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A comparative investigation of first and fourth quartile eighth grade students at Colonial Heights Junior High School

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A COMPARATIVE INVESTIGATION OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS AT COLONIAL HEIGHTS JUNIOR HIGH SCHOOL

A Thesis

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Master of Science in Education

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by

Elbert Lloyd Pugh, Jr.

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APPROVAL SHEET

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CHAPTER I

INTRODUCTION

During the first semester, 1964-1965, at Colonial Heights Junior High School, it was noted that one group of approximately the same students made honor roll each of the three six weeks periods and another group of approximately the same students failed one or more subjects each of the three six weeks periods. The writer has discovered no conclusive attempt to ascertain why this condition existed; only assumptions based on conjecture had been made.

STATEMENT OF THE PROBLEM

It was the purpose of this study (1) to compare the two groups, in certain specific characteristics and abilities; (2) to show that a difference existed between the two groups in such areas as: vital statistics, home environment, school record, intelligence, reading ability, and aptitude; (3) to present statistical evidence that a significant difference did exist between the two groups; and (4) to draw conclusions based upon the data, which would serve as a basis for decision-making at the junior high level.

JUSTIFICATION OF THE STUDY

Individual differences must be taken into account when school personnel plan the curriculum program for a school division. This planning for individual differences must be based upon valid evidence and not on opinions. By showing that the two groups were alike in some areas, planning for the specific grade level could be basically the same for both groups. By offering evidence that the two groups differed significantly in other areas, school personnel can provide subjects and courses that will meet the individual student's needs, interests, and abilities. When this approach is adopted, decision-making can be based upon valid evidence and not on chance or what happens to be popular at the time.

PURPOSE OF THE STUDY

Were differences between groups of students real or imaginary? In this study an attempt was made to employ techniques which would prove that the two samples selected not only differed but differed significantly.

OBJECTIVES OF THE STUDY

The objectives of this study were as follows:

1. To identify the "slow achieving" student.
2. To show whether "slow achieving" students clust-

er geographically in Colonial Heights.

3. To show whether natives of Colonial Heights are better students than non-natives.

4. To show whether "slow achievers" are often behavior problems.

5. To show whether there is a need for a remedial reading program in Colonial Heights Junior High.

6. To show whether homogeneous grouping is advantageous.

7. To show whether "slow achieving" students can make better progress in a program that is basically nonverbal.

LIMITATIONS OF THE STUDY

This study was not all conclusive. There were factors which could not be measured because the ordinary public school is not equipped with the measuring instruments or the qualified personnel.

The two samples in the study differed, but the difference could have been attributed to emotional factors present in the "slow achieving" sample. These factors were not measured.

No testing instrument has been devised which will measure accurately individual motivation. Since the selection of samples for this study were based on academic achivement, there were individuals in the "slow achieving" sample who might not have been in the study had they been properly

motivated. Therefore, one is not sure that all of the subjects in the two samples were equally motivated.

The two samples that were used in the study were selected from an eighth grade class of two-hundred and one students. With the class being limited in number this also limited the samples.

The eighth grade was selected as the sample grade and the assumption made that these samples were typical of other eighth grades. Since samples of other eighth grades were not drawn, one has to hypothesize that the sample means of this study will approximate other eighth graders.

The test scores selected to be used were those required by the Virginia State Department of Education, all tests being group administered tests. Had individual tests been given to the subjects in the two samples, the results might have differed.

Since the selection of subjects for this study was based on an academic average, those students having different teachers but the same subjects did not receive grades based on equivalent judgment. Therefore, the "teacher difference" factor may have influenced the subjects in the samples and the results.

DEFINITION OF TERMS

The First Quartile was interpreted as meaning those students who scored in academic achievement from the first to the twenty-fifth percentile.

The Fourth Quartile was interpreted as meaning those students who scored in academic achievement from the seventy-fifth to the one-hundredth percentile.

METHOD OF STUDY

In order to achieve the objectives which have been determined for this study, the two samples had to be compared directly with one another. This comparison, however, did not take on any real meaning until the data obtained for each sample were treated with the appropriate statistical procedure. Once this was done, conclusions based on the results could be drawn and the difference or non-difference of each factor or category could be noted.

SURVEY OF THE LITERATURE

Identification of the slow learner. The difference of actual slow learners from other children may be in degree rather than in kind, with variations existing among all people. Murray and Doris Lee in their study of the child and his development stated:

> It is more difficult to recognize the slow learner than to recognize the gifted child. While the gifted child attracts us because he accomplishes rather special things, the slow learner may also be identified through observations of all the things he doesn't do that we expect of him. At first glance he appears just like other children in his group, and he often gets tagged "lazy" or "poorly motivated."[1]

The slow learner cannot be expected to achieve as well as average children. Even additional effort often does not make the difference, although it is not uncommon for the highly motivated slow learner to achieve better than many children of average ability. The major objective in working with slow learners is: To aid the slow learner to recognize his limitations and his strengths, and to develop to the limit of his ability.[2]

Willard Abraham, in his study of the slow learner, listed some of the differences between slow learners and those children who were considered intellectually normal as follows:

1. Short attention and interest span
2. Limited imagination and creative thinking
3. Academic retardation, especially in reading
4. Absence or easy loss of self-confidence
5. Gullibility, shyness, and submissiveness
6. Low power of retention and memory
7. Inability to do abstract thinking

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[1]J. Murray Lee and Doris May Lee, The Child and His Development (New York: Appleton-Century-Cofts, Inc., 1958), p. 326.

[2]Walter Burke Barbe, The Exceptional Child (Washington: The Center for Applied Research in Education, 1963), p. 13.

8. Inability to handle symbols
9. Failure to transfer ideas
10. Low levels of initiative, vocabulary, concentration, reasoning, defining, discriminating, and analyzing
11. Action based on impulse[3]

Ann Westlow in her study of possible causes of underachievement found that the students who made up this group were: absent frequently, below average in reading ability, experienced emotional disturbances, and was influenced less by the home environment.[4]

Behavior of the slow learner. Adjustment of the slow learner to the junior high level is particularly difficult. Having to cope with many different teachers and unrelated subjects and expected to operate at grade level, he experiences many frustrations. Barbe reported that the slow learner makes up the greatest percentage of school dropouts and is the behavior problem in the classroom.[5] Louis Brandes made a study of the various rule infractions in forty-six

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[3]Willare Abraham, The Slow Learner (New York: The Center for Applied Research in Education, 1964), p. 18.

[4]Ann Northinghan Westlow, "Possible Causes of Under-Achievement in the Eight Grade of a Large Urban High School for the Year 1962-1963" (unpublished Master's thesis, The University of Richmond, 1964), p. 85.

[5]Barbe, op. cit., p. 66.

schools and found the following infractions in order of frequency:

1. Tardiness
2. Truancy
3. Rule violations
4. Unapproved behavior
5. Classroom disturbance
6. Leaving school without permission
7. Smoking
8. Make-up
9. Forged notes
10. Poor citizenship
11. Coming to class without books
12. Disrespect for teachers[6]

Reading and the slow learner. The child who had difficulty with reading will not necessarily have his problems solved by giving him more to read. The cause must be discovered and removed or at least altered. Although students limited in reading speed and comprehension are frequently slow learners, this is not a necessary relationship. Because reading problems stem from a variety of sources, one can not assume that an intellectual handicap is the sole cause. Willard Abraham, from his study, asserted that a student behind in reading skills is not always a laggard

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[6]Louis Grant Brandes, "Detention as a Disciplinary Measure, "The Bulletin of the National Association of Secondary School Principals, 45:129, October, 1961

in other subject areas, although there is often a close relationship; improved reading ability frequently brings with it a lower number of failures in school subjects.[7]

It has often been stated that, in the area of reading there are no special methods necessary for teaching slow learners. Even more than other children, however, an orderly and systematic approach is necessary with special attention to: reading readiness, building vocabulary and methods of word recognitions, setting up individual standards of expectancy, and selection of the reading materials.[8] Meaningful use of phonics, auditory and visual activities, mechanical aids, basic reading series, supplementary reading materials are all important parts of the reading program.

Grouping of the slow learner. G. Orville Johnson, in his study of the slow learner, concluded that children should be grouped because of similarity of characteristics and educational needs; however, integration should take place where the slow learner can perform on a relatively equal basis.[9] Lotar V. Stahlecker, from his study of slow learners,

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[7]Abraham, op.cit., p. 66.

[8]Ibid., p. 65.

[9]Orville G. Johnson, Education for the Slow Learner (Englewood Cliffs, New Jersey, Prestice Hall, 1963), p. 208.

not only supported homogeneous grouping but special adjustment of content in the various subjects of the curriculum.[10] This adjustment would provide opportunity for learning the functional skill and knowledge and make possible the completion of subjects as basic graduation requirements.[11] Willard Abraham concluded his study of grouping and the slow learner by offering the following reasons in support of grouping: (1) better possibility of achieving and of being accepted and respected by classmates; (2) easier to adopt the educational program to the slow learner; and (3) reduces cost due to pupil failure.[12]

Program for the slow learner. Laverne Carmical, in a study of the characteristics of achievers and underachievers, found that achievers were superior in aptitude on verbal and numerical reasoning as measured by the Differential Aptitude Test.[13] This finding raised the question regarding the

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[10]Lotar V. Stahlecker, "High School Graduation for Slow Learners," Peabody Journal of Education, 42: 169, November, 1964.

[11]Ibid.

[12]Abraham, op. cit., p. 63.

[13]Laverne Carmical, "Characteristics of Achievers and Under-achievers of a Large Senior High School, "The Personnel and Guidance Journal, 53:393, December, 1964.

emphasis placed on verbal ability in most courses and subjects. The title of a course or subject serves to categorize it into broad areas of study and is not necessarily a guide for specific content to be taught. The slow learner, if he is to make satisfactory progress in school, needs the content adjusted to his intelligence, interest, achievements, and needs.[14] Through sound educational programs for slow searners, a condition is established for strengthening school retention until such times as pupils are prepared for leaving. When this approach is adopted, society will receive maximum benefits from holding the slow learner longer in school.[15]

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[14]Stahlecker, op. cit., p. 169.

[15]Ibid., p. 172.

CHAPTER II

RESEARCH METHODOLOGY AND SOURCE OF DATA

The basic purpose of research is to discover the influence of one or more factors upon a condition, group, or situation. It was the purpose of this chapter to explain the procedure used in gathering the data and the statistical treatment of these data.

SELECTION OF SAMPLES

Following the logic of this study, the selection of subjects for the two samples was not made in a random order, but on the basis of grade point average. Since the purpose of this study was to determine the difference or non-difference between the "poor performance" student and the "best performance" student, and since random selection from the entire eighth grade population was not feasible, other criteria were needed.

The selection of subjects for the two samples was based on the following criteria:

1. Did the subject fail one or more classes the First Semester?
2. Did the student have a "B" average or better the First Semester?

On the basis of these criteria two samples of fifty subjects in each were drawn. Since the total eighth grade population consisted of two-hundred and one students, each sample was approximately one-fourth of the entire eighth grade population. It was decided to call the sample composed of the "poor performance" students the First Quartile and the sample composed of the "best performance" students the Fourth Quartile. These names were selected because the subjects in the samples scored in grade point average from the first to the twenty-fifth percentile and from the seventy-fifth to the one-hundredth percentile.

DEVELOPMENT OF BIOGRAPHICAL QUESTIONNAIRE

After the selection of the subjects for the two samples, the next step was the development of a biographical questionnaire consisting of questions which would give pertinent information about the individuals. Criteria were established to include three areas of the student's life. They were as follows: (1) vital statistics, (2) home environment. and (3) school record.

The selection of the area of vital statistics was important because data pertaining to such items as: address, age, and place of birth would give information about the individuals in the study.

Home environment was selected as a category because these

data did not pertain directly to the subjects themselves but had an influence directly upon them. This area included such items as family size, father's occupation, and father's education.

The category of school record was selected because this source provided data about the progress of the individuals in a relatively controlled environment. This category included such items as grades failed, social promotions, demerits, standardized test scores, and others. A sample of the Biographical Data Questionnaire is included in Appendix A, page 74.

INTERVIEW

Having selected the items for the Biographical Questionnaire, the author proceeded to gather pertinent information. This information was of two types: (1) that which was known to the student(e.g., address, age, and father's occupation); and (2) that which was not generally known by the student, (e.g., social promotion and intelligence test scores).

It was decided that the best way to gather the first type of information was by a personal interview. Each of the one-hundred subjects in the two samples was called to the office either before the beginning of school in the morning or immediately after school in the afternoon. Students were informed

that this information was necessary to make up new permanent records. Using the same series of questions the investigator interviewed each student.

CUMULATIVE RECORD

The second type of information was obtained from the student's cumulative record. Each cumulative record was carefully checked and the needed information was transferred to the Biographical Data Sheet.

Teacher comments from grades one through seven had to be read in order to determine whether the student had ever been socially promoted. The marks of each student from grades one through seven had to be examined in order to determine previous failure and the grade level of that failure. Letters of referal for professional counseling were noted and standardized test scores were transferred to the Biographical Data Sheet.

SEMESTER GRADE REPORT

The Guidance Department of Colonial Heights Junior High School prepared a summary report of achievement for the First Semester 1964-1965. See Appendix B, page 77. From this report a break-down of the number of students failing one, two,

three, four, or five subjects was given. This report also provided data on the distribution of marks received the First Semester by the total junior high school population.

SEMESTER DEMERIT REPORT

The disciplinary system used at Colonial Heights Junior High School involves the use of demerit marks. Students are given a list of rules and regulations and the number of demerits is listed for the various violations. When a student has accumulated ten demerits, he is suspended from school. At the end of each six weeks grading period and at the end of the semester a summary demerit report is compiled listing the number of demerits given and the various infractions. (See Appendix C, page 79.) From this report many observations can be made about student behavior.

TEACHER'S REGISTER

Each teacher in the State of Virginia is required by law to keep a register of attendance for students in his or her home room. From the teachers' registers each subject's attendance and absences were carefully checked.

STANDARDIZED TEST SCORES

The State of Virginia, in its testing program, required that all students must take the California Short-Form Test

of Mental Maturity and the Iowa Silent Reading Test at the seventh grade level and the Differential Aptitude Test at the eighth grade level. Therefore, approximately all of the subjects in the two samples had taken these three tests.

The California Test of Mental Maturity is an instrument for appraising mental development or mental capacity. The scores reveal information that is basic to any interpretation of present functioning and future potential in a relatively specific but critical area of human activities. The coefficients of reliability have been computed by the split-halves method, as shown in Table I.

One of the most important functions of the Iowa Silent Reading Test lies in the fact that their use provides the tester with a rather exact estimate of the level of development of a number of important elements of silent reading abilities, as well as with specific information in certain important skill areas concerning the limitations of the individual. By analyzing the scores made by individual pupils on the various parts of the test, certain of the specific weaknesses or strengths of the individual may be discovered. The coefficients of reliability have been computed by the odd-even method, as shown in Table II.

TABLE I

RELIABILITY COEFFICIENTS AND RELATED DATA FOR
THE CALIFORNIA SHORT-FORM TEST OF MENTAL MATURITY
JUNIOR HIGH LEVEL, GRADE 8

Data	Reliability Coefficient	Mental Age		Intelligence Quotient	
		S. E. Measurement	S. D.	S. E. Measurement	S. D.
Language	.84	10.7	26.7	6.4	16.0
Non-language	.72	12.3	23.2	8.5	16.0
Total	.87	8.4	22.8	5.9	16.0

[1]Elizabeth T. Sullivan, Willis W. Clark, Ernest W. Tiegs, Manual, California Short-Form Test of Mental Maturity, (California Test Bureau, Hollywood, California, 1957),p. 4.

TABLE II

RELIABILITY COEFFICIENTS AND RELATED DATA FOR
IOWA SILENT READING TEST
JUNIOR HIGH LEVEL, GRADE 6

Test	Coefficient	Standard Deviation	PEmeas
Comprehension	.68	16.9	6
Directed Reading	.92	16.6	3
Word Meaning	.85	16.9	4
Paragraph Comprehension	.85	19.8	5
Sentence Meaning	.61	19.6	8
Alphabetizing	.94	16.2	3
Use of Index	.93	17.3	5

[2]H. A. Greene, and V. H. Kelley, Manual, Iowa Silent Reading Test, (World Book, Chicago, 1960), p. 5.

The Differential Aptitude[3] Test was produced as a guidance battery for use at the secondary-school level. The attempt was made to include in the battery tests each of which would be useful in many areas rather than in only one or two. Included in the battery of the Differential Aptitude Test are the following types: Verbal Reasoning, Numerical Ability, Abstract Reasoning, Space Relations, Mechanical Reasoning, Clerical Speed and Accuracy, and Language Usage. The reliability coefficients used for all the tests except Clerical Speed and Accuracy was the split-halves method, Table III.

CHI SQUARE

The raw data collected on the Biographical Data Sheet conveyed little meaning in the raw form. Therefore, it was necessary to determine how the data should be treated in order that it would take on meaning. The data from the Biographical Data Sheet were of two types: first, those which were expressed in terms of classified frequencies meaning that the data were recorded in terms of the number of subjects who fell into each of two or more categories; and second, those data which were expressed in terms of unclassi-

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[3]A condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some knowledge, skill or set of responses.

TABLE III

RELIABILITY COEFFICIENTS AND RELATED DATA FOR
DIFFERENTIAL APTITUDE TEST
JUNIOR HIGH LEVEL, GRADE 8

Test	Coefficient	Standard Deviation	Standard Error of Measurement
Verbal Reasoning	.88	7.8	2.7
Numerical Ability	.85	7.2	2.8
Abstract Reasoning	.90	11.0	3.5
Space Relations	.93	22.4	5.9
Mechanical Reasoning	.81	11.5	5.0
Clerical Speed and Accuracy	.77	8.7	4.2
Spelling	.92	22.1	6.3
Grammar	.86	12.8	4.8

[4]George K. Bennett, Harold G. Seashore, and Alexander G. Wesman, Manual, Differential Aptitude Test, (The Psychological Corporation, New York, 1952), p. 66.

fied frequencies meaning that the data were a measure of some characteristic and a score was obtained for each subject.

For the first type of data, all of the subjects included in each category had the same score and there was no variability in the response as classified within a category. The question that had to be answered is whether the observed frequency deviates significantly from what would be expected from a hypothetical frequency? To answer this question statistically the Chi Square technique was used.

In order to compute Chi Square, one first found the deviations of each observed frequency from its corresponding expected frequency and then squared the deviations. Next, each squared deviation was divided by the appropriate expected frequency. The remaining step was to sum these quotients; the sum of the value was Chi Square.[5]

If the obtained value of Chi Square was as large as or larger than the value obtatained by sampling error only 5% or 1% of the time, then it was said to be significant. If the Chi Square value was significant then there was a difference in the population between the two categories of response.

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[5]Benton J. Underwood, Elementary Statistics, (New York, Appleton-Century-Crofts, 1954). p. 204.

T-RATIO

For the second type of data all of the subjects in each of the two samples comprised two frequency distributions. The question that had to be answered is whether there is a significant difference in the mean performance of the two samples? To answer this question statistically the t-ratio technique was used.

To compute the t-ratio the difference between the two sample means was divided by the standard error of difference, which was an estimate of what the standard deviation of a large number of differences between sample means would be.

If the obtained t-ratio value was as large as or larger than the value obtained by sampling error only 5% or 1% of the time, then it was said to be significant.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

The purpose of this chapter was to present the sample data from the statistical treatment of the items on the Biographical Data Sheet. The treatment of each item was determined by the type of data obtained. When the data were in categories, Chi Square was used. When the data were distributed in frequency distributions, t-ratio was used. When neither Chi Square nor t-ratio could be used, the data were reported in raw units.

GEOGRAPHICAL AREA

Colonial Heights has experienced a rapid growth in school population in the last decade. Listed below are the projected growth figures for the next six years:

1965-66	3,401
1966-67	3,707
1967-68	4,041
1968-69	4,405
1969-70	4,801
1970-71	5,233
1971-72	5,704[1]

With this influx of students into the city the question was posed: Is Colonial Heights developing areas where "high achieving" students and "slow achieving" are congregating or are they equally distributed within the city limits? From

[1]Colonial Heights School Board, Report to Patrons, Number 2, June, 1965, p. 1.

the map on page 26 there is no clear evidence indicating that the subject in the First Quartile are clustering in any specific area of the city. However, there does seem to be a slight indication that the area in the vicinity of the junior high school has more First Quartile students than other areas. A survey of the first quartiles of additional classes may prove or disprove this assumption.

The subjects composing the Fourth Quartile also seem to be equally distributed throughout the city except in two areas. The first area, "Sherwood Hills" is located in the northwestern portion of the city. The second area is located in the southern portion with Marvin Avenue as a focal point.

PLACE OF BIRTH

Another question posed by this study was: Are students who are natives of Colonial Heights more likely to be "high achievers", "low achievers", or distributed equally in the total achivement distribution? No significant difference was found. The data with regard to place of birth are presented in Table IV.

One interesting finding, however, was that the First Quartile subjects distributed in place of birth as follows: fourteen from Colonial Heights, sixteen from Petersburg, and

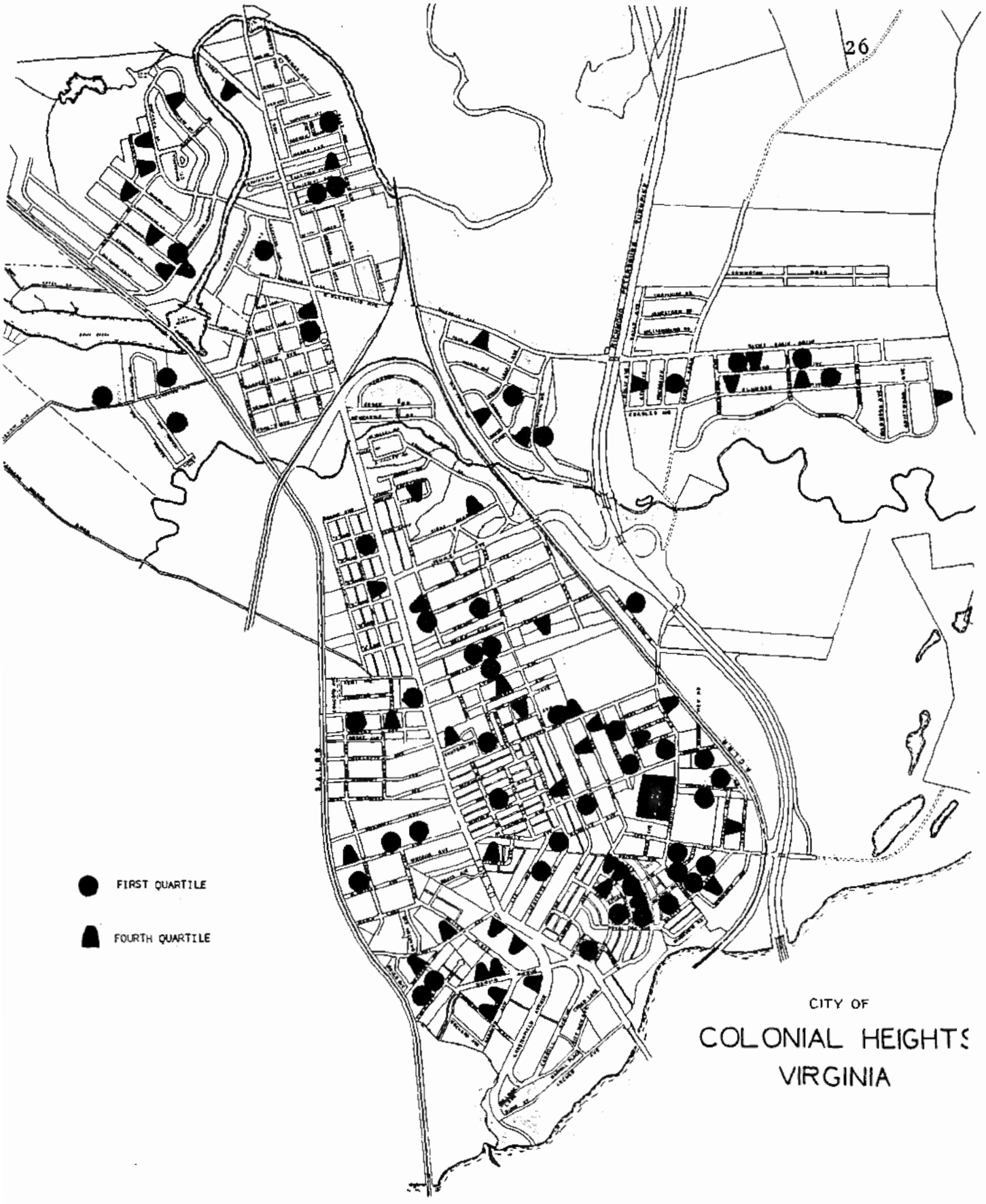
FIRST QUARTILE
FOURTH QUARTILE
CITY OF
COLONIAL HEIGHTS
VIRGINIA

TABLE IV

PLACE OF BIRTH OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Col. Hgts.	Petersburg	Others	Total
First	16 (12.5)	14 (13.0)	20 (24.5)	50
Fourth	9 (12.5)	12 (13.0)	29 (24.5)	50
Total	25	26	49	100

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
16	12.5	3.5	12.25	.98
14	13.0	1.0	1.00	.07
20	24.5	-4.5	20.25	.82
9	12.5	-3.5	12.25	.98
12	13.0	-1.0	1.00	.07
29	24.5	4.5	20.25	.82
			Chi Square	3.74

twenty from other cities or counties. In the Fourth Quartile twelve were natives of Colonial Heights, nine from Petersburg, and twenty-nine from other cities or counties.

AGE

Is a student's age at a particular grade level an indicator of academic sucess or of previous failure? With the significant difference between the two samples in academic achivemant, were the First Quartile subjects significantly older than the Fourth Quartile subjects? It was found by means of a t-test, Table V, that there was a significant difference between the two groups at the .05 level of confidence. The difference between the two groups was 7.3 months, indicating that the subjects in the First Quartile were approximately one school year older than the subjects in the Fourth Quartile.

FAMILY SIZE

Do students who proceed normally through the various grade levels come from larger, smaller, or about the same size family as the student who has experienced academic failure? The results from Table VI shows that there was no significant difference between the two sample groups.

TABLE V

AGE OF FIRST AND FOURTH QUARTILE
EIGHT GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH,
1964-1965

Quartile	Population	Mean Months	S. D.	Range Years & Months	t-ratio
First	50	174.54	9.81	13.5-17.0	4.56*
Fourth	50	167.24	5.52	13.2-16.2	

*significant at the .05 level of confidence.

Simple Analysis of Variance might have been a statistical technique to test the difference between the sample means but following the logic of the study t-tests were used.

TABLE VI

FAMILY SIZE OF FIRST AND FOURTH QUARTILE
EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH,
1964-1965

Quartile	Brothers	Sisters	Total
First	57 (62)	60 (55)	117
Fourth	57 (53)	41 (45)	98
Total	114	101	215

O	E	O - E	$(O-E)^2$	$\frac{(O-E)^2}{E}$
57	62	-5	25	.40
60	55	5	25	.45
57	53	4	16	.30
41	45	-4	16	.35
				Chi Square 1.50

MARITAL STATUS OF PARENTS

Did there exist a significant difference between the marital status of the parents of the First and Fourth Quartiles? The following categories of marital status were selected: living together, divorced, separated, and deceased. Since the number of subjects' parents falling into the selected categories was relatively small, a Chi Square test could not be run because the theoretical frequencies would be smaller than ten. Therefore, the raw data are reported in Table VII.

FATHER'S INCOME

Do students who have experienced academic success have fathers with a higher, lower, or generally the same income as students who have experienced academic failure. The range of income of the fathers of the First Quartile was $4,680-$7,800 and the range of income of fathers of the Fourth Quartile was $5,044-22,067. The mean income of fathers of the First Quartile was $6,033 as compared to a mean income of $7,667 for fathers of the Fourth Quartile. The mean difference in income between the two samples was $1,634. Total income of fathers of the First Quartile was $289,585 as compared to a total income of $375,698 for fathers of the Fourth Quartile. The difference in total income between the two samples was $86,113.

TABLE VII

MARITAL STATUS OF PARENTS OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Living Together		Divorced		Seperated		Deceased	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
First	40	80.00	9	18.00	0	0.00	1	2.00
Fourth	45	90.00	3	6.00	0	0.00	2	4.00
Totals	85	85.00	12	12.00	0	0.00	3	3.00

FATHER'S EDUCATION

Does a significant difference exist in educational level obtained by fathers of "high achieving" students as compared to educational level obtained by fathers of "slow achieving" students? In answer to this question the difference between the mean educational level obtained by the fathers of the two samples was tested (Table VIII) and the difference was found to be significant at the .05 level of confidence.

Of the fifty subjects who composed the First Quartile, twenty fathers were high school graduates, but only three fathers had had any formal training beyond high school. None, however, was a college graduate.

Of the fifty subjects who composed the Fourth Quartile, eighteen fathers were high school graduates and twenty-one had had formal training beyond high school, while fifteen were college graduates.

MOTHER'S INCOME

Did a difference in income exist between the mothers who were employed of the First and Fourth Quartiles? Of the one hundred subjects in the study, forty-four mothers were employed.

TABLE VIII

EDUCATION LEVEL OBTAINED BY FATHERS OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH 1964-1965

Quartile	Mean Grade	S. D.	Education Level 3-8	9-12	13-16	17-21	Total
First	10.02	2.07	15	32	3	0	50
Fourth	13.24	2.97	3	26	15	6	50
Total			18	58	18	6	100

The income of the First Quartile ranged from $2,600-$4,800 as compared to a range of $2,500-$6,500 for the Fourth Quartile. The mean income of First Quartile mothers was $3,459 with the Fourth Quartile's mean income being $4,188. The mean difference between the income of working mothers was $729. The total income earned per year for the First Quartile was $79,576 as compared to a total income of $87,954 earned by Fourth Quartile mothers. The difference in total income was $8,378.

MOTHER'S EDUCATION

Did a significant difference exist in the educational level obtained by the mothers of the subjects in the two quartiles? The difference in the mean level of educational attainment was tested by a t-test and the results in Table IX are significant at the .05 level of confidence.

Of the fifty subjects who composed the First Quartile, twenty-seven mothers were high school graduates, but only four had had any formal training beyond high school and only one of the three was a college graduate.

Of the fifty subjects who composed the Fourth Quartile, twenty-four mothers were high school graduates and nineteen had had formal training beyond high school, while ten were college graduates.

TABLE IX

EDUCATION LEVEL OBTAINED BY MOTHERS OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Mean Grade	S. D.	Education Level 3-8	9-12	13-16	17-21	Total
First	11.06	2.22	7	39	4	0	50
Fourth	12.94	2.16	1	30	18	1	50
Total			8	69	22	1	100

TABLE X

DUAL INCOME OF PARENTS OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Dual Income		Total
	Yes	No	
First	23 (21)	27 (29)	50
Fourth	19 (21)	31 (29)	50
Total	42	58	100

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
23	21	2	4	.19
27	29	-2	4	.13
19	21	-2	4	.19
31	29	2	4	.13
			Chi Square	.64

DUAL INCOME

Another question raised by this study was: Do both parents of the lower quartile work more often, less often, or about the same as both parents of the Fourth Quartile? From Table X it was concluded that there was no significant difference between the two groups having a dual income. Both parents of the First Quartile are as likely to be employed as both parents of the Fourth Quartile.

GRADE(S) FAILED

On page 28 it was reported that there was a significant difference between the ages of the two sample groups. This age difference could have been attributed to one of two factors. First, were the First Quartile students late in entering school or second, had the First Quartile students experienced previous failure in a lower grade or grades? From Table XI it was found that at the .05 level of confidence there was a significant difference between the two samples in number of grades failed.

Three Fourth Quartile students had failed a previous grade: one the first, one the second, and one the fifth.

Twenty-five of the subjects in the First Quartile had previously failed one grade and six of the twenty-five had

TABLE XI

GRADE OR GRADES FAILED BY FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	No Failures	Failed one or more grades	Total
First	319 (332.8)	31 (17.2)	350
Fourth	347 (332.8)	3 (17.2)	350
Total	666	34	700

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
319	332.8	-13.8	190.44	.57
31	17.2	13.8	190.44	11.07
347	332.8	14.2	201.64	.63
3	17.2	-14.2	201.64	11.72
			Chi Square	23.99*

*significant at the .05 level of confidence.

failed two previous grades. The distribution on page 40 shows the total number of students in the First Quartile failing and the grade failed.

Grade	1	2	3	4	5	6	7	8
Number	4	5	3	1	3	3	10	3

SOCIAL PROMOTION

Have students with past records of academic failure been socially promoted? It was not possible to test the significance of the difference between the two samples because the expected frequencies would have been less than ten. However, the raw data indicated that thirteen of the subjects in the First Quartile had been socially promoted as compared to none in the Fourth Quartile. One subject in the First Quartile was placed into the Fourth Grade, two into the Fifth Grade, three into the Sixth Grade, and ten into the Seventh Grade. Three subjects had been placed twice into the next grade.

ATTENDANCE

Do students who attend school regularly make higher grades than students who are absent frequently? This question was answered by a Chi Square test and the results

TABLE XII

ATTENDANCE OF FIRST AND FOURTH QUARTILE
EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH,
1964-1965

Quartile	Days Present	Days Absent	Total
First	4300 (4347)	200 (153)	4500
Fourth	4399 (4347)	101 (153)	4500
Total	8699	301	9000

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
4300	4347	-47	2209	.51
200	153	47	2209	14.43
4399	4347	52	2704	.62
101	153	-52	2704	17.66
			Chi Square	32.22*

*significant at the .05 level of confidence.

in Table XII are significant at the .05 level of confidence. Therefore, from these data it was concluded that regular attendance at school does have a bearing on school marks in a positive way and non-attendance at school has a bearing in a negative way.

DEMERITS

Are students who have experienced academic failure in the classroom more likely to be behavior problems, less likely, or about the same as students who successfully achieve in the classroom? Because the expected frequency categories were fewer that ten, no test of significance was used. However, raw data are reported. The method of discipline used at Colonial Heights Junior High School requires the assignment to demerits. The school published a list of rules and regulations which are given to each student. When an infraction of the rules takes place, the student is given generally one demerit; however, he may be given more, depending upon the seriousness of the infraction.

The First Semester, 1964-65, 196 demerits were given to students in the Eighth Grade. Only one student in the Fourth quartile received any demerits, these being three for talking on three seperate occasions.

TABLE XIII

DEMERITS RECEIVED BY THE FIRST QUARTILE
EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH
1964-1965

Number of Demerits	Offense	Percent
36	Talking in class	29.27
20	Truancy	16.26
15	Smoking	12.20
12	Late to class	9.76
9	Not reporting after school	7.31
5	Impudence	4.07
5	Loitering in halls	4.07
5	Boisterous behavior	4.07
4	Leaving room without permission	3.24
3	Defiance	2.44
2	Throwing object in class	1.63
2	On second floor without permission	1.63
1	Eating in class	.81
1	Misbehavior in class	
1	Putting trash in desk	.81
1	Whistling in class	.81
1	Failure to hand in punishment work	.81
Total 123		100.00

TABLE XIV

DEMERIT DISTRIBUTION OF FIRST QUARTILE
EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH
1964-1965

Demerits	1	2	3	4	5	7	8	9	10	12	13	Total
Number of students	9	3	2	1	1	1	2	1	1	1	3	25
Precent	36	12	8	4	4	4	8	4	4	4	12	100

In the First Quartile twenty-five students out of the fifty received 123 demerits or 62.75 per cent of all demerits given in the Eighth Grade. A list of the infractions by the First Quartile is shown in Table XIII. Table XIV shows the number of students receiving various numbers of demerits and the percentage of the total. Thus, the evidence was quite clear that the students who experience academic success did not cause discipline problems.

SUSPENSION

When a student had accumulated ten demerits, he was suspended from school. During the First Semester, 1964-65, no subjects in the Fourth Quartile were suspended. However, five First Quartile subjects were suspended for a period of three days. Not only do "slow achieving" students present discipline problems but the behavior of a small percent of those becomes serious enough to merit suspension from school.

REFERRAL TO PROFESSIONAL COUNSELING

Do students who are "slow achievers" experience more emotional problems than "high achievers"? Of the fifty subjects who composed the Fourth Quartile, none were referred by the Visiting Teacher to professional counselors. Four students in the First Quartile were considered "emotional

problems" and since the school system did not have the qualified personal to help these students, they were referred to the Mental Hygiene Clinic in Petersburg.

SUMMER SCHOOL

Are "slow achieving" students using summer school to strengthen themselves in weak areas or make up work failed? Are "high achieving" students using summer school to enrich their experience by taking new subjects? In answer to the first question, seventeen of the fifty First Quartile subjects had attended summer school only to make up work or subjects which had been failed. One of the Fourth Quartile subjects had attended summer school to improve his reading comprehension but the majority had never attended.

The "high achieving" students were not far enough advanced in the curriculum program and electives were not avaliable. Therefore, they did not attend summer school. As they advance into the program, the "high achieving" student will find new courses offered and undoubtedly summer school attendance will increase.

COACHING

Do students who are experiencing academic difficulty during the school year seek assistance from a paid coach?

The results from this study indicate that students experiencing academic difficulty do not seek the assistance of a paid tutor. Seven of the subjects in the First Quartile had received outside help during their school careers: four in math, two in reading, and one in English. It may be concluded that wider use of tutors for students experiencing academic difficulty might be beneficial.

NUMBER OF SCHOOLS ATTENDED

Was there a difference between the First and Fourth Quartiles in the number of schools attended outside of Colonial Heights? The raw data indicated that in both quartiles one half of the subjects had attended only schools in Colonial Heights and the other one half had attended schools in from one to seven different school divisions in Virginia or in other states.

LANGUAGE IQ

Was the difference between the two sample quartiles in academic achievement due in part to a difference of intelligence? The answer to this question was sought by comparing the two samples on scores made on the California Short-Form Test of Mental Maturity. Intelligence scores from this test

TABLE XV

CALIFORNIA SHORT-FORM TEST OF MENTAL MATURITY FOR FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Population	Lang IQ Mean	Lang IQ S. D.	Non-Lang IQ Mean	Non-Lang IQ S. D	Total IQ Mean	Total IQ S. D.
First	44	95.29	13.51	95.38	13.65	95.52	9.96
Fourth	49	115.95	9.51	107.53	13.65	111.75	9.79
t-ratio		8.63*		4.25*		7.84*	

*significant at the .05 level of confidence.

were obtained in the following areas: language, non-language, and total IQ.

A language IQ consist of the ability for relating words and for obtaining meaning from words. It indicates the ability to abstract or generalize and to think constructively. This ability is essential in most academic pursuits.

To determine whether a significant difference existed between the two language means, the t-test was used (Table XV) and the difference was found to be significant at the .05 level of confidence. From this result it was concluded that the Fourth Quartile possessed a significant language ability difference, which gave them a greater potential for academic success.

NON-LANGUAGE IQ

A non-language IQ is a measure of a subject's ability to solve problems that do not require the use of language. This score makes it possible to check upon individuals who appear weak or retarded on the verbal type of test to see whether the weakness or retardation is general or whether it is a localized deficiency in the language area.

The difference between the two quartile non-language means was tested and the result was significant at the .05 level of conficence. From table XV one might conclude that

the difference between the first Quartile in both samples, language and non-language, was not due to a deficiency in language.

TOTAL IQ

The data that would be most appropriate, when an overall measure of mental ability is desired, is the total IQ. This is not an average of the two scores on the language and non-language test, but a separate score based on total performance on the test.

The means of the two samples were tested and the difference between the two sample means was found to be significant at the .05 level of confidence.

From the results obtained by comparing the three sample means-language, non-language, and total IQ-it was concluded that the Fourth Quartile did possess a significant difference in intelligence, and this difference was reflected in the academic achievement of the two groups.

RATE OF READING

The objectives of today's reading instruction are the development of a student's ability to comprehend rapidly and to indicate by specific reaction his understanding of the material. Reading is something more that the rapid percep-

TABLE XVI

IOWA SILENT READING TEST OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Population	Comprehension Mean	Comprehension S. D.	Directed Reading Mean	Directed Reading S. D.	Word Meaning Mean	Word Meaning S. D.
First	43	75.83	31.33	63.83	17.68	67.69	18.24
Fourth	44	96.52	25.10	100.65	24.70	99.00	20.19
t-ratio		3.36*		7.37*		7.51*	

Paragraph Comp. Mean	Paragraph Comp. S. D.	Sentence Meaning Mean	Sentence Meaning S. D.	Alphabetizing Mean	Alphabetizing S. D.	Index Mean	Index S. D.
66.00	20.31	64.06	24.75	77.37	29.73	64.12	26.06
111.39	23.83	93.75	22.51	118.40	20.36	104.86	22.45
9.48*		5.79*		7.41*		7.72*	

*significant at the .05 level of confidence.

tion of printed symbols and the memory and organization of material read. It involves the abilities to use libraries, books, and magazines as sources of information and pleasure.

Would a difference in reading ability in part account for a difference in academic achievement between the two quartiles of this study? The attempt was made to answer this question by comparing the scores of the two samples on the Iowa Silent Reading Test. The testmaker stated that the test and its sub-test gave a rather exact estimate of important elements of silent reading.

Did the rate of reading between the two samples differ? This question was answered by testing the two sample means on the first sub-test, rate and comprehension. The difference was significant at the .05 level of confidence. According to Table XVI the mean difference in rate of reading was two school years. The First Quartile was reading at the appropriate grade level, yet the Fourth Quartile was two complete school years advanced in rate of reading.

DIRECTED READING

The question may be asked, "Do 'slow achievers' comprehend as well as 'high achievers' when memory is not stressed in reading?" The Directed Reading sub-test was designed to measure a pupil's ability to comprehend general and specific situations expressed in the content without unduly stressing mem-

ory. A t-test was computed on the difference between the means of the two samples and it was found to be significant at the .05 level of confidence.

The mean score for the First Quartile was one year and one month below the appropriate grade level; whereas, the mean score for the Fourth Quartile was two years and four months above the appropriate grade level. The mean difference in directed reading between the two sample means was three years and six months as indicated in Table XVI.

WORD MEANING

A pupil's failure to grasp any portion of the subject matter will be indicated by vagueness regarding the meaning of the terms involved in that portion of the subject; therefore, pupils must be trained specifically for assimilative reading in each subject and this training must consist primarily of development of vocabulary. Do pupils make good grades because of a superior vocabulary and do pupils make poor grades because of an inferior vocabulary? The results from Table XVI would indicate that there was a relationship between grades and vocabulary. The difference between the two means was significant at the .05 level of confidence.

The subjects in the First Quartile had a mean vocabulary that was eight school months below the school mean and the Fourth Quartile was two years and four months above the

school mean. The difference between the two sample means in word knowledge was three years and two months.

PARAGRAPH COMPREHENSION

The sub-test, Paragraph Comprehension, attempted to measure two factors about the construction of a written paragraph. First, the ability to select the central topic and second, the ability to identify details essential to the meaning of the paragraph.

Did the two sample quartiles differ on this sub-test and if so was the difference significant? The two sample means were tested by a t-test and the difference between the means was found to be significant at the .05 level of confidence.

From Table XVI it is indicated that the mean score of the First Quartile was six school months below the expected mean and the Fourth Quartile was three years and six months above the appropriate grade level mean. The overall difference between the two sample means was four years and five months.

SENTENCE MEANING

Did a difference exist between the two samples on their understanding the meaning of the whole sentence? The evidence

from Table XVI indicates that a difference did exist. The difference between the mean scores made on sub-test, sentence Meaning, was significant at the .05 level of confidence.

The First Quartile's mean score was the sixth grade fourth month and this was one year and one month below the expected mean. The Fourth Quartile's mean score was the ninth grade and fourth month. The difference between the mean scores of the two samples was three years.

ALPHABETIZING

Do "high achievers" possess a significant difference in ability to classify words alphabetically through the use of guide words than the "slow achievers"? The evidence indicated that "high achievers" possessed a difference in the ability to classify words alphabetically. The results from Table XVI are significant at the .05 level of confidence.

The Fourth Quartile mean was the eleventh grade eighth month, four years and one month above the appropriate grade level. The First Quartile was also above the grade mean by two months; however, the difference between the two means was four years and one month.

Of particular interest in the distribution of acores of the Fourth Quartile: thirty-one subjects scored the

equivalent of a high school graduate.

USE OF INDEX

One outcome of instruction in silent reading is the ability to locate information quickly and accurately in the light of the problem at hand. Do superior students possess this ability to a significant degree? Here again the results in Table XVI were in that direction. The difference between the two mean scores was significant at the .05 level of confidence.

The mean score of the First Quartile was the sixth grade fourth month, a year and one month below the expected mean. The Fourth Quartile mean was the tenth grade fifth month, three years above the appropriate grade level. The difference between the two means was four years and one month.

VERBAL REASONING

During the investigation of the differences between the two quartiles, the question was asked: Was there a condition or set of conditions regarded as characteristic of the two samples to acquire with training some knowledge, skill, or set of responses? To answer this question, which implies a difference in the capacity to learn, the mean scores of the

two samples were compared on the sub-tests of the Differential Aptitude Test, which was given to both quartiles in the fall of 1964.

The Differential Aptitude Test was developed to provide an integrated, scientific, and well standardized procedure for measuring the abilities of boys and girls in grades eight through twelve for purposes of educational and vocational guidance.[2]

The Verbal Reasoning sub-test was designed to predict with reasonable accuracy success in fields where complex verbal relationships and concepts are important. The sample means of the two tests were tested by a t-test and from Table XVII the results were found to be significant at the .05 level of confidence.

Since academic success in most fields would come under this classification, the significant mean difference between the two samples is indicative of the academic achievement of the two samples. From the occupational point of view the result indicated a difference in the occupational level to which these two groups may aspire.

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[2]Bennett, op. cit., p. 2.

TABLE XVII

DIFFERENTIAL APPTITUDE TEST OF FIRST AND FOURTH QUARTILE EIGHTH GRADE STUDENTS IN COLONIAL HEIGHTS JUNIOR HIGH, 1964-1965

Quartile	Population	Verbal Mean	Verbal S. D.	Numerical Mean	Numerical S. D.	Abstract Mean	Abstract S. D.
First	48	14.40	5.74	13.62	3.74	23.70	9.48
Fourth	50	24.18	6.66	21.88	4.12	33.86	5.90
t-ratio		8.37*		32.91*		6.30*	

Clerical Mean	Clerical S. D.	Mechanical Mean	Mechanical S. D.	Space Mean	Space S. D.	Spelling Mean	Spelling S. D.	Grammar Mean	Grammar S. D.
32.64	9.32	40.16	7.12	21.85	8.64	49.64	11.97	19.77	5.56
41.40	6.71	42.28	8.90	29.46	10.13	66.54	15.07	30.26	7.99
5.16*		1.29		3.88*		6.10*		7.49*	

*significant at the .05 level of confidence.

NUMERICAL ABILITY

This sub-test of the Differential Apitude Test was designed to test understanding of numerical relationships and facility in handling numerical concepts which avoided the language element, in which reading ability may play a significant role. The difference between the two mean sample scores was tested and the result was found to be significant at the .05 level of confidence. Of all the t-tests that were computed in the study this "t" was found to be the most significant, being 32.91.

From this finding it may be concluded that the Fourth Quartile possessed a superior ability to reason with numbers, to manipulate numerical relationships, and to deal with quantitative materials.

ABSTRACT REASONING

From the results obtained on the Iowa Silent Reading test one might conclude that the difference between the two groups on verbal reasoning was caused by a reading deficiency on the part of the First Quartile. The Abstract Reasoning sub-test was designed as a non-verbal measure of a student's reasoning ability and the comparison of mean scores on this test should prove, if they are significant, whether the read-

ing problem affected significantly the verbal scores. The difference between the two mean sample scores was tested and a "t" of 6.30 was obtained and it was significant at the .05 level of confidence. Thus, it was concluded that a significant difference did exist between the two samples in the ability to perceive relationships in abstract figure patterns.

CLERICAL SPEED AND ACCURACY

Did a difference exist between the two quartiles in speed of response to a simple perceptual test? The Clerical Speed and Accuracy Test placed a heavy premium on speed of response to simple letter and number combinations and this test was used to answer the above question.

The difference between the two quartile means was tested and the result was found to be significant at the .05 level of confidence; therefore, from Table XVII it may be concluded that the Fourth Quartile possessed a greater ability to do routine work than did the subjects in the First Quartile.

MECHANICAL REASONING

Mechanical Reasoning may be defined as the ability to learn the principles of operation and repair of complex

devices. This ability is important in such job areas as carpentry, mechanics, maintenance, and hundreds of other jobs in plants and factories. Was the Fourth Quartile better equipted to handle these types of jobs than the First Quartile? The results from Table XVII indicated that there was no difference in the mean score of the two samples. More will be said about this non-difference in the concluding chapter.

SPACE RELATIONS

Many jobs require an ability to manipulate things mentally; to create a structure in one's mind from a plan. Was the Fourth Quartile more equipped than the First Quartile to handle successfully such jobs as drafting, dress designing, architecture, and many others requiring mental manipulation of objects in three-deminsional space? Again, the result of comparing the difference between the two sample means was significant at the .05 level of confidence.

SPELLING

Are superior students as measured by academic achievement better spellers than students who experience academic difficulty? The answer to this question was sought by comparing the mean scores of the two samples on the sub-test,

Spelling. The result of this comparison was found to be significant at the .05 level of confidence. Thus, it may be concluded that superior students are better spellers than "slow achievers".

GRAMMAR

Does the "high achiever" possess an ability that is significantly different from "slow achievers" in distinguishing between good and bad grammar, punctuation, and word usage? The results from Table XVII indicated that "high achievers" did possess a difference in the ability to distinguish between good and bad grammar, punctuation, and word usage. The measure of the difference between the two mean scores also was significant at the .05 level of confidence. Therefore, the Fourth Quartile was found to be more proficient in distinguishing correct from incorrect English usage.

CHAPTER IV

SUMMARY

From this study it may be concluded that a significant statistical difference existed between the two eighth grade samples chosen for this study.

It was found that the mean age difference between the two quartiles was significantly different. From this finding one might conclude that the older the student at a specific grade level the greater the chance of his being a slow achiever.

Home environment, father's income, and educational level achieved by the parents were also factors that differed statistically between the two samples. From these findings one might conclude that parental attainment and success had a positive influence upon the students who composed the Fourth Quartile.

Previous failure, social promotion, attendance, discipline, suspension, counseling, and attendance at summer school were also factors that set apart the two samples. Thus, on the basis of past school record, the Fourth Quartile had made steady progress; whereas, the First Quartile had deviated to such a degree that the difference was significant.

In the three areas of general intelligence as measured by the California Short-Form Test of Mental Maturity, there

was a significant difference between the two samples. With this difference being as great as it was, one may conclude that the level of acheivement in school as well as the vocational area is limited for the First Quartile.

After investigation of the two quartiles in reading ability by means of the Iowa Silent Reading Test, it was concluded that the difference between the two samples was significantly large to merit the conclusion that reading does correlate positively with academic achievement.

With these two limitations, intelligence and reading ability, one may expect the First Quartile to continue experiencing difficulty in the academic area. The result of this difficulty will be potential drop outs and discipline problems for the teachers as well as the school.

Since the two samples were not alike in aptitudes, except mechanical reasoning, it will be the function of the high school guidance counselors to counsel the First Quartile into a curriculum program that is compatible with their intelligence, reading ability, and aptitudes. Also, the guidance department of the high school must be aware of the potential possessed by the Fourth Quartile in order to counsel them into a curriculum program that will adequately bring out their potential.

When the "slow achieving" student has been identified,

then the selection of a curriculum program to meet his needs is the next important step.

CONCLUSIONS

Another purpose of this study was to find out whether "slow achievers" and "high achievers" were clustering in separate areas of Colonial Heights. No valid evidence was offered that this was true for the First Quartile. The distribution of "slow achievers" in Colonial Heights tended to be equally distributed throughout the city. For the Fourth Quartile this was not true. Two distinct areas had developed in Colonial Heights where the "high achievers" were clustered.

The hypothesis that natives of Colonial Heights are better students than non-natives was not verified. Thus, with the rapid population growth in Colonial Heights this influx of people does not necessitate any change in the total curriculum program as now planned.

Accepted standards of behavior must be adhered to if good order is to exist in the classroom and the school. When accepted standards of behavior are violated, order breaks down and the teaching-learning process suffers. Since this study has identified the academically deficient student as one with a behavior problem,

care must be taken by the administration to schedule these students with the best possible teachers in order to minimize violations of accepted behavior standards.

Instruction at the lower level, when homogeneous grouping exists, must be geared to meet the needs of these individuals in order that they may achieve their full potential. If subject matter is not presented in a meaningful and challenging way, boredom or incomprehensiveness will take over and discipline will break down.

The reading level of the First Quartile was found to be significantly different from that of the Fourth Quartile. Since most courses taken in the secondary school emphasize verbal ability, the subjects in the First Quartile are faced with a disadvantage. The question which must be answered by the school system is "What can be done to eliminate the reading deficiency possessed by the subjects in the First Quartile?"

Two measures which might correct this deficiency are suggested by the author. An objective study of the present reading program in the elementary grades may reveal when these deficiencies began to appear. If this can be determined, corrective measures might be taken to help the individual student. Those students who composed the First Quartile need special and individual instruction in their own reading area difficulty and a remedial reading instruction might be beneficial. It

must be acknowledged at this point that the above objectives might be unrealistic for a majority of the subjects in the First Quartile because of their limited ability,

Should homogeneous grouping of students for instruction exist in the junior high and high school? From this study it was found that the differences between the two samples was highly significant. The author suggest that homogeneous grouping might be one means of improving instruction. If the subjects in the two samples were scheduled randomly and a given class was composed of subjects from each sample, what direction would the instruction take? If it were geared to the "slow achiever" the better students would not be adequately challenged and boredom would result. If the class were geared to the "high achievers", the slow student would fail to comprehend and problems would result. If the class were geared to the average student, the extremes still would not be adequately challenged to develop their full potential.

If intelligence, reading ability, aptitude, and previous school acheivement were used as a basis for homogeneous grouping, the expected class of eighth graders would be devided into approximately three groups. The first group would be composed of approximately twenty-five per cent of the class enrollment and this would constitute the "top group". The second group would be composed of approximately fifty per

cent of the class enrollment and this would include the average students. The third group would be composed of twenty-five per cent of the class enrollment and would constitute the "low group". With this division students possessing similiar abilities would be grouped together and the instruction being geared to the group, would incorporate a larger percentage of students in a given class than heterogeneous grouping. The methods of instruction can not be the same for the three groups. Planning will have to be done to incorporate the difference and teachers will constantly have to be aware of this difference.

One of the most significant findings from this study was that the two quartiles did not differ on mechanical reasoning as measured by the Differential Aptitude Test. Since this ability is basically non-verbal, there exists an opportunity for the school system to expand its non-verbal program to meet better the needs of the "slow achiever".

By adoption of a non-verbal approach with a minimum of emphasis on the verbal, the First Quartile student should be better able to move successfully through a secondary program. With the conclusion of the secondary program the First Quartile student will be better equipped to occupy a responsible place in society. If some direction is not given to these students, frustration will result and society will have to the expense.

UNANSWERED QUESTIONS

An attempt has been made to identify the "slow achieving" and "high achieving" student. It was pointed out how they were alike and how they differed but this study did not answer all the questions. Additional research might give answers to some of the following questions:

1. Are the results of this study typical of equivalent samples in other grades and schools?

2. How would the other two quartiles in the same eighth grade class have compared with the two quartiles studied?

3. Would remedial instruction improve academic performance on the part of the First Quartile?

4. Would intercorrelation of test scores give additional understanding of the two samples?

5. Would a follow-up investigation some time in the future still show a significant difference between the two samples?

BIBLIOGRAPHY

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A. Books

Abraham, Willard. The Slow Learner. New York: The Center for Applied Research in Education, 1964.

Barbe, Walter Burke. The Exceptional Child. Washington: The Center for Applied Research in Education, 1963.

Bennett, George, Harold Seashore, and Alexander G. Westman. Manual for the Differential Aptitude Test. (2nd ed.) New York: The Psychological Corp., 1952.

Greene, H. A., and Kelley, V. H. Manual for the Iowa Silent Reading Test. New York: World Book Company, 1943.

Johnson, G. Orville. Education for the Slow Learner. Englewood Cliffs, N. J.: Prestice-Hall, Inc., 1963.

Lee, J. Murray, and Doris May Lee. The Child and His Development. New York: Appleton-Century-Crofts, Inc., 1954.

Sullivan, Elizabeth, Willis W. Clark, Ernest W. Tiegs. Manual for the California Short-Form Test of Mental Maturity. Hollywood, California: California Test Bureau, 1957.

Underwood, Benton J., and others. Elementary Statistics. New York: Appleton-Century-Crofts. Inc., 1954.

B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS

Colonial Heights School Board. Report to Parents Number 2, June, 1965.

United States. Department of Labor. Occupational Outlook Handbook, 1963-1964 Edition. Washington: Government Printing Office, 1963.

C. PERIODICALS

Brandes, Louis Grant. "Detention as a Disciplinary Measure," The Bulletin of the National Association of Secondary-School Principals, 45:129-35, October, 1961

BIBLIOGRAPHY

Carmical, Laverne. "Characteristics of Achievers and Under-achievers of a Large Senior High School," The Personnel and Guidance Journal, 43:390-96, December, 1964.

Stahlecker, Lotar V. "High School Graduation for Slow Learners," Peabody Journal of Education, 42:166-72, November, 1964.

D. UNPUBLISHED MATERIALS

Westlow, Ann Northingham. "Possible Causes of Under-achievement in the Eighth Grade of a Large Urban High School for the Year 1962-1963," Unpublished Master's thesis, The University of Richmond, 1964.

APPENDIX A

BIOGRAPHICAL DATA SHEET

APPENDIX A

BIOGRAPHICAL DATA SHEET

Name _____

Address _____

Age _____ Date of Birth _____ Place of Birth _____

Number of brothers _____ Older _____ Younger _____

Number of sisters _____ Older _____ Younger _____

Previous failure _____Grade (s) _____

Socially promoted _____ Grade (s) _____

Days absent _____Demerits received _____

Suspended _____Counseling _____

Summer School _____Grade (s) _____

Coached _____ Subject (s) _____

Number of schools attended outside of city _____

Marital Status of Parents:

Married ___ Separated ____ Divorced _____ Deceased _____

Father's occupation _____

Father employed by _____

Education obtained by father _____

Mother's occupation _____

Mother employed by _____

Education obtained by mother _____

Does Student live with someone other than parents _____

APPENDIX A (continued)

California Test of Mental Maturity

Language IQ ____ Non-language IQ _____ Total IQ _____

Iowa Silent Reading Test

Comprehension ___ Directed Reading _____ Word Meaning ___

Paragraph Comprehension _____ Sentence Meaning _____

Alphabetizing _____ Use of Index _____

Differential Aptitude Test

Verbal Reasoning _____ Numerical Ability _____

Abstract Reasoning _____ Clerical Sp. & Acc. _____

Mechanical Reasoning _____ Space Relations _____

Spelling _____ Grammar _____

APPENDIX B

COLONIAL HEIGHTS JUNIOR HIGH SCHOOL

SUMMARY REPORT FOR FIRST SEMESTER GRADES

APPENDIX B

COLONIAL HEIGHTS JUNIOR HIGH SCHOOL

SUMMARY REPORT FOR FIRST SEMESTER GRADES

Enrollment 446

Number making First Honor Roll 7 or 1.5%

Number making Second Honor Roll 67 or 15.0%

Number making B's or better 74 or 16.5%

Number of students passing all subjects 327 or 73.3%

Number of students failing one or more subjects 119 or 26.6%

Number of students failing one subject 49 or 10.9%

Number of students failing two subjects 35 or 7.8%

Number of students failing three subjects 19 or 4.2%

Number of students failing four subjects 14 or 3.1%

Number of students failing five subjects 2 or .4%

Distribution of Grades for Junior High

A	B	C	D	E	F	INC.	TOTAL
460	700	672	409	140	118	22	2521
18.2	27.7	26.6	16.2	5.5	4.6	.8	99.96

APPENDIX C

COLONIAL HEIGHTS JUNIOR HIGH SCHOOL

FIRST SEMESTER DEMERIT REPORT

APPENDIX C

COLONIAL HEIGHTS JUNIOR HIGH SCHOOL
FIRST SEMESTER DEMERIT REPORT

Number of Demerits given 501

Number of students suspended 15

Demerits	Offense
122	Talking in class
60	Truancy
45	Smoking
40	Tardiness
33	Failure to report after school
21	Failure to hand in punishment work
18	Leaving school without permission
16	Misbehavior in class
15	Throwing object in class
14	Using restroom without permission
13	Defiance
11	Insolence
8	Passing note with unchaste language
8	Boisterous behavior in class
8	Playing in cafeteria
7	Conduct unbecomming a gentleman
6	Loitering in halls
6	Using profane language
6	Not bringing books to class
6	Cheating on homework
5	Being in elementary part of building
4	Putting trash in desk
4	Kissing in halls
3	Eating in class
3	Shooting object in class
2	Books not covered
2	Rudeness to teacher
2	Whistling in class
2	Chewing gum in class
2	Knocking books out of students hands
1	Going to locker during lunch
1	Passing note in class
1	Writing on locker
1	Running in cafeteria
1	Taking food out of cafeteria
1	Wrestling in halls
1	Striking match in gym
1	Pushing desk in class

VITA

Elbert Lloyd Pugh, Jr., son of Mr. and Mrs. Elbert Lloyd Pugh of Petersburg, Virginia, was born August 1, 1935. He received his education in the Petersburg Public Schools and was graduated from Petersburg High School in 1954. In 1959 he received a Bachelor of Arts Degree from Randolph-Macon College, Ashland, Virginia, with a major in History. He is a member of Phi Kappa Sigma, a national social fraternity and Kappa Delta Pi, a national education honor society.

He began his teaching career in 1959 at Colonial Heights High School, Colonial Heights, Virginia, as a History teacher. His other duties have included: sponsor of the senior class, 1962-1963; annual advisor, 1962-1964; Chairman of the Social Science Department, 1961-1964; and Guidance Counselor at Colonial Heights Junior High School, 1964-1965. He holds membership in the Virginia Education Association and the National Education Association. He was elected President of the Colonial Heights Education Association in 1965 to serve a term of one year.

He has been appointed principal of Colonial Heights Junior High School, for the 1965-1966 school term.

In September of 1956, he married Patricia Lee Hughes of Petersburg, Virginia. He has two daughters, Rhonda Louise Pugh age five and Robin Leigh Pugh age three.