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An Experiment In the New Philosophy Of Promotion

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CHAPTER 1

INTRODUCTION

The very first kind of instruction in the United States was that given to the children of the more wealthy people by individual tutors or governesses.[1] This was usually done in the home. Later the Dame school made its appearance. The children in the community came together in the kitchen of a lady and there would receive a meager form of education. The Dame school grew out of the family responsibility of teaching children the rudiments of learning.[2]

The first type of school used for group instruction was that called the Lancastrian system about 1830. This system originated in Prussia but spread to England and came to this country. It swept the country rapidly because under this system one teacher could handle all the students in one room. The older pupils acted as monitors and would have a group of younger pupils from whom they would hear lessons in different parts of the room. Edgar W. Knight describes the extent to which the Lancastrian system was in charge of monitors as follows:[3]

> The Lancastrian system was so elaborate that the teacher had little to do except to organize, to reward, to punish, and to inspire. When a

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[1] E. W. Knight, Education in the United States (Ginn and Company, 1929), p. 98.

[2] Ibid., p. 120.

[3] Ibid., p. 164.

> child was admitted, a monitor assigned him to his class; while he remained, a monitor taught him with nine other pupils; when he was absent, one monitor ascertained the fact and another found out the reason; a monitor examined him periodically, and when he made progress a monitor promoted him; a monitor ruled the writing paper; a monitor had charge of the slates or books; and a monitor-general looked after all the other monitors.

About 1840, J. D. Philbrick realized the need of more teachers in the school. He also suggested partitioning each floor of his two-story building into four rooms with a teacher in charge of each room. This was the beginning of grouping students which led to the graded system which was soon described as the "lock-step" system.

The administration of graded schools has long been based on the plan that at stated intervals, usually one year, a reclassification of pupils takes place. The more proficient ones are promoted into the next higher grade, and those who have failed to cover the required minimum amounts of subject matter remain in the grades where they were. In extreme cases, very backward pupils are demoted into the grades below. The most obvious defect of this plan, which is still in force in many localities, is that the child who fails in one or more subjects, but who has been successful in the others, is compelled to repeat work which he has already successfully completed as well as that in which he has failed.

The first step toward mitigating the bad effects of this process was in the system of promotion after smaller

intervals, such as half years or ten weeks as in St. Louis. Thus the pupil who failed had only to repeat part of a year's work instead of that of an entire year. Those who fell out of the lockstep were many. There was no means provided whereby they could regain their step. A few fell behind because they were naturally slower than others; some stumbled over a few difficulties and before they could recover were left behind; some were absent too often and when they returned could not catch up; many fretted because there were so many delays in the progress of the work and became disciplinary outlaws.

The problem was still very serious by 1911. School statistics of that time told a striking story of maladjustment in school. Twelve to twenty per cent annually failed of promotion; one third of all the pupils in city schools had lost one, two, three, or more years; more than fifty per cent were entering life outside of school without an elementary education.[4] It is difficult to appreciate fully the unrealized economic and social advantages, health, good citizenship, and social and civic progress that might have accrued to over half of the nation's youth if they could have gone out into life with the rudiments of an education to aid them.

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[4] J. H. Van Sickle, L. Witmer, and L. P. Ayres, Provisions for Exceptional Children in Public Schools, United States Bureau of Education Bulletin, (1911), No. 14, p. 36.

Brueckner and Melby[5] have explained the philosophy of promotion very clearly:

> In case a child was unable to master the work prescribed by the school this fact was immediately pronounced to be the fault of the child. Had not the school existed for centuries? In it revered subjects were taught by scholarly and consecrated teachers. The school was there. The child came to it. He must meet the demands. If he failed, his failure was evidence of deficiency or perhaps laziness on his part. To vary the program of instruction for this child would have been unthinkable. It would have been considered as a lowering of standards. In fact, the school often prided itself on the fact that its work was difficult and that many failed.

H. B. Nash,[6] in an article in the American School Board Journal, had the following to say in regard to promotion:

> When the writer went to school some 25 years ago, school promotion was on somewhat of a competitive basis. Failure was to be expected. If failure was absent, it was felt that standards were not high enough. These should be so set that not all would pass through the 'golden gate' of promotion. Vivid are the memories still present of the ritual with which the successful pupils were duly initiated into the next grade, while the unsuccessful ones watched with envious glances.

In schools committed to the "lock-step" philosophy very little attention has been paid to the individual differences of the pupils. Pupils are passed or retained according to whether they receive a passing mark in each study. This grade is often indicated as seventy or seventy-five per cent. Any such percentage mark is an unsatisfactory means by which

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[5] L. J. Brueckner and E. O. Melby, Diagnostic and Remedial Teaching (Houghton Mifflin Company, 1931), p. 17.

[6] H. B. Nash, "What Is the Most Desirable Basis for Promotion," American School Board Journal, Vol. 84 (May 1, 1932), p. 30.

to measure fitness for promotion; for if a mark of seventy per cent be understood to mean that percentage of fitness to proceed, it is clear that the pupil is not ready to proceed. If this mark represents an average of his various abilities, then some of them are above seventy per cent and some of them are below. It is obvious that great gaps will thus exist in the foundations of such pupils, and each gap will fail to support the greater abilities required for later promotions. Pupils thus selected for advancement to any grade are unequally prepared to do the work of that grade, and therefore the work presents different degrees of opportunity for development to different pupils. The arrangement prevents many of them from having the opportunities they are currently supposed to have. For, as has been shown, opportunity is rightly measured by the extent to which there is ability to take advantage of it. Exposure to recitation is not, in any adequate sense, opportunity.[7]

By 1900 it was expected that every individual should have a common school education, and by 1925 a high school education was coming to be looked upon as the right of every boy and girl. The result of this increased enrolment and great extension of educational privileges was to confront the school with a problem of educating all types of abilities of children which it had never before really faced.[8]

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[7]A. A. Sutherland, "Factors Causing Maladjustment of Schools to Individuals," Twenty-fourth Yearbook, National Society for the Study of Education, Part II, (1925), p. 18.

[8]L. J. Brueckner and E. O. Melby, op. cit., p. 18.

While many educational leaders no doubt influenced the school to give more attention to the child and his needs, it is nevertheless probably true that the attention which has been given to the problem of individual differences has in a large measure been due to the fact that when the traditional school machinery undertook to educate all the children in the different branches it broke down.

In the old lock-step system of promotion the cause of failure lay with the pupil--he had failed to meet the required standard. The school, its organization, and its teachers were in no way held responsible for this failure to meet the standards. At the other extreme today stand certain educators, who advocate that there must be no failure; progress and promotion should be continuous as the pupil grows chronologically. Here a grade is not a level of attainment; it is a level of physical maturity or a good social environment for the child, or just a convenient group in which to place the child until something further develops to alter current conditions.

Furthermore, most educators agree that the cause of our current maladjustment of school to child lies with the course of study, teaching procedures, and inadequate administrative practices. Modify them in studied ways and adjustment will be greatly improved. It is becoming increasingly recognized that pupil failure is much more a failure of the educational program of the school than it is a failure of

the pupil. In other words, the responsibility for failure is with the teachers much more than with the pupils. The administrative machinery, the courses of study, the teaching practices have been at fault. The responsibility for failure which has been assigned to the pupils who have paid the penalty of repeating their work, really has belonged to the administration and teachers from the very beginning.

The Way the Problem Arose

The problem with which this thesis is concerned arose from the fact that some of the parents in the community in which the writer taught were of the opinion that all students should proceed from grade to grade at the same rate regardless of mental ability, past achievement, or aptitude for school work, because these students had been progressing at the rate of one grade per year previously.

Students in an eighth grade class were the ones in question. At the time the writer was teaching the class five pupils failed in a particular study because they did not have the background necessary for the advanced subject matter. They had previously been promoted without having mastered the necessary skills considered standard for passing from the lower grades. The parents were not able to understand the reason for their failure. The difficulty lay in the fact that the old philosophy of grade promotion was being applied to them now in the eighth grade after they had achieved their current grade level through

application of a more liberal recognition of individual differences. They had been passed along to higher grades on the strength of proficiency in certain studies even though they were failing in others.

Furthermore, a mixture of the two promotional philosophies had been practiced in the school. Some pupils were retained in the same grade and were made to repeat the same material another year because they had fallen short in two or three studies, although they had mastered one or two others. Often these students became discouraged and left school. Students of greater than average ability were not given enriched materials but were held back with the slower ones. Inasmuch as all pupils have a right to an equal opportunity to develop the abilities they have and should be retained in the schools as long as possible, this problem was significant enough to be worthy of an effort to solve it.

In regard to this matter Fred Englehardt[9] has written:

> The resultant value of the educational service rendered by a school system is measured in the last analysis by the opportunities it has provided the individual child. It becomes a responsibility of the schools not only to provide these opportunities but to see that the children receive a maximum of benefit from them.

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[9]Fred Englehardt, Survey Report Albert Lea Public Schools, Albert Lea, Minnesota (University of Minnesota Press, 1927), p. 3.

The importance of this problem is also shown in a quotation taken from an address by W. J. Shearer:[10]

> The only object of the schools is the education of the children.

The Problem

The purpose of this study was to answer a number of questions in regard to the application of a new philosophy of promotion at Landa, North Dakota. (1) Will any educational advantage be likely to result from the application of the philosophy of universal promotion compared with the lock-step promotional plan? (2) Is there likely to be a difference in the number of overage pupils in the various grades of the schools under the two promotional plans? (3) How do the two promotional plans adjust to the wide range of mental abilities found among the students in the schools under discussion, by schools and by grades? (4) Does the new philosophy of promotion tend to retard pupils or result in the more rapid advancement of pupils, compared with the old philosophy? (5) Does the new philosophy of promotion tend to adjust the school program to the individual differences of the pupils any more successfully than the old philosophy?

Setting up the Experiment

A field as broad as the one about which this thesis is written must necessarily be limited in its scope. The writer's own school at Landa, North Dakota, was chosen as

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[10] W. J. Shearer, "Elimination of Waste in Education," Addresses and Proceedings of the National Education Association, Vol. 58 (1920), p. 513-515.

the experimental school in which the new philosophy of promotion was practiced. Although the study shows some information about all the grades, it was written primarily about the third, fourth, fifth, seventh, and eighth grades, because there were no pupils enrolled in the second and sixth grades of the experimental school.

The control and experimental group method was used in conducting the experiment upon which this discussion is based. In this method two groups of schools are taken whose conditions are as near alike as possible. Ideally, the only element of difference between the two groups is the one factor, the effect of which is being tested. In practice, this cannot always be the case, but the differences can be determined and taken into account in evaluating the results. The school in which the experiment was carried on was called the experimental school, and the ones in which the old philosophy was used and with which the experimental school was compared, were called the control schools. For this experiment there were three control schools.

In order to determine the extent of equivalence of the schools which formed the two groups, comparisons were made in the following particulars: location of schools, types of schools, length of school term, social and economic status of communities, parentage of children--nationality, education, wealth; and qualifications of teachers employed--age, education, experience, certification, tenure, grades in which enrolled, and number of pupils.

The Rockwell technique was used to compare the schools in the factors in which they differed. This technique involves the ranking of schools in a stairway-like arrangement. Preferably, at the beginning of the experiment the experimental school should rank near the bottom of the stairway. If the new philosophy of promotion has made a significant difference in the achievement of the pupils, the experimental school will rank higher in the stairway at the end of the experiment. The schools were compared in regard to age-grade placement, intelligence levels, mental age-grade placement, and previous achievement.

The promotional plan used in each of the three control schools during the experiment was based on the old philosophy of grade promotion at the end of the year. The teacher held before the pupils the fear of failure as a means of motivation. The work done by each pupil was compared with or evaluated by the work done by the best pupils in the class. The pupils were urged to beat the records of other pupils. A passing grade of seventy per cent was set up as a minimum for the completion of the various studies, failure in any one of which would necessitate the repetition of the work of the grade for another year. No particular attempt was made to motivate the work or enrich the curriculum either for the brighter pupils or the slower ones. Pupils were often promoted from one grade to the next regardless of their mastery of the branches of study,

even though the pupils were deficient in some studies and lacked the background necessary for more advanced work. A pupil obtaining a mark of seventy per cent in arithmetic and of ninety-five in English was better prepared to do the more advanced work in English than in arithmetic. Under this type of philosophy a pupil who did not like a study might do only enough work to obtain a passing mark and go into the next grade less able to proceed satisfactorily in that study than he should have been.

The plan used in the experimental school (more fully explained in Chapter 3) consisted of the removal of the old motivation of fear of failure and put in its place a program of motivation for both the brighter and the slower pupils, enrichment of subject matter, superivision of instruction, teachers' conferences, remedial work, and professional reading by the teachers. Each pupil was encouraged to better his own best previous record of achievement. His advancement was determined from his own records made in a subject and not from those of a brighter pupil. This type of work was carried on for seven and one-half months.

Sources of Data

The data for this thesis consisted of: (1) The age-grade distributions in the schools of the experiment. Those included the names, ages, dates of birth, and grade placement of the pupils. (2) Responses to questionnaires sent to the teachers of the schools stating their qualifications.

(3) Scores of the pupils on intelligence and achievement tests, intelligence quotients, mental ages, and amount of improvement made by the pupils. (4) Information from reference books and articles on the subject of the experiment.

Limitations

The writer recognizes that the experiment was not carried out to his complete satisfaction because of the lack of time on his part due to added unforeseen responsibilities. The writer recognizes that it would be almost impossible to match perfectly three control schools with the writer's own experimental school. The same is true concerning teachers, grades, and pupils. He further recognizes that the best methods of motivation and enrichment of subject content may not have been used, and he does not pretend to show conclusively that the new philosophy of promotion is the only method which will bring about more rapid advancement. The writer recognizes also certain chances of error in the results of the various tests. The mental attitudes of the pupils at the time the tests were given, the time of day, the physical condition of the pupils at the time, and their previous testing experiences all may have affected the scores. Hence, the tests may not have given a true picture of the abilities measured. However, great care was exercised in administering the tests and calculating the scores.

CHAPTER 2

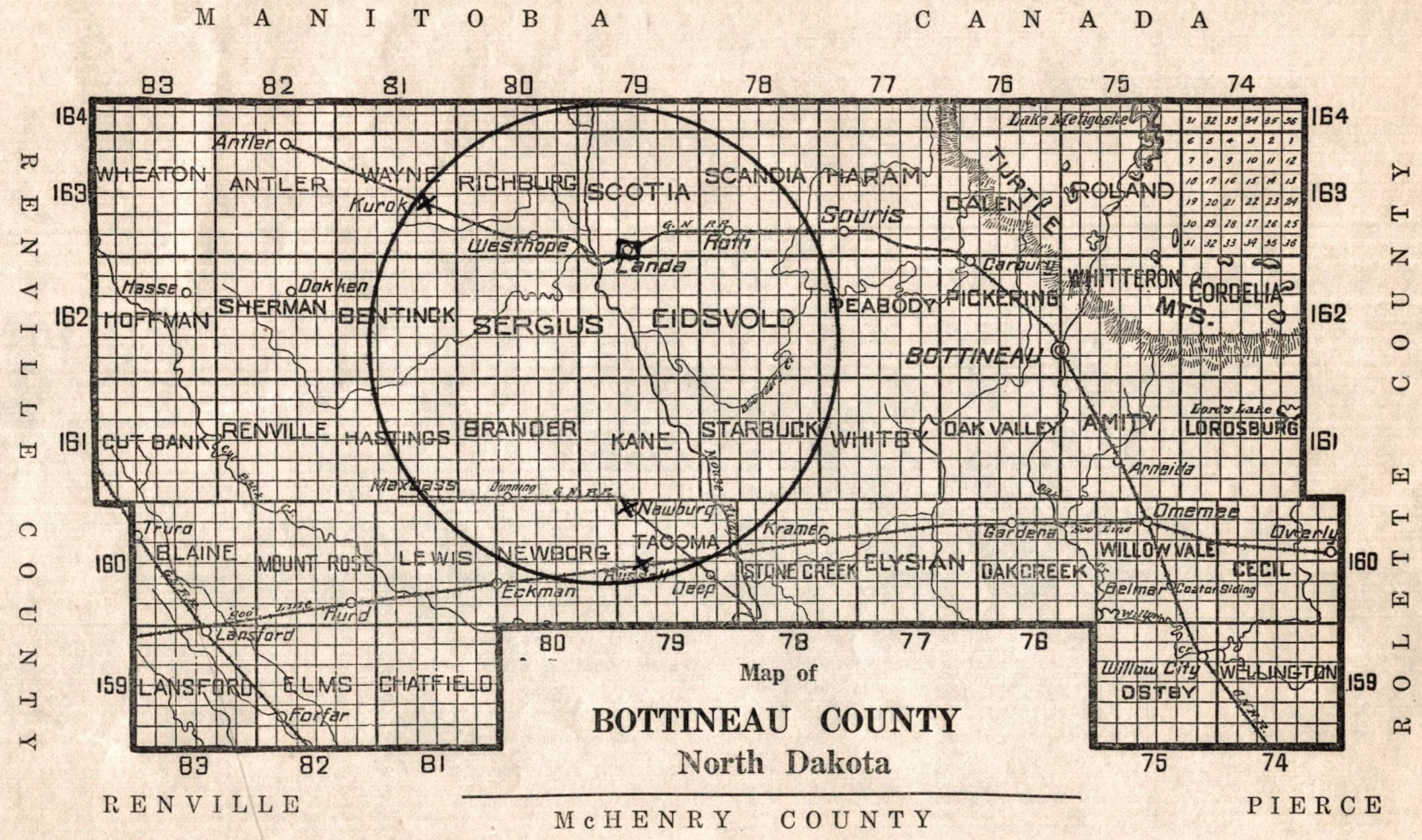
PRELIMINARY INVESTIGATION

The control and experimental group method was used in conducting the experiment. In order that the experiment might yield reliable results it was necessary to choose schools with factors as nearly alike as possible in all respects except the one in which the improvement was to be measured.

Comparison of Schools

The schools chosen were within a circle of a radius of twelve miles (Map 1). Two of the control schools, C and A, were south of the experimental school fourteen and seventeen miles respectively, and three miles from each other. School B was located ten miles west and two miles north of the experimental school.

The social and economic status of the people living in the communities was very similar. The social life of the people consisted largely of public dances, moving pictures in the neighboring towns, and basketball games. Very few of them participated regularly in church activities. The people were almost wholly of Scandinavian descent. Their economic status was that of an ordinary rural group in that part of North Dakota. There was no evidence of extreme poverty nor of moderate wealth. Many families in each community were on relief or working on WPA projects.


M A N I T O B A
C A N A D A
RENVILLE COUNTY
ROLETTE COUNTY
83 82 81 80 79 78 77 76 75 74
164
163
162
161
160
159
Antler
WHEATON
ANTLER
WAYNE
RICHBURG
SCOTIA
SCANDIA
HARAM
Kurok
Souris
Lake Metigoshe
TURTLE
GALEN
ROLAND
Westhope
Landa
Rath
Carbury
WHITTERON
CORDELIA
Hasse
HOFFMAN
Dokken
SHERMAN
BENTINCK
SERGIUS
EIDSVOLD
PEABODY
PICKERING
MTS.
BOTTINEAU
CUT BANK
RENVILLE
HASTINGS
BRANDER
KANE
STARBUCK
WHITBY
OAK VALLEY
AMITY
LORDSBURG
Lord's Lake
Anneida
Maxbass
Dunning
G.N.R.R.
Nawburg
Truro
BLAINE
MOUNT ROSE
LEWIS
NEWBORG
TACOMA
Kramer
Gardena
Omemee
Overly
WILLOW VALE
CECIL
STONE CREEK
ELYSIAN
OAKCREEK
Eckman
Deep
Belmar
Coeur Siding
Hurd
Lansford
LANSFORD
ELMS
CHATFIELD
Forfar
Willow City
OSTBY
WELLINGTON
Map of
BOTTINEAU COUNTY
North Dakota
RENVILLE
McHENRY COUNTY
PIERCE
X Control Schools
□ Experimental School

Map 1

The schools were all first class consolidated schools in small villages in Bottineau County. Each had a term of nine months.

The first school selected, known as School A in this experiment, was located fourteen miles south of the experimental school. The school building was an old wooden structure with a new gymnasium and auditorium built on the west side. School A had two teachers teaching eight grades. Teacher H, thirty-four years old, had attended college one year and four summer sessions. She held a second grade professional life certificate in North Dakota and a six-year elementary certificate for the state of Montana. She had had fifteen years of teaching experience, one of which was in this school. She was teaching four grades, first to fourth inclusive, with enrolments of three, three, seven, and two, respectively, with a total enrolment of fifteen. Teacher E, twenty-five years old, had attended college two years and one summer session. She held a second grade professional life certificate. She had had five years' experience, one of which was in this school. She was teaching four grades: fifth, sixth, seventh, and eighth, with enrolments of three, three, three, and two, respectively, with a total enrolment of eleven.

School B was selected because it was very similar to the experimental school. This school was located ten miles west and two miles north of the experimental school.

The school building was an old wooden structure with no gymnasium facilities. School B had two teachers teaching eight grades and part of the high school. Teacher L was twenty-seven years old and had attended college two years. She held a second grade professional life certificate and had had six years of experience, one of which had been in this school. She was teaching six grades: first to sixth, inclusive, with enrolments of three, four, three, one, five, and two, respectively, with a total of eighteen. Teacher M, twenty-four years old, had attended college four years. She had a bachelor of arts degree and held a first grade professional life certificate. She had had three years' experience, one of which was in this school. She was teaching grades seven and eight and two high school subjects. The enrolment of the grades was three and four, respectively.

School C was the largest school chosen. It had an enrolment of thirty-seven pupils in the grades. The school building was a new structure including gymnasium, auditorium, library, indoor toilets, and convenient classrooms. This school, however, was handicapped by lack of funds for proper teaching equipment. School C had three teachers teaching eight grades. Teacher J, twenty-three years old, had attended college two years, and held a second grade professional life certificate. She had had three years' teaching experience, all in this school. She was teaching two grades, second and third with enrolments of nine and three respectively. Teacher N was twenty-seven years old and had

attended college two years and one summer session. She held a second grade professional life certificate and had had nine years' teaching experience, four of which were in this school. She was teaching the fourth, fifth, and sixth grades with enrolments of five, eight, and four respectively, making a total enrolment of seventeen. Teacher K was twenty-three years old and had attended college one year and four summer sessions. She held a second grade professional certificate and had had four years' experience, one of which was in this school. She was teaching two grades, seventh and eighth, with enrolments of five and four respectively, making a total enrolment of nine.

The experimental school was chosen because it was the school of which the writer was superintendent during the experiment. The school building was a wooden structure with no gymnasium facilities. The school had two teachers in the elementary grades. Teacher C was twenty-nine years old and had attended college two years. She had had eight years' experience. She was teaching her first year in this school, having accepted the position made vacant by the resignation of the original teacher four weeks after school had begun. She was teaching four grades: first, third, fourth, and fifth with enrolments of three, three, five, and four, respectively. There were no pupils in the second or sixth grades of the experimental school. Teacher H was twenty-eight years old and had attended college one year and

five summer sessions. She had had nine years' experience and was teaching her first term in this school. She was teaching the seventh and eighth grades with enrolments of seven and three, respectively.

Tables 1 and 2 have been prepared to summarize the qualifications of the teachers in the experimental and control schools.

Table 1

Summary of Teachers' Qualifications in the Control Schools

School	Teacher	Age	College	Summer School	Experience	Certificate	Tenure	Grades	Pupils
A	H	34	1	4	15	2nd Pro.	1	4	15
A	E	25	2	1	5	2nd Pro.	1	4	11
B	L	27	2	0	6	2nd Pro.	1	6	18
B	M	24	4	0	3	1st Pro.	1	2	7
C	J	23	2	0	3	2nd Pro.	3	3	12
C	N	27	2	1	9	2nd Pro.	4	3	17
C	K	23	1	4	4	2nd Pro.	1	2	9
Average		26.1	2	1.4	6.4		1.7	3.4	12.7

The teachers in the control schools had an average age of 26.1 years, two years of college training, one and four-tenths terms of summer school, six and four-tenths years' experience, and one and seven-tenths years' tenure. Each teacher taught an average of three and four-tenths grades, having an average enrolment of twelve and seven-tenths pupils (Table 1).

Table 2

Summary of Teachers' Qualifications in Experimental School

School	Teacher	Age	College	Summer School	Experience	Certificate	Tenure	Grades	Pupils
	C	29	2	0	8	2nd Pro.	0	4	15
	H	28	1	5	9	2nd Pro.	0	2	10
Average		28.5	1.5	2.5	8.5		0	3	12.5

The teachers in the experimental school had an average age of 28.5 years, one and one-half years' college training, two and one-half terms of summer school, and eight and one-half years' experience. Both were teaching their first term in the school and were teaching an average of three grades with an enrolment of twelve and five-tenths pupils (Table 2).

The control school faculties had the advantage in college training and amount of experience in the positions held, while that of the experimental school had the advantage of age and summer sessions attended, total experience and slightly fewer grades' teaching responsibility. The advantages were very slight either way and should make little difference in the results obtained.

The experimental school was handicapped by the necessity of hiring a teacher to replace the regular one, who resigned after six weeks to be married. Fortunately, however, the new teacher had two weeks to become familiar with the school and her pupils before the first tests in her room were given.

In all respects in which the teachers' qualifications were compared, the data just presented indicate that the schools were very similar.

Age-Grade Study

The age-grade study of pupils was the device used to show the ages of all pupils in each of the grades in the school system. Tables 4, 6, 8, and 10 are so arranged that students who are between the ages of five years nine months and six years three months are classified as six years old; those from six years three months to six years nine months, six and one-half years old, and so on throughout as explained.

In October, 1937, the writer made age-grade studies in the three control schools and the experimental school to compare the placement of pupils in the various grades; to find the number who were overage, the number that were of normal age, and those who were underage. The record of births of the pupils was obtained from the instructors in each school. Each teacher listed the name of each student, his grade, and the year, month, and day of his birth. From this information and by the use of Table 3, the age of each pupil was determined as of September 1, 1937. Table 3 is so arranged that the ages may be determined as of September 1. For example, an individual born on July 16, 1924, was thirteen years old on September 1, 1937.

Table 3

Device for Finding Ages from Dates of Birth

Year of Birth	Month of Birth											
	1 J	2 F	3 M	4 A	5 M	6 J	7 J	8 A	9 S	10 O	11 N	12 D
1918			19½						19			18½
1919			18½						18			17½
1920			17½						17			16½
1921			16½						16			15½
1922			15½						15			14½
1923			14½						14			13½
1924			13½						13			12½
1925			12½						12			11½
1926			11½						11			10½
1927			10½						10			9½
1928			9½						9			8½
1929			8½						8			7½
1930			7½						7			6½
1931			6½						6			5½
1932			5½						5			4½
1933			4½						4			3½
1934			3½						3			2½
1935			2½						2			1½
1936			1½						1			½
1937			½						0			0

The heavy lines running diagonally across Tables 4, 6, 8, and 10 enclose the number of pupils who were of normal age. That is, they were in the grade which would be expected according to commonly accepted standards. Thosecon-sidered of normal age in the first grade were pupils between the ages of five years nine months and seven years three months; those of normal age in the second grade were between the ages of six years nine months and eight years three months.

In each grade there were three groups of pupils: those enclosed by the heavy horizontal lines, or the normal pupils; those below the heavy lines, or the students who were overage; and those above the lines, or those who were underage for their grade. Underageness does not represent rapid progress or promotion accurately, because some under-age pupils have entered school when younger than the average and have made normal progress. Likewise, some overage pu-pils are not retarded but have entered late or been away from school for a semester or a year on account of illness. However, while in school they have made normal progress. Hence, the age-grade table does not tell all the facts about the progress of the pupils, but it is a great aid in comparing schools.

A child who passes regularly from grade to grade year by year is said to be making normal progress in school. Unfortunately, not all children make normal progress. Some

because of unusual ability or other factors are advanced more than are their mates in school work. Others are failed in some of their work and required to repeat grades. This promotional method disrupts the orderly progress of pupils through school and violates the principle or articulation, which implies the orderly progress of each child through school at his own rate without gaps and without duplication of material previously experienced.

The age-grade distribution of the pupils in the experimental school revealed that all were in the normal age group except two in the seventh grade, one in the fourth, one in the fifth, and two in the eighth grade (Table 4). The two who were retarded in the eighth grade were twins, and it is known to the writer that one of the twins was retained in a grade for two years and the other stayed with him so that they could go through school together. The percentages of underage, overage, and normal age pupils in the experimental school were summarized (Table 5). Twenty-eight and five tenths of those in the seventh grade were underage; twenty per cent of the pupils in the fourth grade, twenty-five per cent in the fifth grade, and sixty-six and seven tenths per cent in the eighth grade were overage. Eight per cent of the pupils in the experimental school were underage, seventy-six per cent were normal age, and sixteen per cent were overage.

Table 4

Age-Grade Distribution of the Students in the Experimental School

Chron. Age Yrs. & Mos.	Age Yrs.	Grades 1	2	3	4	5	6	7	8	Total
5-3 to 5-9	5½									0
5-9 to 6-3	6	3								3
6-3 to 6-9	6½									0
6-9 to 7-3	7									0
7-3 to 7-9	7½									0
7-9 to 8-3	8			2						2
8-3 to 8-9	8½									0
8-9 to 9-3	9			1	2					3
9-3 to 9-9	9½				2					2
9-9 to 10-3	10					2				2
10-3 to 10-9	10½				1	1				2
10-9 to 11-3	11									0
11-3 to 11-9	11½					1		2		3
11-9 to 12-3	12							1		1
12-3 to 12-9	12½							3		3
12-9 to 13-3	13							1	1	2
13-3 to 13-9	13½									0
13-9 to 14-3	14									0
14-3 to 14-9	14½									0
14-9 to 15-3	15								2	2
15-3 to 15-9	15½									0
Total		3	0	3	5	4	0	7	3	25

Table 5

Number and Per Cent of Underage, Overage, and Normal Age Students in the Experimental School

Grades	1	2	3	4	5	6	7	8	Total
Number Enrolled	3	0	3	5	4	0	7	3	25
Underage									
Number	0	0	0	0	0	0	2	0	2
Per cent	0	0	0	0	0	0	28.5	0	8.
Normal Age									
Number	3	0	3	4	3	0	5	1	19
Per cent	100.	0	100.	80.	75.	0	71.5	33.3	76.
Overage									
Number	0	0	0	1	1	0	0	2	4
Per cent	0	0	0	20.	25.	0	0	66.7	16.

Ideal articulation in school would mean that every pupil would take the same number of years to finish the grades and would travel at his own rate of learning without leaving gaps at any point. Thus some would know much more than others at the end, although all were exposed to similar experiences on the way.

All the students of School A were in the normal age group except one in the third grade, one in the seventh grade, and one in the eighth grade, each of whom were one-half year underage for their grade; and one in the fifth grade, one in the sixth grade, and one in the eighth grade, the first two of whom were one-half year overage and the other one year overage (Table 6).

In School A fourteen and three-tenths per cent of the pupils in the third grade, thirty-three and three-tenths per cent in the seventh grade, and fifty per cent in the eighth grade were underage; thirty-three and three-tenths per cent of the pupils in the fifth and sixth grades and fifty per cent of those in the eighth grade were overage (Table 7). In school A as a whole eleven and five-tenths per cent of the pupils were underage, seventy-seven per cent normal age, and eleven and five-tenths per cent overage.

Table 6

Age-Grade Distribution of the Pupils in School A

Chron. Age Yrs. & Mos.	Age Yrs.	1	2	3	4	5	6	7	8	Total
5-3 to 5-9	5½									0
5-9 to 6-3	6	1								1
6-3 to 6-9	6½	2								2
6-9 to 7-3	7		1							1
7-3 to 7-9	7½		2	1						3
7-9 to 8-3	8			2						2
8-3 to 8-9	8½			4						4
8-9 to 9-3	9				1					1
9-3 to 9-9	9½				1					1
9-9 to 10-3	10									0
10-3 to 10-9	10½					2				2
10-9 to 11-3	11						1			1
11-3 to 11-9	11½					1	1	1		3
11-9 to 12-3	12							1		1
12-3 to 12-9	12½						1		1	2
12-9 to 13-3	13							1		1
13-3 to 13-9	13½									0
13-9 to 14-3	14									0
14-3 to 14-9	14½									0
14-9 to 15-3	15								1	1
15-3 to 15-9	15½									0
Total		3	3	7	2	3	3	3	2	26

Table 7

Number and Per Cent of Underage, Overage, and Normal Age Pupils in School A

Grades	1	2	3	4	5	6	7	8	Total
No. Enrolled	3	3	7	2	3	3	3	2	26
Underage									
Number	0	0	1	0	0	0	1	1	3
Per cent	0	0	14.3	0	0	0	33.3	50.	11.5
Normal Age									
Number	3	3	6	2	2	2	2	0	20
Per cent	100.	100.	85.7	100.	66.7	66.7	66.7	0	77.
Overage									
Number	0	0	0	0	1	1	0	1	3
Per cent	0	0	0	0	33.3	33.3	0	50.	11.5

Table 8

Age-Grade Distribution of the Pupils in School B

Chron. Age Yrs. & Mos.	Age Yrs.	Grades 1	2	3	4	5	6	7	8	Total
5-3 to 5-9	5½									0
5-9 to 6-3	6	2								2
6-3 to 6-9	6½	1								1
6-9 to 7-3	7		1							1
7-3 to 7-9	7½		3	1						4
7-9 to 8-3	8			1						1
8-3 to 8-9	8½			1						1
8-9 to 9-3	9				1					1
9-3 to 9-9	9½					1				1
9-9 to 10-3	10					1				1
10-3 to 10-9	10½					2				2
10-9 to 11-3	11					1				1
11-3 to 11-9	11½									0
11-9 to 12-3	12							1		1
12-3 to 12-9	12½						2			2
12-9 to 13-3	13							1	1	2
13-3 to 13-9	13½								2	2
13-9 to 14-3	14								1	1
14-3 to 14-9	14½							1		1
14-9 to 15-3	15									0
15-3 to 15-9	15½									0
Total		3	4	3	1	5	2	3	4	25

Table 9

Number and Per Cent of Underage, Overage, and Normal Age Pupils in School B

Grades	1	2	3	4	5	6	7	8	Total
No. Enrolled	3	4	3	1	5	2	3	4	25
Underage									
Number	0	0	1	0	1	0	0	0	2
Per cent	0	0	33.3	0	20.	0	0	0	8.
Normal Age									
Number	3	4	2	1	4	0	2	4	20
Per cent	100.	100.	66.7	100.	80.	0	66.7	100.	80.
Overage									
Number	0	0	0	0	0	2	1	0	3
Per cent	0	0	0	0	0	100.	33.3	0	12.

All the pupils in School B were in the normal age group except one in the third grade and one in the fifth, each of whom was one-half year underage; two in the sixth grade who were one-half year overage; and one in the seventh grade who was one year overage (Table 8). Of the pupils in this school, thirty-three and three-tenths per cent in the third grade and twenty per cent in the fifth grade were underage. All of the pupils in the sixth grade and thirty-three and three-tenths per cent in the seventh grade were overage (Table 9). Of all the pupils in School B, eight per cent were underage, eighty per cent were normal age, and twelve per cent were overage.

In School C two pupils in the second grade, one in the fifth, and two in the eighth were each one-half year underage, and one pupil in the fourth grade was one year underage (Table 10). One pupil in grade three and two in grade five were one-half year overage. One pupil in the fourth grade and one in the sixth were found to be one year overage, and one in the fifth grade was one and one-half years overage. Converted into percentages, the figures were: twenty-two and two-tenths per cent in the second grade, twenty per cent in the fourth, twelve and five-tenths per cent in the fifth, and sixty-six and seven-tenths per cent in the eighth were underage; and thirty-three and three-tenths per cent in the third grade, twenty

Table 10

Age-Grade Distribution of the Pupils in School C

Chron. Age Yrs. & Mos.	Age Yrs.	Grades 1	2	3	4	5	6	7	8	Total
5-3 to 5-9	5½									0
5-9 to 6-3	6									0
6-3 to 6-9	6½		2							2
6-9 to 7-3	7		5							5
7-3 to 7-9	7½		2							2
7-9 to 8-3	8				1					1
8-3 to 8-9	8½			2						2
8-9 to 9-3	9									0
9-3 to 9-9	9½			1	3	1				5
9-9 to 10-3	10					1				1
10-3 to 10-9	10½					2				2
10-9 to 11-3	11				1	2				3
11-3 to 11-9	11½					2				2
11-9 to 12-3	12						1	1		2
12-3 to 12-9	12½					2		3	2	7
12-9 to 13-3	13						1	1		2
13-3 to 13-9	13½								1	1
13-9 to 14-3	14									0
14-3 to 14-9	14½									0
14-9 to 15-3	15									0
15-3 to 15-9	15½									0
Total		0	9	3	5	8	4	5	3	37

Table 11

Number and Per Cent of Underage, Overage, and Normal Age Pupils in School C

Grades	1	2	3	4	5	6	7	8	Total
No. Enrolled	0	9	3	5	8	4	5	3	37
Underage									
Number	0	2	0	1	1	0	0	2	6
Per cent	0	22.2	0	20.	12.5	0	0	66.7	16.2
Normal Age									
Number	0	7	2	3	3	3	5	1	24
Per cent	0	77.8	66.7	60.	37.5	75.	100.	33.3	64.9
Overage									
Number	0	0	1	1	4	1	0	0	7
Per cent	0	0	33.3	20.	50.0	25.	0	0	18.9

per cent in the fourth, fifty per cent in the fifth, and twenty-five per cent in the sixth grade were overage (Table 11). Of all the pupils in School C, sixteen and two-tenths per cent were underage, sixty-four and nine-tenths per cent normal age, and eighteen and nine-tenths per cent overage.

Comparison of percentages shows that School B was superior in grade placement (Table 12). Eighty per cent of the pupils in this school were of normal age, as compared with seventy-seven per cent in School A, seventy-six per cent in the experimental school, and sixty-four and nine-tenths per cent in School C.

Table 12

Comparison of the Percentage of Underage, Normal Age, and Overage Pupils in the Schools

Schools	A	B	C	Experimental
Underage	11.5	8.	16.2	8.
Normal Age	77.	80.	64.9	76.
Overage	11.5	12.	18.9	16.

School A had the lowest percentage of overage pupils--eleven and five-tenths per cent; while School B had twelve per cent, the experimental school sixteen per cent, and School C eighteen and nine-tenths per cent in the overage group. For greater clarity these facts are shown graphically in Figures 1 and 2 in the stair-step arrangement.

Figure 1

Comparison of the Percentage of Normal Age Pupils

in the Schools

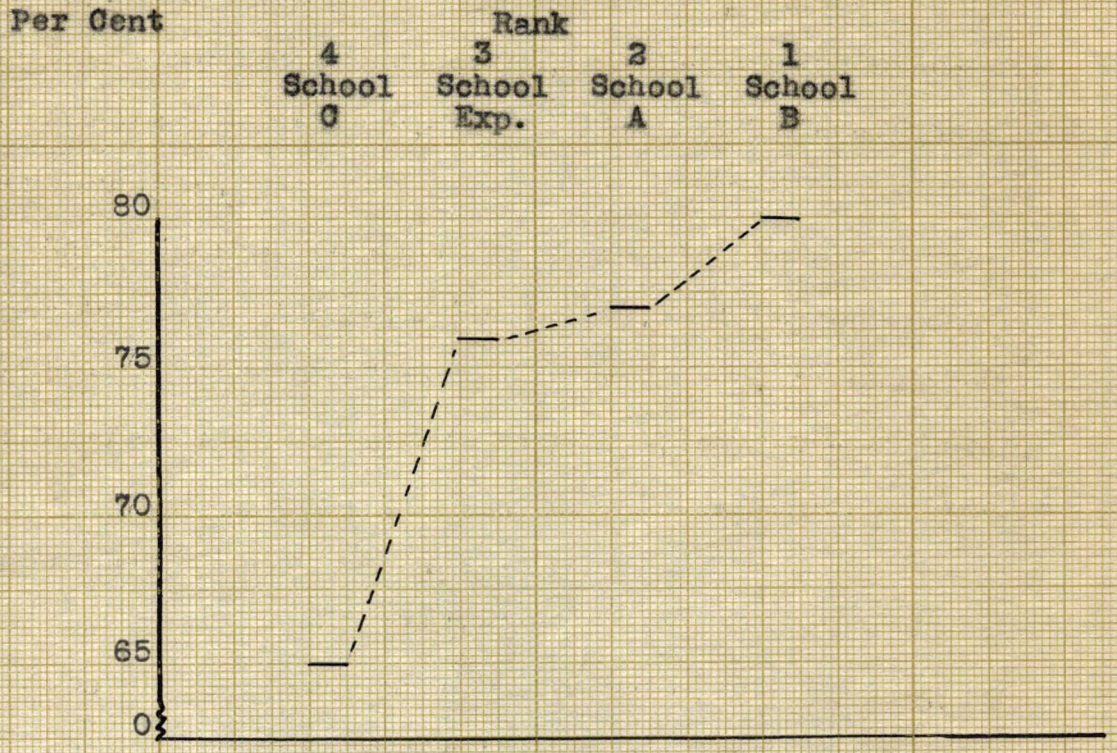
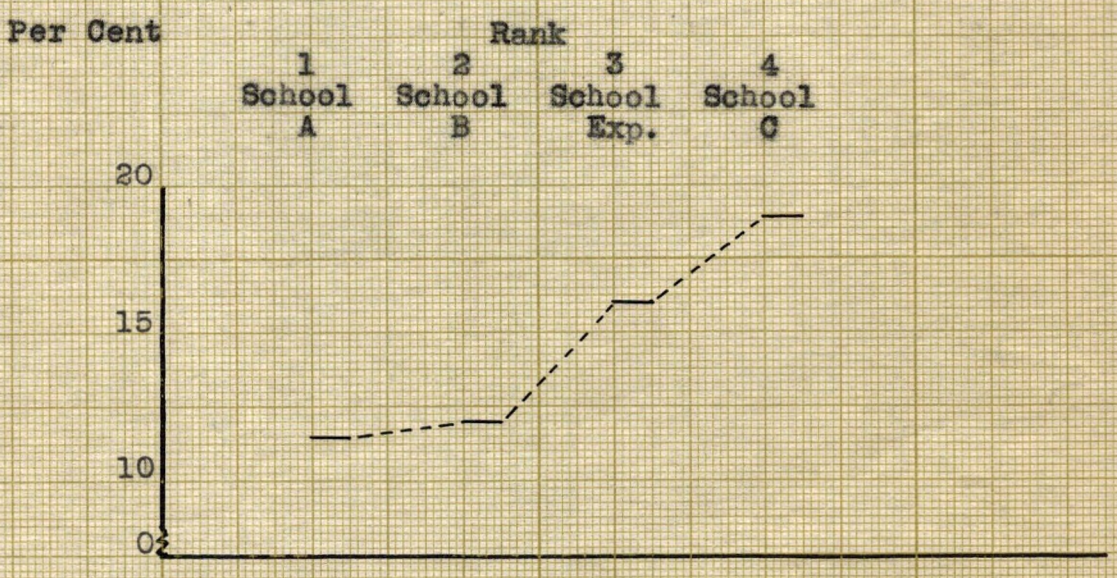


Figure 2

Comparison of the Percentages of Overage Pupils

in the Schools



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Testing Procedure

To determine as accurately as possible the mental abilities and traits of the pupils as a factor in perceiving the correlation, if any, between mental ability and grade placement, intelligence tests were given to the pupils in the three control schools and the experimental school during the month of October, 1937. The Kuhlman-Anderson[1] battery of intelligence tests was selected for use in this experiment. The New Stanford Achievement tests[2] were chosen for achievement testing at the beginning and the end of the experiment. Forms V and Y (the advanced examination for grades four to nine and the primary examination for grades two and three) were used. The advanced examinations tested the pupils in paragraph meaning, word meaning, dictation, language usage, history and civics, geography, physiology and hygiene, arithmetic reasoning, and arithmetic computation. The primary examinations tested paragraph meaning, word meaning, dictation, arithmetic reasoning, and arithmetic computation.

The tests were given in the four schools during the third week in October. The achievement test, Form V, was given during the last week in October, one week later than the intelligence tests. The final achievement test, Form Y, was given during the second week in May.

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[1]F. Kuhlman and Rose Anderson Intelligence Tests, Educational Test Bureau, Inc., Minneapolis, Minnesota.

[2]New Stanford Achievement Tests, World Book Company, Chicago, Illinois.

To insure uniformity in administration, all the tests were given under the personal supervision of the writer. In the control schools the teachers and the superintendent were instructed as to proper supervision of the tests. The writer was present at the beginning of each test to assure himself that the correct methods were being properly followed. The achievement tests were given in the same manner during the following week. In each of the control schools, all three tests were given by the same instructor under personal supervision.

The teachers and superintendents of the three control schools and the experimental school met at School C on a designated night and corrected the tests under the supervision of the writer. Each teacher corrected the same test throughout all the booklets. In this way many errors were eliminated, and the booklets were checked rapidly and accurately. The intelligence quotients were determined by the writer with the aid of the Noyes Icumeter which accompanied the Kuhlman-Anderson Intelligence tests. The scores and educational ages of the pupils were determined from accompanying charts and tables.

Summary of Intelligence Data

The results of the intelligence tests given in the three control schools and the experimental school have been summarized in the tables which follow. Tables 13, 15, 17,

Table 13

Distribution of All Pupils According to Grade and Relative Intelligence in School A

Intelligence Quotients	Grades 3	4	5	7	8	Total
140 - 136						0
135 - 131						0
130 - 126						0
125 - 121						0
120 - 116	1			1		2
115 - 111	3					3
110 - 106	1	2	1			4
105 - 101				1	1	2
100 - 96					1	1
95 - 91	2		1	1		4
90 - 86			1			1
85 - 81						0
80 - 76						0
75 - 71						0
70 - 66						0
65 - 61						0
Total	7	2	3	3	2	17

Table 14

Number and Per Cent of Pupils with Above Normal, Normal, and Below Normal Intelligence in Each Grade of School A

Grades	3	4	5	7	8	Total
No. Enrolled	7	2	3	3	2	17
Above Normal						
Number	4	0	0	1	0	5
Per cent	57.1	0	0	33.3	0	29.4
Normal						
Number	3	2	2	2	2	11
Per cent	42.9	100.	66.7	66.7	100.	64.7
Below Normal						
Number	0	0	1	0	0	1
Per cent	0	0	33.3	0	0	5.9

and 19 show the distribution of all pupils according to grade and relative intelligence in the schools, and Tables 14, 16, 18, and 20 give the numbers and percentages of pupils with above normal, normal, and below normal intelligence in each grade.

Tables 13, 15, 17, and 19 are designed to show immediately the number of pupils in each grade who are above normal, normal, and below normal intelligence. The numbers appearing above the top parallel line indicate the number of pupils in each grade who are above the normal intelligence, those between the two parallel lines indicate pupils of normal intelligence, and those below the lower parallel line indicate pupils of subnormal intelligence.

For example, School A had four pupils in grade three and one in grade seven who were above normal intelligence (Table 13). In the same school three pupils in the third grade, two in the fourth, two in the fifth, two in the seventh, and two in the eighth grade were of normal intelligence; and one fifth grade pupil possessed intelligence below normal. These data are further summarized in terms of the number and percentage of pupils in each grade and the total number in each intelligence group (Table 14). Of the seventeen pupils in School A, there were five above normal, eleven normal, and one below normal. Stated otherwise, twenty-nine and four-tenths per cent were above normal, sixty-four and seven-tenths per cent normal, and five and nine-tenths per cent below normal.

Table 15

Distribution of All Pupils According to Grade and Relative Intelligence in School B

Intelligence Quotients	3	4	5	7	8	Total
140-136						0
135-131						0
130-126						0
125-121				1		1
120-116						0
115-111			1			1
110-106	1			1		2
105-101	2		1		1	4
100- 96			2		1	3
95- 91			1		2	3
90- 86						0
85- 81				1		1
80- 76						0
75- 71						0
70- 66						0
65- 61						0
Total	3	0	5	3	4	15

Table 16

Number and Per Cent of Pupils with Above Normal, Normal, and Below Normal Intelligence in Each Grade of School B

Grades	3	4	5	7	8	Total
No. Enrolled	3	0	5	3	4	15
Above Normal						
Number	0	0	1	1	0	2
Per Cent	0	0	20.	33.3	0	13.3
Normal						
Number	3	0	4	1	4	12
Per Cent	100.	0	80.	33.3	100.	80.
Below Normal						
Number	0	0	0	1	0	1
Per Cent	0	0	0	33.3	0	6.7

Table 17

Distribution of All Pupils According to Grade and Relative Intelligence in School C

Intelligence Quotients	Grades 3	4	5	7	8	Totals
140 - 136						0
135 - 131						0
130 - 126		1	1			2
125 - 121				1		1
120 - 116					1	1
115 - 111	1	1				2
110 - 106		1		1	2	4
105 - 101				1		1
100 - 96	2	1	2	1		6
95 - 91						0
90 - 86		1	2	1	1	5
85 - 81						0
80 - 76						0
75 - 71			3			3
70 - 66						0
65 - 61						0
Total	3	5	8	5	4	25

Table 18

Number and Per Cent of Pupils with Above Normal, Normal, and Below Normal Intelligence in Each Grade of School C

Grades	3	4	5	7	8	Total
No. Enrolled	3	5	8	5	4	25
Above Normal						
Number	1	2	1	1	1	6
Per cent	33.3	40.	12.5	20.	25.	24.
Normal						
Number	2	2	2	3	2	11
Per cent	66.7	40.	25.	60.	50.	44.
Below Normal						
Number	0	1	5	1	1	8
Per cent	0	20.	62.5	20.	25.	32.

Of the fifteen pupils enrolled in School B, two were above normal intelligence, twelve were normal, and one was below normal. There were thirteen and three-tenths per cent with intelligence above normal, eighty per cent with normal intelligence, and six and seven-tenths per cent below normal (Table 16).

There were twenty-five pupils enrolled in School C in the grades under consideration. Of these six were above normal intelligence, eleven were normal, and eight were below normal (Table 17). There were twenty-four per cent of the pupils with intelligence above normal, forty-four per cent normal, and thirty-two per cent below normal (Table 18).

There were twenty-two pupils enrolled in the experimental school. Three, or twenty-nine and four-tenths per cent were above normal intelligence; sixteen, or seventy-two and seven-tenths per cent, were normal; and two, or nine and one-tenth per cent, were below normal (Table 20).

A comparison of the percentages of the pupils in the three control schools and the experimental school shows that School A had an advantage over all of the other schools in the intelligence of its pupils (Table 21). Of the pupils in this school, twenty-nine and four-tenths per cent were above normal intelligence,and only five and nine-tenths per cent were below normal. School A ranked third in number of pupils of normal intelligence, with sixty-four and seven tenths per cent of its pupils in this group.

Table 19

Distribution of All Pupils According to Grade and Relative Intelligence in the Experimental School

Intelligence Quotients	Grades 3	4	5	7	8	Total
140 - 136						0
135 - 131						0
130 - 126						0
125 - 121		1				1
120 - 116						0
115 - 111	2		1			3
110 - 106				2		2
105 - 101		2	1	2	1	6
100 - 96		1		2	1	4
95 - 91	1		2	1		4
90 - 86		1				1
85 - 81					1	1
80 - 76						0
75 - 71						0
70 - 66						0
65 - 61						0
Total	3	5	4	7	3	22

Table 20

Number and Per Cent of Pupils with Above Normal, Normal and Below Normal Intelligence in Each Grade of the Experimental School

Grades	3	4	5	7	8	Total
No. Enrolled	3	5	4	7	3	22
Above Normal						
Number	2	1	1	0	0	3
Per cent	66.7	20.	25.	0	0	29.4
Normal						
Number	1	3	3	7	2	16
Per cent	33.3	60.	75.	100.	66.7	72.7
Below Normal						
Number	0	1	0	0	1	2
Per cent	0	20.	0	0	33.3	9.1

Table 21

Summary of the Per Cent of Pupils with Above Normal, Normal, and Subnormal Intelligence in the Schools

Intelligence Group	Schools A	B	C	Experimental
Above normal	29.4	13.3	24.	18.2
Normal	64.7	80.	44.	72.7
Subnormal	5.9	6.7	32.	9.1

School B ranked first, with eighty per cent of its pupils normal. Second, with six and seven-tenths per cent below normal; and fourth, with thirteen and three-tenths per cent above normal (Table 21).

School C ranked second with twenty-four per cent of the pupils above normal; fourth, with forty-four per cent in the normal group; and fourth, with thirty-two per cent below normal.

The experimental school ranked second in the normal group with seventy-two and seven tenths per cent, and third in each of the other groups, with eighteen and two-tenths per cent above normal and nine and one-tenth per cent below normal. Table 22 summarizes the ranks of the four schools in three criteria, namely, above normal intelligence, normal intelligence, and subnormal intelligence. It ranks the four schools on the bases of the above criteria.

Figure 3

Rank of Control and Experimental Schools on Basis of Intelligence

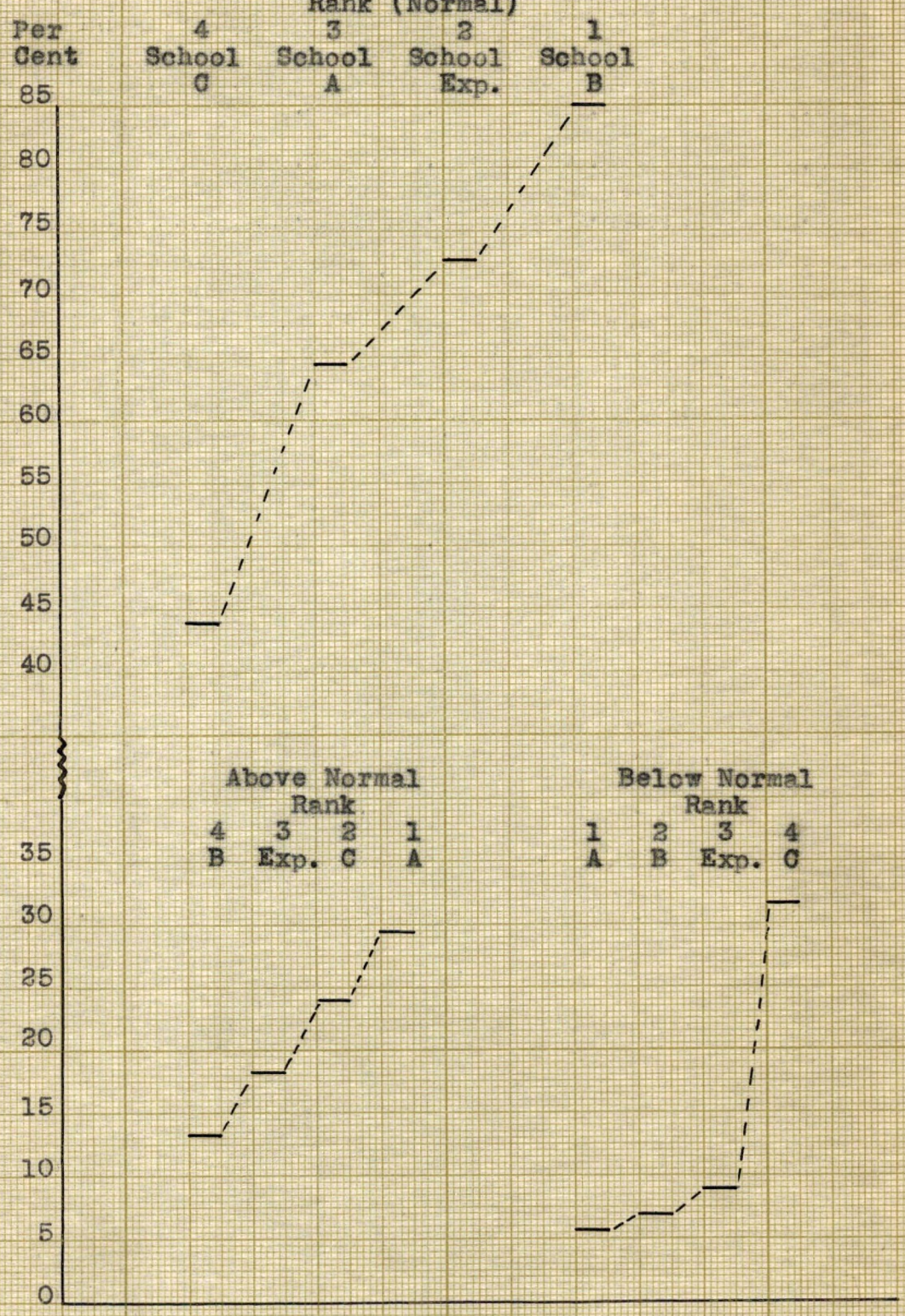

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Figure 4

Final Ranking of the Control and Experimental Schools on the Basis of Intelligence

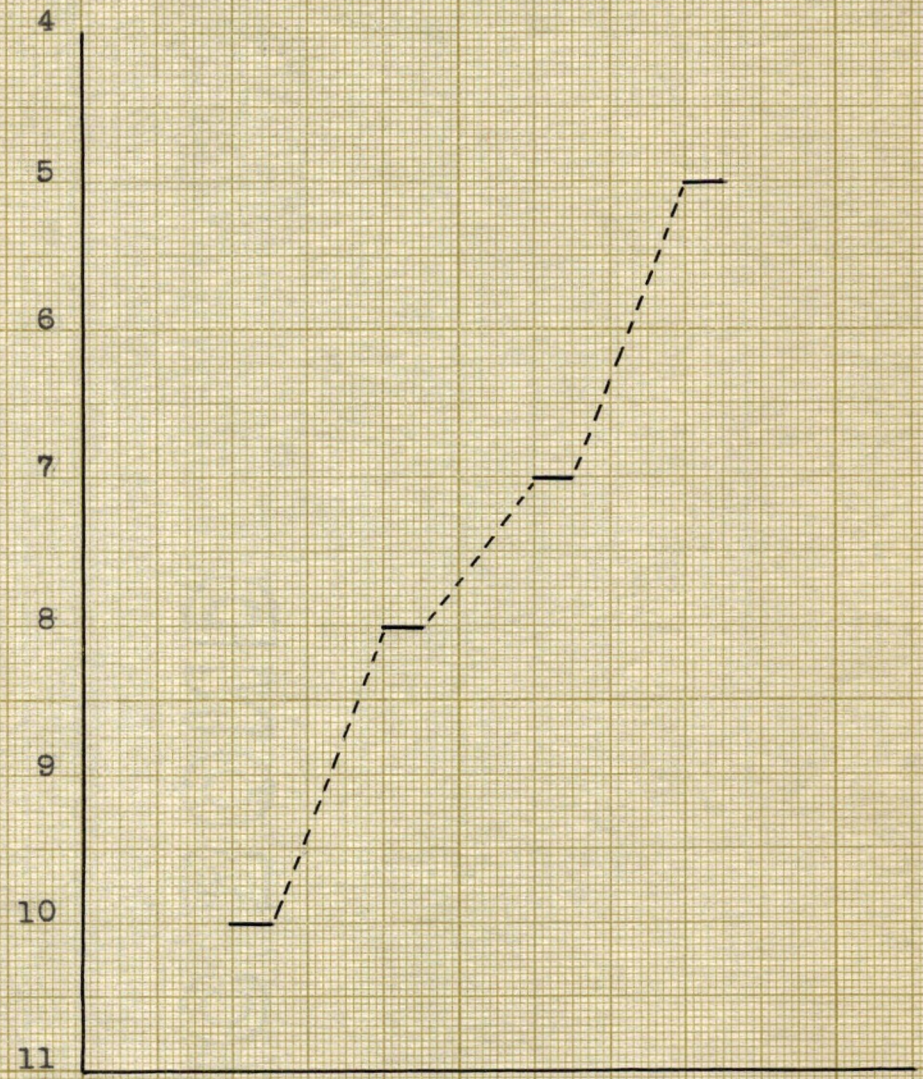

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Table 22

Rankings of the Schools on the Basis of Pupils' Intelligence

Intelligence Group	Rank of Schools A	B	C	Experimental
Above Normal	1	4	2	3
Normal	3	1	4	2
Subnormal	1	2	4	3
Total	5	7	10	8

When the numerical rankings were added, School A was found to rank first in intelligence with a score of five; School B second with a score of seven; the experimental school third with a score of eight; and School C fourth with a score of ten (Table 22). School C had eight pupils below normal intelligence and only eleven of its enrolment of twenty-five normal.

Graphs were constructed to show the comparative ratings on each of the three intelligence levels (Figure 3) and the average intelligence ratings (Figure 4).

The range of intelligence quotients, medians, and the range of the middle fifty per cent of the intelligence quotients of the students in each of the control schools and the experimental school show that School C had the greatest total range and also the greatest range of the middle fifty per cent (Table 23). The experimental school ranked second in width of range, varying from 81 to 123. School A had a median I. Q. of 106; School B and the experimental school, 102 each; and School C, 100. The same comparison is shown graphically in Figure 5.

Table 23

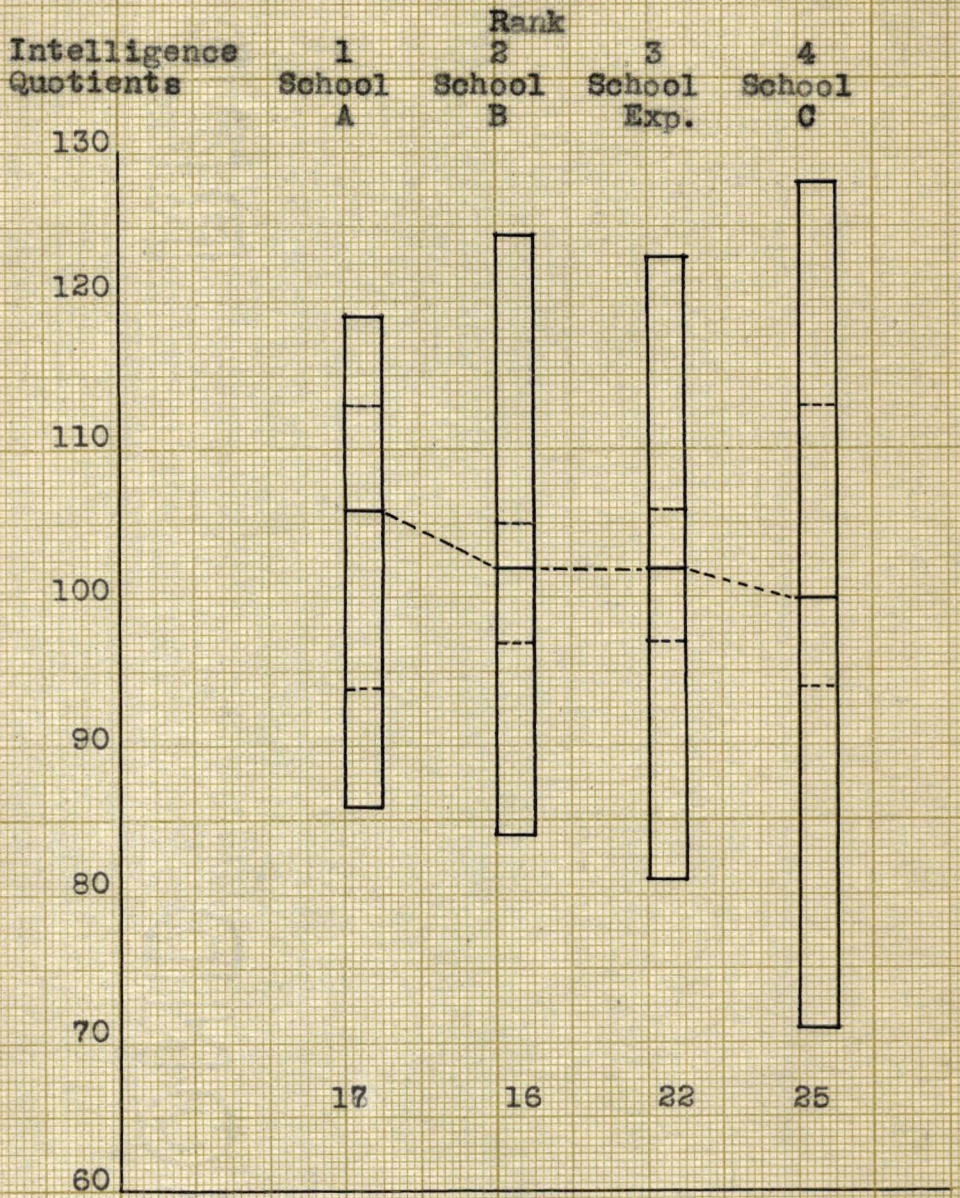
Range, Medians, and Range of the Middle Fifty Per Cent of the Intelligence Quotients of the Pupils in the Schools

Schools	A	B	C	Experimental
Range	86-119	84-124	71-128	81-123
Medians	106	102	100	102
Range of Middle Fifty Per Cent	94-113	97-105	90-112	97-108

The range of the middle fifty per cent was widest in School C (112-90 or 22 units). The range of School A was nineteen units. The median intelligence of the pupils in School A was 106; that of School B was 102; that of the experimental school was also 102 (although it actually ranked third because the upper limit and the lower limit of intelligence quotients in the school were lower than the limits in School B); and that of School C, 100 (Figure 5). The schools were found to rank the same as they did in Figure 4.

Figure 5

Comparison of the Range, Medians, and Middle Fifty Per Cent of the Intelligence Quotients of the Pupils in the Control and Experimental Schools



Summary of Mental-Age Placement

Mental age-grade tables were prepared from the results of the intelligence test in each school. Grades one, two, and six were omitted because there were no pupils in those grades in the experimental school.

The figures enclosed by the heavy lines on each table represent the number of pupils in each grade at normal mental age. Those of normal mental age for the third grade are pupils with mental ages between seven years, nine months and nine years three months; in the fourth grade, between eight years nine months, and ten years three months, etc. to the eighth grade, where the normal mental age is between twelve years nine months and thirteen years three months.

Three groups of pupils in each grade are represented: the number within the lines shows the proportion of pupils of normal mental age; that below the lines, the proportion having a higher than normal mental age for the grade; and that above the lines, the proportion having mental ages less than normal for the grade. The figures above the lines represent pupils who were in grades too far advanced for their mental ability; those within the lines, the pupils of normal age who were satisfactorily graded on the basis of mental age; and those below the heavy lines, the pupils in grades below their mental capacity, who could do average work in higher grades.

Table 24

Mental Age Grade Distribution in School A

Mental Age Yrs. & Mos.	Age Yrs.	Grades 3	4	5	6	7	8	Total
7-3 to 7-9	7½	1						1
7-9 to 8-3	8	1						1
8-3 to 8-9	8½	1						1
8-9 to 9-3	9							0
9-3 to 9-9	9½	3	1					4
9-9 to 10-3	10			1				1
10-3 to 10-9	10½		1	1				2
10-9 to 11-3	11			1				1
11-3 to 11-9	11½							0
11-9 to 12-3	12							0
12-3 to 12-9	12½					2	1	3
12-9 to 13-3	13							0
13-3 to 13-9	13½					1	1	2
13-9 to 14-3	14							0
14-3 to 14-9	14½							0
14-9 to 15-3	15							0
15-3 to 15-9	15½							0
15-9 to 16-3	16							0
Total Enrolled		6	2	3	0	3	2	16
Underage								
Number		1	0	0	0	0	1	2
Per cent		16.7	0	0	0	0	50.	12.5
Normal Age								
Number		2	1	3	0	2	1	9
Per cent		33.3	50.	100.	0	66.7	50.	56.3
Overage								
Number		3	1	0	0	1	0	5
Per cent		50.	50.	0	0	33.3	0	31.2

Table 25

Mental Age Grade Distribution in School B

Mental Age Yrs. & Mos.	Age Yrs.	3	4	5	6	7	8	Total
7-3 to 7-9	7½							0
7-9 to 8-3	8	1						1
8-3 to 8-9	8½	1						1
8-9 to 9-3	9	1						1
9-3 to 9-9	9½							0
9-9 to 10-3	10			2				2
10-3 to 10-9	10½			2				2
10-9 to 11-3	11			1				1
11-3 to 11-9	11½							0
11-9 to 12-3	12						1	1
12-3 to 12-9	12½					1		1
12-9 to 13-3	13						1	1
13-3 to 13-9	13½					1		1
13-9 to 14-3	14					1	1	2
14-3 to 14-9	14½						1	1
14-9 to 15-3	15							0
15-3 to 15-9	15½							0
15-9 to 16-3	16							0
Total Enrolled		3	0	5	0	3	4	15
Underage								
Number		0	0	0	0	0	1	1
Per cent		0	0	0	0	0	25.	6.7
Normal Age								
Number		3	0	5	0	1	2	11
Per cent		100.	0	100.	0	33.3	50.	73.3
Overage								
Number		0	0	0	0	2	1	3
Per cent		0	0	0	0	66.7	25.	20.

The mental age-grade distribution of the pupils in School A shows that there were two pupils mentally underage; or twelve and one-half per cent of the total enrolment; five pupils,or thirty-one and two-tenths per cent of the total enrolment,mentally overage; and nine pupils or fifty-six and three-tenths per cent normal age (Table 24).

School B had one pupil, or six and seven-tenths per cent of the enrolment, mentally underage; eleven pupils, or seventy-three and three-tenths per cent, normal age; and three pupils, or twenty per cent, mentally overage (Table 25). In this school ninety-three and three-tenths per cent of the pupils were of normal mental age or above.

School C had four pupils, or sixteen and seven-tenths per cent of the enrolment, mentally underage; thirteen pupils, or fifty-four and two-tenths per cent, normal age; and seven pupils, or twenty-nine and one-tenth, mentally overage (Table 26). School C had eighty-three and three-tenths per cent of its pupils in the normal age group or above.

The experimental school had one pupil, or four and five-tenths per cent of its total enrolment, underage mentally; seventeen pupils, or seventy-seven and three-tenths per cent, of normal age mentally; and four pupils, eighteen and two-tenths per cent, overage mentally (Table 27). A total of ninety-five and five-tenths of its pupils were in the normal mental age group or above.

Table 26

Mental Age Grade Distribution in School C

Mental Age Yrs. & Mos.	Age Yrs.	3	4	5	6	7	8	Total
7-3 to 7-9	7½							0
7-9 to 8-3	8							0
8-3 to 8-9	8½	1		1				2
8-9 to 9-3	9	1		1				2
9-3 to 9-9	9½	1	1	2				4
9-9 to 10-3	10		3	3				6
10-3 to 10-9	10½							0
10-9 to 11-3	11		1					1
11-3 to 11-9	11½							0
11-9 to 12-3	12					1		1
12-3 to 12-9	12½			1		1		2
12-9 to 13-3	13					1		1
13-3 to 13-9	13½					1	1	2
13-9 to 14-3	14							0
14-3 to 14-9	14½					1	1	2
14-9 to 15-3	15						1	1
15-3 to 15-9	15½							0
15-9 to 16-3	16							0
Total Enrolled		3	5	8	0	5	3	24
Underage								
Number		0	0	4	0	0	0	4
Per cent		0	0	50.	0	0	0	16.7
Normal Age								
Number		2	4	3	0	3	1	13
Per cent		66.7	80.	37.5	0	60	33.3	54.2
Overage								
Number		1	1	1	0	2	2	7
Per cent		33.3	20.	12.5	0	40.	66.7	29.1

Table 27

Mental Age Grade Distribution in the Experimental School

Mental Age Yrs. & Mos.	Age Yrs.	3	4	5	6	7	8	Total
7-3 to 7-9	7½							0
7-9 to 8-3	8							0
8-3 to 8-9	8½	1						1
8-9 to 9-3	9	2	1					3
9-3 to 9-9	9½		3					3
9-9 to 10-3	10			1				1
10-3 to 10-9	10½			2				2
10-9 to 11-3	11							0
11-3 to 11-9	11½		1	1				2
11-9 to 12-3	12					1		1
12-3 to 12-9	12½					4	1	5
12-9 to 13-3	13					1		1
13-3 to 13-9	13½					1	1	2
13-9 to 14-3	14							0
14-3 to 14-9	14½							0
14-9 to 15-3	15							0
15-3 to 15-9	15½						1	1
15-9 to 16-3	16							0
Total Enrolled		3	5	4	0	7	3	22
Underage								
Number		0	0	0	0	0	1	1
Per cent		0	0	0	0	0	33.3	4.5
Normal Age								
Number		3	4	3	0	6	1	17
Per cent		100.	80.	75.	0	85.7	33.3	77.3
Overage								
Number		0	1	1	0	1	1	4
Per cent		0	20.	25.	0	14.3	33.3	18.2

Table 28

Comparison of the Percentages of Pupils in the Mental-Age Grade Placement

Schools	A	B	C	Exp.
Underage	12.5	6.7	16.7	4.5
Normal Age	56.3	73.3	54.2	77.3
Overage	31.2	20.	29.1	18.2
Normal Age or Above	87.5	93.3	83.3	95.5

Table 28 shows the comparison of the percentage of pupils in each school who were underage, normal age, and overage mentally. Figure 6 shows in graphic form the percentage of the pupils in each school who were of normal mental age or above according to the stairway arrangement.

The experimental school ranked first; but the advantage in this respect was probably offset by lower rankings on all the other bases of comparison.

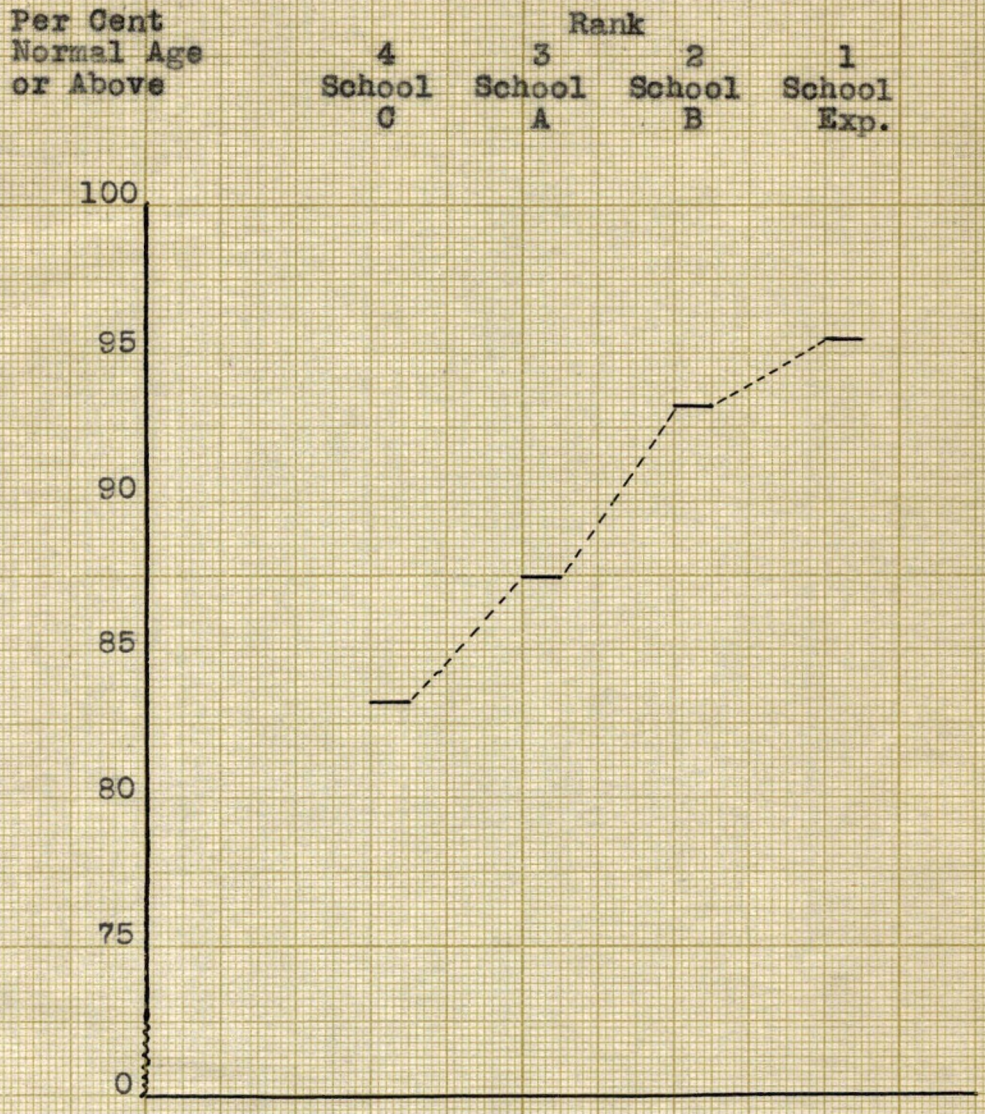
In this experiment a maladjustment in each school both in age-grade placement and in mental age-grade placement was found. E. L. Thorndike,[3] summarizing the literature of 1913 in regard to factors causing maladjustment, says:

> The wide range of achievement of pupils of roughly the same school training suggests that differences born in them play a large part in determining the differences eventually found in them.

[3] E. L. Thorndike, Educational Psychology, (Teachers College, Columbia University, 1913), p. 149.

Figure 6

Ranking of Schools on Basis of Mental Age-Grade Distribution



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Mrs. L. S. Hollingsworth[4] quotes McCall as follows:

> There is an objective and practically measurable something, which constitutes the core of most aptitudes. It is overlaid with various incidental abilities, and further on retarded by emotional or physical characteristics of the individual. This something is general intelligence.

A. A. Sutherland has expressed his belief that many of the maladjustments found among school pupils are the result of modification of their abilities by some factor in their environment. He says:[5]

> Every experiment systemically performed yields some data regarding the modification of abilities by the experiences of home, school, laboratory, or play ground. Differences of motor skill, sensory discrimination, perceptual and conceptual abilities, while they must have an inherited basis, become useful when recognized and skillfully employed. Certain principles for education emerge from all these studies and may be thus formulated: 1. No group has yet been found in which the individuals composing it possess equal amounts of any one ability. 2. Performances vary so greatly as to indicate that no single requirement is adequate as a stimulus to a majority of the group. 3. To study the development of learning process it is absurd to set up as a standard a definite quantity of performance and expect each member of the group to accomplish just that amount and no other. In addition to these inborn differences, the conditions under which children learn produce further differences.

Sutherland refers to findings of Laird in regard to his study of responses of pupils in high school to different incentives. Reprimand, sarcasm, ridicule, low grades, extra work, conference with parents, friendly

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[4] L. S. Hollingsworth, Special Talents and Defects (Macmillan Company, 1925), p. 33.

[5] A. A. Sutherland, op. cit., p. 5-6.

talk with the pupil, corporal punishment, praise, remission of assignments, honor books, scholarship fraternities--all these, it was found, have varying influence upon pupils of different natures. Knowledge of results makes a difference in the performance, and differences of initial ability seem to be increased rather than decreased by this factor.

Instruction has been recognized as a fruitful source of differences in ability. E. A. Kirkpatrick[6] set two groups with equal foundation at the same task but with different instructions. One group increased in skill only; the other increased in intelligent reasoning about the activity. Differences in the ability to comprehend, carry in mind, and perform may be perceived not only in the results of direction tests but in nearly any group.

According to Sutherland[7] failure of pupils is frequent, if (1) they feel something else is more important, and receive rewards for things other than the one thing on which they are supposed to be at work; if (2) they have no desire to put forth the effort, for a variety of reasons; if (3) they are unable to attack the work from an original point of view.

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[6]E. A. Kirkpatrick, "An Experiment in Memorizing Versus Incidental Learning," Journal of Educational Psychology, Vol. 5 (September, 1914), p. 405.

[7]A. A. Sutherland, op. cit., p. 16.

Comparison of Educational Ages

The results of the first achievement test showed that there was a wide variation in informational background among the pupils. Individual differences were found in each grade. The achievement test, as has already been described, consisted of a battery of ten tests, with objective questions on various school studies. The number of questions correctly answered was converted into a score for each test. By averaging the scores of the ten tests for each pupil and converting them by means of a chart which accompanies the test battery, the "educational age" of each pupil was found.

A summary of the range, median, and range of the middle fifty per cent of educational ages expressed in terms of months was computed for each school (Table 30).

Table 30

Range, Median, and Range of the Middle Fifty Per Cent of the Educational Ages in Months

Schools	A	B	C	Experimental
Range	99 - 186	89 - 192	104 - 200	72 - 180
Median	118.5	136	120.5	132.5
Range of Middle Fifty Per Cent	110 - 137	125 - 159	115 - 138	121 - 148

The median, as shown in Table 30, is a measure of central tendency and is therefore useful in this study as a basis for comparison of the achievement of the two groups of schools.

Henry E. Garrett[8] explains the use of central tendencies in the following words:

> The value of a measure of central tendency is two-fold. First, it is a single measure which represents all of the scores made by the group, and as such gives a concise description of the performance of the group as a whole; and second, it enables one to compare two or more groups in terms of typical performance.

The range and the range of the middle fifty per cent are merely measures of variability from the median and therefore do not serve as reliable measures of the performance of two or more groups.

It was found that the experimental school had the widest range of educational ages (Table 30). Among its pupils were those lowest in educational achievement ranking fourth in this respect. However, the median (which represents the entire group) ranks the experimental school second, with School B first, School C third, and School A fourth. School B had a median of 136, the experimental school,132.5; School C,120.5; and School A, 118.5.

A separate comparison was made of the range, median, and range of the middle fifty per cent of the educational ages as determined by the first achievement test, Form V (Figure 7). The range was quite wide for each school because the scores include the educational ages of pupils in the grades three, four, five, seven, and eight. The heavy

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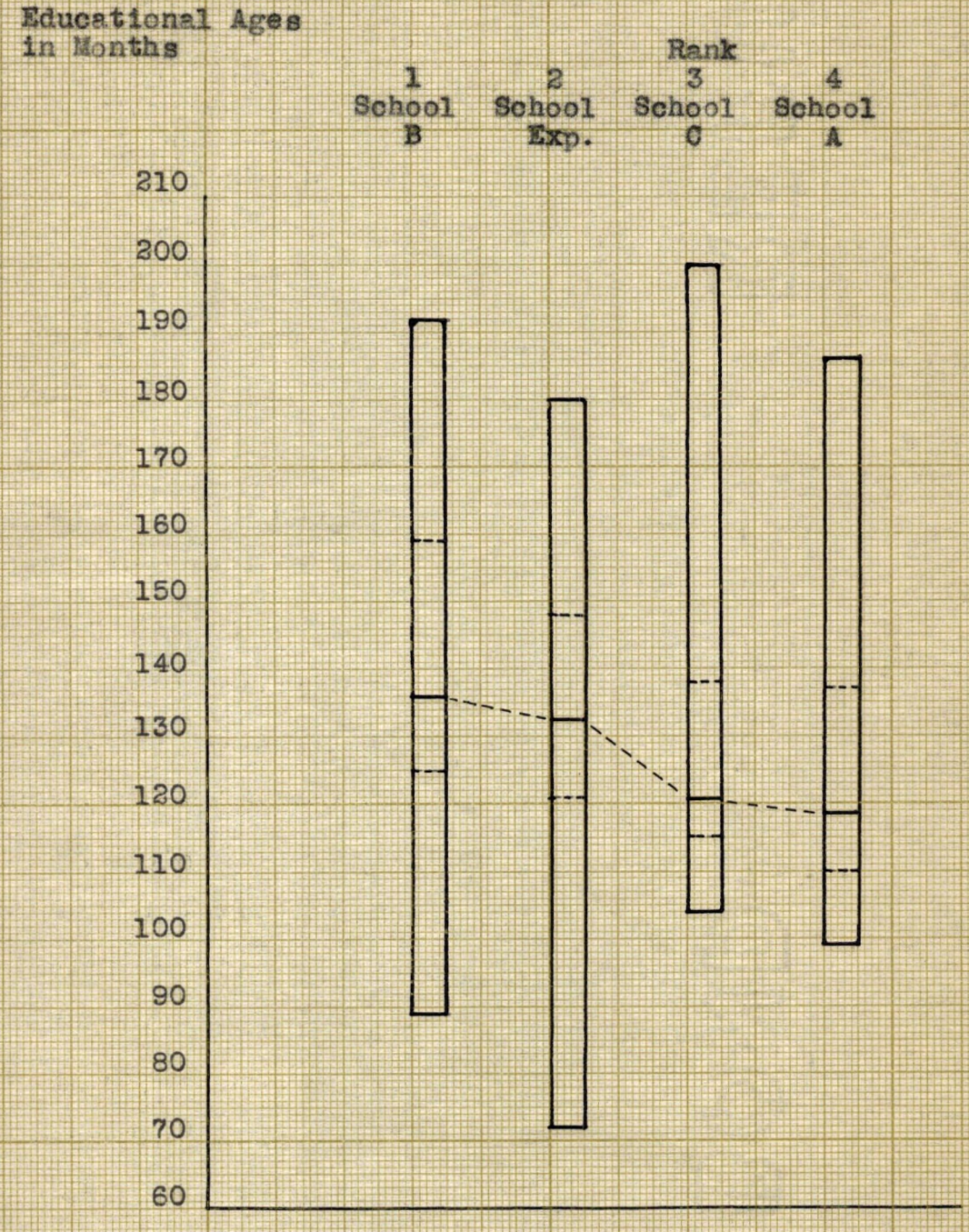
[8]H. E. Garrett, Statistics in Psychology and Education (Longmans, Green and Co., 1938), p. 17.

Figure 7

Comparison of the Range, Median, and Range of the Middle Fifty Per Cent of Educational Ages



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line at the top of each bar indicates the maximum educational age in months,and the heavy line at the bottom indicates the minimum educational age in months. The heavy line across each bar between these two limits indicates the median educational age in each school. A dotted line joins the median scores of the schools. The dotted lines between the median and the two extremities mark the range of the middle fifty per cent. It is particularly interesting to see how the range of the middle fifty per cent compares with the medians.

Summary

This chapter has been devoted to a discussion of the comparison of three control schools and an experimental school on the basis of type of school, location, enrolment, length of term, qualifications of teachers, social and economic status of the communities, age-grade placement, intelligence levels, mental age-grade placement, and previous informational background.

The four schools studied were very similar in type, location, enrolment, length of term, qualifications of teachers, and social and economic status of the people in the communities. In teacher qualifications, the control schools had the advantage in college training and tenure, while the experimental school had the advantage of age, summer sessions attended, experience, and number of grades

taught. The advantages either way were very slight and should make no significant difference in the results of the experiment.

The age-grade placement study showed some maladjustment. School B had an advantage in that eighty per cent of its pupils were in the normal age group as compared with seventy-seven per cent in School A, seventy-six per cent in the experimental school, and sixty-four and nine-tenths per cent in School C. School A had the smallest number of overage pupils; School B was second, the experimental school third, and School C fourth.

In the total numerical ranking on the three levels of intelligence, School A ranked first, School B second, the experimental school third, and School C fourth. In the comparison on the basis of range, medians, and range of the middle fifty per cent of the intelligence quotients of the pupils, School A ranked first, School B second, the experimental school third, and School C fourth. School C had the widest range of intelligence quotients (71 to 128). School A had the narrowest range.

The experimental school was slightly superior in mental age-grade placement. Of its pupils ninety-five and five-tenths per cent were of normal age or above. School B ranked second, School A third, and School C fourth.

Finally, the schools were compared on the basis of educational ages. On the basis of the median in educational

ages School B ranked first, the experimental school second, School C third, and School A fourth.

In general summary, allowing a first rank to count one point, second rank two points, third rank three points and fourth rank four points, it was found that School B ranked first in the stairway arrangement with ten points, School A second with twelve, the experimental school third with fifteen, and School C fourth with twenty-three.

CHAPTER 3

OLD PHILOSOPHY VERSUS THE NEW PHILOSOPHY OF PROMOTION

The primary purpose of this study was to answer the following question. Will any educational advantage be likely to result from the application of the philosophy of universal promotion compared with the lock-step promotional plan?

Old Philosophy of Promotion

The older idea of promotion, as used in many schools today, was based upon a negative philosophy. The motivation came through fostering a fear of failing to pass. The motivation was fear. A student received a mark on his report card each month and was constantly reminded of the fact that he was exceptionally bright, ordinarily bright, or near the point of failure. The slowest pupils during their entire school life were reminded that they could scarcely expect to be successful. When a pupil failed in a grade or a subject he met the rebuke of his friends, relatives, and classmates and often developed an inferiority complex which handicapped him throughout his entire life.

In denunciation of this older plan of promotion B. R. Buckingham says:[9]

> We have set up in our American schools a system of artificial grades. Having set it up

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[9]B. R. Buckingham, "An Experiment in Promotion," Journal of Educational Research, Vol. 3 (May, 1921), p. 330.

> we have worshipped not its substance but its form; not the duty but the temple built by our own hands. We have blinded ourselves to the fact that the grades which we have created are only administrative devices intended to facilitate the handling of large groups of children. We have asserted the sequential character of these grades and maintained to the extent of denying the visible fact that children are often entirely capable of negotiating the course of study of one grade without having spent a year negotiating the course of study of the previous year. We have ignored unquestioned evidence of the fact that grade lines cannot be sharply drawn; that the overlapping of one grade upon another is so extensive that in individual cases membership in a given grade fails to establish to a useful degree of accuracy what a child knows or what he can do.

A number of types of waste in the educational process resulting from this lock-step system have been aptly pointed out by W. J. Shearer:[10]

> 1. By useless repetition of one kind alone Ayres shows an annual loss of twenty-seven millions. Others show less than ten dollars annually per pupil. Multiplied by the number of children, the amount lost would give every teacher a large deserved increase in salary and would build many school buildings.
>
> 2. From official records of more than 100 cities, experts have shown that but three were 80 per cent efficient. Nearly all others were less than 50 per cent efficient.
>
> 3. In no class are pupils permitted to advance as able. All must go only as fast as the slowest.
>
> 4. Three out of four never finish the elementary grades, which merely requires the ability to read the daily papers and solve the simplest problems of everyday life.
>
> 5. Only one-half ever get past the primary grades, which demands but one-half as much as the above.
>
> 6. In 750 cities, where results are better than the rest of the country, out of each one

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[10] W. J. Shearer, "Elimination of Waste in Education," Addresses and Proceedings of the National Education Association, Vol. 58 (1920), p. 513-514.

hundred who enter school, 55 get past the primary; only 26 reached the highest elementary grade, but 18 got to the first year in high school, where to finish the mortality was so great that less than five out of 100 remains.

7. In the United States, at the present time, only 35 out of each 100 are past the primary, and less than seven are in the eighth grade.

8. The courses of study are not fitted to the needs of the children, but all are forced to fit the arbitrary course handed down from the colleges of past ages.

9. Every year 20,000,000 start over some part of the course, bound to the mass, and by force, all are kept to the pace of the slower. Time and time again, when the bright get ahead they are dragged back and mentally benumbed repeating thoroughly known work, while the slower are continually nagged.

10. Each year more than 25 per cent are branded "dummied" by failure to be promoted, and compelled to repeat a whole term's work, though in nine out of ten cases, they are but a short distance behind in one or two subjects.

11. No class contains only those who should be there; though this is the only object of the grading of schools which aim to secure for education the benefits of the division of labor.

12. All fourteen-year-old pupils should be in the highest elementary grades. In many places four out of five are not there, but, disgusted and discouraged, are dragging from one to five years in the rear. Most of these leave school as soon as the law will permit.

13. Though pupils differ in many ways affecting their progress, but little provision is made for such differences, either in time, method, subject-matter, or rate of advancement.

14. Because of the slow rate of progress, all save the higher grades are congested and it is almost impossible to provide enough school buildings and teachers.

A. A. Sutherland[11] has expressed himself very forcefully:

> Mass methods are still in use, although they have been shown to be not only unintelligent, because impossible of specific direction, but actually

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A. A. Sutherland, op. cit., p. 1.

brutalizing in their effect upon both pupil and teacher. For when pupils are at work at a level too high for their intelligence, the effect is brutalizing; when they are at work at a level too low for their intelligence, the effect is again brutalizing; and when teachers in large numbers reach a state of violent outburst over iniquities of organization which prevent them from doing their best work; or fall into a passive routine attitude of helpless fatiuty, still the effect is brutalizing.

And Fredrick Burk, a very strong opponent of the lock-step system, states severely:[12]

> Those who have ever stood in a penitentiary and watched the line of prisoners marching in lock-step to their cells never forget the scene--each prisoner with hands clasping the shoulder of the man in front; the line closely packed so that it marches solidily as one man, with no power to vary the rate of gait, all individually lost yet we know the individual is there--the man who fell and he who merely stumbled, the boy who a short time ago buckled on his armor to conquer the world, and he who was conquered ere he was born--all now leveled by common degradation to this ignominious equality of man. This is the lock-step--the physical lockstep of our prisoners, handed down by tradition from ages when humanity did not think.
>
> We have the mental lockstep in our schools handed down by the same tradition from the same ages. From nine until three, every mental and physical act of every pupil, if the regulation of the class method of instruction could be carried out ideally, must be performed in unison, by external direction and dictation of the teacher. Each must work over lessons which he has already learned, because others have failed in them, and he must hasten forward with foundation lessons, unlearned, because the others cannot wait longer for him. All must learn arithmetic of shingling--little girls as well, not because all will be shinglers, but because some one might be. So also with selling stock and buying bonds, banking, surveying, horse trading, and many other vocational and avocational pursuits presented by the one course.

F. Burk, "Individual Instruction vs the Lock-Step System," The American City, Vol. 18 (1918), p. 327.

> The unbreakable unit is the class; for if the system is to be maintained at all, no variation in the absolute uniformity can be permitted. If, by accident, one pupil makes a movement or a sound out of unison, thinks by a different route, shortens or lengthens the established time, or puts down his left foot when he should put down his right, the whole system is thrown out of gear.

The quotations given justly condemn the old philosophy of promotion in no uncertain terms.

The Newer Philosophy of Promotion

To disregard the promotional element at the end of each year and to motivate each pupil to travel at his own learning rate while being exposed to the same experiences as the other pupils, is a newer philosophy of internal school organization. Each pupil should proceed at his own rate, never failing, always moving forward. In most cases under the older philosophy the pace has been set by the mediocre pupil. The brighter pupil has been held back and the slower pupil has been advanced too rapidily. Under the newer philosophy, the brighter pupil may accomplish two years' work in one, while the slower pupil may accomplish a half-year's work; yet neither is discouraged. The slower pupil has made progress; the brighter pupil has not been held back.

Rise of the Newer Philosophy of Promotion

Perhaps the first systematic plan for injecting flexibility into the promotional system was developed at St. Louis by Dr. W. T. Harris in 1872 and reported to the

National Education Association. Harris presented the advantages of a system of school progress whereby pupils were promoted at short intervals, as short as five weeks in the lower grades, and gifted pupils in each section could, without much difficulty, be passed on to the section just above their own. It is interesting that Dr. Harris urged as one point in favor of this plan, that it held brighter pupils to the work of which they were capable and kept them from acquiring habits of laziness.[13]

In 1886 W. J. Shearer, Superintendent of Schools at Elizabeth, New Jersey, elaborated a plan whereby three or four sections were formed within each of the eight grades in such a way that pupils of approximately the same attainment were grouped together. Each section was allowed to do as much work as it could, and individual pupils were promoted without formal examination to sections making more rapid progress as soon as they had demonstrated fitness for more difficult work. This system was called the Elizabeth Plan.[14]

Even before the days of accurate measurement in education, it was obvious to many people that not every pupil was able to adapt himself successfully to the graded promotion system. Some children could not keep pace with the rest of the class--they lagged behind, became disciplinary problems, clogged classes by repeating grades, and were

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[13] G. M. Whipple, "Historical and Introductory," Twenty-third Yearbook, National Society for the Study of Education, Vol. 23, Part I (1924), p. 8.

[14] Ibid., p. 9.

stigmatized as failures. To help these children, John Kennedy, superintendent of schools at Batavia, New York, developed about three decades ago a form of individual instruction.[15] His plan was to coach and encourage the backward pupils; to give them additional individual assistance so that they might keep pace with the others. Usually an extra teacher per room was hired for this purpose. The cost of hiring the additional teachers was somewhat compensated for in that each regular teacher was enabled to handle larger classes.

Cambridge Plan

In 1891 there came into existence at Cambridge, Massachusetts, a plan that has had much influence and has been widely copied with various modifications. This "Double-Track Plan"[16] or "Cambridge Plan" embodied two distinct tracks along which pupils could progress through grades four to nine. Pupils on the regular track took the six years' work in six years. Brighter pupils on the fast track did the same work in four years and were classed as in Grades A, B, C, or D. Provision was made for coaching dull pupils as well as the brighter ones, and for transferring them from one track to another at certain common points, which permitted their making six grades in five years.

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[15] W. H. Holmes, "An Example from Mount Vernon, New York," Twenty-fourth Yearbook, National Society for the Study of Education, Vol. 24, Part II (1925), p. 32.

[16] G. M. Whipple, op. cit., p. 8.

Double Tillage Plan

In 1894, before the extension and development of the "Cambridge Plan," there was introduced into the schools of Woburn, Massachusetts, a unique system of promotion to which the name "Double Tillage Plan" has been applied. According to this plan (which was in operation from 1894 to 1903) the work of each school grade was covered twice during the year--rapidly during the first half-year and then in greater detail during the second half-year. Pupils of superior ability who were able to proceed satisfactorily on the basis of their efforts during the first half-year could be promoted to the grade above at the middle of the year and thus accomplish two years' work in one.[17] The plan was abandoned finally except for the first two grades, primarily because the gradual increase in the subject matter of the elementary school curriculum made it increasingly difficult to gain the extra promotion in the higher grades.

J. H. Van Sickle, noted for his work in connection with gifted children, was superintendent of the north side school of Denver in 1895. At that time he developed a plan now often called an "enrichment plan."[18] Brighter pupils were given opportunity and encouraged to do more extended and more intensive work than the rest of the class. This

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[17] G. M. Whipple, op. cit., p. 10

[18] G. M. Whipple, op. cit., p. 10.

extra work was not to be done at home, but in the main during free periods when the other pupils were reciting.

Modifications of Early Plans

The "Cambridge Plan" in 1910 was modified by dividing the first seven years of the regular elementary course into three grades each and the eighth year into two grades, thus making twenty-three grades in all for the eight years. Parallel to this regular course there was another which covered the same ground in six years. This was divided into seventeen grades. Many opportunities were offered for passing from one course to the other, so that the rate of progress could be varied to meet almost any need.

The earlier Cambridge Plan was adopted with modifications by various school systems. Among these modified plans several have come to be known by the names of the communities in which they arose. Among these are the "Lemars Plan," the "Odebolt Plan," and the Portland Oregon Plan."[19]

A modern adaptation of the Batavia plan is in successful operation at Mt. Vernon, New York. Superintendent W. H. Holmes originated the plan. He believed in keeping the class organization intact, as did John Kennedy at Batavia; and, like Kennedy, he provided for the coaching and encouragement of the laggards. However, he provides this extra assistance in another way. Instead of hiring an extra teacher per room, he sets aside an hour each day for individual help.

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[19] G. M. Whipple, op. cit., p. 10.

In addition, one or more special teachers are provided in each school to help the slower pupils.[20]

Flexible Promotion Plans

About the year 1900 there was a sudden increase in the interest of school administrators in flexible promotion. As a result, several interesting plans were evolved. Among them was the "Santa Barbara Concentric Plan." Each grade, under this plan, was divided into three sections, A, B, and C. All sections were required to master the minimum essentials of the curriculum, but the pupils in section B did more intensive work than those in section C, and those in section A accomplished still more. When the A pupils of a grade were considered sufficiently prepared for the work of the next grade, they were promoted to section C of that grade. Provision was made for transfer of pupils from section to section within any grade when it might be deemed advisable.

The general effect of the "Santa Barbara" plan seems to have been enrichment of the course of study of the gifted pupils rather than a more rapid progress from grade to grade. Some elements of this plan appeared later in the "Detroit" plan.

There also appeared in this period a plan sometimes called the "Large-School Plan" and sometimes the "Group System." It appeared almost simultaneously in New York,

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[20] W. H. Holmes, op. cit., p. 32.

Chicago, and several other large cities. The plan involves grouping of the pupils in each grade into three or more sections on the basis of ability.

This "Large-School Plan" has been elaborated in several ways.[21] In the so-called "Constant Group System" the assignment of a pupil to a given group was made for a fixed length of time, and promotions from group to group or from grade to grade were made only at regular intervals. Usually this plan was operated so that when time for promotion arrived a pupil was promoted only from those subjects in which his achievement was considered sufficient as a basis for advanced work. The aim of this system was to give to the brighter pupil an opportunity to advance rapidly in those subjects in which he was most competent.

Under the "Shifting Group System" there may be as many groups in each subject as the teacher desires, and promotions may take place at any time. This system attempts, according to W. H. Holmes,[22] to bring slower pupils up to the grade standard and to encourage gifted pupils to do thorough and careful work.

The Pueblo Plan

The first voice in America raised loudly in protest against class lock-step methods of teaching and in earnest advocacy of completely individual progress was that of

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[21] G. M. Whipple, op. cit., p. 11.
[22] W. H. Holmes, op. cit., p. 34.

Preston Search,[23] superintendent of schools in Pueblo, Colorado. Apparently without any special technique, he decided that each child in the Pueblo schools should progress at his own rate. This was undertaken at Pueblo apparently with some success, from 1888 to 1894.

Speaking in favor of his extreme type of individual instruction, Mr. Search says:[24]

> Experience shows conclusively that even in a well graded class there are some pupils who do three times as much work as others, and that if class instruction be done away with and the individual be allowed to progress at this natural pace, there will be secured for gifted children full, free opportunity to live up to the best that is in them.

The Pueblo Plan was eventually discarded, partly because of its cost and partly because in practice too much emphasis was placed upon coaching the backward pupils and not enriching the work of the gifted.

In 1913, however, Frederic Burk inaugurated a similar plan in the elementary school.[25] At the San Francisco State Normal School he developed the first definite technique of individual instruction and promotion. His self-instruction bulletins spread all over the United States and to many foreign countries until a ruling of the California attorney-general stopped their publication. His school was visited by educators from all parts of the world. Teachers trained under Burk carried his method into rural and village schools

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[23] W. H. Holmes, op. cit., p. 59.

[24] P. W. Search, An Ideal School (D. Appleton Company, 1901), p. 31.

[25] W. H. Holmes, op. cit., p. 59.

and modified the classroom procedure in their city school classes. It was Frederic Burk who really started the present movement of individualizing school work.

Burk organized all classes from the kindergarten through the eighth grade so that every pupil might progress in each subject as rapidly as his individual ability permitted. Each of the 700 children enrolled was given a copy of the course of study for each subject on his program of studies. Class recitations were abandoned. No daily assignment was given in any subject. Each pupil was tested and promoted as soon as he had satisfactorily completed the work thus outlined.

Writing some five years later of the results, Burk declared:[26]

> The competent pupils demonstrate their fitness to be placed upon a self reliant program whereby they use their own judgment in deciding upon what amounts of time they shall give to the various subjects, and proceed very largely on their own initiative. Superior pupils can by this method finish the regular eight year program of study in five years.

Legislation was passed to prohibit Burk from using his plan, and it was dropped. But more recently the principles advocated by Burk in the organization of his normal school have been further developed and extended, with systematic supplementary work of a socializing nature, in the

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[26] F. Burk, "Individual Instruction vs the Lock-Step System," The American City, Vol. 18 (1918), p. 330.

famous Winetka plan developed by C. W. Washburne, who once was on the faculty of Burk.[27]

Other Promotional Plans

In 1902 there was introduced at Baltimore a "Preparation Center Plan" whereby pupils who had completed the sixth grade with distinct success brought together in a common class and given departmental instruction arranged covering in two years not only the regular work of the seventh and eighth grades but also a considerable fraction of the first year's high school work.[28]

Writing in 1910, J. H. Van Sickle reported that:[29]

> Despite obstacles raised by some of the parents and pupils as well as teachers, there was statistical evidence that the selected pupils had distinctly profitted by their sojourn in the preparatory centers, whether by gaining time or gaining credits without gaining time.

The "Newton Plan"[30] is associated with the work of Dr. F. E. Spaulding while superintendent of schools at Newton, Massachusetts, 1904-1914. One freature of this plan was employment of "unassigned teachers" who had no regular class instruction duties, but were placed in charge of a special room for pupils in need of special assistance. The usual grade lines were abolished as barriers to

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[27] G. M. Whipple, op. cit., p. 13.

[28] Ibid., p. 13.

[29] J. H. Van Sickle, "Provisions for Gifted Children in the Public Schools," Elementary School Teacher (April, 1910), p. 365.

[30] G. M. Whipple, op. cit., p. 14.

advancement. Spaulding used the term "grade" only to indicate degrees of difficulty in the work prescribed in his course of study. Any pupil or class of pupils completing the work of one of these grades proceeded immediately to the next grade regardless of the time in the school year. As in the case of the Pueblo Plan, the effort of the special instruction thus provided seems to have been primarily helping retarded and dull pupils rather than toward directing gifted pupils.

During the past twenty-five years many plans for handling gifted pupils have been instituted. Special promotion (skipping grades) has become a fairly common feature. The formation of special segregated groups, on a quasi-experimental basis, has been tried in several cities.[31]

Homogeneous Grouping

It was early recognized that the lock-step system of promotion did not meet the needs of individual pupils with their varying abilities, but it was not easy to abandon classification into grades for administrative purposes. Individualized instruction, coaching of laggards, and special work for the gifted were not altogether satisfactory. There had to be some means of classifying pupils for administrative purposes. In small schools where individualized instruction was made difficult by lack of funds and teaching

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[31] G. M. Whipple, op. cit., p. 15.

force, the problem still existed. This need brought about what is known as homogeneous grouping.

The term "homogeneous grouping" is applied to any method of organizing pupils in classes which aims to bring together, for purposes of instruction, pupils who vary less in ability or achievement, and those grouped solely on the basis of age or number of school years previously attended. In a more narrow sense, the term refers to segregation of pupils within a grade or classification according to standards which attempt to bring about narrower ranges of abilities, interests, and successes with the subjects to be taught than would chance groupings within the grade.[32]

There are four possible bases for the grading of pupils, with promotion in each instance governed by the basis adopted:[33]

1. Achievement grading: This is the traditional basis. Pupils are promoted as a group on the basis of having reached a certain standard achievement. Each grade is a level of attainment.

2. Chronological age grading: Promotion is on the basis of chronological age. Every pupil thus moved forward each semester or year, since all children grow chronologically at the same rate.

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[32] P. W. L. Cox and R. E. Langfitt, High School Administration and Supervision (American Book Company, 1934), p. 43.

[33] H. B. Nash, "What Is the Most Desirable Basis for Promotion," American School Board Journal, Vol. 84 (May, 1932), p. 36.

3. Mental age grouping: Mental age grading keeps the pupil in the grade where he belongs mentally. The practice of mental-age promotion places too much confidence in our mental tests. It promotes many bright pupils too rapidly for satisfactory social adjustment and often unduly retards the slower pupil.

4. Combination of achievement and ability: This basis is used for both grading and grouping. Promotion is based on achievement interpreted in terms of the pupils' ability. Grades represent not merely levels of attainment, but adjusted levels of attainment.

H. B. Nash lists several advantages of this method:[34]

1. Normal continuous progress is readily secured for at least ninety-five per cent of the pupils.

2. Promotion ismade on certain definite standards of achievement.

3. Possibility of repetition of the work where the pupil's best interests demand it. Repetition may be desirable to overcome handicaps due to inefficient foundations in certain subjects, which insufficiency is not due entirely to a basic intellectual inefficiency that no number of repetitions can improve.

4. Classification on such basis is easily explained to either parent or pupil; it creates no more feeling of superiority or inferiority than is created by the widely different school marks given to pupils.

5. Group activity is possible, since in the average elementary school at least two groups will be in all rooms, and where only one group exists it will always be the average group and the personnel of this will always be so large and varied that real group activity is possible.

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[34] H. B. Nash, op. cit., p. 36.

6. Challenge to the teacher is more real. Her mark is given a double weight.

7. Specificity of ability is cared for. A certain pupil is good in reading and much poorer in arithmetic. In the elementary grades pupils may in classroom procedure take in a certain subject the work with another group--either higher or lower according to his needs.

8. Possibility of increasing the rate of progress as well as enriching the work in the elementary grades for certain very bright pupils.

9. Ability and achievement are both duly considered.

Many arguments concerning the advantages and disadvantages of the various types of homogeneous grouping have been advanced. It is beyond the scope of this thesis to present them all, but a few of the most important are outlined.

P. M. Symonds[35] quotes Principal Reynolds of the Horace Mann school on ability as a basis for homogeneous grouping:

> The grouping of our children, mostly on the basis of abstract mental ability as measured by the intelligence quotient, seemed to us to have distinctly bad effects. Intellectual snobbery on the part of the children, a competitive spirit on the part of the teachers and pressure on the part of some parents were a few by-products of the so-called homogeneous grouping of children.
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> One's attitude toward a group depends on the reputation or stigma attached to that group. A child does object to being in the "low" moving class because certain stigmas have been attached to these terms and he experiences an emotional branding, a feeling of inferiority.

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[35] P. M. Symonds, "Homogeneous Grouping," Teachers College Record, Vol. 32 (March, 1931), p. 504.

Mr. Symonds continues:[36]

> To hide from a child the nature of his group is to prevent him from forming a just appraisal of his talents and potentialities. But if we are frank with the pupils in the best interest of their guidance we must do two things: be certain our groups are what we represent them to be; secondly, we must allow him the opportunity to try the more advanced work if he or his parents so desire. If he fails he will be only to glad to drop back.

Dr. Alice V. Keliher[37] insists that education must be concerned with the total personality--the "whole child." She challenges intelligence tests as measures of intelligent behavior. She reminds us that grouping on any one basis, as intelligence, fails to reduce the range of variability on other levels. She reviews evidence demonstrating that there may be considerable variation among specific traits of an individual, and that homogeneous grouping does not necessarily result in superior learning. Attitudes of inferiority or superiority which may result from competitive aspects of homogeneous grouping, she says, are a matter of grave concern. She challenges the right of administrators and teachers to restrict educational opportunities by rigidly defining groupings and curricula. She maintains that the attitude of membership in a favored or in an unfavored group will seriously affect the later adult attitudes which these pupils will hold in democratic society. She gives no positive

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[36] P. M. Symonds, op. cit., p. 516.

[37] A. V. Keliher, "A Critical Study of Homogeneous Grouping in Elementary Schools," Contributions to Education, No. 452 (Teachers College, Columbia University, 1931), p. 164.

recommendations for grouping, except possibly in the last paragraph of her book, wherein she says:[38]

> Our groupings in school should be the groupings of the development of the individuals and the school and society. They should approximate the groupings employed by society in the maintenance of the social group. To this end, school groupings should be highly fluid, should be suited to varied specific purposes in view from time to time and should come when school grades as we now know them will release their grip on elementary education, when the classification and segregations prepared for making grading more accurate will no longer have reason for being. Before that day, however, we should as rapidly as possible dispense with homogeneous grouping in order that its retarding influence on the forward motion of education toward education of the whole individual, in and by life, may be lifted.

According to H. B. Nash[39] there are three main contentions of the opponents to the plan of homogeneous grouping:

> 1. Grouping by intelligence tests or achievement ratings takes into consideration but a small fraction of the child's personality. Education is concerned with the "whole child" and present homogeneous grouping neglects the "whole child."
>
> 2. Ability is specific--not general. If a group is made homogeneous in one or two abilities, it is heterogeneous in others.
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> 3. Homogeneous grouping encourages a spirit of snobbery and is entirely out of place in our democratic country. Children under such a grouping plan develop attitudes of inferiority and superiority, which, in turn, produce serious maladjustments.

One of the chief contentions upheld by most of those who criticize homogeneous grouping is that it creates inferiority and superiority complexes. In confutation of this

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[38] A. V. Keliher, op. cit., p. 164.

[39] H. B. Nash, op. cit., p. 31.

viewpoint, E. A. Lincoln[40] states:

> It is generally believed that grouping does not brand or stigmatize the pupil, if it is properly administered. It is thus reasonably clear that it is not ability grouping, itself, but rather the attitudes and actions of teachers which stigmatize pupils.

J. B. Maller,[41] in his studies on cooperation and competition, reports:

> Members of a group will tend to show a higher degree of cooperation if there is, within the group little variation in intelligence, age, social factors. A maximum of cooperation is obtained when a group is of highest homogenity.

Symonds points out the following three arguments in favor of ability grouping:[42]

> 1. Ability grouping tends to improve instruction, since the teacher does not have to face the problem of wide individual differences among pupils.
>
> 2. Ability grouping makes it possible to adapt the curriculum to individual differences.
>
> 3. Pupils who are somewhat alike in the speed at which they can learn are ahppier together and enjoy their school life more when grouped according to ability.

However, not withstanding these numerous arguments, a great many discerning teachers in the smaller schools today are making such groupings within classes, using pupil committees and other schemes to maintain and develop individual interests and abilities.

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[40]E. A. Lincoln and V. L. Wadleigh,"Teacher Opinion on Ability Grouping," Journal of Education Research, Vol. 21 (April, 1930), p. 282.

[41]J. B. Maller, "Cooperation and Competition," Contribution to Education, No. 384 (Teachers College, Columbia University, 1929), p. 163.

[42]P. M. Symonds, op. cit., p. 501.

Many schools have found it desirable not to make this grouping inflexible but to provide frequent periods when shifts can be made and to consider individual needs at any time in making adjustments. Some leaders are now recommending a return to yearly promotion in the interest of wider curriculum offerings, making adjustments for individuals by shifting from class to class, or section to section, at any time as the need arises. Such a plan necessitates an efficient and watchful guidance system. The keynote in more progressive secondary schools is a better understanding of the individual and a greater willingness to adapt the school organization to the individual pupil's needs.

In the light of recent criticisms of homogeneous groupings in the elementary schools, Symonds gives the following list of tendencies which should govern the grouping of pupils in secondary schools:[43]

1. Group by subject where possible.

2. Plan to make individual adjustments whenever necessary.

3. In case it is not possible to group by subject throughout, because of administrative difficulties, group by one or two subjects in which it is most difficult to care for individual differences in the classroom, and allow the same grouping to continue in other subjects. Provide individual contracts or work sheets where possible so that a high degree of individualization of the work is possible.

4. In most subjects the tendency is toward greater enrichment rather than toward differences in the speed with which ground is covered. In skill subjects like language, where enrichment is also likely to lead to greater proficiency, flexibility

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[43] P. M. Symonds, op. cit., p. 512-513.

in shifting from group to group on the basis of achievement is desirable.

5. Where schools are so small that only one class in a subject is held, adaptation of the instruction to individual differences must be taken care of by the teacher in the classroom, either by sub-class grouping or by individual instruction.

In the experiment upon which this thesis is based no attempt at homogeneous grouping was made. The pupils remained in the grades in which they were found throughout the entire experiment. The measurement of their progress under the two types of promotional philosophies was the thing stressed.

Individual Differences

The widespread use of intelligence tests and achievement tests during recent years has made most educators realize that there is great variation in the ability and previous accomplishment of individual children. Individual differences of pupils have probably always been recognized; but the educational importance of capacity and achievement background is only beginning to be realized. During the last half of the nineteenth century a few farsighted educators began to recognize the importance of individual differences among the pupils in their schools, and began to develop procedures for individual instruction, especially of the laggards. Interest in the problem of individual differences was greatly stimulated by developments in educational measurements a little later.

The quotations which follow help to show the extent and importance of individual differences among school children.

A. O. Heck says:[44]

> The actual differences in ability found among school children are great. These differences are so pronounced that individuals are said to have different abilities--one is a mathematician, while another is a chemist, a song writer, or a politician. This does not mean that the mathematician has no musical ability or that the musician has no political ability, but it does mean that the differences in a given ability, for those of the group, are very great.

Bolton, Cole, and Jessup made the following statement:[45]

> The primary reason why the classification of pupil is a difficult problem is that there are such great individual differences among human beings. No two are exactly alike. There are the tall and the short, brunettes and blondes, blue-eyed and black-eyed, brilliant and stupid, some are ready spellers while others are almost hopeless blunderers, some are born mathematicians while others cannot progress beyond the merest rudiments. One child early exhibits mechanical genius, devising appliances for every sort of work while another can never devise the simplest contrivance; one can memorize with the greatest ease, while another can never repeat a quotation and always bungles the multiplication table. One child bursts forth into song with the most meager training, while others with the ablest masters can never learn to carry a tune. Some children learn to read with no apparent effort and others monopolize most of the time of expert teachers and then stumble over the simplest material.

These same authors quote Gesell of Yale University, who, on the basis of observations in his Child Clinic, has aptly recorded some of the differences observable in almost

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[44] A. O. Heck, "A Study of Child Accounting Records," Bureau of Educational Research Monograph, No. 2 (Ohio State University, 1925), p. 18.

[45] F. E. Bolton, T. R. Cole, and J. H. Jessup, The Beginning Superintendent (The Macmillan Company, 1937), p. 389.

any school system which account for the problems of classification:[46]

> Take an ordinary kindergarten and first grade, with a combined enrolment of one hundred pupils, and among this number we may expect to find at least one child feeble-minded; one child who stutters; two or three who seriously lisp; another babyish--a year or two retarded in mental or moral growth; and still another morally weak. There will be one "negative" child--passive, colorless; one over sensitive, nervous child; one superficially precocious child; another distinctly supereager, ardent, imaginative, sociable. The diversity of the ungraded class membership is often pathetically picturesque. Here is the roll-call for one such class in a large eastern city: Twenty-four boys, sixteen girls; nationalities Norwegian, French, Irish, Armenian, Italian, Austrian, American, Chinese; names range from James Moriarity and Ong Yung to Arcangelo Christiano and Nishan Kalehadoarian; ages range from 6 to 18; mentality, from giggling imbecility to ambitious intelligence; morality, from truancy, cigarette smoking, and thieving to good behavior; parentage, noted in special cases, includes a drunken mother, and insane father, and in three instances gypsies; physical condition, from partial blindness and deafness, and spinal trouble and anaemia to vigorous physical health. Think of the problem before this teacher who may not even have a working definition of feeble-mindedness in her consciousness to aid her in classification and instruction.

Fred Engelhardt makes a brief statement in regard to the individual differences among students in the small schools and the difficulty of making adjustments for these students:[47]

> Pupils of the same age and training vary greatly in intellect and in ability to do school work. The small school with its limited enrolment of children is at a distinct handicap to apply the methods most useful for the classification of children so that individual needs of children can best be met.

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[46] F. E. Bolton, T. R. Cole, and J. H. Jessup, op. cit., p. 390.

[47] Fred Engelhardt, "Survey Report Albert Lea Public Schools, Albert Lea, Minnesota," (University of Minnesota Press, Minneapolis, 1927), p. 18.

The extent and importance of individual differences among children are just beginning to be realized. These differences, due in some degree to inheritance, are magnified by experience until they become enormously complex. In our schools they make any form of mass instruction inadequate to meet the varying needs and abilities of the children. Children require varying amounts of time and of drill, and different children need different methods.

Because of the desirability of simple, uniform organization, courses of study, and textbooks, schools too often ignored these differences. This is particularly true of the consolidated schools of North Dakota, which must adhere closely to a prescribed course of study in order that all the pupils may be qualified to pass the same state examinations, regardless of the individual differences, at the end of their elementary school work.

This failure to adjust teaching methods to individual differences often manifests itself in undesirable habits fixed upon the children. These habits include the habit of failure, the habit of work half-done, the habit of doing less than one's best work, and the habit of shirking. Furthermore, re-educating repeaters, holding them out of productive activity for one or more years, is an economic waste. By turning out half-educated those children whose failure has discouraged them from further educational effort

the school system itself is displaying not only inefficiency, but bad citizenship.[48]

Individual differences among children, while disturbing to a system of education which tries to ignore them, are potentially the means by which human society may progress. Sutherland says:[49]

> The more carefully the processes and goals of education are analyzed and made clear, the more the fact appears that individual differences are unavoidable and invaluable. By means of them the public schools should be able to keep up a wholesome supply of the many kinds of persons needed to carry on the complex work of civilization, all of these different individuals with trained abilities in a state of healthy and buoyant readiness to perform their appropriate tasks.

In short, uniform progressive results never have been and never will be achieved from uniform assignments. Throughout the educational world, therefore, there has awakened a desire to find some way of adapting schools to the differing individuals who attend them. This desire has resulted in a variety of experiments and plans to meet the situation.

These experiments may be classified under two general heads: those which seek to retain the present classroom organization with its comparatively uniform pace and annual promotion, and those which break away more or less completely from the traditional type of organization.

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[48] A. A. Sutherland, op. cit., p. 28.
[49] Ibid., p. 29.

Application of the Newer Philosophy of Promotion in the Experimental School

The newer philosophy of promotion, as applied in this thesis, is based upon the hypothesis that students will advance more rapidly in school subjects under positive teaching and motivation than they will under the older philosophy of fear--fear of failure, fear of poor grades, and fear of ridicule by classmates, parents, and the general public. In the newer philosophy as applied in the experimental school the fear of failure was removed and each student was motivated to do the very best work he could do by setting no definite upper limit to the amount of knowledge he was to acquire, the extent of detail which he might master, or the breadth of reading he might attain in the subject.

At the beginning of the experiment, the writer explained it in detail to the teachers of the experimental school and secured their whole-hearted cooperation and aroused their interest in its possible results. The teachers were urged to do the very best teaching that they knew how to do. They were asked to spend as much time as possible with the students individually, not only with the slower ones, but also with the brighter ones. An enriched program was suggested for the brighter pupils, and the teachers were asked to provide extra work of an interesting nature for those who seemed capable of doing it. The teachers were

also asked to encourage attendance, motivate the work, and to develop interest in various ways.

The pupils in the experimental school were told at the beginning of the experiment that all would be promoted at the end of the year regardless of the amount of work done during the year but that their success in more advanced grades would largely depend upon the way in which the work of this year was mastered. Nothing was said to the pupils in the control schools in regard to their promotion. However, the pupils in all four schools had previously been accustomed to the older philosophy of promotion: do good work or you will fail to pass.

The entire procedure in the experimental school was based upon three factors: professional growth of teachers, motivation, and curriculum enrichment. These three factors were not entirely separate from each other. Professional growth of teachers and their interest in their work are sufficient in themselves to aid motivation. A pupil can not help but be motivated by a teacher who is growing professionally and by a teacher who is interested in her work. Her personality affects the attitude of the child toward his work. To enrich the curriculum and to provide interesting material to the child with a purpose is also a form of motivation.

Because of the writer's belief that teachers are the most important factors in education, definite methods were

taken to improve the work of the teachers. It is readily recognized that a poorly equipped school with a good teacher can accomplish more than a well equipped school with a poor teacher. In order that teachers may work effectively there must be cooperation between them and the superintendent. This cooperation was obtained at the beginning of the experiment and maintained throughout. The teachers agreed to carry out any suggestions made on the part of the superintendent insofar as possible.

In the first place the teachers showed their professional spirit by joining the North Dakota Educational Association, and thereby had access to The North Dakota Teacher. They attended the state educational association convention and the northwest district convention at Minot, receiving many helpful suggestions from the general sessions and their own particular sectional meetings. Their exchange of ideas with other teachers at the conventions was a source of inspiration and encouragement.

Group teachers' meetings were used for the purpose of improving the teachers and encouraging professional growth. A series of five teachers' meetings was held near the beginning of the experiment. Meetings were held on Saturday afternoons from two until four o'clock, two weeks apart. Several meetings did not require the entire two hours allotted, and none of them were held after four o'clock,

although the interest evidenced would have justified an extension of the time.

The first meeting was held on the third Saturday in September. The purpose of this meeting was to explain to the teachers the nature of the experiment and to secure their cooperation and suggestions. The following items were discussed by the writer: the old and new philosophies of promotion, purpose of the experiment, meaning and methods of motivation, procedure in giving standardized tests, age-grade distribution technique, intelligence quotients, and educational ages. A round table discussion of the items was held, after which the meeting was adjourned.

The second meeting was held on the first Saturday in October. The qualities of a good teacher were outlined and discussed at this meeting and a few helpful methods were suggested. A few of the qualities mentioned were: the factors which make up a personality (appearance, neatness, common sense, friendliness, sense of humor, good judgment, tact, and consistency); experience (obtained from reading, travel, study, or meeting people who have had wholesome experiences); vocal qualities; knowledge and presentation of subject matter; willingness to learn; and proper attitudes of cooperation.

A good teacher keeps the objectives of her courses before herself and the students, and is able to give reasons for the various school subjects in terms of child experiences.

A good teacher has sufficient initiative to vary her methods so that they do not become monotonous. At this meeting the teachers were urged to do positive teaching. It was suggested that they try to find something good in each student and to acknowledge it to the student but say nothing to him in regard to his bad points. In correcting papers they were urged to mark the papers with helpful criticisms rather than magnify the errors. It is stimulating to a child to have his paper returned with such words as these, "This problem is neatly done," "You have the correct answer here," "This word should be spelled this way," and "This is a good sentence or paragraph," instead of having all errors checked with red pencil in such a way that they stand out. Errors should be minimized. Positive teaching is constructive and affirmative. Suggestions should never be made how not to do a thing, but always how to do it correctly. It was suggested that whenever possible a child should be permitted to talk about, write about, and read about those things in which he was most interested, rather than assigned topics in which he might have no interest.

A general discussion of the topic was held after the comments of the writer. Carbon copies of the "Blueprint of a Good Teacher" were given to the teachers after the meeting. A copy has been inserted in this thesis on the following page. It was suggested that the teachers read parts of the book, Teachers and Teaching by Ten Thousand High School Seniors.[50]

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[50] F. W. Hart, Teachers and Teaching by Ten Thousand High School Seniors (The Macmillan Co., 1936).

Blueprint of a Good Teacher

by

Dr. J. K. Van Denburg,
Chairman of the Board of Examiners of New York City

Virtues of the ideal teacher, together with the "vices" of the inferior one, follow:

In appearance, the ideal teacher is attractive, cheerful, considerate, courteous, friendly, patient, polite, sympathetic, tactful. The poor teacher is crude, conspicuously made up, ignorant of conventions, ill-mannered, intolerant, peculiar, rude, unsuitably clad, untidy.

When it comes to teaching the facts, the superior teacher is frank, honest, impartial, open-minded, skillful, talented, tolerant, truthful, well informed. The inferior teacher is boastful, bluffing, clumsy, ignorant, partial, dogmatic, rusty, unfair, untruthful.

In her contacts with pupils, the good teacher is adaptable, calm, firm, guiding, stays in the background, leading, listening, modest, patient, pleasant, poised, quiet, with sense of humor, unselfish. The poor one is domineering, peevish, hard-mannered, harsh, lacking in self-control, nagging, partial, sarcastic, scolding, too talkative, threatening, unforgiving, unjust, indifferent.

In mental-emotional traits, the praise-worthy teacher is adaptable, alert, challenging, enthusiastic, inspiring, optimistic, ingenious, mentally honest. The inferior teacher is bored, cynical, complaining, discouraged, evasive, indifferent, uninterested, pessimistic.

As for diction or pronunciation, the ideal teacher is clear, correct, cultured, discriminating, natural, understandable. Her opposite is incorrect, careless, involved, foreign, ungrammatical, vulgar.

Finally, the teacher's voice, if it is to receive a high rating, should be controlled, pleasing, properly pitched, well modulated. It should not be organically defective, rough or nasal, too loud, or inaudible.

One of the most important functions of the class period is that of making the assignment for the next day. Perhaps there is no phase of the teaching procedure that is so little understood by most teachers. Teachers expect pupils to accomplish certain units of work; yet their instructions regarding the task to be performed by the pupils are often not clear and too indefinite to be followed. Since it is necessary for a child to know what he is supposed to do before he can do it, and since a good assignment is nothing more than directions informing pupils regarding the work to be completed by the time they return to their classes on the following day, these directions should be so specific that no child should leave a class without knowing exactly just what he is expected to do. Because of the importance of the assignment to the progress of the pupil, one teachers' meeting was taken up with a discussion of this topic.

The following list of questions in regard to the making of an assignment prepared by J. D. Falls[51] was handed to the teachers one week previous to the meeting, with the suggestion that they were to be discussed at the teachers' meeting on the following Saturday afternoon.

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[51]J. D. Falls, "Daily Lesson Assignments of the Classroom Teacher," American School Board Journal, Vol. 87 (September, 1933), p. 19-20.

Teachers' Meeting
Saturday

Topic: The Assignment

The following questions will be discussed at the teachers' meeting on Saturday afternoon. Please be prepared to contribute your opinions on each question.

1. When should daily assignments be made?

2. How much time should be devoted to the making of a daily assignment?

3. Should there be an aim for each recitation?

4. How many major questions should be asked in one daily assignment?

5. Should a teacher "blockout" a big, basal project or problem covering several days work?

6. Should all obstacles that the pupils are likely to encounter the next day, be pointed out to them, emphasizing their difficulties?

7. What relation is there between the preparation the child made on his lesson for today and the interest which the teacher stimulated in him yesterday when she made the assignment?

8. How may interest be motivated to stimulate preparation?

The main purpose of discussing the assignment in the teachers' meeting was to make the teachers conscious of the importance of good assignments in motivating the pupils to make proper preparation for their daily classes. The questions were discussed from various angles at the meeting and much interest was aroused in the teachers. At the close of the meeting a list of suggestions for making assignments, also prepared by Falls,[52] was issued to each of the teachers. A copy of these suggestions are given on the following pages.

The teachers' meeting held on the first Saturday afternoon in November was devoted to the study of reading, especially the importance of oral and silent reading and the common reading difficulties found among the children.

Miss H, a teacher of the experimental school, gave a very interesting report on "Oral and Silent Reading." Her report stressed silent reading as most important, since little of the average person's reading during life is oral. She emphasized the need of increased speed and comprehension in silent reading, and gave a few suggestions as to methods of increasing the speed and comprehension.

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[52] J. D. Falls, op. cit., p. 56.

Helpful Suggestions for Making Assignments

The following are a group of helpful suggestions to be used in improving the lesson assignments. Please keep this list on file and refer to it often.

1. The teacher must first know what a proper assignment is and what it should accomplish.

2. The teacher must have studied and learned thoroughly the content to be taught, and must be imbued with its richness.

3. She must have determined the portions that will offer difficulties and point them out to the children.

4. She should have each pupil check these difficulties and have their general explanations in mind before he leaves the class.

5. The teacher should have an aim well in mind and contained in a simple question, whenever possible.

6. The retarded pupil in the class should be led and encouraged to ask questions concerning the work to be accomplished.

7. The pupils should be urged to aid in explaining to the group the directions for the next day's work.

8. The teacher should have some pupil write on the black board the important parts of the assignment and emphasize further the most difficult portions by underscoring them.

9. The pupils should take notes on the assignment so that they will know later what to do.

10. No pupil should leave the class without sufficient knowledge of the work expected of him.

11. Have certain pupils repeat the assignment and have others ask questions about it, to assure that all understand.

12. The assignments should be of sufficient length to permit execution in the time allotted.

13. The assignment should lead from a brief summary of the previous work to that to be accomplished.

14. The assignment should be motivated by interest-

Helpful Suggestions for Making Assignments, Continued

provoking situations and by introducing matters that are well understood at the grade level.

15. The teachers should stimulate individual interest and provide material and references for the particular grade levels.

16. The assignment should be clearly and interestingly presented in a dynamic question.

17. The teacher should finally outline and definitely summarize the assignment.

Signed:

Reading is the basic subject in the elementary school. The solution of most class-room problems in the modern school requires the skillful use of books as sources of information. Ability to read not only marks the differences between the literate and the illiterate person, but it is also absolutely necessary as a basis for the other subjects in the curriculum. To be sure, in the earliest grades a child may compensate for a deficiency in reading by accurate listening and a good verbal memory, but the time soon comes when progress in all academic subjects very nearly ceases unless he can read. It is therefore essential that teachers should understand the nature of the reading process, in order that they may give the greatest possible aid to pupils in the mastery of this fundamental educational tool. In fact the ability to read is not only fundamental to progress in school but is essential to successful participation in the activities of life. Thus reading is something more than merely the rapid comprehension of printed symbols and the memorizing and organization of the materials read. It is the ability to make efficient use of books and libraries as sources of information.

As W. S. Gray[53] has pointed out, reading is an indispensable means of "familiarizing adults with current events, with significant social issues, with community and national problems, and with American institutions, ideals and aspi-

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[53]W. S. Gray, "Importance of Intelligent Silent Reading," Elementary School Journal, Vol. 24 (January, 1924), p. 349.

rations. It is also essential in attaining vocational efficiency, in broadening one's range of information, and in seeking pleasure and profit during leisure hours."

Miss Pennell[54] treats the social aspect of the value of reading as well as its educational value in the following quotation:

> If the citizens in our land are to act intelligently, if they are to be able to initiate wise policies or to give intelligent allegiance to them, they must possess a rich fund of knowledge. They can understand current social trends and anticipate future needs only by having a knowledge of our past history.
>
> A wealth of information is necessary if one is to cope with the present, to avoid the mistakes of the past, and to chart an intelligent course for the future. The more complex and changing the civilization, the greater is the need for a vast fund of knowledge upon which one can rely for comfort, understanding, guidance, and vision.
>
> To give us the broad information needed in life we must depend to a great extent on the matter contained in books, magazines, newspapers, and other printed materials. It is imperative that the children in our schools form the habit of resorting to books. This habit will not be formed unless they acquire a love for reading.

The tendency to treat reading as a most important tool of learning and as having a valuable social aspect has resulted in giving reading the paramount place in the elementary curriculum.

Miss C presented a paper on frequent reading difficulties among school children and suggested drills which might be applied in remedial teaching. She mentioned the following common difficulties: reversal of letters in a word

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[54] Mary E. Pennell and Alice M. Cusack, The Teaching of Reading for Better Living (Houghton Mifflin Company, 1935), p. 15.

and words in a sentence; additions and omissions of sounds; additions and omissions of words; refusals to attempt words; substitution of words for unfamiliar ones; repetitions of words and phrases; faulty vowels and consonants; lack of vocabulary, difficulty of word recognition; and poor enunciation and expression. Books fully or partially read in preparation for this meeting are listed in the section on professional reading.

After a general discussion of the reports and methods used in remedial work, the writer emphasized the value of vocabulary building in the elementary grades. It is thought by some that a vocabulary test is a good measure of intelligence and especially of educational achievement. Koehnlein[55] concludes that there is a very close relationship or correlation between grades of a student in an objective test in general science and a vocabulary test in the same course. The writer also talked briefly on the objectives of reading and handed out copies of objectives as adapted from Brueckner and Melby.[56] These objectives appear on the following two pages. The teachers were urged to outline objectives for their other courses as well.

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[55]H. H. Koehnlein, "A Vocabulary Study in General Science," Unpublished Thesis, University of North Dakota, 1937.

[56]L. J. Brueckner and E. O. Melby, op. cit., p. 250-253.

General Objectives in Reading

Second and Third Grades

1. To provide a rich variety of reading experiences.

2. To increase enjoyment in reading material of various types.

3. To increase the desire and ability to seek independently for material related to activities in which the child is interested.

4. To secure rapid growth in habits of intelligent interpretation of different types of reading material for different purposes.

5. To increase the rate and accuracy of oral reading and of silent reading.

6. To improve the ability to give pleasure when sharing stories and informational material.

7. To continue training in the skillful use of books and the library.

Fourth, Fifth, and Sixth Grades

1. To develop the power to think more actively when reading.

2. To secure rapid growth in power and habits of intelligent interpretation.

3. To increase rate and accuracy of silent reading.

4. To improve and refine the habits necessary for effective oral reading.

5. To develop greater skill in the use of books, libraries, and other sources of information.

6. To develop wholesome and abiding interests in reading widely varied types of worth-while materials.

General Objectives in Reading, Continued

Seventh and Eighth Grades

1. Ability to remember that which is read.

2. Ability to recognize and pronounce all the words in a selection.

3. Ability to read aloud intelligibly and intelligently enough for the ordinary demands of life.

4. To enlarge and enrich the experience through a wide range of reading.

5. To learn to gather information accurately and quickly by proper use of the index, table of contents, dictionary, encyclopedia, library file, reference materials, maps, tables, and graphs.

6. Ability to comprehend quickly what is read by establishing rhythmic and rapid eye-movements, elimination of lip reading and vocalization, and acquiring a vocabulary of accurate meaning.

7. Ability to select and evaluate material needed.

8. Ability to organize what is read by picking out the central ideas, selecting main topics, outlining, and summarizing.

9. Ability to use effectively and economically newspapers, magazines, bulletins, books of reference and libraries.

The fifth teachers' meeting was held on the first Saturday afternoon in December. The topic under consideration at this meeting was supervised study and proper conditions for study. Teacher H gave a report on the proper conditions of study, which she divided into three general divisions: physiological, physical, and psychological. The physiological factors included the value of good health, food, sleep, and recreation. The physical factors mentioned were light, heat, ventilation, and appearance of the study room. The psychological factors included concentration, mood, feeling, distractions, and fatigue.

Teacher C gave a paper on the meaning and aims of supervised study based upon a book on the subject by A. L. Hall-Quest.[57] He defines supervised study as "that plan of school procedure whereby each pupil is so adequately instructed and directed in the methods of studying and thinking that his daily preparation will progress under conditions most favorable to a hygienic, economical, and self-reliant career of intellectual endeavor." The aims of supervised study given were: that it seeks to prepare pupils not simply to do their school work well, but to an even greater extent for successful coping with problems in a world of intense competition, where superior achievement depends on initiative, clear thinking, and confidence in one's ability to organize experience for new adjustments; and that it provides for the

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[57] A. L. Hall-Quest, Supervised Study (The Macmillan Company, 1917), p. 29.

wide extent of individual differences by giving the teacher opportunity to offer assistance, guidance, and suggestions to the child while he is preparing his assignments.

The writer spoke briefly on the possibilities of supervised study as an aid in solving the problem of individual differences through the enrichment of experiences of the brighter pupils and through individual assistance to the backward ones. One of the most serious drawbacks in the small consolidated schools is the lack of time for supervised study. One period was set aside each day in the experimental school for supervised study of the type mentioned above.

Another method used to improve the teachers while the experiment was in progress was intervisitation. This proved to be an excellent device. The teachers in the experimental school were allowed to visit another school while it was in session. The teachers in the experimental school, having taught for several years, had had no opportunity to observe other teachers at work. The learning of new or better techniques in teaching was accelerated by seeing and hearing lessons carried on by those who had mastered the technique. Therefore, permission was obtained from the board of education to allow the teachers to take a day off to visit the schools at Bottineau, which have long been noted for their high quality of work. A definite sheet of instructions was given to each of the teachers, with suggestions for things

to notice while visiting. A copy of these instructions may be found on the following page. Each teacher visited the grade and the subjects in which she was doing her work. A conference was held on the following day to discuss the methods and techniques observed during the visitation, and plans were suggested as to putting these techniques into practice. Both the teachers expressed the opinion that they had received much help from this short period of visitation.

Throughout the experiment the teachers were urged to do professional reading. Among the books read, wholly or in part, either for material suggested for the teachers' conferences or for their own personal interest were: Reading Readiness by M. Lucille Harrison,[58] Remedial Reading by Monroe and Backus,[59] One Hundred Ways of Teaching Silent Reading by Nila B. Smith,[60] The Improvement of Reading by Luella Cole,[61] The Teaching of Reading for Better Living by Pennell and Cusack,[62] Diagnostic and Remedial Teaching by Brueckner and Melby,[63] Supervised Study by A. L. Hall-Quest[64]

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[58]M. L. Harrison, Reading Readiness (Houghton Mifflin Company, 1936).

[59]M. Monroe and B. Backus, Remedial Reading (Houghton Mifflin Company, 1937).

[60]N. B. Smith, One Hundred Ways of Teaching Silent Reading (World Book Company, 1925).

[61]L. Cole, The Improvement of Reading (Farrar and Rinehart, 1937).

[62]M. E. Pennell and A. M. Cusack, The Teaching of Reading for Better Living (Houghton Mifflin Company, 1935).

[63]L. J. Brueckner and E. O. Melby, Diagnostic and Remedial Teaching (Houghton Mifflin Company, 1931).

[64]A. L. Hall-Quest, Supervised Study (The Macmillan Company, 1917).

SCOTIA SPECIAL SCHOOL DISTRICT NO. 22
Landa, N. Dak.

Oct. 23, 1937

Dear teachers:

By the kind permission of the board of education, we have been granted leave of absence from class work on Monday, October 26, to visit the schools at Bottineau.

We shall visit the Bottineau school through the courtesy of the superintendent and his staff. Each teacher will be expected to visit teachers at work in her own special field.

We shall leave here at 8:00 o'clock so that we may arrive in Bottineau in time to adjust ourselves and get the rooms and programs straightened out.

While observing the instruction, please note the following items:

1. Dependence on or freedom from use of textbook.
2. Organization of teaching procedures.
3. Character of questioning by teachers.
4. Attention and character of pupil response.
5. Relative part taken by teachers and pupils.
6. Types of lessons seen and methods used.
7. Character and method of assignment.
8. How well conducted, and brought to conclusion.
9. Strong points in teaching technique seen.

Be sure to ask permission of the teacher in charge to take notes in her class.

On your return to school you will be expected to report your findings in a group conference. Try to apply any of the new good ideas you may have seen in your observation.

You are requested not to comment on the work seen, other than favorably, to any one else than to me or the other faculty members.

Very sincerely yours,

M. W. Gunter, Supt.

and The Teacher in Modern Education by A. V. Overn.[65]

The second factor of the procedure in the experimental school was that of motivation. Motivation is of supreme importance in all school life. It is the approach to the building of character and moral ideals. It is the starting point in developing permanent social interests, appreciations, ideals, and attitudes, which in themselves, after they have been developed, serve as further motives for social conduct both in and out of school. Motivation is the basis of all methods. The teacher should focus his efforts upon inducing each pupil to see his own problems and attempt to solve them.[66]

Motivation, according to Dr. A. V. Overn,[67] is conceived usually either as (1) the employment of devices to make subject matter interesting or (2) the adaptation of subject-matter to conscious or instinctive needs and (3) the development of the natural urges or motives along social lines, for the building up of the most desirable and useful appreciations, permanent interests, high ideals, and worthy attitudes, as a basis of all further effort both in school and in life outside.

The first attempt at motivation was made by the writer, who was the superintendent of the experimental school.

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[65] A. V. Overn, The Teacher in Modern Education (D. Appleton-Century Company, 1935).

[66] Ibid., p. 35.

[67] Ibid., p. 36.

He made a special effort to get acquainted with each student personally and thus secure the confidence and respect of the grade children. He talked to the children on the street and at school; he played with them and worked with them. One project of special interest was that of rope making. The writer prepared a crude rope-making machine and with the help of the children he made ropes for the boys and girls. Because of the apparent friendliness of the superintendent the children were willing to do almost anything for him.

The writer, at a special assembly, told the boys and girls that he was proud of them for the fine start they had made in the school year, and that he expected them to do good work during the remainder of the year. He said he was going to have their teachers let him examine samples of their class work and test papers from time to time and that he wanted to see just how well their work was done.

He did examine the papers at frequent intervals and wrote positive statements on each paper praising the children for their good work but made no criticisms on poor work. Such statements as these were written on the papers: "An excellent paper," "This shows much work," "I believe you can do better next time," "Very neat paper," etc. The children tried their best to have their papers in very good condition, since the superintendent might ask to see them. Just the fact that the superintendent took time to look at the papers made the children feel that their work was really important. It proved very stimulating to the children.

At the beginning of the experiment the writer gave a talk to the pupils in the grade rooms on habits of study and distributed mimeographed copies of suggestions for good study habits to each of the students and the teachers, urging the students to follow the suggestions as closely as possible. A copy of these suggestions appears on the next page. During the course of the experiment the writer gave a brief inspiring talk to the pupils once a week at a general assembly. He used for the basis of these talks the pamphlet, Young Folks--Be Somebody and Do Something.[68]

Most students are anxious to know why they should take certain subjects in school, and they do their best work in those subjects which they believe would further their life interests. Therefore, the teachers were asked to prepare some simple illustrations exemplifying the reasons for taking the various school subjects.

A few examples used by the teachers were as follows:

Purposes for reading: "How many of you children listen to the story of Little Orphan Annie over the radio? Yes, I am sure many of you do. The story is very interesting and it seems that the story is always interrupted at the very best place, and then you have to wait until next day to hear the rest of the story. Now if you were able to read you could obtain many more interesting stories similar to the

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[68] Young Folks--Be Somebody and Do Something (International Harvester Company, 1930).

Study Habits

Provide yourself with the materials needed for your work--have on hand textbooks, ruler, pencil, paper, notebook, eraser, maps, etc.

Make out a definite daily program, arranging a definite time for each subject.

Follow your program regularly. You will thus form the habit and save time in beginning work.

Study away from interruptions. Learn to concentrate and have a definite place for study.

Understand the lesson assignment. Learn to take notes on the assignment.

Do individual study. Learn to form your own judgments, to work your own problems.

Study your lesson, if possible, immediately after the class in that subject.

Take brief notes and review them before class.

Use dictionaries and reference books to obtain a thorough understanding of the material in each lesson.

Learn to use the textbooks and references correctly by using index, appendix, footnotes, maps, tables of content, and bibliography.

Do not waste time in studying. Begin your work immediately and do not use more time than is necessary to do your work well. Use enough time to master the work.

Review often so asnot to lose important facts.

Take an interest in the subjects taught.

Talk over your school work with your parents and friends. Tell them what you have learned. It will help you remember it.

Prepare each day's lesson well. You will be that much better prepared for the next day's work.

Make comparisons and contrasts where possible. Relate new material to the old.

Think of school work as your most important work. It is your preparation for making a living, enjoying life, and of being of service to others.

one about Little Orphan Annie. Wouldn't you like to be able to read more stories like that? Yes, I am sure you would. Reading is placed in our schools for just that purpose so we must do the very best we can in reading this year so that we may read many interesting books."

Purposes of spelling: "Would you like to be able to write to some of your friends to tell them about your experiences during the summer on your farm or on your vacation? Perhaps they would write to you and tell you many interesting things, too. But how are we going to let them know these things? We must learn to spell the words which we will need to use in our letters. Our class in spelling this year will help us write our letters and stories.

Purposes of arithmetic: "Your mother will perhaps send you down town to get groceries for her, and she will give you some money too. If she sends for two dozen eggs @ 12¢ a dozen and a pound of butter at 24¢ a pound, how much money should you bring back if you have fifty cents for the purchase? I don't expect you to answer now, but I will expect you to answer similar questions this year in our arithmetic class. It will be so much fun to learn to help our parents."

Purposes of geography: "Now that your parents have a nice car you will perhaps be making a trip some day either to the west coast or to the east coast. Wouldn't it be nice to know the states and the towns you might pass through, the

mountains and rivers you might cross, the beautiful parks, forests, and other places of scenery you may see? If you knew something about these places you could enjoy them so much more. Geography is a study of the states, towns, rivers, mountains, and places of beauty, not only in the United States but also in foreign countries about which we hear so much over our radios. For breakfast this morning you probably had grapefruit or oranges, sugar, coffee, breat, butter; for dinner you may have had bananas, tomatoes, olives, meat, salt, pepper, etc. These materials all came from different parts of the country and of the world. Our study of geography will help us know from which country we get the articles we use. All the subjects in school help us know more about the world in which we live, and therefore we must do our very best to learn about it through our school subjects, textbooks, and reference books."

These simple illustrations used by the teachers developed the interest of the pupils, as was shown by the eagerness with which the children prepared their lessons.

Each teacher made it a practice to have each pupil constantly aware of his record in order to strengthen the operation of the motive to excel in his work. Students are known to do more work and at a more rapid rate when they know results of their work than when they did not.[69] Without knowing the progress made in his own previous work, the

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[69] A. V. Overn, op. cit., p. 41.

pupil cannot know vividly enough just what goal he must beat. Athletes practice for long periods of time to beat their own record in track events. At the annual track meet each one does his very best to beat the conference records in the various events. This is a form of motivation by being aware of one's best previous record. The teachers, during the period of experimentation, prepared a score chart for each student on which his grades on periodical tests were recorded in graph form. The teachers prepared their own tests over the subject matter covered in the classes taught except in those classes in which tests were available with their teaching aids. The results of these tests were placed on the individual charts, and each pupil was able to see his progress immediately. The chart of the first achievement test administered in this experiment was shown to each student, and he was urged to prepare himself well for the final test in order to exceed his first record. The pupils in the control schools were not permitted to see their results.

There were four forms of the achievement test, but only two were given in the experimental school, because practice in taking the test might have affected the final results in comparison with those in the other schools. Practice on tests has a tendency to increase the scores.[70] However, in actual teaching in which no experiment is being

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[70] R. Pintner, Intelligence Testing (Henry Holt and Company, 1936), p. 93.

carried on, it would have been well to give the other two forms at proper intervals and recorded the results on the individual charts showing the child his progress over his previous test. It was believed that the practice in writing these two additional test forms between the two used in the experiment would have unjustly affected the results in favor of the experimental school.

In order to be of greater help to each student the teachers visited many of the homes to get better acquainted with the parents and to learn the likes and dislikes of the children. When the teachers knew the interests of the students they were able to guide them more effectively in assigning additional work or in providing enriched materials. Their visits also helped to strengthen the relationship between the home and the school.

Absences were kept at a minimum during the experiment by encouraging attendance on the part of the pupils and by making the school work so interesting that the children did not want to stay away. A bulletin was sent to the parents revealing the attendance statistics for the preceding year and explaining the results of frequent absences. The parents were asked to cooperate as much as possible to keep their children in school regularly. E. P. Cubberly[71] states that one cause of retardation in school is poor attendance:

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[71]E. P. Cubberly, The Principal and His School (Houghton Mifflin Company, 1923), p. 247.

> Because irregular attendance is such an important cause of retardation and ultimate elimination from school, because irregular pupils become such a drag on the class on account of what he missed, and because truancy and tardiness are bad habits and tend to undermine the discipline and morals of a school, it is important that the principal give careful attention to the matter of attendance.

The enrichment of the curriculum was the third method used to motivate the students to do good work. The money available to supply materials was rather limited. However, the school district did help to quite an extent in purchasing dictionaries and library books. The children purchased the workbooks, as the district did not furnish free textbooks to the children.

With the growth of the acknowledgment of individual differences among students there has come a development of teaching materials to meet these differences. The chief ones among the material are workbooks. Some are designed to accompany a particular textbook; many may be used with any textbook. Workbooks were secured for practically all the grades and in several of the subjects in each grade. The pupils enjoyed the workbooks, and although some of the slower ones were not able to complete all the lessons, those with superior ability finished theirs. These workbooks served as motivating materials and study guides. While the students were busy with the workbooks, the teacher was free to move about the room giving individual help to those who were behind or were having difficulties.

Workbooks used in this experiment included the following: The New Curriculum Workbooks in Arithmetic by Brueckner and others,[72] Goals in Spelling by Wickey and Lambader,[73] and Constructive English Exercises by William B. Guitteau[74] for grades three, four, five, seven and eight; Study Guides in United States History by Tucker and Sharp,[73] and Practice Tests in Advanced Geography by Branom[75] for the seventh and eighth grades. These workbooks were selected without any attempt to evaluate them in any way, and any other workbooks might have given the same or even better results.

A few of the textbooks in use in the experimental school were found to be very old and unattractive. Therefore, new textbooks were purchased to replace those in the worst condition. New textbooks purchased were the following: Practical Arithmetics by Strayer and Upton[76] for grades four, five, seven, and eight; Story of the American People by Mary G. Kelty[77] for grade five; and Since We Became a Nation by Knowlton and Harden,[78] for the seventh and eighth grades.

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[72] The John C. Winston Company
[73] Webster Publishing Company
[74] Johnson Publishing Company
[75] Macmillan Company
[76] American Book Company
[77] Ginn and Company
[78] Macmillan Company

An attempt was made to encourage the children to do work with a dictionary so that they might increase their vocabulary as an aid in the work of the various courses. It is recognized that students often fail in courses because they are unfamiliar with the words used and therefore are unable to understand the content of their reading. Practice was given in the use of dictionaries at specified intervals, and several lessons were given in the correct use of the dictionary. Several new dictionaries were purchased for the use of the pupils. A special dictionary for the lower grades, The Right Word, by Statts and Frasier[79] was obtained. Three copies of A Dictionary for Boys and Girls by Webster[80] were purchased for use of grades four to eight. Various games were devised by which interest in the use of dictionaries was maintained. The students seemed to enjoy learning to use the dictionaries.

The students were encouraged to do supplementary reading of books secured from the library. Fifteen new library books were purchased by the school district to supplement the older ones, which many students had already read.

No attempt was made to evaluate the type of instruction in the control schools. However, it is known that they did not have teachers' meetings, intervisitation, professional reading, nor supervised study. Their supply of

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[79]Allyn and Bacon Company, Chicago.
[80]American Book Company, Chicago.

workbooks and supplementary teaching materials was very limited. In most cases these were supplied from materials which the children brought in or which could be collected by the teacher. In no instance was there any extraordinary attempt to improve the method of instruction in the control schools.

Summary

This chapter has attempted to explain an older and newer philosophy of promotion and to set forth the procedure followed in the experiment. The older philosophy of grade promotion was known as the "lock-step" system in which the child was required to complete the minimum essentials or fail the grade. It was a negative philosophy built upon fear. The newer philosophy attempts to substitute for the negative philosophy of fear a positive philosophy of motivation. Each child may proceed as rapidly as he can, and he is exposed to all the work of each succeeding grade as he grows chronologically older.

The rise of the newer philosophy was traced from its early beginnings at St. Louis in 1872, through various stages, up to the present time. Attempts at homogeneous grouping, achievement grading, mental-age grouping, and a combination of achievement and ability grouping were discussed.

The new philosophy of promotion as applied to the experimental school was built upon three factors: professional

growth of teacher, motivation, and the enrichment of the curriculum. Professional growth of the teachers was secured by membership in professional organizations, teachers' conferences, intervisitation, and professional reading.

The pupils were motivated to do good work by their confidence in the superintendent and his interest in their work, by his assembly talks, explanation of the purposes of each course by the teacher, knowledge of each pupil's past record, and by visitation to each child's home.

The curriculum was enriched, especially for the brighter pupils, by the use of workbooks, new textbooks, dictionaries, and library books.

CHAPTER 4

RESULTS OF LAST TESTING

The intelligence test and the first achievement tests used in this experiment were given in October, and the results were summarized in Chapter 2 of this thesis. These tests were followed by seven and one-half months of motivation, enrichment of subject matter, and professional growth of the teachers as explained in Chapter 3. The final New Stanford Achievement Tests were given during the second week in May and were scored in the same manner as were the preliminary ones. The results of the last achievement tests were compared with the results of the first tests.

Tables 29 to 32 contain a review of the results of all the tests as given in the four schools. The first column of these tables identifies each student by number; the second column shows his grade; the third, his chronological age in months; the fourth, his mental age in months; the fifth, his intelligence quotient; the sixth, his educational age in months as obtained from the first achievement test, Form V; the seventh, his educational age in months as determined from the second achievement test, Form Y; and the last, the number of months that his educational age increased during the period of the study. Each table also shows the average number of months' improvement of the educational ages of all the students in the particular school.

Table 29

Summary of Test Results in School A

Pupil	Grade	C.A.	M.A.	I.Q.	Form V E. A.	Form Y E. A.	Inc. Mos.
1	3	103	89	86	99	111	12
2	3	93	105	113	110	119	9
3	3	102	95	93	106	114	8
4	3	100	114	114	115	123	8
5	3	103	112	109	108	115	7
6	3	96	115	119	118	123	5
7	4	106	116	109	115	133	18
8	4	115	124	108	119	133	14
9	5	140	123	87	108	120	12
10	5	125	133	106	129	140	11
11	5	129	121	94	119	126	7
12	7	140	163	116	157	172	15
13	7	145	150	103	155	184	29
14	7	157	148	94	137	144	6
15	8	150	149	99	186	188	2
16	8	180	161	103	172	176	4
Average increase of educational ages in months							10.44

Table 30

Summary of Test Results in School B

Pupil No.	Grade	C.A.	M.A.	I.Q.	Form V E. A.	Form Y E. A.	Inc. Mos.
1	3	102	109	107	110	111	1
2	3	99	101	102	89	86	-3
3	3	93	97	104	92	96	4
4	5	125	124	99	126	139	13
5	5	125	129	103	140	154	14
6	5	132	122	96	125	132	7
7	5	117	130	111	136	144	10
8	5	122	118	97	116	122	6
9	7	156	167	107	176	188	13
10	7	142	162	124	146	172	22
11	7	175	149	84	135	140	5
12	8	158	146	92	159	161	2
13	8	163	155	95	184	174	-10
14	8	165	172	105	161	204	43
15	8	170	169	100	192	197	5
Average increase of educational ages in months							8.8

A summary of the results of the tests given to the pupils in School A shows that the range in the number of months' increase in educational ages ranged from a maximum of twenty-nine to a minimum of two (Table 29). The average increase in the educational ages for the entire group of students in the school was ten and forty-four hundredths months. In other words, one student accomplished twenty-nine months' work in the school year while another accomplished only two months' work. There is a wide span in the possible amount of work that such pupils may do in one school year. In School B the maximum increase was forty-three, and the minimum increase was a minus ten months (Table 30). The writer was not able to explain why this one student showed a negative advancement. It may have been due to any one of several factors. The average increase in the educational ages of the students in School B was eight and eight-tenths months. The maximum improvement in School C was twenty-five months, and the minimum was zero, with an average advancement of seven and eighty-eight hundredths months (Table 31).

The results of the achievement tests in the experimental school showed that the maximum improvement in the educational age was thirty-seven, with a minus four months as a minimum (Table 32). The average advancement was thirteen and four-tenths months.

Table 31

Summary of Test Results in School C

Pupil No.	Grade	C.A.	M.A.	I.Q.	Form V E. A.	Form Y E. A.	Inc. Mons.
1	3	100	112	112	104	126	22
2	3	112	108	96	110	126	16
3	3	101	101	100	107	116	9
4	4	133	119	89	120	120	0
5	4	116	130	119	122	133	11
6	4	94	121	128	123	129	6
7	4	116	123	106	115	118	3
8	4	113	112	99	111	122	11
9	5	153	108	71	111	113	2
10	5	126	113	90	120	127	7
11	5	138	104	75	112	124	12
12	5	128	123	96	121	125	4
13	5	117	148	128	133	151	18
14	5	136	106	87	119	125	6
15	5	152	101	74	120	125	5
16	5	120	119	99	119	126	7
17	7	158	142	90	129	132	3
18	7	153	156	102	147	163	16
19	7	151	163	108	146	154	8
20	7	152	152	100	138	140	2
21	7	142	177	124	165	172	7
22	8	164	180	110	200	208	8
23	8	150	174	116	167	192	25
24	8	150	164	109	169	172	3
Average increase of educational ages in months							7.88

Therefore, in increase of educational ages the experimental school ranked first with an average increase of thirteen and four tenths months, School A was second with ten and forty-four hundredths, School B third with an average of eight and eight tenths months, and School C fourth with seven and eighty-eight hundredths months. These facts are shown graphically in Figure 8.

Table 32

Summary of Test Results in the Experimental School

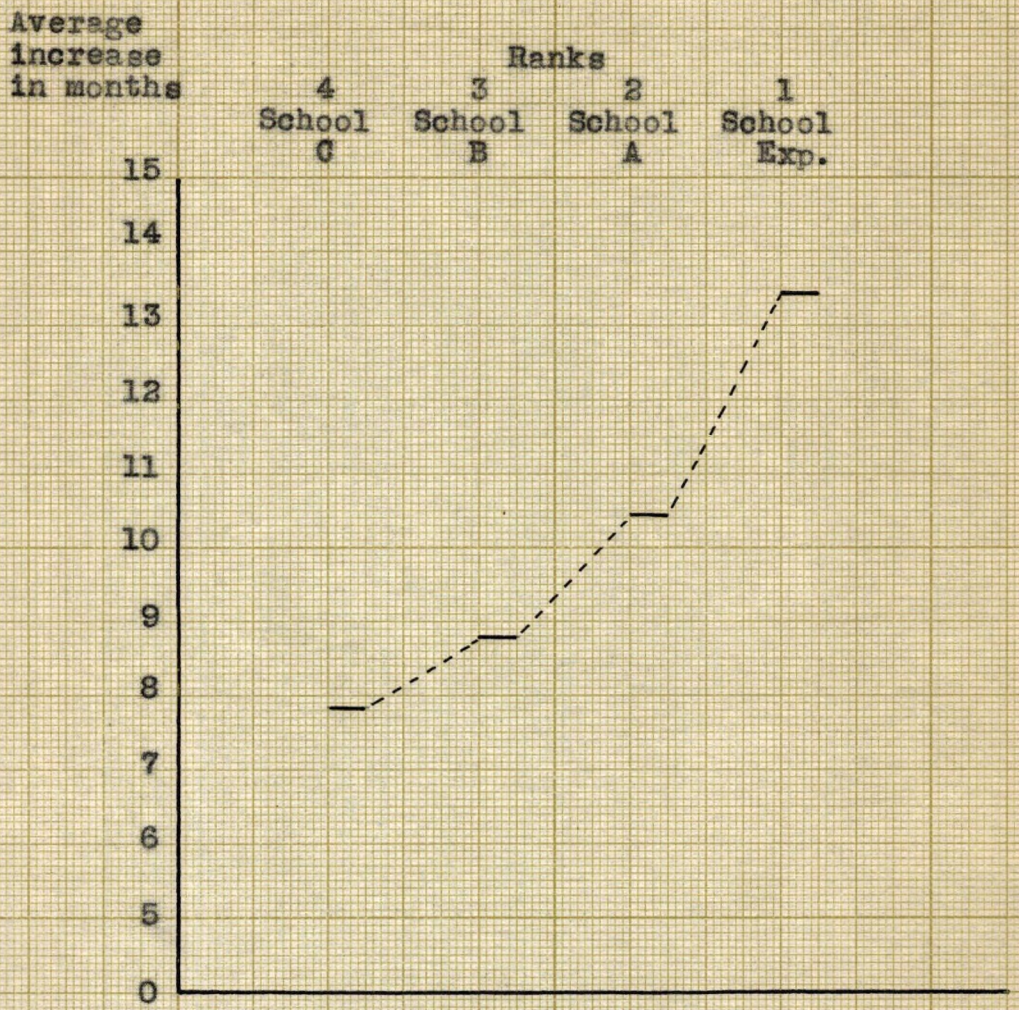
Pupil No.	Grade	C.A.	M.A.	I. Q.	Form V E.A.	Form Y E.A.	Inc. Mon.
1	3	96	109	113	97	112	15
2	3	106	101	94	72	109	37
3	3	97	108	113	97	122	25
4	4	106	115	99	120	131	11
5	4	111	115	104	121	123	2
6	4	109	111	102	126	129	3
7	4	129	115	89	115	116	1
8	4	114	140	123	133	143	10
9	5	125	129	102	134	147	13
10	5	123	139	113	132	151	19
11	5	125	118	94	123	135	12
12	5	138	129	93	124	132	6
13	7	148	159	107	161	180	19
14	7	154	160	104	159	176	17
15	7	152	148	97	130	126	-4
16	7	141	149	106	137	163	26
17	7	142	149	105	143	148	5
18	7	158	146	92	148	159	11
19	7	152	152	100	152	176	24
20	8	160	164	102	169	178	9
21	8	185	149	81	152	165	13
22	8	185	184	100	180	200	20
Average increase of educational ages in months							13.4

Figure 8 compares the average increase of the educational ages of the pupils in the four schools using the stairway arrangement, as shown by the results of the two achievement tests, Forms V and Y. The short heavy horizontal line indicates the average increase in the educational ages of the students in each school.

Tables 29 to 32 also show the actual educational ages of the pupils in the four schools expressed in terms of months. From these data it was possible to determine the

Figure 8

Comparison of the Average Increase of Educational Ages



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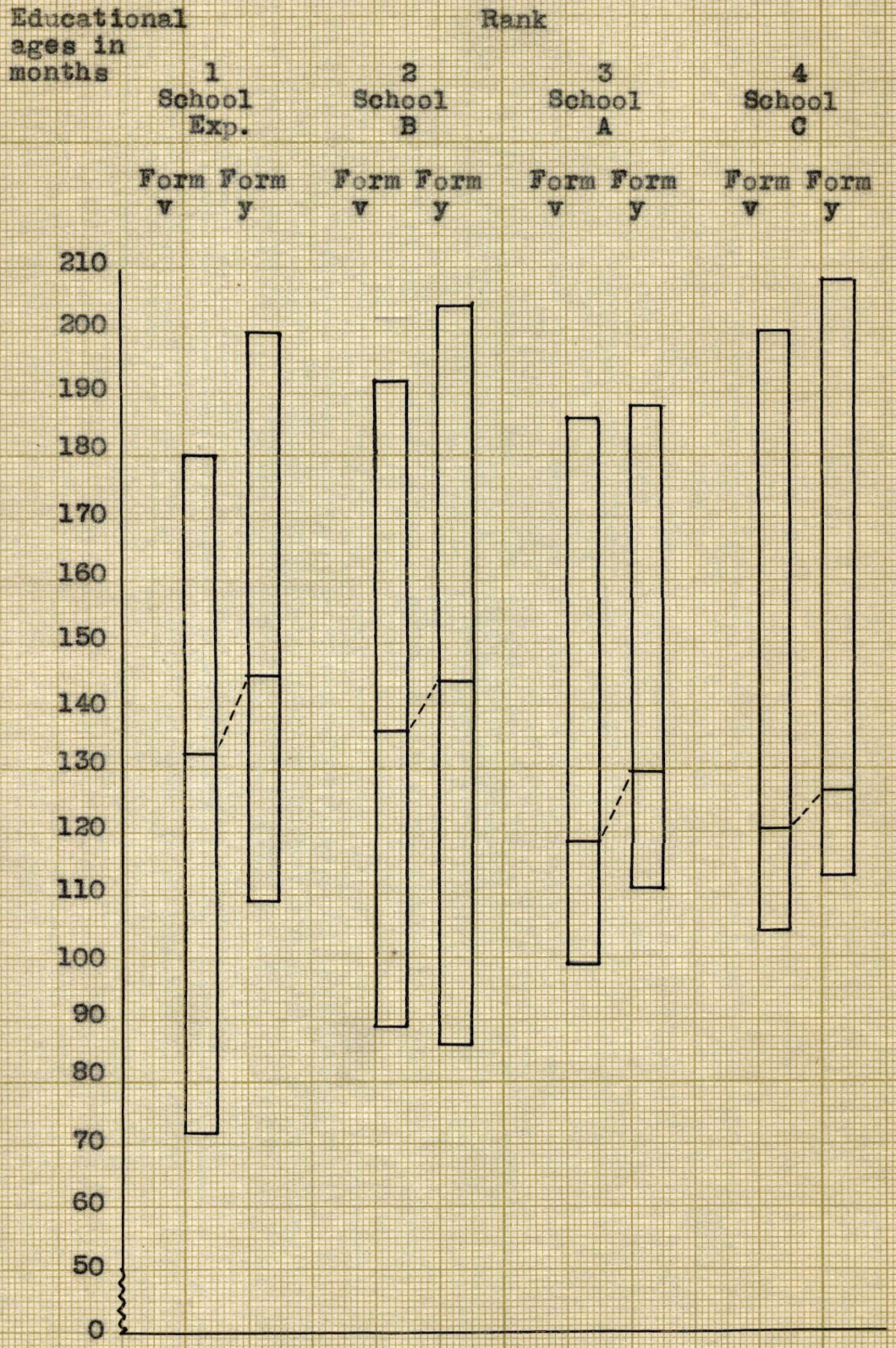
range of the educational ages and the median ages, and to compare the results of the two achievement tests for each school. The extent of increase of the median in each school during the experiment is also shown. Figure 9 shows this information in a graphical form.

The heavy line at the top of each bar represents the maximum educational age, the heavy line at the bottom of the bar the minimum educational age, and the heavy line near the middle the median educational age. The dotted line between the pairs of bars indicates the direction and extent of improvement.

Figure 9 shows that the pupils in the experimental school had a maximum educational age of 180 months in Form V of the test, a minimum of 72 months, and a median age of 132.5 months. In Form Y the experimental school had a pupil with a maximum educational age of 200 months and one with a minimum age of 109 months; the median age was 145 months. The median educational age was raised twelve and five-tenths months during the period of the experiment. The corresponding ages for the other schools have been compared in a similar way. By this comparison it was found that the median educational age of School B was 136 months in Form V and 144 months in Form Y; with an increase in the median age of eight months. School A showed a median age of 118.5 months on Form V and 129.5 months on Form Y, an increase of

Figure 9

Comparison of the Median and Range of the Educational Ages in Tests Forms V and Y



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eleven months. School C showed a median age of 120.5 on the first test and 126.5 on the second, or an increase of six months.

The experimental school ranked first in the second testing with the highest median age of 145 months and with an increase of twelve and five-tenths months. The experimental school ranked second at the beginning of the experiment as shown on Figure 7. School B ranked second in the last testing with a median of 144 months and an increase of eight months; School A, third with a median of 129.5 months and an increase of eleven months; and School C, fourth with a median age of 126.5 months in the final testing or an increase of only six months over the results of the first testing.

The advancement in rank of the experimental school is a significant fact in this experiment. In the general summary of Chapter 2, it was found that the experimental school ranked third in all bases of comparison, while at the end of the experiment it ranked first in accomplishment. This is a point in favor of the newer philosophy of promotion as defined and practiced in this experiment.

Another significant fact shown by Figure 9 is the increase in the minimum and maximum educational ages shown by Form Y over those shown by Form V. In the experimental school, the minimum educational age was raised from seventy-two months on Form V of the test to ninety-nine on Form Y,

an improvement of twenty-seven months. School B made a change of three in the negative direction; School A made an improvement of twelve months; and School C made an improvement of nine months in its minimum educational age. This implies that the method of instruction used in the experimental school had a tendency to improve the backward students to a greater degree than that used in the other schools. This fact is also evident in regard to the maximum educational ages, although not to such a marked degree. The educational ages in the experimental school increased from a maximum of 180 months in Form V of the test to 200 months in Form Y, a gain of twenty months; while School B showed a gain of twelve months; School A, a gain of two months; and School C, a gain of eight months in maximum educational age. Apparently, therefore, the type of instruction used in the experimental school had a tendency to provide assistance for the backward students and enrichment for those who were brighter, because in each case the pupils made more progress than pupils of similar ability in the other schools.

The results of the two forms of the New Stanford Achievement Tests may be compared in another way. In order to show how the groups compare in their improvement in each of the functions tested, a series of tables is presented in which all the children of the experimental group are compared with all of the children of each control group in degree of improvement in each function tested. Each table analyzes

improvement in one study in the grades in which it was given. The tables are based upon records kept for each student in the first and the final achievement testings. The number of correct responses made on the first form of the test was subtracted from the number of correct responses on the second form of the test, and the difference was recorded as the progress made by the student. The progress in terms of the difference in number of correct responses was added for all the pupils in each grade in each school and averaged. The result was recorded as the average improvement in number of correct responses for that grade in the study.

The numbers in the column headed "control" in Tables 33 to 42 were obtained as follows: the total number of correct responses in each grade in the three control schools was calculated and divided by the total number of pupils in each grade in these three schools. It may be interpreted as the average number of correct responses of all the pupils in a given grade in the three control schools in the study indicated. The total improvement was obtained by adding the figures in columns A, B, C, etc. The average total improvement was obtained by dividing the total improvement by the number of grades.

Tables 33 to 42 attempt to answer the following two questions: 1) What was the average amount of improvement by all of the pupils of the experimental group and by all the pupils of the control groups in each function tested?

2) How many school years would it take the pupils of the control schools advancing at the rate indicated to accomplish a degree of advancement similar to that of the pupils in the experimental school during the year of experimentation?

The pupils in the third grade of School A made an average progress of three and eighty-three hundredths correct responses in paragraph meaning during the experiment; the same group in School B, an average progress of one and thirty-three hundredths correct answers; in School C, three correct responses; and in the experimental school fourteen and thirty-three hundredths correct responses (Table 33).

The average improvement of correct responses in paragraph meaning was thirteen and twenty-eight hundredths in the control schools and twenty-three and ninety-one hundredths in the experimental school. The average improvement per grade was two and sixty-six hundredths in the control schools and four and seventy-five hundredths in the experimental school.

Table 33

Number of Correct Responses in Paragraph Meaning

	Schools				
Grades	A	B	C	Cont.	Exper.
Third	3.83	1.33	3.00	3.00	14.33
Fourth	6.50	0.00	0.00	1.86	5.20
Fifth	8.33	13.20	5.50	8.44	6.00
Seventh	-3.33	2.67	- .60	- .46	3.71
Eighth	-4.50	3.00	.33	.44	-5.33
Total Imp.	10.83	20.20	8.23	13.28	23.91
Total Av. Imp.	2.16	5.04	1.64	2.66	4.75
Difference of average improvement					2.09
Years for control group to make same improvement					1.78

The difference in average improvement between the control schools and the experimental school was two and nine-hundredths correct responses. At the same rate of progress, it would

take the pupils in the control group one and seventy-eight hundredths years to make the improvement accomplished in the experimental school in one year.

Table 34

Number of Correct Responses in Word Meaning

	Schools				
Grades	A	B	C	Cont.	Exper.
Third	6.50	-2.00	10.67	5.42	6.67
Fourth	6.00	0.00	10.00	8.86	7.80
Fifth	0.00	12.80	2.62	5.31	8.00
Seventh	4.33	10.00	5.20	6.27	5.00
Eighth	-12.00	2.25	0.00	-1.67	3.67
Total Imp.	4.83	23.05	28.49	24.19	31.14
Total Aver. Imp.	.96	5.76	5.69	4.84	6.23
Difference of Average Improvement					1.39
Years for control group to make same improvement					1.29

In word meaning the experimental group made an average improvement of six and twenty-three hundredths correct responses, as compared with four and eighty-four hundredths for the control group (Table 34). It would require one and twenty-nine hundredths years for the control schools, at the same rate, to make the same improvement in word meaning as the experimental school made in the year studied.

Table 35

Number of Correct Responses in Dictation

	Schools				
Grades	A	B	C	Cont.	Exper.
Third	8.50	3.00	15.00	8.75	16.00
Fourth	14.50	0.00	8.20	10.00	11.60
Fifth	6.33	8.40	8.62	8.12	8.75
Seventh	3.33	-7.67	5.20	1.18	10.00
Eighth	6.50	.25	16.00	6.89	6.33
Total Imp.	39.16	3.98	53.02	34.94	52.68
Total Av. Imp.	7.83	.99	10.60	6.98	10.54
Difference of average improvement					3.56
Years for control group to make same improvement					1.51

The experimental group made an average improvement of ten and fifty-four hundredths correct responses in dictation as compared with an average of six and ninety-eight hundredths for the control group. The control schools would require one and fifty-one hundredths years at the same rate of progress to make as much improvement in dictation as the experimental school.

Table 36

Number of Correct Responses in Language Usage

	Schools				
Grades	A	B	C	Cont.	Exper.
Fourth	4.50	0.00	10.00	8.43	3.80
Fifth	1.67	2.40	9.12	5.62	3.75
Seventh	- .67	-2.00	-1.20	-1.27	7.57
Eighth	4.50	1.25	- .67	1.33	3.33
Total Imp.	10.00	1.65	17.25	14.11	18.45
Total Av. Imp.	2.50	.53	4.31	3.52	4.61
Difference of average improvement					1.08
Years for control group to make same improvement					1.31

The experimental group made an average improvement of four and sixty-one hundredths correct responses in language usage as compared with an average of three and fifty-three correct responses for the control group. The control schools would require one and thirty-one hundredths years at the same rate to make improvement similar to that made by the experimental school in one year.

Table 37

Number of Correct Responses in Literature

Grades	Schools A	B	C	Cont.	Exper.
Fourth	1.50	0.00	12.60	9.43	10.20
Fifth	-3.67	3.80	1.38	1.19	2.75
Seventh	-1.67	12.33	-1.80	1.09	.33
Eighth	-6.00	2.50	.33	-0.11	3.00
Total Imp.	-9.84	18.63	12.51	12.60	16.28
Total Av. Imp.	-2.46	6.21	3.13	3.15	4.07
Difference of average improvement					.92
Years for control group to make same improvement					1.29

In literature the experimental school made an average improvement of four and seven-hundredths correct responses, as compared with three and fifteen hundredths for the control group (Table 37). The control schools would require one and twenty-nine hundredths years at the same rate to make the same improvement in literature as the experimental school made in one year.

Table 38

Number of Correct Responses in History and Civics

Grades	Schools A	B	C	Cont.	Exper.
Fourth	12.50	0.00	3.40	6.00	15.40
Fifth	-13.33	1.80	-1.00	-3.19	14.00
Seventh	- 1.33	19.67	-3.40	3.45	1.43
Eighth	7.00	12.25	18.00	13.00	0.67
Total Imp.	4.84	33.72	17.00	19.26	31.50
Total Av. Imp.	1.21	11.24	4.25	4.81	7.88
Difference of average improvement					3.07
Years for control group to make same improvement					1.64

The experimental group made an average improvement of seven and eighty-eight hundredths correct responses as compared with four and eighty-one hundredths for the control

group in history and civics (Table 38). The control schools would require one and sixty-four hundredths years at the same rate to make improvement similar to that made by the experimental school in one year.

Table 39

Number of Correct Responses in Geography

Grades	Schools A	B	C	Cont.	Exper.
Fourth	7.50	0.00	7.40	7.71	9.80
Fifth	2.00	5.00	8.00	5.94	9.00
Seventh	7.00	12.00	8.60	9.64	2.57
Eighth	-9.50	4.00	-1.33	-0.78	-0.67
Total Imp.	7.00	21.00	22.77	22.51	20.70
Total Av. Imp.	1.75	7.00	5.69	5.63	5.15
Difference of average improvement					-.48
Years for control group to make same improvement					.92

The experimental group made an average improvement of five and fifteen hundredths correct responses in geography as compared with five and sixty-three hundredths for the control group (Table 39). It would take the control group of schools ninety-two hundredths years to make the same improvement as the experimental school made in one year. This is the only function tested in which the control schools showed a greater degree of improvement than the experimental school.

Table 40

Number of Correct Responses in Physiology and Hygiene

Grades	Schools A	B	C	Cont.	Exper.
Fourth	6.00	0.00	5.80	5.86	13.00
Fifth	-6.67	9.00	9.88	6.50	5.00
Seventh	4.67	11.00	1.00	4.73	5.00
Eighth	2.50	.75	-0.67	.67	4.33
Total Imp.	6.50	20.75	16.01	17.76	27.33
Total Av. Imp.	1.62	6.92	4.00	4.44	6.83
Difference of average improvement					2.39
Years for control group to make same improvement					1.54

The experimental group made an average improvement of six and eighty-three hundredths correct responses as compared with four and forty-four hundredths for the control group in physiology and hygiene (Table 40). The control schools would require one and fifty-four hundredths years at the same rate to make a similar improvement to that made by the experimental school in one year.

Table 41

Number of Correct Responses in Arithmetic Reasoning

	Schools				
Grades	A	B	C	Cont.	Exper.
Third	1.67	0.00	4.67	2.00	6.67
Fourth	1.50	0.00	1.60	1.43	2.20
Fifth	.67	14.00	4.12	6.56	.25
Seventh	-1.00	-0.33	1.60	.36	1.57
Eighth	-3.00	3.25	3.67	2.00	5.33
Total Imp.	-0.16	16.92	15.66	12.35	16.02
Total Av. Imp.	-0.03	4.23	3.13	2.47	3.20
Difference of average improvement					.73
Years for control group to make same improvement					1.29

The experimental group made an average improvement of three and two-tenths correct responses as compared with two and forty-seven hundredths for the control group in arithmetic reasoning (Table 41). At this rate it would take the control schools one and twenty-nine hundredths years to make the same improvement as the experimental school made in one year.

Table 42

Number of Correct Responses in Arithmetic Computation

Grades	Schools A	B	C	Cont.	Exper.
Third	4.67	2.67	9.00	5.25	8.00
Fourth	6.50	0.00	2.40	3.57	4.60
Fifth	12.33	21.20	11.75	15.06	13.75
Seventh	1.67	10.00	-5.40	.73	7.43
Eighth	7.00	5.00	-0.33	3.67	4.00
Total Imp.	32.17	38.87	17.42	28.28	37.78
Total Av. Imp.	6.43	9.72	3.48	5.65	7.55
Difference of average improvement					1.91
Years for control group to make same improvement					1.34

The experimental group made an average improvement of seven and fifty-five hundredths correct answers as compared with five and sixty-five hundredths for the control group in arithmetic computation (Table 42). At this rate it would take the control schools one and thirty-four hundredths years to make the same improvement as the experimental school made in one year.

Table 43

Summary of the Number of Years Necessary for the Control Schools to Make the Same Improvement as the Experimental School

Function Tested	Number of Years
Paragraph Meaning	1.78
Word Meaning	1.29
Dictation	1.51
Language Usage	1.31
Literature	1.29
History and Civics	1.64
Geography	.92
Physiology and Hygiene	1.54
Arithmetic Reasoning	1.29
Arithmetic Computation	1.34
Average	1.39

A summary of the number of years necessary for the control schools to make the same improvement in all the functions tested as the experimental school shows that it would take the control schools one and thirty-nine hundredths times as long to make a degree of improvement similar to that made by the experimental school during the time the experiment was in progress (Table 43). Out of the ten functions tested, the average improvement of the experimental group was superior to that of the control group in nine functions and inferior in only one.

Summary

By all the methods of comparison shown by the tables and figures in this chapter the average results of the year's work by the experimental school were superior to the average for the control schools.

Pupils in the four schools made different degrees of advancement. One pupil in School A made an improvement in his educational age during the experiment of twenty-nine months. Another made only two months' improvement during the same time. In School B one pupil made an advancement of forty-three months in his educational age while another student made a negative progress of ten months. This wide range of accomplishment is explained only in the terms of the individual differences among pupils which are found in schools today. School C had one pupil who made a maximum

improvement in his educational age of twenty-five months and another who made no improvement at all. The experimental school had one pupil who advanced his educational age thirty-seven months while another pupil made a negative progress of four months.

Tables 29 to 32 show that the pupils in the experimental school improved to a greater degree in average educational age than those in the control schools. The average increase in educational age of the pupils in the experimental school was thirteen and four-tenths months; in school A, ten and forty-four hundredths months; in School B, eight and eight-tenths months; and in School C, seven and eighty-eight months. These tables and Figure 8 show that the pupils in the experimental school had at the end of the experiment a median educational age of 145 months as compared with 132.5 at the beginning of the experiment. At the beginning the experimental school ranked second in median educational age; at the conclusion it ranked first. The experimental school increased its median educational age by twelve and five-tenths months; School A, eleven months; School B, eight months; and School C, six months.

The experimental school seemed to provide improved assistance for the backward pupils as well as the brighter ones. The minimum educational age was increased from seventy-two months to ninety-nine months, and the maximum from 180 months to 200 months. These results were not equaled by any of the other three schools.

The average improvement in number of correct responses made by the children of the experimental school exceeds the average improvement in the control group in all functions except geography. It was found that the control schools, progressing at the same rate as during the experiment, would require one and thirty-nine hundredths times as long to make as much improvement in the ten functions tested as the experimental school made during the year (Table 43).

CHAPTER 5

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The problem of this thesis concerned the rate of advancement of pupils if the promotional element as a motive were minimized. The problem, more fully stated, is as follows: Does the newer philosophy of promotion tend to retard pupils, or does it result in more rapid advancement of pupils, in comparison with other systems using the older philosophy? The problem as stated should be one of great importance to all school administrators.

One of the most recent trends in education is guidance. Guidance implies that school administrators and teachers have become increasingly aware of the individual as an individual and not merely as a unit of a group or mass. As interest in the individual has advanced, the injustice of the old lock-step system of promotion has become a matter of primary concern. The results of the old system in retardation, inferiority complexes, high "mortality," overage pupils, clogging of classes, juvenile delinquency, and disciplinary problems are all too evident. It is not difficult to see the unfairness in making a pupil repeat a whole grade when deficient in only one or two subjects, or the bad effects of requiring a student to attempt advanced work in a subject which is too difficult for him because he happens to be well-prepared in other subjects of that grade.

The attitude has grown that a student should proceed in each subject according to his ability to master that subject. He should not be held back in his grade because of a poor showing in one or two subjects in which he is more backward. The bright pupils in a class should not be held back by the slower ones, and the slower ones should not be swept along to keep up with those of greater ability.

This thesis told of an attempt to apply a new philosophy of promotion to a small consolidated school in this state. There was an attempt to disregard the promotional element in this small school and substitute other forms of motivation, enrichment of materials, and professional growth of teachers in its place as incentives to pupils to do better work and make more rapid progress in achievement.

Summary of Method

To accomplish the purpose of this thesis, three control schools were compared with an experimental school in respect to several factors. The four schools were then ranked according to the Rockwell technique in regard to those factors in which there were differences. The schools were ranked on the bases of age-grade placement, extent of normal intelligence, intelligence quotients, range and medians, mental age-grade placement, and educational ages. The final ranking of the schools on the above factors placed School B first, School A second, the experimental school third, and School C fourth.

The Kuhlman-Anderson intelligence tests were given to the pupils in the four schools at the beginning of the experiment in order that the schools could be compared in regard to intelligence quotients and mental ages.

The New Stanford Achievement Test, Form V, was given as the initial test to determine the educational ages of the pupils at the beginning of the experiment. The results were made known to the pupils of the experimental school so that each pupil, knowing his own ability in each test in the battery, might make definite efforts to beat his own record. The number of correct answers for each student in each test and his educational age were kept for comparison with the results of the final test.

A period of seven and one-half months of professional growth of teachers, motivation through pupil interest, and enrichment of the curriculum followed the preliminary testing. This work consisted of:

(a) Five group teachers' meetings at which were discussed the nature of the experiment, qualities of a good teacher, making the assignment, objectives and methods of improving reading, and supervised study.

(b) A day of visitation at a school recognized for its superior type of work. The teacher visited the classes in which she was particularly interested so that each might obtain helpful suggestions and methods to be used in classes in her own school.

(c) Professional reading by the teachers, which was encouraged by topics assigned for teachers' meetings and problems of interest arising from the discussions at these meetings.

(d) Printed helps and suggestions from the writer were distributed to the teachers at these meetings.

(e) Projects and games with the children in which a spirit of comradeship, friendliness, understanding, and confidence was secured.

(f) Short inspiring talks to the children in special assemblies concerning the value of education, the best methods of study, words of encouragement in regard to their work, and brief interesting illustrations suggesting the virtue of hard work, honesty, and traits of character.

(g) Frequent examination of class papers and tests by the superintendent, with positive and helpful suggestions.

(h) Getting the children to feel that the work they were doing was for their own benefit, rather than just doing it for the teacher, through simple illustrations to exemplify the values or uses of the common school subjects so that the pupils could recognize the relation of each subject to their life interests.

(i) Keeping the pupil aware of his own past record so that he might be motivated to beat his own record in the subject. Charts of each child's progress in tests were kept before him.

(j) Visits to the homes of the children to get better acquainted with the parents and to learn the likes and dislikes of the children, and strengthen the relationship between the parents and the school.

(k) Attempts to make the school so interesting that pupils would not want to stay away, and thus keep absences at a minimum. Acquaintance of the parents with the importance of the child's regular attendance was secured by a special bulletin sent to the homes.

(l) Use of workbooks to motivate work and to hold the interest of the children. Workbooks provided material for the children with exceptional abilities in addition to keeping the backward pupil interested and aware that he always had a higher goal toward which to work.

(m) Use of new textbooks to develop interest in the work.

(n) Use of library books to encourage and improve reading and breadth of experiences.

(o) A course on the use of the dictionary to develop word consciousness and vocabulary.

The seven and one-half months of teaching were followed by the New Stanford Achievement Tests, Form Y. The results of this test were compared with the results of the first one to determine the relative difference in the amount of improvement in the control schools and the experimental school.

Summary of Results

The results of this experiment will be summarized as answers to the questions stated in Chapter 1.

1. Are there very many overage pupils in the schools? The study made of the age-grade placement of the pupils in the control and experimental schools gives the answer to this question. A comparison of the percentages of underage, normal age, and overage pupils showed that of the pupils in School A, seventy-seven per cent were normal age; in School B, eighty per cent; in School C, sixty-four and nine-tenths per cent; and in the experimental school seventy-six per cent. In School A eleven and five-tenths per cent of the pupils were overage; in School B, twelve per cent; in School C, eighteen and nine-tenths per cent; and in the experimental school, sixteen per cent. The data thus indicate that there was a considerable amount of overageness in the schools, but the situation was not serious.

2. Is there a wide range of mental abilities among the pupils in the schools under discussion? It was found that the range of the mental abilities as expressed in terms of the intelligence quotients was from eighty-six to 119 in school A, eighty-four to 124 in School B, seventy-one to 128 in School C and eighty-one to 123 in the experimental school. School A had the highest median I. Q. of 106; School B and the experimental school each had a median I. Q. of 102, and School C had a median I. Q. of 100. School C had the greatest

range of intelligence quotients, and School A had the least. It is difficult to make any generalizations in regard to the range of ability within any one because there were so few pupils in each grade. However, the greatest range in mental ability was found in the fifth grade of School C. In this grade were one pupil with an I. Q. of 128 and three pupils with I. Q.'s between seventy-one and seventy-five.

3. Does the new philosophy of promotion used in the experimental school tend to retard pupils or does it result in more rapid advancement of pupils, in comparison with other theories? In Tables 29 to 32 it was found that the experimental school made an average increase of educational age of thirteen and four-tenths months, School A of ten and forty-four hundredths months, School B of eight and eight-tenths months, and School C of seven and eighty-eight hundredths. This evidence indicates a more rapid advancement.

The students in the experimental school had a median educational age of 132.5 months on Form V of the achievement test and a median of 145 on Form Y, showing an improvement of twelve and one-half months. School B improved in median age eight months; School A, eleven months; and School C, six months. This comparison indicates a somewhat more rapid advancement in the experimental school.

The tables showing the improvement made in each of the ten functions tested also indicate a more rapid advancement (Tables 33 to 42). The difference in the average

improvement in number of correct responses in paragraph meaning is two and nine hundredths in favor of the experimental school. It would have taken the control schools one and seventy-eight hundredths times as long at the same rate to make the same degree of improvement that the experimental school made during the time of the experiment. The difference in the average number of correct responses in word meaning was one and thirty-nine hundredths in favor of the experimental school. It would have taken the control schools at the same rate one and twenty-nine hundredths times as long to make the same improvement as the experimental school. The other functions tested showed similar results. The difference in the average number of correct responses in dictation, language usage, literature, history and civics, physiology and hygiene, arithmetic reasoning, and arithmetic computation was three and fifty-six hundredths, one and eight hundredths, ninety-two hundredths, three and seven hundredths, two and thirty-nine hundredths, seventy-three hundredths and one and ninety-one hundredths, respectively, all in favor of the experimental school. Only one function showed a greater improvement for the control schools, and that was geography, in which the control schools had an average improvement of forty-six hundredths more correct responses than the experimental school.

A summary of the time necessary for the control schools to make the same improvement at their own rates of progress

in the ten functions as did the experimental school shows that it would have required one and thirty-nine hundredths times the seven and one-half months used in the experiment. The total evidence is in favor of the experimental school. It accomplished more in nine of the ten functions than did the control schools during the experiment.

4. Does the newer philosophy of promotion tend to alleviate and compensate for individual differences among the students? This evidence is found in the interpretation given to Figure 9. In the experimental school, the minimum educational age of the pupils was raised from seventy-two months on Form V of the test to ninety-nine months on Form Y, or an improvement of twenty-seven months. School B made a progress of three months in the negative direction; School A, an improvement of twelve months; and School C made an improvement of nine months. Thus the method of the newer philosophy of promotion used in the experimental school had a tendency to improve the backward pupils to a greater degree than that used in the other schools.

The maximum educational ages in the experimental school increased from 180 months in Form V to 200 months in Form Y, or a gain of twenty months; while School B showed a gain of twelve months; School A, a gain of two months; and School C, a gain of eight months.

In the experimental school there were only seven pupils who failed to increase their educational age ten months

or more; in School A there were nine; School B, nine; and in School C, sixteen. In general, the pupils in the experimental school made greater educational progress than those in the control schools.

Conclusions and Implications

The preceding summary and the results of the experiment seemed to justify the following conclusions:

1. That there was a maladjustment in the schools studied with respect to the equitable grouping of pupils either in chronological age grouping or in mental age grouping.

2. That there was a wide range of mental abilities among the pupils in any one school and any grade of that school, and that the pupils in one grade or class present a large variety of individual differences.

3. That it seems wise that pupils with different mental abilities, interests, and attitudes should not be restricted to the same subject matter or speed of mastery.

4. That the pupils in the experimental school improved more in all functions except one than the pupils of the control schools.

5. That the pupils in the experimental school improved their average educational age to a greater extent than the pupils in the control schools.

6. That both more backward and more advanced pupils in the experimental school improved to a larger extent than similar students in the control schools.

7. That some pupils in one school were able to accomplish three or more years of work in one school year while others were not able to accomplish one-half year's work in the same time.

Although the results of this study appear conclusive that other forms of motivation can be found that are stronger than the fear of failure, the writer does not imply that the same results would be obtained in another group of schools under different circumstances.

The writer realizes the limitations involved in an experiment of this kind. In the first place the enrolment in the schools tested was perhaps too small for valid conclusions for general application. Secondly, the methods used in this experiment were not the only methods which could be used to secure similar results. The writer had no way of determining which methods were of the greatest value. Some may have been detrimental to the results, while others may have done more than their share toward increasing the results. No attempt was made before the experiment to evaluate the workbooks, new textbooks, library books, and other materials used in the experiment. Thirdly, although the tests used were given under standardized directions and scored under close supervision, there were chances for errors to creep in unnoticed. Most of these may be classed under personal factors and attitudes of the children taking the tests.

The writer recommends that the state department of public instruction propose and adopt an elementary course of study which would provide for the advancement of students at their own rate in the various subjects instead of holding to the old method of passing state tests in seventh and eighth grade subjects in order to qualify for the high school level.

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