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UNIVERSITY OF LOUISVILLE

A STUDY OF THE ACADEMIC SUCCESS
OF ELEMENTARY PUPILS DURING THEIR
FIRST YEAR IN HIGHLAND JUNIOR HIGH SCHOOL

A Dissertation
Submitted to the Faculty
of the Graduate School of the University of Louisville
In Partial Fulfillment of the
Requirements for the Degree
Of Master of Arts

Department of Education

By

Esther Barth

Year

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TITLE OF THESIS: A Study of the Academic Success
of Elementary Pupils during
Their First Year in Highland
Junior High School

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DATE: September 14, 1944

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CHAPTER I

INTRODUCTION

"Of the numerous roles which the classroom teacher plays, that of dispenser of success and failure is undoubtedly the most impressive and worrisome to the pupils, and the most crucial for their present and future adjustment. It is also the role in which many teachers meet their severest conflicts; to fail or not to fail, which ever is done, frequently leaves feelings of guilt and anxiety."¹ While the word success is weighted with various implications, the experiments of Professor Kurt Lewin and his student, Ferdinand Hoppe, led the latter to the following conclusion:

The occurrence of success and failure experiences is independent of actual achievement; it is determined, rather, by the goals, expectation and aspirations of the person (the subject) at the time of the action.²

Taking for granted that the goal chosen is within the range of the pupils' capacities, A Study of the Academic Success of Elementary Pupils during Their First Year in Highland Junior High School may be undertaken as an attempt to ascertain:

¹Roger G. Barker, "Success and Failure In The Classroom", Progressive Education, April, 1942. p. 221.

²Ferdinand Hoppe, "Erpolg and Misserpolg", Psychologische Forschung, 1930, 14, pp. 1-62.

(1) What relationship exists among pupils from feeder-elementary schools entering junior high school with respect to achievement in specific school subjects as measured by teachers' grades.

(2) Whether differences in intelligence, achievement, chronological age, and attendance at school exist among these pupils.

(3) If sex is a factor which may determine a pupil's success in school.

In the elementary schools in Louisville³, the Metropolitan Readiness Test is given to every pupil in the First Grade, B division. In the Sixth Grade, A division, the Kuhlmann-Anderson Intelligence Tests and Progressive Achievement Test - Elementary Battery, Forms A, are administered to every pupil. Other standardized tests may be given in any of the grades at the discretion of the principal of the school. The results made on the tests given are recorded on individual pupil-record cards. This card, together with a record of marks obtained from kindergarten through the sixth A grade and personality comment are sent to the junior high school which the child will attend.

The writer has been interested in the success of the entrants during their first year in Highland Junior High School from the standpoint of a homeroom teacher as well as a classroom teacher. It has been

³Nancy T. Collins, Bureau of Research, Louisville Board of Education, Fifth and Hill, Louisville, Kentucky.

her assignment at various times to arrange them in class groups on the basis of intelligence test records. It is not her purpose here to defend the plan of homogeneous grouping. It is sufficient to state that the trend of opinion of those who have made studies of the plan seems to favor it, especially when adapted to individual instruction. It must be remembered that intelligence tests are not infallible measures, and, therefore, groups formed on the basis of their scores are not perfect. The above mentioned assignment afforded an opportunity to examine other records of the entrants, such as chronological age, scores on achievement tests given during their six years in elementary school, and a personality comment written by the sixth grade teacher.

The success of pupils at the Highland Junior High School has also been brought to the attention of the writer through the teaching of Algebra to ninth grade pupils. There are at least one-hundred new 9B entrants at the beginning of each September term in this school. Over half of them are county residents, some of them are from parochial schools, and others are residents who have recently moved to Louisville from other cities. Many of these new ninth grade pupils have had difficulty in succeeding in Algebra due to the fact that these pupils admit their previous preparation had not been comparable to those pupils from local public schools. While the make-up of the group entering the seventh grade is unlike that of the ninth grade, a study of the entering seventh grade pupils was made in order to throw

some light on the following questions:

1. In which of the three basic subjects, English, social studies, and mathematics, do the children succeed (as shown by teachers' grades) during their first year in Highland Junior High School?
2. To what extent are there any existing differences among these feeder-group entrants?
3. Are these differences of any importance to the Highland Junior High School?
4. Which entering feeder group ranks highest as indicated by teachers' grades?

The Highland Junior High School is located on a site of eight and one-half acres at Norris Place, Speed and Richmond Avenues in Louisville, Kentucky. The school, a three-story colonial building, accomodates seventh, eighth, and ninth year pupils living in this section of the city. The personnel of the school for the year 1942-43, as shown in Table I, consisted of a principal, twenty-nine classroom teachers, a visiting teacher, librarian, guidance and health counselors, an office secretary, custodian of the building, an engineer, a fireman, three janitors, one maid and five lunchroom employees.

TABLE I

Number of Teachers at Highland Junior High School by
Subjects*
1942 - 1943

<u>No. of Teachers</u>	<u>Subjects</u>	<u>No. of Teachers</u>	<u>Subjects</u>
1	Art	2	Music
1	Clothing	2	Physical Education
3	English	2	Science
1	Guidance	4	Social Studies
1	Health-Science	1	Woodwork
1	Latin	1	English-Latin
1	Library	1	English-Home Economics
4	Mathematics	1	English- Social Studies
1	Metal	1	Mathematics- Junior Office Training

*School Directory, Louisville Public School Directory,
1942-43

The differentiated curriculum of the junior high school includes certain constants and certain electives. Such a program recognizes the fact that different individuals are attracted by and responsive to different types of training. The constant courses in the junior high school of the Louisville Public School System are English, general science, mathematics, social studies, and physical education, and are required of all pupils at the Highland Junior High School. The introduction of courses which will give breadth and variety to pupils' experience has been an important part of the junior high school movement. The term exploration has been used to describe this aim of the junior high school program. Exploratory courses, therefore, have been introduced into the curriculum for the purpose of finding out what are the pupils' interests and aptitudes. In the seventh grade no elective courses are offered, but the pupils may develop their special interests through the exploratory courses. Dr. W. C. Ryan discovers, through his visits in various schools in different sections of the country, that a distinct advance in curriculum provision has been made.

The most obvious improvement in the educational program was the addition of new activities - health, physical education, art, music, shop work, agriculture. These were really not new - they have formed important parts of educational provision among all peoples from the earliest recorded times.⁴

⁴W. C. Ryan, Mental Health Through Education, New York The Commonwealth Fund, 1938, p. 146.

Table II shows a typical program of studies for a seventh grade pupil at the Highland Junior High School. Special schedules are sometimes necessary in a few individual cases.

TABLE II

Typical Program of Studies and Periods Per Week for
Seventh Grade Pupils at Highland Junior High School
For the year 1942-1943

Subjects	Periods	Per Week
	7B	7A
Art	2	2
English	4	4
Exploratory*	5	5
Health	2	2
Library	1	1
Mathematics	5	5
Music	2	2
Physical Education	3	3
Science	2	2
Social Studies	4	4

*7B pupils are offered simple mechanics and clothing
7A pupils are offered woodwork and foods

The word success in this study is used to indicate that the pupil has conformed to standards of the Highland Junior High School, namely, a passing grade of seventy. Whether or not these standards are true measures of success is not the concern of this study, rather they have been accepted and will be used in drawing conclusions.

Much has been written about the variability and unreliability of teachers' marks. But despite the unreliability of the measures, these records are after all the most satisfactory indication available of the probable future achievement of pupils. The present marking system might well render two services to the pupil: first, to spur him on or warn him of failure; secondly, to help him see his place in relation to his fellow pupils.⁵

The significant basis for this writing is a comparative study of the native ability and academic success of pupils entering Highland Junior High School in September, 1940, from feeder schools, and pupils entering Highland Junior High School in September 1942, from feeder schools. The pupils entering in September, 1940, will be designated as the Pre-War Class, while those entering in September, 1942, as the War Class. Regularity of attendance and chronological age will also be considered in this study as factors which are helpful in making it possible for pupils to achieve

⁵J. B. Johnston, The Liberal College in Changing Society The Century Co., New York, 1930.

success experiences.

This study may have served a purpose if it can increase the interest of the faculty of Highland Junior High School in the achievement of the pupils whose ground work for success should have been prepared in the elementary school, and also stimulate a desire to develop a curriculum of experiences based on the needs and abilities of pupils.

CHAPTER II

SURVEY OF LITERATURE

The examination of an extensive body of educational and psychological literature emphasizes the importance of dealing with two phases of this subject:

1. Articulation between the elementary and junior high schools.
2. Prognosis - which implies statistical measurement

Articulation between the Elementary and Junior High Schools

The pupils who enter a junior high school in Louisville, Kentucky, are those admitted from an elementary school known as a feeder school which is located in the district of the junior high school.

What is meant by the elementary school unit? The Committee on Elementary Education,¹ composed of three members with Herbert S. West as Chairman, accepted the following definition, "The elementary school as an administrative unit consists of the kindergarten and the first six grades." In terms of supervision the elementary unit has three divisions: (1) kindergarten; (2) primary grades - first, second, and third and (3) intermediate grades - fourth, fifth, and sixth.² These

¹Department of Superintendence, Seventh Year Book. National Education Association, Washington, D. C., 1929, p.68.

²Ibid., p.71.

definitions describe the organization as it exists in the public schools of Louisville.

The junior high school is the educational unit consisting of seventh, eighth, and ninth grades and was established in order to bridge the gap between the elementary and secondary schools. It is an exploratory school in which the pupil may participate in so-called broadening and finding courses. Socialized situations which provide guidance through self-directed activities are to be found in the junior high school.

Education should be a continuous reconstruction of experiences which are meaningful and will increase ability; in other words, education should be a continuous forward movement and not a disjointed series of unrelated accomplishments. If this is our aim of education, it is necessary that our educational system be well articulated so that it may function as a coordinated whole and offer the fullest educational opportunity to all pupils. A common understanding among teachers below and above the junior high school level is pointed out by J. J. Hendricks who states:

If a public school system possesses an intermediate transitional school unit that properly provides a suitable educational environment for its adolescent youth that is in keeping with the 'junior high school idea', then the grades above and below should probably best be articulated with this unit instead of articulating it with them. At least, this would be advocated by some junior high school enthusiasts. They would claim that if the junior high school can make child-centered schools of the teacher-centered elementary school and of the subject-centered senior high school, it will have

accomplished its purpose and may, without serious harm, entirely disappear from the educational map. It is true that the teachers in all three units must come to understand and thoroughly appreciate the 'junior high school idea' before the agencies of articulation may be put into operation, and before there can be unity of purpose.³

Articulation, in terms of education, means the adjustments and relationships between school units as shall tend to keep every pupil making progress at all points in his school life. Better articulation of school units is still cause for concern in many school systems throughout the country.

A study of articulation problems based on actual experience was made by the Commission on the Articulation of the Units of American Education of the Department of Superintendence of the National Education Association. Twenty-two school systems were selected whose superintendents of schools had expressed a desire to cooperate. When asked to list the articulation problems at transition from elementary school to next higher unit, the cooperating systems listed the following:

1. Teacher Problems:

(a) Lack of common understandings among teachers and school administrators of conditions above and below them.

(b) Difference in viewpoint and training of teachers due to specialization in institutions training for work in given units.

³J. Hendricks, "Special Articulating Function of the Junior High School", School Executives Mag., Sept. 1932, p. 18.

(c) Jealousy.

2. Organization Problems:

(a) Too sudden transition from one teacher to many teachers.

(b) Necessity of assimilating pupils from various elementary schools and with various home backgrounds.

(c) Sudden offering of many auxiliary activities.

(d) Ability classification in lower school unit often not continued in higher.

(e) Promotion to Junior High School of below average pupils who have not completed the sixth grade.

(f) Lack of adequate pupil records.

3. Instructional Problems:

(a) Problem of teaching pupils how to study in the new situation.

(b) Transitional procedures required for a transition period not developed.

(c) Maintenance of socializing process of lower school needed.

(d) Different rating standards in the two schools.

4. Curriculum Problems:

(a) Lack of adjustment of curriculum to pupils of varying levels of ability.

(b) Present curriculum does not afford ample exercise for vocational aptitudes.

(c) Change to elective basis needs to be very gradual.

(d) Tradition plays too important a role.

(e) A reasonable balance in emphasis needed between college preparatory and non-college preparatory training.

5. Problems of Pupil Adjustment:

(a) Sudden transition in disciplinary situation to greater freedom and self-direction.

(b) Social adjustment of pupils difficult in the junior high school due to the assimilation of pupils from many elementary schools.

(c) Lack of adequate guidance in choosing courses.

(d) Need for home-room teacher.⁴

Typical comments and frequency of mention of the above items from the cooperating school systems placed emphasis upon: (1) Lack of common understanding among administrators and teachers of both units; (2) too sudden transition in types of discipline; and (3) improper adjustment of curriculum.

How can local school systems bring about the closest possible articulation between the elementary school and the next higher unit? Charles H. Judd, writing about educational forces cooperating more effectively states:

⁴Department of Superintendence, Seventh Year Book, National Education Association, Washington, D.C., 1929, pp. 43-44.

Coordination can be secured only by strenuous effort. Coordination depends on clearly recognized differentiation of functions among the units of the school system. Coordination depends on the discovery of natural sequences and conformity of school operation to these sequences. Coordination can be secured only by school officers with broad vision. Coordination of the school with life is essential to true coordination within the school.⁵

"Adequate supervision of instruction is one of the means of bringing about better articulation. Unfortunately, supervision is too often on the subject basis, or over small groups of grades, and supervisors often work independently of one another."⁶ If the primary functions of supervision are to coordinate and integrate the several units of our educational program into a unified and functioning whole, a plan of vertical supervision rather than horizontal is suggested.⁷ Under such plan the supervisor must think in terms of the education of the whole child, and will be responsible for results in a given field extending through the several units.

⁵C. H. Judd, "How Can American Educational Forces Cooperate More Effectively?" National Education Association Addresses and Proceedings, Washington, D.C., Vol. 79, 1931, p. 705.

⁶M. A. Norton, "In What Ways Can Adequate Supervision Bring about Better Articulation of the Units of American Education?" National Education Association Addresses and Proceedings, Washington, D.C., Vol. 69, 1931, p. 809.

⁷J. J. Hendricks, "Special Articulating Function of the Junior High School," School Executives Magazine, Sept. 1932, p. 18.

Another means of articulating the work between the two units is through a cooperative curriculum study program. All education must be dominated by a social purpose if the school is to serve its function. All subject matter and activities must be selected according to their social significance.⁸ It is the opinion of the writer that education which is concerned with the "child as a whole" implies intellectual, moral and physical instructions. "If education is to make life useful, beautiful and noble, it must be motivated by the spirit of the Supreme Teacher who set the goal for all worthy educators in these familiar words, 'I come that they might have life abundant'."⁹ In the introductory statement on "Principles of Integration" prepared by Jesse A. Newlon, it is pointed out that two prime considerations underlie educational integration: namely, the nature of the child and the social functions of the school.¹⁰

It has been found that there is much repetition as well as omission of the important material in the

⁸J. H. Newton, "Key Problems in Achieving an Integrated Program of Education", National Education Association Addresses and Proceedings, Washington, D.C., Vol. 69, 1931. pp. 716-717.

⁹Tuenis E. Gouwens, "Where Our Education Fails". Sermon delivered in the Second Presbyterian Church, Louisville, Kentucky, September 27, 1936.

¹⁰The Department of Superintendence, Ninth Year Book, National Education Association, Washington, D.C., 1931. p. 361.

curriculum. W. J. Osburn has estimated that the amount of overlapping between elementary, secondary, and higher education is equal to a whole year in six.¹¹ Harap showed there was much duplication in the science taught in the elementary school and the junior high school.¹²

A third suggestion for articulating the educational program of a school system is by teacher articulation through programs of inservice training, intervisitation and teachers' exchange between the different school units, and all supervisory conferences. This training is to develop an overview of the whole school program, thus resulting in a philosophy of education that includes the entire educational situation.¹³

There are those who suggest that secondary education should be presented as a phase of a gradual, continuous, unitary process. Also there are those who advocate that secondary education should be organized as a distinct but closely articulating part of the entire educational program with special function of its own. The Committee on Orientation believes the second

¹¹W. J. Osburn, "Overlappings and Omissions in Our Courses of Study". Public School Publishing Co., 1928, p. 67.

¹²H. Harap and E. C. Pershing, "The Present Objectives in General Science," Science Education XIV. March 1930, p. 482.

¹³J. J. Hendricks, "Special Articulating Function of the Junior High School," School Executives Magazine, September 1932, p. 19.

alternative presents a better solution to the problem.¹⁴

Continuity may be attained if a program is planned in a unified way by administrators and teachers. Articulation may be brought about by an effective guidance system. The home-room teacher and special guidance counselor working together to meet the needs of individual pupils realize acutely all curriculum shortcomings. They are in a position to indicate expansion and adaptation of the curriculum to meet these individual needs.¹⁵

Prognosis

There are many methods of predicting future success including the simplest one of parents, which is many times based upon fondest hopes for achievements of their offspring, to more elaborate ones, such as, character analysis. Educational prognosis is a scientific procedure and includes the prediction of future accomplishments from definite criteria. It is necessary in determining the type of educational program for every child.

In the elementary school a child's ability to succeed with various features of the educational program is predicted by the use of standard tests. It was stated

¹⁴Symposium. "Articulating Administrative Units", Journal of the National Education Association, 26:81 March 1937

¹⁵Department of Superintendence, Seventh Yearbook. National Education Association, Washington, D.C. 1929, p. 174.

in Chapter I that in the elementary schools in Louisville a Readiness Test, an Intelligence Test, and an Achievement Test are given to each pupil at some time during his six years of attendance. The Literature related to prognosis in the elementary school gives summaries of the relationship between scores on such tests and achievement in various subjects.

In an investigation by Gates and Bond¹⁶ of four large classes of first-grade children it was found that results from reading-readiness tests gave higher correlations with reading achievement at the end of the year than did scores from the Binet Intelligence Test. The investigations of Fendrick and McGlade¹⁷ and Grant¹⁸ also show that reading-readiness tests provide a more accurate basis than intelligence tests for determining when a child is ready to learn to read. Besides the use of

¹⁶A. I. Gates and G. L. Bond, "Reading Readiness, A Study of Factors Determining Success and Failure in Beginning Reading," Teachers College Record 37:679-85; 1936.

¹⁷P. Fendrick and C. A. McGlade, "A Validation of Two Prognostic Tests of Reading Aptitude." Elementary School Journal 39:187-94; 1938.

¹⁸A. Grant, "The Comparative Validity of the Metropolitan Readiness Tests and the Pintner-Cunningham Primary Mental Tests." Elementary School Journal 38: 599-605; 1938.

reading-readiness and intelligence tests for the prediction of reading readiness, the chronological age and mental age have also been used. Results of studies show the inadequacy of the chronological age and also do not regard the mental age as an adequate basis for such prediction. The following correlations between these last three mentioned measures and a composite of fourteen representative reading tests were made in a study by Wilson and Flemming:¹⁹ chronological age, .289; mental age, .51; intelligence quotient, .332.

The relationship between scores on mental ability tests and achievement in various subjects is reported by Louttit.²⁰ The following are the coefficients of correlation: for 16 studies of reading the mean correlation was .55, the median .60; for 9 studies of spelling the mean was .49, the median .51; for 9 studies of arithmetic the mean and median were .55; for 5 studies of handwriting the mean was .13, the median .08. These correlations show prognostic value for general mental tests in relation to reading, spelling, and arithmetic but not to handwriting. Gates and LaSalle²¹ reported the same re-

¹⁹F. T. Wilson and C. W. Flemming, "Correlation of Chronological Age, Mental Age, and Intelligence Quotients with Other Abilities and Traits in Grade One." Pedagogical Seminary 50:323-37; 1937.

²⁰C. M. Louttit, Clinical Psychology, Harper and Brothers, New York, 1936.

²¹A. I. Gates and J. LaSalle, "The Relative Predictive Values of Certain Intelligence and Educational Tests Together with a Study of the Effect of Educational Achievement upon Intelligence Test Scores." Journal of Educational Psychology 14:517-39; 1923.

lationship even though the lapse of time between the administration of the intelligence test and achievement records was greater.

Achievement tests are also used to predict success in the elementary school and have proved to be as good a measure as an intelligence test. School marks are also a basis for predicting marks to be received in the future by the pupil. Kelly²² reports, in a study of the correlations between marks in the successive semesters of the sixth and seventh grades, a considerable variation in the magnitude of the coefficients. A study of the predictive value of elementary-school marks for high-school achievement was made by T. L. Kelley²³ who correlated marks given in the fourth, fifth, sixth, and seventh grades with marks in the first year of high school. The following correlations were obtained: .624, .531, .728, .719. Correlations of .71 and .60 between average elementary school marks and average high school marks were found by Miles²⁴ and Ross²⁵ respectively. A higher predictive value for elementary

²²F. J. Kelly, "Teachers' Marks." Contributions to Education, No. 66. Teachers College Record, N.Y. 1914.

²³T. L. Kelley, "Educational Guidance." Contributions to Education, No. 71. Teachers College Record, N.Y. 1914.

²⁴W. R. Miles, A Comparison of Elementary and High School Grades, U. of Iowa, Studies in Education, Vol 1, No.1, 1914.

²⁵C. C. Ross, "The Relation between Grade School Record and High School Achievement." Contributions to Education, No.66, Teachers College Record, N.Y. 1925.

school marks than for intelligence and achievement tests is reported by Wright.²⁶ The results for three widely scattered schools reported by Ross and Hooks²⁷ emphasize the fact that elementary school records offer a more reliable means of predicting high-school achievement than any other available measure.

Research studies on prognosis reveal that the techniques used in the high school are the same as those used at the elementary level and with essentially the same results. Intelligence tests, achievement tests, chronological age, mental age, and school marks have all been used as a basis of prediction. Writers of studies seem to be in general agreement that elementary-school marks provide a more accurate basis for predicting academic success in high school than any other measure. There seems to be need for more reliable measures of personality factors which do play a part in the success of an individual.

²⁶W. W. Wright, "The Development and Use of a Composite Achievement Test." Indiana University, Bulletin of the School of Education, Vol. 5, No. 3, 1929.

²⁷C. C. Ross and W. T. Hooks, "How Shall We Predict High School Achievements?" Journal of Educational Research 22:184-95; 1930.

CHAPTER III

ELEMENTARY BACKGROUND OF PRE-WAR CLASS
AND WAR CLASS

One hundred and twenty-eight pupils entered the Highland Junior High School in the seventh grade in September 1940. Of this number, 120 pupils came from three feeder schools located in the immediate district, 1 pupil from a school located in Jefferson county, 5 pupils from local elementary schools not located in the district, and 2 pupils from schools located outside of the city. This group of pupils, referred to in this study as the Pre-War Class, will be divided into two groups: (1) the group of children entering from feeder schools; (2) the group of children entering from non-feeder schools.

In September, 1942, 116 pupils entered Highland Junior High School in the seventh grade. Of this number 83 pupils came from three feeder schools located in the immediate district, 3 pupils from schools located in Jefferson county, 14 pupils from local elementary schools not located in the district, 5 pupils from local parochial schools, 1 pupil from a local church school, 1 pupil from a local private school, and 9 pupils from schools located outside of the city. This group of pupils, referred to in this study as the War-Class, will be divided into two groups as indicated above for the Pre-War Class.

It was stated in Chapter I that each pupil in the elementary schools in Louisville is given the Metro-

politan Readiness Test in the first grade B division; also in the sixth grade A division the Kuhlmann-Anderson Intelligence Test and Progressive Achievement Test-Elementary Battery. The latter test is a diagnostic-survey group test in the fundamental skills of reading, arithmetic and language. It is standardized for pupils in grades four, five, and six, and contains material of sufficient diversity, quality, range, and quantity to measure the achievement of pupils in these grades. It is believed that this test battery will reveal pupils' strength and weaknesses in the above mentioned fundamentals, and that a diagnostic analysis of learning difficulties will suggest to both elementary and junior high school teacher a remedial and constructive program suited to the needs of pupils. Such a program should enable the pupil to improve his abilities in these fundamental skills which are required for educational progress.

During the six years in the elementary school a pupil is given two promotions per year, thus indicating the pupil's ability to meet the requirements for promotion in the several subjects constituting the curriculum. The establishment of standards of promotion is a controversial issue of long standing. On the subject of promotion, H. M. Lafferty has this to say:

From the administrative point of view the matter of pupil promotion is one of vital importance to the public school. Other things being equal, a high rate of promotion carries with it a three fold implication:

(1) it denotes satisfactory work on the part of pupils; (2) it reflects the utilization of efficient teachers and successful methods of instruction, and (3) it means reduced costs of repetition.¹

The policies for bases of promotion of sixth grade elementary pupils to junior high school as stated by Miss Elise Weibel, an elementary principal of extensive experience in the Louisville public schools, are:

1. Mastery of minimum essentials in major subjects.
2. Teacher's judgment - in some cases decided by teacher in conference with principal.
3. Chronological age - all pupils having reached the age of 14 years must be sent to junior high school.
4. Educational age - pupil should not spend more than three terms in the same grade.
5. What is best for the individual pupil - pupil is placed where the school can help him to do the very best of which he is capable.
6. Reading ability - every pupil must have a fourth grade reading ability.

The data, including test scores made in the elementary school, chronological age, intelligence quotient, school attendance, and teachers' grades, used in this study were taken from the permanent record files of the Highland Junior High School and the office of the Bureau of Research, Board of Education Building. It should be mentioned that to the group of children entering from the non-feeder schools is given the Otis Self-Administering Test of Mental Ability at the Highland Junior High School. To those who come from other local

¹H. M. Lafferty, "Enrollment vs. Pupil Failures," Nation's Schools 21: pp. 29-30, February 1938.

public elementary schools, it will be remembered, the Kuhlmann-Anderson test had been administered and the records are easily obtainable.

CHAPTER IV

PRESENTATION OF DATA

It seems appropriate to make a comparison of the Pre-War Class and War Class by intelligence quotient, including medians and ranges, by average chronological age, by average daily attendance, and by teachers' grades in three major subjects, English, Social Studies, and Mathematics, for the purpose of ascertaining the relation of various factors to achievement in subjects studied during the first year in junior high school. Since more information about pupils from feeder schools was available it might be worthwhile to determine which of these groups attained the greatest amount of academic success. Such information might determine policies for grouping the entrants. Another reason for making this comparison is to discover whether academic success during war time is on a higher level than during peace time.

The native ability of the Pre-War and War Class and existing differences among Feeder Schools.

The median I.Q.'s of the pupils in the Pre-War Class and War Class at Highland Junior High School are given in Table III, together with the range of I.Q.'s for both classes.

TABLE III

Intelligence Quotient Medians and Ranges of Pupils
of the Pre-War and War Classes at the Highland Junior High School by Feeder and Non-Feeder Schools.

School	Median I.Q.'s				Range of I.Q.'s	
	No. of Pupils	Pre-War Class	War Class	No. of Pupils	Pre-War Class	War Class
Feeder X	33	110	121	23	89-144	94-150
Feeder Y	60	110	121	33	84-140	92-138
Feeder Z	27	110	116	27	88-133	98-127
Non-Feeder	<u>8</u>	111	114	<u>33</u>	106-125	96-145
	128			116		

A score resulting from the intelligence test is considered to be indicative of native ability. It is obvious from Table III that the group entering Highland Junior High School in September 1942, known in this study as the War Class, happens to be superior mentally to the class entering in September 1940, known as the Pre-War Class. In schools X and Y the median I.Q. is larger by 10 per cent, in school Z it is larger by 5.4 per cent, while in non-feeder schools it is larger by 3.2 per cent. Since the War-Class is superior mentally, will the academic achievement be greater for this class? The question will be answered later. Upon examination of the range of I.Q.'s it will be noticed that there is greater variability in schools Y, Z, and non-feeder than in school X.

The mean I.Q.'s of the pupils in the Pre-War-Class and War Class at the Highland Junior High School are given in Table IV, together with the standard deviation for both classes.

TABLE IV

Intelligence Quotient Means and Standard Deviations of
Pupils of the Pre-War and War Classes at Highland Junior
High School by Feeder and Non-Feeder Schools

School	Class	No. of Pupils	Mean I. Q.'s	Standard Deviation
Feeder X	Pre-War	33	109.697	12.25
	War	23	121.304	12.55
Feeder Y	Pre-War	60	111.533	11.09
	War	33	121.061	8.20
Feeder Z	Pre-War	27	110.592	11.48
	War	27	114.667	8.64
Non-Feeder	Pre-War	8	113.375	6.60
	War	33	114.879	10.71
		<u>244</u>		

The means given in Table IV are close to the medians given in Table III. The slightly different values which may be noticed are probably explained by the skewness of the distribution of I.Q.'s in each class. The standard deviation for the Pre-War and War Classes in Feeder School X are nearly the same. In Feeder Schools Y and Z the deviation of the scores in the Pre-War Class is slightly greater than that of the scores for the War Class; that is the I.Q. of the pupils in the Pre-War Class in these schools was slightly more variable than that of the pupils in the War Class. In order to prove whether or not there is a significant difference in the mean I.Q.'s of the pupils from feeder schools the formula for the significance of the difference was applied:¹

$$t = \frac{\bar{x}_2 - \bar{x}_1}{\sqrt{\frac{s^2}{n_1} + \frac{s^2}{n_2}}}$$

The statistical significance of the difference between the means is shown in Table V. The differences between the mean I.Q.'s of feeder schools are given at the left of the table. The means themselves are given in parentheses to show how the differences are obtained. The standard errors of the means were calculated from the formula:

$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{N-1}}$$

¹F. E. Croxton and D. J. Cowden, Applied General Statistics Prentice-Hall, Inc. New York 1939, Chapter 12.

Where $\sigma_{\bar{x}}$ refers to the standard error of the distribution,
 σ refers to the standard deviation of the distribution,
 and N refers to the number of cases. The standard errors
 of the differences between the means were calculated
 from the formula:

$$\sigma_{\bar{x}_1 - \bar{x}_2} = \sqrt{\sigma_{\bar{x}_1}^2 + \sigma_{\bar{x}_2}^2}$$

Where $\sigma_{\bar{x}_1 - \bar{x}_2}$ refers to the standard error of the
 difference between the means, $\sigma_{\bar{x}_1}$ is the standard error
 of the first obtained mean, $\sigma_{\bar{x}_2}$ is the standard error
 of the second obtained mean.

TABLE V

Statistical Significance of Differences Between
Mean I.Q. of Pupils from Feeder Schools

Pre-War Feeder Schools	Means	d	$\sigma_{\bar{X}_1 - \bar{X}_2}$	$d/\sigma_{\bar{X}_1 - \bar{X}_2}$	Signif- icant
X-Y	(116.83-119.35)	-2.52	2.917	-.86	No
X-Z	(117.46-119.35)	-1.89	3.024	-.63	No
Z-Y	(116.83-117.46)	-.63	2.84	-.22	No
 <u>War Feeder Schools</u>					
X-Y	(127.83-126.23)	1.60	3.084	.52	No
X-Z	(113.39-126.23)	-12.84	3.040	-4.22	Yes
Z-Y	(127.83-113.39)	14.44	2.376	6.08	Yes

Since it is generally agreed that a difference should be at least three times as large as its standard error to be significant, we may say there is no definite evidence that the I.Q. ratings are superior except in the War Feeder Schools X and Y.

Upon further examination of the data, it was found that more girls made an I.Q. score equal to the median and above than did boys with two exceptions. The first exception was found in the Pre-War Class from school

Z where boys exceeded the girls by one, and the second in the non-feeder school where the number was the same. The question of relative intelligence of the sexes has always been one of interest and social significance. Psychologists have found that as far as the evidence of mental tests can be trusted the average intelligence of girls is as high as that of boys. From a study of 1000 I.Q.'s of boys and girls made by Terman there was found a small but fairly constant superiority of the girls up to the age of thirteen years.²

If the value of this test score lies in the realm of prophesying how well a person will do in other intellectual tasks, we may assume that the girls will achieve greater academic success than boys in the three subjects chosen for this study. This conclusion is in keeping with the fact that a great many studies which have been published point out the fact that there is a relationship between intelligence tests scores and achievement in school. However, the score on an intelligence test is not to be looked upon as a substitute for personal judgment of pupil's past achievement on the part of the teacher.

Angelo Patri writing on the "I.Q." states,

It can be a useful tool in the hands of the expert psychologist and teacher. It can be a dangerous nuisance if handled by an amateur. At its best, the I.Q. is an indication of the state of the child's

²L. M. Terman, The Measurement of Intelligence. Houghton Mifflin Co., New York, 1916. pp. 68-71.

mental powers, in the tested fields,
at a certain hour on a certain day,
under certain conditions.³

It was thought at one time that scholastic success was determined by intelligence. To say that intelligence is of significance in most school situations is an axiom. However, in recent years research data tend to indicate that intelligence is not the only factor conducive to success. Other factors, such as industry, perseverance, loyalty, and cheerfulness affect the nature and extent of scholastic achievement.

Other factors indicative of academic success.

Many studies have been made to find out the relation between various factors and pupil achievement in the subjects studied in school, but the factor of regularity of attendance has escaped the attention of investigators. Educational literature contains little bearing on the effect which this factor has on achievement. The study presented in this thesis does not include any pupil who was a very late entrant or who was not in attendance during his first year at Highland Junior High School at least eighty-five percent of the school year. One hundred eighty-four days comprised the school year of September 1940 to June 1941 for the Pre-War Class, while one hundred eighty-five days comprised the school

³Angelo Patri, "I.Q.", Journal of the National Education Association 29:236, November 1940.

year of September 1942 to June 1943 for the War Class.

This ruling was authorized by the Board of Education.

A comparison of the average daily attendance and average age of the pupils follows in Table VI.

TABLE VI

Average Age and Average Daily Attendance of Pupils
of the Pre-War and War Classes at Highland Junior
High School by Feeder and Non-Feeder Schools

School	No. of Pupils	Aver. Age Pre-War Class*	No. of Pupils	Aver. Age War Class**	Aver. Daily Attendance	
					Pre-War Class	War Class
Feeder X	33	13	23	13	175	1 73
Feeder Y	40	12-10	33	12-10	173	1 76
Feeder Z	27	12-11	27	12-11	175	1 68
Non-Feeder	<u>8</u> 128	12-10	<u>33</u> 116	13	177	1 73

*Age in years and months computed as of June 1941

**Age in years and months computed as of June 1943

The comparisons of average daily attendance shown in Table VI are rather close. The Non-Feeder-School of the Pre-War Class has the highest average daily attendance, while Feeder School Y of the War Class attained the highest record. The latter school made the best record of average daily attendance, figured on a percentage basis, when both Pre-War and War Classes were compared.

In educational literature available on the subject of relationship between school attendance and scholastic achievement, writers are of the opinion that there is a positive correlation between these two factors.

W. A. Wetzel writes:

The desire to be present at school is likely to grow out of the desire to do school work, and the best agent to create this desire is the class room teacher. Just as irregular attendance and poor work go hand in hand, so do regular attendance and good work attend each other.⁴

A study was made for the purpose of testing the hypothesis, namely: the relation between attendance and achievement by C. H. Butler. He concluded from his study that regularity of attendance may be taken as a fairly valid index of achievement and one that may have a rather large diagnostic and prognostic value.⁵

⁴W. A. Wetzel, "School Attendance and Scholarship", School Review, 36:118, February 1928.

⁵C.H. Butler, "School Achievement and Attendance", School Review, 33:450, June 1925.

Upon further study of the data of the Pre-War and War Classes at the Highland Junior High School it was found that those pupils with the highest I.Q.'s in the various schools in the Pre-War and War Classes did not have a better attendance record than did those with the lowest I.Q.'s. This finding seems to be in agreement with one of the conclusions from a survey of attendance literature by L. C. Halberstadt, which is, that intelligence affects school attendance only "in a minor way".⁶ The relationship between I.Q. scores and daily attendance records for the Pre-War and War Classes was obtained from the formula:⁷

$$r = \frac{\frac{\sum x' y'}{N} - c_x c_y}{\sigma_x \sigma_y}$$

The coefficient of correlation for the Pre-War Class was $.17 \pm .07$, and for the War Class was $.10 \pm .06$. While these coefficients are positive and indicate that a relationship is present, the correlation is considered low. Perhaps this very low correlation is due to the fact that very late entrants and pupils attending less than eighty-five percent of the school year were not included in this study.

⁶L. C. Halberstadt, "High School Truants", Nation's Schools, 21:33, April 1938.

⁷H. E. Garrett, Statistics in Psychology and Education, Longmans, Green and Co., New York 1926, Formula 23.

In Table VI the age comparisons of all groups are very close. The most outstanding fact is that both classes from Feeder School X are the oldest of all groups by only one to two months, except the War Class from Non-Feeder Schools which has the same average age.

Academic success measured by teachers'
grades and correlations with I.Q. scores

The distribution of marks in English, Social Studies, and Mathematics among pupils in the Pre-War and War classes is shown in Tables VII, VIII, and IX. These tables are shown on pages 42, 43, and 44 and these tables are given for the purpose of making a detailed comparison of the schools and classes in question. The term "marks", employed in this study, refers to letters used to report to pupils, parents, or others concerned, the status of pupils' achievement in the above mentioned subjects.

"School marks serve many purposes, but their value as a measurement of academic achievement has received the greatest agreement among educators."⁸

The academic achievement of the pupils in both classes was based on teachers' estimates as indicated by the daily recitation marks, written and oral assignments, and tests made by the teachers and given at the conclusion

⁸R. A. Norsted, "To Mark or Not to Mark?" Journal of Education, 121:81-84, March 1938.

of each unit of work. Teachers intend to base their marks on actual achievement in school subjects, but the fact that marks usually represent the teachers' subjective judgment, and that a great diversity of factors is considered when a mark is determined tends to complicate this problem. Also, all pupils in both classes were not taught English, for example, by the same teacher.

Studies have shown that a school mark is more than a simple rating of achievement. It is in addition a reflection of effort, initiative, interest, improvement, attitude, talkativeness of the individual and his personality as it affects others. Symonds⁹ believes that the school mark should represent only achievement in the subject pursued. Paterson and Langlie¹⁰ have shown that teachers tend to favor girls rather than boys in marking. They also show that quiet, well-mannered, clean polite boys are given higher marks than noisy, ill-mannered, dirty boys. Boys who make themselves prominent by taking part in class discussion, or in other school activities, tend to receive higher marks than boys who do little to attract attention.

Comparisons of the distribution of English, Social Studies and Mathematics grades are shown in Tables VII, VIII and IX on the following pages.

⁹P. M. Symonds, Measurements in Secondary Education, Macmillan, New York, 1927. p.505.

¹⁰D. G. Paterson and T. A. Langlie, "The Influence of Sex on Scholarship Ratings", Educational Administration and Supervision, 12:458-468, Oct. 1926.

TABLE VII

Distribution of English Grades by Number and Percents
of the Pre-War Class with Those of the War Class as
Given by Teachers at The Highland Junior High School
by Feeder and Non-Feeder Schools

												Total No
Feeder School		A		B		C		D		E		Pupils
		No.	%	No.	%	No.	%	No.	%	No.	%	
X	P-W	0	---	8	24.2	9	27.3	15	45.5	1	3.0	33
	W	4	17.4	4	17.4	8	34.8	7	30.4	0	000	23
Y	P-W	4	6.7	29	48.3	22	36.7	5	8.3	0	000	60
	W	12	38.4	6	18.2	8	24.2	7	21.2	0	000	33
Z	P-W	2	7.4	8	29.7	6	22.2	11	40.7	0	000	27
	W	3	11.1	9	33.3	7	26.0	8	29.6	0	0000	27
Non Feeder School												
	P-W	1	12.5	3	37.5	3	37.5	1	12.5	0	000	8
	W	6	18.2	5	15.2	12	36.3	9	27.3	1	3.0	33

TABLE VIII

Distribution of Social Studies Grades by Number and
 Percents of the Pre-War Class with Those of the War
 Class As Given By Teachers at the Highland Junior High
 School By Feeder and Non-Feeder Schools

												Total
												No
												Pupils
Feeder		A		B		C		D		E		
School		No.	%	No.	%	No.	%	No.	%	No.	%	
X	P-W	1	3.0	12	36.4	9	27.3	5	15.1	6	18.2	33
	W	3	13.0	4	17.4	10	43.5	4	17.4	2	8.7	23
Y	P-W	5	8.3	27	45.0	17	28.3	10	16.7	1	1.7	60
	W	6	18.2	6	18.2	14	42.4	6	18.2	1	3.0	33
Z	P-W	2	7.4	8	29.7	9	33.3	5	18.5	3	11.1	27
	W	3	11.1	7	26.0	6	22.2	9	33.3	2	7.4	27
Non												
Feeder												
School												
	P-W	0	000	5	62.5	3	37.5	0	000	0	0000	8
	W	2	6.1	9	27.3	12	36.3	6	18.2	4	12.1	33

TABLE IX

Distribution of Mathematics Grades by Number and Per
Cents of the Pre-War Class with Those of the War Class
As Given by Teachers at the Highland Junior High School
By Feeder and Non-Feeder Schools

Feeder School		A		B		C		D		E		Total No. Pupils
		No.	%	No.	%	No.	%	No.	%	No.	%	
X	P-W	0	000	3	9.1	13	39.4	14	42.4	3	9.1	33
	W	3	13.0	4	17.4	6	26.1	6	26.1	4	17.4	23
Y	P-W	5	8.3	15	25.0	32	53.3	8	13.4	0	0000	60
	W	5	15.2	7	21.2	10	30.3	9	27.3	2	6.0	33
Z	P-W	0	0000	1	3.7	15	55.5	8	29.7	3	11.1	27
	W	1	3.7	6	22.2	5	18.5	7	26.0	8	29.6	27
Non Feeder School												
	P-W	0	000	4	50.0	4	50.0	0	0000	0	0000	8
	W	2	6.1	4	12.1	10	30.3	10	30.3	7	21.2	33

While the grades shown in Tables VII, VIII, and IX vary more or less from school to school and from class to class, it will be observed that they approximate a normal distribution for four of the mathematics classes, three of the social studies classes, and only one of the English classes. This fact is also shown graphically farther on in this chapter. A striking evidence in achievement is that the War Class received 32.4 per cent more A's in the three subjects than did the Pre-War Class. Also the highest percent of A's was given in English to the War Class. Earlier in this chapter it was stated that the War Class happens to be superior mentally to the Pre-War Class as shown by scores from the intelligence test. If such a test is important in understanding what should be expected of pupils regarding academic achievement, then the War Class has fulfilled the prediction of higher achievement. A very small percent of failing grades was given in English, while the percent of failing grades in social studies is smaller in the War Class than in the Pre-War Class except in Feeder School Y. Again from Table III it was shown that the median I.Q. for the War Class was 116 and above. Psychologists classify such scores as indicative of superior intelligence. Perhaps these very high grades may be explained by the fact that training is not at the level of the pupils' high mental ability. However, the percent of failing grades is larger for the War Class

than for the Pre-War Class in mathematics in all of the Feeder Schools. Recent emphasis upon the importance of mathematical abilities and accuracy by the armed forces may be reflected in the larger percent of failing grades. "Getting by" in school is not sufficient to get one by in the armed forces. The War Class also received three times as large a percent of high grades, "A", in all subjects as was received by the Pre-War Class.

The median grade in English for both classes from Feeder School Y is "B", while from other Feeder Schools it is C for both classes. The median grade in social studies for the Pre-War Class from Feeder School Y is "B", while for all other classes the median grade is "C". The median grade in mathematics for all classes from Feeder Schools is "C" with two exceptions - for the Pre-War Class from Feeder School X, and for the War Class from Feeder School Z, the median grade is D.

Table X on page 48 shows the correlations between intelligence test scores made by pupils of the Pre-War and War Classes and school grades given by teachers. The formula used for finding these correlations was:¹¹

$$\rho = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$

in which D represents the difference in the rank of an individual in the two series, $\sum D^2$ is the sum of the

¹¹H. E. Garrett, Statistics in Psychology and Education Longmans, Green and Company, New York, 1926, Formula 36.

squares of all such differences, N is the number of cases, and P is the rank order coefficient of correlation. They range from .09 to .77, while most of the correlations are between .40 to .43.

TABLE X

Correlation Between Intelligence Test Scores and Grades
Given in English, Social Studies, and Mathematics by
Teachers at the Highland Junior High School to Pupils
of Pre-War and War Classes

<u>School</u> <u>Pre-War</u> <u>Class</u>	No. of Pupils	English	Soc. Studies	Mathematics
Feeder X	33	.67 $\pm$.07	.70 $\pm$.06	.77 $\pm$.05
Feeder Y	60	.37 $\pm$.08	.52 $\pm$.07	.46 $\pm$.07
Feeder Z	27	.09 $\pm$.13	.40 $\pm$.11	.43 $\pm$.11
<u>War</u> <u>Class</u>				
Feeder X	23	.68 $\pm$.08	.42 $\pm$.12	.53 $\pm$.11
Feeder Y	33	.43 $\pm$.10	.43 $\pm$.10	.66 $\pm$.07
Feeder Z	27	.27 $\pm$.13	.51 $\pm$.10	.43 $\pm$.11

The correlations in Table X are in keeping with those found in educational literature. Standard educational tests give a more objective result than school marks. When these test records are used the correlation between them and intelligence scores are higher.¹² The deviation of scores in English for the War-Class is greater than that of the scores for the Pre-War Class; that is the achievement of the pupils in the War Class is more variable than that of the pupils in the Pre-War Class. However, the achievement is only slightly more variable in Feeder School X. The standard deviation in social studies and mathematics for the Pre-War Class in Feeder School X is very much larger than for the War Class and indicates a great variability exists in the achievement of the Pre-War pupils.

The question naturally arises as to the significance of difference between the grades received by children in the Pre-War and War Classes from teachers in the Highland Junior High School. The critical ratio between these two classes was computed from the formula for the significance of the difference, as given on page 34, and found to be .31. These figures do not indicate a significant difference between the grades of the Pre-War and War Classes, since it is generally agreed that the critical ratio must be at three or greater.

¹²Rudolph, Pinter, Intelligence Testing. Henry Holt and Company, New York, 1931, pp. 108-109.

In order to prove statistically whether or not there is a significant difference in the mean achievement of Feeder Schools, the formula for the significance of the difference was again applied. The statistical significance of the difference between the means is shown in Table XI. The differences between the mean achievement of the feeder schools are given at the left of the table. The means themselves are given in parentheses to show how the differences are obtained.

TABLE XI

Statistical Significance of Differences between
Mean Achievement of Feeder Schools

Pre-War Feeder Schools	Means	d	$\sigma_{\bar{x}_1 - \bar{x}_2}$	$\frac{d}{\sigma_{\bar{x}_1 - \bar{x}_2}}$	Significant
X-Y	(85.88-80.95)	4.93	.8043	6.13	Yes
X-Z	(81.19-80.95)	.24	1.0196	.24	No
Z-Y	(85.88-81.19)	4.79	.8732	5.49	Yes
War Feeder Schools					
X-Y	(85.62-83.31)	2.31	1.2714	1.82	No
X-Z	(82.31-83.31)	-1.00	1.3510	- .74	No
Z-Y	(85.62-82.31)	3.31	1.2332	2.68	No

Since it is generally agreed that a difference should be at least three times as large as its standard error to be significant, we may say that the scholastic achievement of Pre-War Feeder School Y is significantly different from that of Feeder Schools X and Z.

Elementary School records compared with Highland Junior
High School Records

Tables XII through XVII, on the following pages, show the results of the Progressive Achievement Tests, Elementary Battery, Form A, administered to both classes in each of the Feeder Schools. The War Class in each of the Feeder Schools had a larger percent of pupils scoring a grade placement above the 6A grade in all tests than did the Pre-War Class. A larger percent of pupils scored a grade placement above the 6A in the Reading Vocabulary, Reading Comprehension, and Language Tests than did in the Arithmetic Tests. The Pre-War and War Classes from Feeder School Y had a larger percent of pupils to score a grade placement above the 6A than did the other two Feeder Schools in all of the tests given.

TABLE XII

Number and Percents of Pupils Scoring at Given Grade Levels on Progressive Achievement Tests, Elementary Battery, Form A, Administered in February 1940 to School X Pupils in Louisville Public Schools

Grade Scores	Reading Vocab.		Reading Comprehension		Arith. Reasoning		Arith. Fundamentals		Language	
	No.	%	No.	%	No.	%	No.	%	No.	%
10B										
9A			1	3.0						
9B	1	3.0	5	15.2						
8A	2	6.1	1	3.0	1	3.0				
8B	8	24.2	4	12.1			2	6.1	2	6.1
7A	5	15.2	6	18.2	3	9.1	2	6.1	7	21.2
7B	7	21.2	4	12.1	4	12.1	3	9.1	7	21.2
6A	4	12.1	4	12.1	6	18.2	8	24.2	5	15.2
6B	2	6.1	3	9.1	10	30.3	7	21.2	4	12.0
5A	2	6.1	3	9.1	3	9.1	7	21.2	5	15.2
5B			2	6.1	4	12.1	4	12.1	1	3.0
4A	1	3.0			2	6.1				
4B	1	3.0							2	6.1
TOTAL	33	100.0	33	100.0	33	100.0	33	100.0	33	100.0
Percents above 6A		69.7		63.6		24.2		21.3		48.5
Percents below 6A		18.2		24.3		57.6		54.5		36.3

Table XII on page 53 shows that the largest percent, 69.7, of pupils in Feeder School X received a grade placement above the 6A in the Reading Vocabulary Test, the next largest percent in the Reading Comprehension Test, and the next largest percent in the Language Test. The Arithmetic Reasoning Test and Arithmetic Fundamentals came next in the order named. The highest grade placement, 9A, was given to only one pupil in the Reading Comprehension Test. If these test records are helpful in predicting what the pupil will do in junior high school, let us examine the seventh grade records. Fifty-one percent of the pupils from Feeder School X received a grade of 80 and above in English at Highland Junior High School, Three percent received failing grades. In social studies 66.7 percent of the pupils received a grade of 80 and above, and the largest percent, 18.2, of failing grades was given in this subject. In mathematics 48.5 percent received a grade of 80 and above, and only 19.1 percent of failing grades was given.

TABLE XIII

Number and Percents of Pupils Scoring at Given Grade Levels on Progressive Achievement Tests, Elementary Battery, Form A, Administered in February 1940 to School Y Pupils in Louisville Public Schools.

Grade Scores	Reading Vocab.		Reading Comprehension		Arith. Reasoning		Arith. Fundamentals		Language	
	No.	%	No.	%	No.	%	No.	%	No.	%
10B			2	3.3						
9A			3	5.0						
9B	9	15.0	10	16.6	3	5.0	2	3.3	1	1.7
8A	13	21.7	8	13.4	4	6.7	3	5.0	4	6.7
8B	16	26.7	13	21.7	13	21.7	13	21.7	17	28.2
7A	3	5.0	11	18.3	6	10.0	11	18.4	12	20.0
7B	11	18.3	4	6.7	6	10.0	13	21.7	14	23.3
6A	3	5.0	6	10.0	13	21.7	14	23.3	6	10.0
6B	3	5.0	3	5.0	10	16.6	2	3.3	3	5.0
5A	2	3.3			3	5.0	2	3.3	1	1.7
5B									1	1.7
4A					2	3.3			1	1.7
Total	60	100.0	60	100.0	60	100.0	60	100.0	60	100.0
Percents above 6A		86.7		85.0		53.4		70.1		79.9
Percents below 6A		8.3		5.0		24.9		6.6		10.1

Table XIII shows that while the largest percent, 86.7, of pupils in Feeder School Y received a grade placement above the 6A in the Reading Vocabulary Test, the highest grade placement for this school was 10B and was given to two pupils in the Reading Comprehension Test. The Arithmetic Fundamentals and Arithmetic Reasoning Tests received the lowest percents of grade placement above the 6A, although the highest grade placement for these two tests, 9B, is one term above Feeder School X. The junior high school records for Feeder School Y showed no failing grades in English and Mathematics, and only 1.7 per cent in social studies. The percent of pupils receiving a grade of 80 and above in English was 91.7; in social studies it was 81.6; and in mathematics it was 86.6. The data from Table XIII indicates that the pupils of Feeder School Y are capable of doing high quality work and suggests to teachers in junior high schools the necessity of offering to such pupils a high type of curriculum experiences and to hold them to first-class performances.

TABLE XIV

Number and Percents of Pupils Scoring at Given Grade Levels on Progressive Achievement Tests, Elementary Battery, Form A, Administered in February 1940 to School Z Pupils in Louisville Public Schools.

Grade Scores	Reading Vocab.		Reading Comprehension		Arith. Reasoning		Arith. Fundamentals		Language	
	No.	%	No.	%	No.	%	No.	%	No.	%
10B										
9A	1	3.7	1	3.7						
9B	2	7.4	2	7.4						
8A	1	3.7	2	7.4					1	3.7
8B	3	11.1	2	7.4					1	3.7
7A	5	18.6	4	14.8			1	3.7	4	14.9
7B	6	22.2	4	14.8	3	11.1	2	7.4	3	11.1
6A	4	14.8	5	18.6	9	33.3	8	29.7	6	22.2
6B	1	3.7	4	14.8	6	22.2	7	25.9	3	11.1
5A	2	7.4	2	7.4	4	14.8	7	25.9	3	11.1
5B					5	18.6	1	3.7	3	11.1
4A	2	7.4	1	3.7					3	7.4
4B							1	3.7		
3A									1	3.7
Total	27	100.0	27	100.0	27	100.0	27	100.0	27	100.0
Percents above 6A		66.7		55.5		11.1		11.1		33.4
Percents below 6A		18.5		25.9		55.6		59.2		44.4

The largest percent, 66.7, of pupils in Feeder School Z also scored a grade placement above the 6A in the Reading Vocabulary Test. The percent of pupils receiving a grade placement score above the 6A in the Arithmetic Reasoning and Arithmetic Fundamentals Test is very low (11.1). The percent of grade placement scores above the 6A for all tests in Feeder School Z is the lowest of the three Feeder Schools, while the highest percent was made by Feeder School Y. Feeder School Y also scored the highest grade placement in both of the Arithmetic Tests. Also in Feeder School Z more than one-half of the pupils have a grade placement score below 6A in the two Arithmetic Tests. However one-half of these pupils received a grade of 'C in mathematics at the Highland Junior High School, and the largest percent of failures in the same subject is among these pupils from Feeder School Z.

The last three tables XV, XVI, and XVII on the following pages also show the results of the Progressive Achievement Tests given to the same Feeder Schools in 1942, and are for the pupils known in this study as the War Class.

TABLE XV

Number and Percents of Pupils Scoring at Given Grade Levels on Progressive Achievement Tests, Elementary Battery, Form A Administered in February 1942, to School X Pupils in Louisville Public Schools.

Grade Score	Reading Vocab.		Reading Comprehension		Arith. Reasoning		Arith. Fundamentals		Language	
	No.	%	No.	%	No.	%	No.	%	No.	%
10B	1	4.3	1	4.3						
9A										
9B	2	8.7	4	17.4					1	4.3
8A	1	4.3	2	8.7			1	4.3	1	4.3
8B	4	17.4	2	8.7	1	4.3	3	13.1	2	8.7
7A	2	8.7	7	30.4	3	13.1	3	13.1	4	17.5
7B	7	30.4	3	13.1	5	21.9	6	26.1	6	26.1
6A			4	17.4	2	8.7	3	13.1	3	13.1
6B	5	21.9			11	47.7	4	17.4	3	13.1
5A	1	4.3					1	4.3	1	4.3
5B					1	4.3	2	8.6	1	4.3
4A									1	4.3
Total	23	100.0	23	100.0	23	100.0	23	100.0	23	100.0
Percents above 6A		73.8		82.6		39.3		56.6		60.9
Percents below 6A		26.2		00.0		52.0		30.3		26.0

In Feeder School X the percents of grade placement scores above the 6A are higher than those for the Pre-War pupils in the same school. The Reading Comprehension Test has the highest percent of grade placement scores above the 6A, with Reading Vocabulary Test in second place and the Language Test in third place. The Arithmetic Fundamental Test had a higher percent of grade placement above the 6A than did the Arithmetic Reasoning Test. The War Class pupils of this school received a larger percent of grades of 80 and above at Highland Junior High than did the Pre-War Class. This increase ranged from 7.2 percent in Social Studies to 18.1 percent in English. An increase of eight percent was received in mathematics by the War Class.

TABLE XVI

Number and Percents of Pupils Scoring at Given Grade Levels on Progressive Achievement Tests, Elementary Battery, Form A, Administered in February 1942, to School Y Pupils in Louisville Public Schools.

Grade Scores	Reading Vocab.		Reading Comprehension		Arith. Reasoning		Arith. Fundamentals		Language	
	No.	%	No.	%	No.	%	No.	%	No.	%
10B			2	6.1						
9A			1	3.0	1	3.0	1	3.0		
9B	6	18.2	11	33.3	1	3.0	4	12.1	3	9.1
8A	11	33.3	5	15.2	2	6.1	7	21.2	3	9.1
8B	2	6.1	6	18.2	6	18.2	3	9.1	5	15.2
7A	3	9.1	1	3.0	3	9.1	7	21.2	7	21.2
7B	8	24.2	5	15.2	6	18.2	6	18.2	8	24.2
6A	1	3.0	1	3.0	11	33.3	5	15.2	5	15.2
6B			1	3.0	3	9.1			1	3.0
5A	2	6.1							1	3.0
Total	33	100.0	33	100.0	33	100.0	33	100.0	33	100.0
Percents above 6A		90.9		94.0		57.6		84.8		78.8
Percents below 6A		6.1		3.0		9.1		0.0		6.0

Table XVI shows at a glance the very high grade placement scores for Feeder School Y. Ninety-four percent of the pupils received a grade placement score above the 6A in the Reading Comprehension Test. The lowest percent (57.6) of pupils to receive a grade placement above the 6A was made in the Arithmetic Reasoning Test, however no other school scored a grade placement as high in both the Arithmetic Tests as did Feeder School Y. All of the Feeder Schools have consistently made higher grade placement scores above the 6A in the Reading and Language Tests than were made in the Arithmetic Tests. The percent of grades of 80 and above received by pupils from Feeder School Y were 78.8 in English and Social Studies and 66.7 in Mathematics. While these percents are the highest for all of the War Classes in Feeder Schools, they are not as high as were the percents for the Pre-War Class for Feeder School Y. This is also true for Feeder School Z. Academic success during war time does not seem to be on a higher level than during peace time.

TABLE XVII

Number and Percents of Pupils Scoring at Given Grade Levels on Progressive Achievement Tests, Elementary Battery, Form A, Administered in February 1942, to School Z Pupils in Louisville Public Schools.

Grade Schools	Reading Vocab.		Reading Compre- hension		Arith. Reason- ing		Arith. Funda- mentals		Language	
	No.	%	No.	%	No.	%	No.	%	No.	%
10B			1	4.0						
9A										
9B	1	4.0	4	16.0			1	4.0		
8A	1	4.0	4	16.0						
8B	6	24.0	2	8.0					2	8.0
7A	6	24.0	1	4.0	1	4.0			4	16.0
7B	4	16.0	3	12.0	4	16.0	5	20.0	3	12.0
6A	2	8.0	7	24.0	6	24.0	5	20.0	4	16.0
6B	2	8.0	2	8.0	10	40.0	7	28.0	5	20.0
5A	1	4.0			3	12.0	5	20.0	5	20.0
5B			2	8.0			2	8.0	1	4.0
4A	2	8.0			1	4.0			1	4.0
Total	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0
Percents above 6A		72.0		60.0		20.0		24.0		36.0
Percents below 6A		20.0		16.0		56.0		56.0		48.0

The pupils in Feeder School Z also made the highest percent of grade placement scores above the 6A in the Reading Vocabulary, Reading Comprehension, and Language Test. While the pupils in this class from Feeder School Z improved their grade placement scores over those of the other class from the same school, their achievement at Highland Junior High School was improved in English since 70.4 percent of the pupils received a grade of 80 and above. This represents an increase of 11.1 percent. In Feeder School Z 56 percent of the pupils are below their grade level in both of the Arithmetic Tests. This is also reflected in the largest percent of failing grades given in mathematics to these pupils at Highland Junior High School. Forty-four percent of the pupils received a grade of 80 and above in mathematics, which represents a decrease of 14.8 percent when compared with the Pre-War Class.

The distribution of grades in English, Social Studies and Mathematics of the Pre-War and War Class given by teachers at the Highland Junior High School is shown graphically on the following pages.

G R A P H I

Distribution of English Grades by percents of the
Pre-War and War Classes as given by Teachers at
the Highland Junior High School by Feeder Schools.

First Bar - Pre-War Class Feeder School X
Second Bar - War Class Feeder School Y
Feeder School Z

Graph I shows that English grades for only one class, from Feeder School X, approximate the normal curve. Excellent grades were made by pupils from Feeder School Y, and the grades for the War Class are skewed to the left. In fact this graph indicates that very good grades were made by pupils from all of the Feeder Schools with only one failing grade scored by Feeder School X. The graph also shows the improved grades of the War Class from Feeder Schools X and Z. E. D. Martin states that the junior high school must perform a war-time service of academic preparation:

Another service is academic preparation that it must give pupils. It is more necessary than ever that pupils know well the fundamental processes of learning. English must be thoroughly learned. World history has become a necessity. World geography is needed as badly as a road map used to be. Science and mathematics are used more in this war than other subjects. One of the great services that the junior high school can render is to do a better job teaching these fundamental subjects than was done before. The junior high school can and should stress the study of languages for boys who are soon to be called into service. Academic preparation on the part of pupils in junior high school needs to be thorough in all its work.¹³

¹³E. D. Martin, "War-Time Service and the Junior High School", The Bulletin of the National Association of Secondary School Principals, 27:105-108, April 1943.

G R A P H II

Distribution of Social Studies Grades by percents
of the Pre-War and War Classes as given by Teachers
at the Highland Junior High School by Feeder Schools.

First Bar - Pre-War Class

Feeder School X

Second Bar - War Class

Feeder School Y

Feeder School Z

Three of the social studies classes on Graph II show a normal distribution of grades at Highland Junior High School. Feeder School Y again shows a higher percent of A and B grades than in the other two Feeder Schools and also the smallest percent of failing grades. Higher grades in social studies might be expected in view of the high grade placement scores in the Progressive Achievement Reading Vocabulary and Comprehension Tests. If world history and world geography are the necessary elements which in the seventh grade comprise the social studies program, perhaps the text books that provide material for this course have not achieved unification of subject matter in this field at the child's level.

G R A P H I I I

Distribution of Mathematics Grades by percents of the
Pre-War and War Classes as given by Teachers at the
Highland Junior High School by Feeder Schools.

First Bar - Pre-War Class

Feeder School X

Second Bar - War Class

Feeder School Y

Feeder School Z

GRADES

The Progressive Achievement Arithmetic Tests showed the smallest percent of grade placement scores above the 6A in arithmetic than any of the other tests. It is also evident from Graph III that many low grades in mathematics were given to pupils from all of the Feeder Schools. Feeder School Y again received more "A" grades than did the other two Feeder Schools, and the smallest number of failing grades in the War Class as compared with the other Feeder Schools. The present emergency has indicated the importance of mathematics and offers an opportunity to establish the importance of the field in a way which cannot be denied, and abolishes the necessity of apologizing for our failure to educate for the mathematical needs of the masses. The low achievement as indicated by Progressive Arithmetic Tests and by grades at Highland Junior High may be the result of the less formal arithmetic instruction given in the lower grades, a change brought about in the curriculum. Whether the elementary school and the junior high school are stressing one of the fundamental subjects more than another is a matter for further investigation.

It was stated earlier in this chapter that we may assume that the girls will achieve greater academic success than boys in the three subjects chosen for this study, and also that teachers tend to favor girls rather than boys in marking. Upon examination of the individual grades to boys and girls in the Pre-War and War Classes, it was found that 19 girls received a grade of A in English while 7 boys received A in the same subject; 15 girls received A in social studies, while 5 boys received A in social studies; and 8 girls received A in mathematics, while 6 boys received A in the same subject. A larger number of A grades was received by boys and girls from both Pre-War and War Classes from Feeder School Y than from any other Feeder School.

It has been shown in this chapter that the superiority of Feeder School Y for both classes is indicated by the highest median grades received in the three subjects used in this study, and also by the larger percent of pupils to score a grade placement above the 6A than did the other Feeder Schools in all of the tests given in the Progressive Achievement Tests, Elementary Battery. Statistically there is no significant difference between the grades of the Pre-War and War Classes, but a significant difference of the mean achievement was found in the Pre-War Class of Feeder School Y. Analysis of the achievement of pupils for all classes from Feeder Schools in mathematics discloses a deficiency. Whether the reason for this deficiency is not so much lack of capacity, but rather a lack of interest, lack of motiva-

tion, of effective teaching, of curriculum changes, or of the adjustment of the curriculum to the abilities and interests of the pupils is not definitely known by the writer. The reason for this deficiency, for the superiority of pupils from any given Feeder School, and for any other outstanding achievement or lack of it is a matter for further study.

CHAPTER V

CONCLUSIONS

If the data reported in this study reflect the actual academic achievement of pupils from the Feeder Schools at the Highland Junior High School, it would appear that the following conclusions seem justified.

1. A child who enters the elementary school at six years of age, and makes regular progress, should enter junior high school at the age of twelve. On this basis the classes considered in this study are of average age. The Pre-War and War Classes from Feeder School X are oldest of the Feeder Schools by one to two months.
2. The data indicate little variation in the amount of attendance. The War Class of Feeder School Y made the best record of average daily attendance. The pupils with the highest I.Q.'s in the various schools in the Pre-War and War Classes did not have a better attendance record than did those with the lowest I.Q.'s.
3. The median I.Q. scores for the War Class happen to be higher than for the Pre-War Class in every school. The median scores for the Pre-War Class indicate normal ability,

while those for the War Class indicate superior intelligence. The range of I.Q.'s shows a near genius score was made by two girls in the Pre-War Class from Feeder Schools X and Y, and one girl from Feeder School X. It is possible that the tests used, designed to measure the I.Q. are less linguistic than formally, and as a result we may say that class room instruction may tend to be less linguistic than formally. This might explain the seemingly large difference between the median I.Q. of 110 of the Pre-War Class and 121 of the War Class.

4. There is no significant difference of the means of the I.Q. rating of pupils except in the War Feeder Schools X and Y.
5. The median marks for the Pre-War and War Classes from the Feeder Schools represent an approximate equality of success. The subject in which there seems to be a notable evidence of superiority of achievement is English, especially from Feeder School Y.
6. The War Class received a higher percent of A's in English, social studies, and mathematics than did the Pre-War Class. The highest percent of A's was given to the War Class in English. The percent of failing grades in social studies is smaller in the

War Class than in the Pre-War Class except in Feeder School Y. The percent of failing grades is larger in mathematics for the War Class than for the Pre-War Class.

7. Feeder School Y consistently received a higher percent of grades of 80 and above in all three subjects than did Feeder Schools X and Z. The superiority of achievement of Feeder School Y is shown by the highest median grades received in English, social studies and mathematics, and also by the highest grade placement scores in the Progressive Achievement Tests.
8. Statistically there is no evidence of a significant difference between the grades received by the children of the Pre-War and War Classes, and no differences of mean achievements of Feeder Schools except the Pre-War Class of Feeder School Y.
9. Analysis of the achievement in mathematics discloses deficiencies among pupils from Feeder Schools X and Z, and suggests the basis for further investigation, the adoption of a more comprehensive plan of testing, and more effective teaching.
10. The first year junior high school pupils attained a greater degree of success in English, one of the three basic subjects chosen for this study, as shown by teachers' grades.

11. Most of the correlations between intelligence test scores and school marks lie between .40 and .43. This correlation is not high, but shows a substantial agreement which exists between general ability as measured by tests and rather unreliable school marks as given by various teachers.
12. The examination of individual grades showed that more girls received a grade of A in English, social studies and mathematics than did boys. We may therefore conclude that sex is a factor in determining academic success.
13. The results of the Progressive Achievement Tests, Elementary Battery, Form A show that the War Class in each of the Feeder Schools had a larger percent of pupils scoring a grade placement above the 6A-grade in all tests than did the Pre-War Class. A larger percent of pupils scored a grade placement above the 6A in the Reading Vocabulary, Reading Comprehension, and Language Tests than did in the Arithmetic Tests.
14. The academic achievement of pupils at Highland Junior High School indicated by teachers' grades was not greater during war time for Feeder School Y in any of the three subjects as might have been expected. Academic achievement, as indicated above,

was improved during war time in Feeder School X in all three subjects and in English only in Feeder School Z. The variation of academic achievement in this study might suggest to junior high school teachers the value of making an intensive study of the individual and class records of future entrants with the purpose of determining policies governing grouping of pupils, items for emphasis in the curriculum, testing, methods of instruction, and grading.

15. One factor which may be of interest to anyone studying the tables is that Feeder School Z uses a less formal method of reporting achievement of pupils than is used in other Feeder Schools. A criticism often made of this informal method is that it fails to motivate the pupils to greater efforts. A student in the field of education may raise the question of whether the use of the above method may be a factor in the lower achievement of pupils in this school.

16. It may be said in explanations of the facts, as indicated in the tables in this study, that the following are possible explanations:

1. It is generally recognized that there is a variation in the economic status of the three divisions of the neighborhood represented by the feeder schools.

The superior academic achievement of Feeder School Y may be the result of such economic variation. There also may be an interplay of factors in any one school affecting achievement.

2. A change in the mathematics curriculum brought about less formal arithmetic instruction below the fourth grade. Instruction in the early elementary grades may be dominated by supervisor-influence and teacher-interest.
3. There are factors other than teacher-interest, such as initiative, cooperation, effort, attitude, personality, which affect pupil achievement. It is also generally agreed that there is a considerable variation in teacher skill and experience.
4. With such a small number of pupils, 120 in the Pre-War Class and 83 in the War Class, there may be a noticeable variation in the native ability of pupils from year to year or in any one given year from school to school. Such a fact may explain the variations of academic success.

SUMMARY OF CONCLUSIONS

BY CLASSES

Class	Median I. Q.	Average Daily Atten- dance	Age	Prog. Achieve- ment Test Element. Battery	Sig. Dif- feren- ces between Grades at HJH	Eng. Grades at H.J.H.
Pre-W		Same	Average		none	
War	larger	Same	Average	scored larger percent above 6A	none	rec'd larger percent of A's

Class	Soc.Stud. Grades at H.J.H.	Math. Grades at HJH	Percent of grades above 80 English-Soc.Stud.-Math.	Percent of Failing Grades Eng. S.S. Math.
Pre-W			larger larger	lar- lar- ger ger
War	rec'd lar- ger per- cent A's	rec'd larger percent A's	larger	lar- ger

SUMMARY OF CONCLUSIONS

BY FEEDER SCHOOLS

School	Sig. of Dif. in Mean I.Q. Rating	Attendance	Age	Median Grades		
				English	Soc.Stu.	Mathematics
X	none		oldest by 1-2 months			
Y	none	highest average		highest	highest	highest
Z	none					

School	Percent above 6A on Progressive Achieve- ment Test	Percent of grades above 80 at Highland Junior High School
X		
Y	largest	largest
Z	lowest	

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