teachers on the middle grade level of the skills to be introduced, developed, and reviewed in mathematical work.

5. The teacher should become aware of and familiar with the basic concepts and skills of the modern approach to mathematics.

6. To recommend smaller classes and thus a lower teacher-pupil ratio to allow for more individual and small group instruction.

7. To provide more grade group or individual teaching aids for middle grade math instruction.

8. To try to find the amount of required time in the teaching schedule to allow for the development of mathematical skills.

9. To provide additional material to supplement the mathematics textbook.

10. To encourage groupings for the mathematical instruction on the middle grade level.

11. To recommend and provide more materials of both the consumable and non-consumable nature for mathematical work.

12. To provide supplementary materials to strengthen the present textbook.

13. To better inform the parents of facts and procedures being developed and used in present day mathematics.

14. To provide a variety of material to meet the individual needs in mathematical work.

Strategy

1. Help to improve attitudes and instruction by the following methods: in-service course, mathematic bulletins, films, visitations to other schools and group meetings.

2. Adult course for the parents to attend; grade explanations of skills to be taught during the year; memographed information sheets; parental involvement through visitations.

3. To explain reasons for and the advantages of the modern approach through established guidelines, group meetings, and printed leaflets.

4. Scope and sequence should be devised for middle grade mathematics.

5. In-service training for middle grade teachers.

6. To continue to advocate smaller classes; determine if grade grouping and room groupings would help to improve the situation.

7. Determine the kind of aids to be purchased by an appropriate committee and those that could be made by the teacher.

8. A committee should explore the present schedule and recommend procedures to create additional time for mathematical work.

9. A committee should study and recommend appropriate materials to supplement the present textbook.

10. Establish procedures and guidelines for effective groupings.

11. Resource center equipped with necessary materials.

12. Develop resource center of purchased and individually designed materials to supplement the textbook.

13. Inform the parents through adult course, school visitations, and memographed informational sheets.

14. Develop a school resource center.

JUNIOR HIGH SCHOOL COMMITTEE
FINAL REPORT

1. Determine during summer activities how best to meet individual differences of students in order to raise achievement level of students of mathematics.

2. A resource center be made available which would contain audio-visual materials, supplementary materials, and all pertinent materials to mathematics.

3. An in-service training course be held for all Junior High Mathematics teachers.

4. Lines of communication be kept open between grade levels, school, school system, community, etc.

5. Flow charts to indicate skills and concepts mastered at each grade level be developed.

HIGH SCHOOL COMMITTEE
FINAL REPORT

1. Review the present mathematics curriculum for grades 9-12 with the following suggested curriculum to be explored:

   The sequence of mathematics would vary according to capability and progress of students. Ninth grade students would be placed in Algebra I, Ia, or Ib (2100, 2120, 2110). Where the students would be placed upon completion of the above suggested courses would depend upon their progress. Provided achievement is satisfactory, students completing Algebra I and Ia would theoretically advance into Geometry. Following geometry, the students would complete Algebra II, Algebra III in summer school and Trigonometry and Advanced Mathematics in the 12th grade.

   A second tract for students who cannot attend summer school would provide Algebra III in the first semester of the senior year and Advanced Algebra the second semester. In this sequence, the students would not take the semester of trigonometry available in the first tract.

   The Mathematics Committee feels that a lack of Algebra III which now exists creates problems for the student entering trigonometry.

   For a graphic picture of the possible suggested sequences consult the following diagram:

2. Resource center in Junior and Senior High Schools equipped with programmed and other pertinent materials. Explore the possibility of video-taped in the teaching of mathematics.

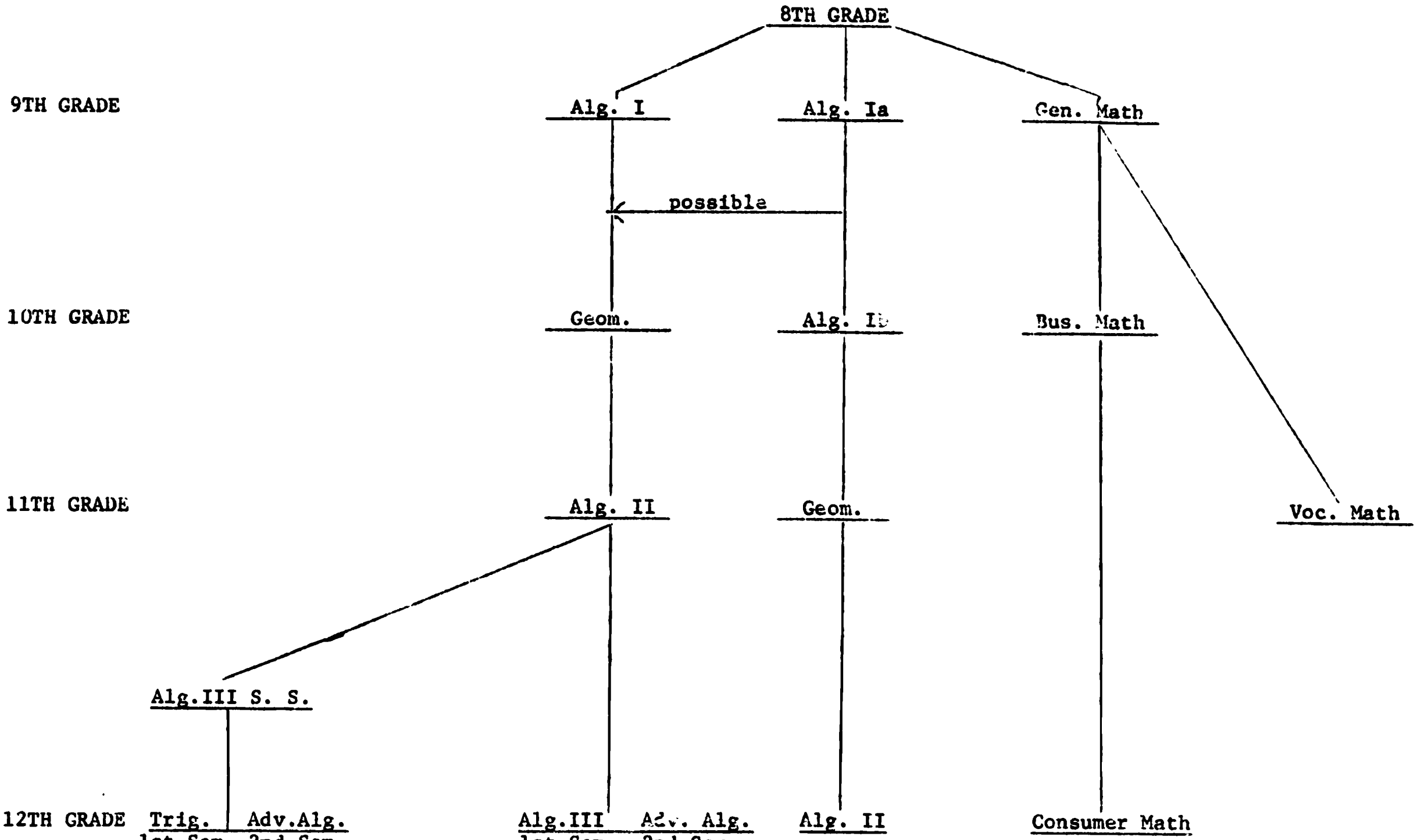
3. In-service training for teachers in the areas of basic mathematics and Algebra be provided on the local level.

4. College courses be provided for teachers of advanced mathematics and Trigonometry on the college level.

5. Explore possibility of offering Algebra I or an introductory Algebra to selected 8th grade students, maybe in 5 years.

   Explore the possibility of placing more emphasis on basic mathematical skills in grades 4-6, highly recommended in process.

6. Explore possibility of employing full time Mathematic Coordinator.


8TH GRADE
9TH GRADE
Alg. I
Alg. Ia
Gen. Math
possible
10TH GRADE
Geom.
Alg. Ib
Bus. Math
Voc. Math
11TH GRADE
Alg. II
Geom.
Alg.III S. S.
12TH GRADE
Trig.
Adv.Alg.
1st Sem.
2nd Sem.
Alg.III
Adv. Alg.
1st Sem.
2nd Sem.
Alg. II
Consumer Math

PROJECTED ACTIVITIES

I. Objectives of the Project

During the second fiscal period of this project, activities will be related to the objectives which were stated in the original proposal. These objectives are as follows:

A. To organize curriculum and instructional committees on Mathematics and Social Studies composed of teachers, principals, supervisors, college consultants and specialists to make a thorough investigation of our curricula and instructional programs in these two areas.

B. To develop an in-service training program designed specifically to meet the needs of our teachers and our program in Mathematics and Social Studies.

C. To evaluate present curriculum and instructional media and to select and design, if necessary, media to meet specifically the instructional needs of our school system in the area of Mathematics and Social Studies.

D. To help teachers become more competent in meeting the needs of all students.

E. To increase our county-wide student achievement in Mathematics and Social Studies skills.

F. To instill within each student a better appreciation for good citizenship, democratic principles, patriotism and a good human value system.

An additional objective in the area of social studies seems to appear to need to be stated more succinctly. In Carteret County, as well

as in other schools throughout the United States, there is an awareness of the necessity to reevaluate the place of and instruction in the area of Afro-American history. This additional objective for purposes of this project will be stated thusly:

> To evaluate present curriculum instruction, materials, media, etc. currently existing in Carteret County Schools in the area of Afro-American history and to survey what is being done and advisable in schools elsewhere; further, to recommend what should be done in our schools.

Major interest during the second fiscal period of the project will be directed toward the area of Social Studies; however, the main thrust of the evaluation of the Mathematics portion of the project will be implemented and recommendations of the Mathematics committees will be carried out.

II. Comments on first fiscal periods as it relates to evaluation to date and future procedures for social studies.

Evaluation, up to this point, has been only in the area of in-service training for teachers and attitudinal changes on their part. Statistical information is included at the end of Projected Activities which indicates that, according to pre and post tests and attitudinal scales for teachers, there was substantial improvement in teacher understanding of mathematical skills and concepts as well as improvement in attitude towards the teaching of Mathematics.

The procedures for investigation of the Mathematics program seemed to have worked well and will be followed in the approach to Social Studies.

A. Planning Phase - The same basic structure will be employed for investigation of the Social Studies as was stated in the original proposal. The second phase, with the exception of a committee already working on Afro-American history, will begin its activities September 1, 1969 and should be completed by February, 1970.

B. The In-Service Training Phase in Social Studies will begin in February, 1970 and terminate in June of 1970. It is anticipated that the following classes will need to be established for from sixteen (16) to thirty-two (32) contact hours.

1. It is anticipated that two (2) in-service classes for sixty-five (65) primary teachers.
2. Two (2) in-service training classes for sixty (60) grammar grade teachers.
3. One (1) in-service training class for twenty (20) junior high school teachers.
4. One (1) in-service training class for twenty-four (24) high school teachers.

Some teachers may not need to be involved in the full thirty (30) hours. Teachers with "A" or "G" teaching certificates may use the in-service courses for certificate renewal.

The in-service training program will be developed and implemented in the same manner as stated in the original proposal. This procedure worked quite successfully for Mathematics.

IV. Emphasis

It is felt by the staff of Carteret County Schools that a full

investigation has proved most valuable in the area of Mathematics and will be equally so in Social Studies. The structure of the Committee and Sub-Committee for Social Studies will be basically the same as provided for in the original proposal. In-service training also should contribute greatly to the instruction of students in this area.

V. Timetable:

A. Investigation - September 1, 1969 to February 1, 1970

B. In-service - February 1, 1970 to June 1, 1970

C. Implementation - June 1, 1970 to February 28, 1971

VI. Evaluation

A. Mathematics

1. The pre and post tests and attitudinal surveys for teachers have been discussed previously in this application.

2. The hypothesis that in-service training for teachers will reflect in higher achievement scores by their students is being and will be tested by the use of the Iowa Test of Basic Skills. A pre and post test was given for the past school year prior to initiation of in-service training for teachers and a pre and post test will be administered to students for the school year 1969-1970. A control group consisting of students taught by teachers (new teachers in Carteret County Schools) not having taken the in-service training will be established.

3. Opinionnaires concerning all phases of the program to date will be administered to participants concerning committee work, in-service training, etc.

4. Six committees (Primary, Middle Grade, Junior High, High School, Educable and Social Studies) are currently involved, with assistance from the State Department of Public Instruction, in preparing and evaluating curricula and materials and media in the area of Mathematics and Afro-American history. Their work will be appraised by all teachers during the up-coming school year.

B. Social Studies

1. A pre and post survey test in social study skills only will be administered to teachers.

2. In the event that new units of study, courses of study or co-curricular activities in the area of Social Studies are developed, they will be submitted to personnel of the State Department of Public Instruction for evaluation and approval. The effectiveness of these will be determined by staff, pupil, and parental opinionnaires.

3. As the subject area of social studies continues to be strengthened, appropriate tests will be administered to each category of students on a pre and post test basis.

IN-SERVICE TRAINING

The in-service training program for teachers will be unique in that the course of study will be tailor-made for Carteret County teachers. Our consultants, in conjunction with the Curriculum and Instruction Committee and the participation of the total teaching staff, will assess the specific in-service education needs of our teachers in knowledge of the subject, techniques of teaching, methodology and utilization of curriculum materials and develop the course content accordingly. It is expected that the "knowledge of the subject" portion of the in-service program will begin in February, 1969.

EVALUATION

Mr. David G. Singleton, Mathematics Instructor, Saint Andrews Presbyterian College, Laurinburg, North Carolina will be conducting the evaluation of the mathematics phase of the project. The evaluation will be done as Mr. Singleton's dissertation for the doctoral degree from Duke University. Dr. W. G. Katzenmeyer, Professor of Research and Statistics, and Dr. Thomas Reynolds, Professor of Mathematics, both at Duke University will work with Mr. Singleton in coordinating the evaluation.

Students will be tested in the fall and in the spring of the 1968-69 - 1969-70, and 1970-71 school year. The rate of growth between the fall testing and spring testing will be determined for each of the three year each I. Q. quartile.

In the in-service training program for teachers pre and post instruments will be used to determine the extent to which the objectives of the courses are met. Since the in-service training program will be conducted during the spring and summer of 1969, it is expected that our teacher training program will enhance the rate of growth of the students between the fall and spring testing of 1969-70 and 1970-71.

The rate of student growth between fall and spring testing 1968-69 (prior to in-service training, curriculum revision and reorganization) will be compared with the rate of student growth between fall and spring testing during the 1969-70 and 1970-71 school year.

The classes of those teachers not involved in the in-service training (those teachers who join the Carteret County Schools staff after the in-service program or for other reasons) will serve as the control group. The tests results of the control group will be compared with the results of the other classes.

An attempt will be made to determine the degree of correlation between the extent to which the in-service objectives were met and the increased rate of student growth between the fall and spring testing.

CURRICULUM LIBRARY

A system-wide curriculum library is now being established. A comprehensive collection of professional books, materials and magazines in mathematics and social studies will be available for use by the curriculum and instruction committee and the total staff. The curriculum library will contain a wide variety of curriculum materials for study, preview, and evaluation.

VIDEO TAPE TO BE USED

Beginning second semester, the use of video tape instruction in mathematics will be tested at the Beaufort Central School. The mathematics teachers will program mathematics classes via video tape in the afternoon for use the next day. This will enable the math teacher to program the T. V. classes on a current basis, permitting the day to day feedback from students to dictate the programming of the classes.

Demonstration classes will be video taped in other schools for use in the in-service training sessions on techniques of teaching, organization for instruction, and utilization of curriculum materials.

VISITS AND OBSERVATIONS

This project provides for visitation and observation of mathematics programs in other school systems that are innovative in nature and seem to have much promise. The high school sub-committee visited the Parkland Senior High School on October 17 to observe their modular schedule approach, resource learning centers and programmed instruction in mathematics.

On December 4 the Junior High Sub-Committee will visit the Lexington Middle School to observe their modular schedule and work-week approach appropriate to the functional ability of the students in mathematics.

The middle grades sub-committee will visit three elementary schools in Greensboro on December 12 to observe three different innovative approaches to teaching mathematics in grades 4-6.

The Individually Prescribed Instruction (IPI) Program will be observed by the primary sub-committee in either Charlotte or Reidsville when the program is ready for observation.

GREATER CLEVELAND MATH PROGRAM IS FIELD TESTED

The Greater Cleveland Math Program is being field tested in the Beaufort Elementary School and the White Oak Elementary School for adaptability of usage in conjunction with our basal state adopted text books to individualize the instructional program in mathematics. The materials are filed centrally and pulled daily by teacher aides as prescribed by the teachers. At this time the program seems to have much promise. A complete evaluation will be made at the end of the 1968-69 school year.

VOL. I, NO. I FALL, 1968

OVERVIEW

"Program Development and In-Service Training for the Improvement of Curriculum, Organization and Instruction" was funded by ESEA Title III in April in the amount of $179,000 for a three-year period. This project is designed to establish a system-wide curriculum development and instructional improvement effort in mathematics and social studies with mathematics receiving attention during the first eighteen months. A curriculum and instruction committee of 40 teachers, principals and supervisors, and 4 outstanding consultants began functioning in July. The committee is sub-divided into 5 sub-committees, primary, middle grades, Junior High, high school and special education. A layman advisory committee representative from each school will attend and participate in general meetings of the committee.

The Curriculum and Instruction Committee will evaluate, study and make recommendations relative to the curriculum structure, pupil progression through the curriculum structure, curriculum materials and media, organization for instruction, in-service training needs of teachers, knowledge of pupils by teachers and reporting pupil progress.

The majority of the funds provided by this project will be used to pay teachers in addition to their regular salary for participation in curriculum planning and in-service training during after-school hours.

SYSTEMS ANALYSIS APPROACH USED

On July 17-19 the Curriculum and Instruction Committee had a three-day workshop on "The Systems Analysis Approach to Curriculum Development" under the direction of Dr. Leslee Bishop, Professor of Curriculum, University of Georgia. With the assistance of Dr. Bishop, the committee adopted a six-step system to be used in this project as follows:

1. SITUATION: What general factors (situations, conditions) significantly affect any improvements we wish to make?
2. PROBLEMS: What are the basic educational problems regarding mathematics?
3. OBJECTIVES: What specific (behavioral) objectives or outcomes do we wish to achieve?
4. RESOURCES: What resources do we have that can help us achieve our objectives?
5. STRATEGY: What strategy or plan can we propose to meet our objectives?
6. EVALUATION: What evaluation procedures, instruments, etc. would be most appropriate?

OUR CONSULTANTS

Dr. Thomas Reynolds, Professor of Mathematics, Duke University, Serving as General Consultant

Dr. Leslee Bishop, Professor of Curriculum, University of Georgia Serving as Consultant in Curriculum Development

Dr. Katharine Hodgin, Professor of Mathematics Education, East Carolina University, Serving as Junior High Consultant

Mrs. Betty Stike, Department of Education, Wilmington College Serving as Primary Consultant

Mr. David G. Singleton, Mathematics Department, Saint Andrews Presbyterian College, Serving as Coordinator of Evaluation

FOR FURTHER INFORMATION

Contact: M. D. James, Associate Superintendent
Carteret County Schools
Beaufort, North Carolina 28516

VOL. I, NO. 2 SPRING, 1969

MATHEMATICS IN-SERVICE TRAINING FOR TEACHERS UNDERWAY

Five modern mathematics in-service courses for teachers are now underway accomodating 125 teachers, grades 1-12. The five courses include two classes for primary teachers, one for teachers in grades 4-6, one for teachers in grades 7 & 8, and one for high school teachers. All classes are meeting for 32 contact hours except the high school group which will meet for only 16 contact hours. Our instructors for the classes are as follows:

Primary:	Dr. Katye Sowell, Professor of Mathematics Education East Carolina University Miss Eloise Scott, Instructor, Mathematics Education Wilmington College
Middle Grades:	Dr. Olan Petty, Professor, School of Education Duke University
7th & 8th Grades:	Dr. Katherine Hodgin, Professor, Mathematics Education East Carolina University
High School:	Mrs. Wilma Reusch, Advanced Math and Chemistry Instructor, East Carteret High School

IN-SERVICE COURSES DESIGNED TO MEET THE NEEDS OF TEACHERS

The in-service course outlines were designed on the basis of the results of a diagnostic modern mathematics test for teachers and recommendations of our curriculum and instruction study committee. In late February, a planning session was held at St. Andrews Presbyterian College to design the courses of study. All of the in-service instructors met with our project staff and Mr. David Singleton who is directing the evaluation of the project.

TEACHERS EVALUATE THEIR OWN TEACHING ON VIDEO TAPE

Mathematics teachers involved in the in-service program for high school teachers are being video-taped while teaching demonstration classes involving a concept found to be difficult for students to understand. All demonstration classes are replayed for evaluation and constructive criticism by the teacher himself, as well as the total class. The video demonstrations found to be of good quality will be filed in our video-tape library for future reference.

CURRICULUM MATERIALS TO BE SELECTED

During this summer a committee of teachers will work with our supervisors, audio-visual director, and consultants to select curriculum materials to meet needs as stated by our Curriculum and Instruction Committee. As recommended by the committee, major emphasis will be placed upon evaluating and obtaining materials conducive to individualized and small group instruction.

STUDENT FLOW CHARTS TO BE DESIGNED

A committee of teachers will work with our supervisors and consultants, beginning this summer, to develop student flow charts in mathematics for the first eight years of school. Upon completion of the charts, our mathematics curriculum and instructional program will move to a "continuous progress" program. Hopefully, a carbon copy of the student's flow chart will serve as the progress report instead of our traditional grading system. This, of course, will first begin as a pilot program.

In conjunction with the development of flow charts, a curriculum guide will be designed for teachers on the use of the flow charts, methods and techniques appropriate for individualizing instruction and use of curriculum materials and other resources in meeting the individual needs of all students.

FOR FURTHER INFORMATION

Contact: Mrs. Shirley Babcock, Director
Program Development Project
Drawer 29
Beaufort, North Carolina 28516