THE VALUE OF STANDARDIZED SURVEY TESTS

TO THE ELEMENTARY SCHOOL TEACHER

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INTRODUCTION.

CHAPTER 1.

Education today, like everything else, is becoming highly standardized. The subject matter is not all that has undergone a change. Superintendents, principals and supervisors everywhere are looking for and making use of better methods and means of securing the best results in the classroom. Educational methods are becoming more scientific as our professionally trained force of educators increases. Many of the old traditional ideas relative to teaching methods are now in discard. The teachers, pupils and patrons want to know the quality of work being done in the schools. They do not want to guess at the results. They want everything carefully weighed and measured by some reliable and accurate method.

Standardized tests have been found to be very reliable for measuring the achievement of the pupils. What improvement in instruction can be hoped for by using standardized tests? First, the teacher can know whether or not her effort is showing results comparable to those obtained in a large number of other schools over the country. Second, the pupil's work is motivated by letting them "in on" the heretofore secret. Jonny and Mary like to know how their work compares with the boys and girls in other schools. Third, if the parents are educated to the use of standardized tests, and can see that their use makes a more efficient system,

they will co-operate wholeheartedly with the teachers in obtaining the best results.

THE PROBLEM.

The specific purpose of this study is to determine whether teachers using standardized survey test results can raise the average achievement level of their pupils, a significant degree, above the level of teachers working without the standardized survey test results, providing all other factors are equal.

Data will be presented in answer to the following questions: In what school subjects, if any, is the achievement of the standardized survey test group superior? In what school grades, if any, is the achievement of the standardized survey test group superior?

MATERIALS USED.

The new Stanford Achievement Test was used to measure the progress of the two groups of pupils in grades two to eight inclusive, and the National Intelligence Test was used to obtain the mental ages. The subjects used in this study are two groups of elementary grade school pupils of the Dale Consolidated School of Pottowatomie County. This school is typical of many Oklahoma schools.

METHOD.

The equivalent group method of the two test type was used to obtain the data upon which this study is based.

This method is familiar to those who have given time to experimental education. To those who may not understand the method, it is sufficient to say that the group of equal chronological and mental ages are compared by use of standard tests. Measurements were made at the beginning and at the close of a nine months term of school, by use of the New Stanford Achievement Test, and the significance of any differences evaluated. This particular test is known to be one of the best obtainable and ranks very high as to validity and reliability.

The national Intelligence Test was used to find the mental ages of the two groups. The mental ages were changed to Intelligence Quotients and the term IQ is used. This was done because the groups we are comparing are not composed of corresponding grades. The results of the above mentioned standard tests were given to the teachers of one group and with-held from the other. Will there be any noticeable difference in the achievement of the two groups during the year?

CHAPTER 11.

MATERIALS AND METHOD USED.

This experiment was conducted during the school year 1931 and 1932. The plans for this program were made while the author was attending the summer session of 1931, even to the purchasing of material and acquainting some of the faculty with the value and use of the tests.

Form V of the New Stanford Achievement Test was given to every pupil of grades two to eight inclusive at the beginning of the school year in September. Another form of the same test was given them all in May, near the close of the school year. The work of administering and scoring of these tests was all done under the supervision of the author who had had advanced courses in this field of education and also considerable experience in the administration and handling of these tests. The results obtained on these two tests are used in comparing the achievement of the pupils of the two groups of grades two to eight inclusive of the Dale Consolidated School of pottowatomie County.

Grades 11 and 111 were given the primary booklet of the New Stanford Achievement Test while grades 1V to V111 inclusive were given the advanced booklet. The subjects tested in the primary booklet are paragraph meaning, word meaning, spelling, arithmetic reasoning and arithmetic computation.

The advanced booklet tests the same five functions with language, literature, history and civics, geography, physiology and hygiene added.

Characteristics which make the New Stanford Achieve-Test desirable for measuring achievement are: (1) ease of administering, (2) easy to score and interpret. (3) the scores of each test are equated to each other, (4) a chart is provided on which graphical representation of scores can be made, (5) norms are easily read from the chart on each test, (6) chart shows school grade for each score.

The National Intelligence Test was given to all pupils of the grades some time during the fall. This was done for the purpose of comparing the two groups as to their mental ability. Intelligence quotient (IQ) is the term used in this study rather than mental age since the groups are not of the same grades.

DESCRIPTION OF SUBJECTS.

The subjects used in making this study include 173 pupils of the Dale Consolidated School in Pottowatomie County, grades two to eight inclusive.

The Dale Consolidated School is located in the northwest part of Pottowatomie county about ten miles northwest of Shawnee. It is a small town or village in a purely agricultural community. The town has never experienced a boom such as oil or mining towns are subject to, consequently the personel of the student body has, year after year, seen very little change. Two outlying two room school districts were consolidated with the Dale School in 1918 and it has remained a consolidated school since. Six buses are used in trans-

porting the pupils some of whom ride seven miles. The school
has eleven teachers and has an average daily attendance, year
after year, of approximately 200 in the grades and 100 in high
school.

DESCRIPTION OF GROUPS USED.

The 173 pupils of grades ll to Vlll were divided into two
groups for the purpose of comparing their achievement during
the year. The two groups were under different methods of treat-
ment which will, if a significant difference in achievement is
found, answer the problem in this investigation. Grades ll,
lV, Vl and Vll were put in a group and shall be called Group
one. Grades lll, V and Vlll were grouped and called Group two.

In Group one, there were 85 pupils distributed as follows:
grade ll, 20 pupils; grade lV, 29 pupils; grade Vl, 14 pupils;
and grade Vll, 22 pupils. The distribution for Group two:
grade lll, 36 pupils; grade V, 36 pupils; grade Vlll, 16
pupils. This is not the total enrollment for each of these
grades, it is the number that took both the September and the
May tests. In grades lll, lV, V and Vll, we were able to
test nearly the entire enrollment while in the Vl and Vlll,
several pupils were missed for the May test. No pupil was
excluded from taking the test. We have used every case that
we caught in May who took the September tests.

The scores made by the 173 pupils from grades ll to
Vlll inclusive of the Dale Consolidated School in

Pottowatomie County were used in making this experiment.

GENERAL CONDITIONS.

The groups as set up for purposes necessary in conducting this investigation were in the same building and under the same supervision. The percent of attendance for the two groups is nearly the same. In Group one we have grade ll 91%, grade lV 94%, grade Vl 92%, grade Vll 88%, with an average of 91% for the year. In Group two, grade lll had an attendance percentage of 93%, grade V 93% and grade Vlll 86% with an average for the year of 90%.

The teachers of Group one are slightly better qualified, based on college hours completed. The difference however is slight. The average for Group one is 109 hours against 105 hours for Group two. The average number of years taught by the teachers of Group one is 5 and for Group two the average is 4.5 years. The average salary for the teachers of Group one is $90 per month, for Group two it is $87.

METHOD USED.

The method used to secure the data for this study was obtained by the equivalent group method of the two-test type. The groups were arbitrarily set up by placing grades ll, lV, Vl and Vll in Group one and grades lll, V and Vlll in Group two. This plan, in the judgement of the writer, was a fair and equal division of the school into two groups closely

comparable to each other as to mental ability, present
educational achievement and size. The intelligence tests
(see tables) gave mental ages, which, when changed to
Intelligence Quotients (IQ), showed no significant dif-
ference between the two groups. The educational age divid-
ed by the chronological age gives the educational quotient,
and in this respect the two groups are found to be equiva-
lent. This division also gave groups whose teachers show-
ed qualifications almost identical, based on college hours
completed and total years taught. Salaries of the two groups
compared favorably. There being only $3.00 per month dif-
ference in the average salary received by the two groups.

Now comes the question, just what was done with these
two equivalent groups? What difference in method was used
in treating the two groups throughout the school year? Only
in one respect was there any difference in treatment accord-
ed the two groups and that was: The teachers of Group one
were given the results of the September tests whereas the
teachers of Group two did not have this privilege.

Since this test yielded a thorough diagnosis of the
teaching situation confronting the teachers, will the teach-
ers of Group one make any more progress with their group than
will the teachers of Group two working without these diagnos-
tic test results. A chart for each grade of Group one was
prepared showing each individual pupil's score in the vari-
ous subjects, as compared to the norm. The average of the

class for each subject was also shown with the norm. This was handled in school years or grades completed. For example, pupil A, who is in the 7th grade makes a score of 82 in language usage on the September test. This pupil is normal in this function as 82 is the norm for a pupil starting in the 7th grade, and the chart shows this pupil to be 7.0 grade in language. It matters not what pupil's score was, normal, low or high, it is the information the teacher wants. The average for a whole class or subject in any given grade likewise told the teacher what part of a school year her class was behind or ahead in this function.

After the school year, 1931-32, had been taught with this difference in treatment accorded the two groups and they had taken the May test the achievement made by the pupils in each group was compared. The reliability of the difference found in the mean improvement of the two groups was determined by use of the mean, standard deviation and the statistical methods of determining whether or not a difference found between two means is a reliable difference.

The distribution of achievement made by the groups in the various subjescts is shown in tables. All tables are in terms of school years completed, not mere scores made. School years mean school grades.

ANALYSIS AND INTERPRETATION OF DATA.

CHAPTER lll.

Tables 1 to lX inclusive are given for the purpose of
comparing the two groups of pupils used, as to their mental
ability and their educational achievement up to the time of
the begining of the experiment.

Tables l,ll,lll and lV are used to show the data found
for grades ll, lV, Vl and Vll respectively. These grades
are designated as group one. The chronological age, the
intelligence quotient, the educational age and the educational
quotient of each pupil is given. The term mental age is not
used, intelligence quotient being used instead, because the
groups are not composed of corresponding school grades.

Tables V, Vl, and Vll are used to show the same sort of
data for grades 3, 5 and 8 which compose group two.

The information obtainable from the data presented in
tables 1 to lX inclusive is necessary in this study in order
that we may know something definite regarding the relative
ability of the two groups to make improvement. The intelli-
gence quotient is an index to the pupils mental ability to
learn. The educational quotient tells us to what degree the
pupil is educated for his particular age. However, it
matters little what an IQ of 90 or an EQ of 90 means so long
as we use them for making comparisons between groups. Tables
Vlll shows a comparison of the two groups in terms of mental
ability. We use intelligence quotient or IQ. It will be

noticed that the IQ for group one is 93.88 as compared to
94.59 for group two. This was found by the formula:
IQ equals $\frac{MA}{CA}$. The mental age was found by the use of
the chart furnished by the makers of the National Intelli-
gence Test for the purpose of converting the scores made
on the test into mental ages.

Table IX shows a comparison of the two groups as to their
achievement up to September 1931, when the experiment was
begun. How well has each group educated itself according
to its age? Is the retardation of either group greater than
the other?

From the tables 1 to 1X inclusive, which are explained
above, it is clearly evident that there is no significant
difference between the two groups. We can, all other factors
being equal, expect them to make comparable gains in achieve-
ment during the period of this experiment.

Tables X to XVl, inclusive, show the progress during the
year, of each group. This is shown in all subjects taught in
the various grades represented in each group. An explanation
of the data contained in each of these tables, X to XVl, is
given at the foot of each table.

Table XVll shows a distribution of net improvement in
terms of school years or grades for group one. This is shown
for each grade. The mean improvement for group one is 1.685
years, the sigma is .7503, the sigma average is .0814.

Table XVlll shows the same data for group two with the

results as follows: mean equals 1.124, sigma equals .7257 and the sigma average is .0774. The sigma of the difference is .1123 which informs us that our obtained difference of 1.561 is very significant.

Table XlX is a kind of summary of the achievement of the two groups as a whole which was the purpose of the experiment, to compare the progress of two equivalent groups under different methods of teaching.

TABLE 1   GRADE 11

GROUP 1

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	7-6	95	6-8	89
2	11	80	5-6	50
3	7-6	110	7-1	94
4	7-6	95	6-0	80
5	7-6	93	5-7	74
6	7-6	92	5-6	73
7	6-6	110	6-10	105
8	6-6	90	5-6	92
9	7-2	90	5-6	77
10	9-3	83	5-7	64
11	6-5	97	5-7	87
12	7-3	96	5-6	76
13	8-2	100	6-0	73
14	10-0	72	6-1	61
15	6-10	95	5-7	82
16	6-6	96	5-6	87
17	7-3	90	5-7	77
18	6-4	95	6-1	96
19	7-5	84	5-9	78
20	7-7	90	6-1	80
Av.	7-7	93	6-1	80

TABLE 11.   GRADE 1V

GROUP 1

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	9-9	69	9-8	99
2	8-6	96	7-2	84
3	9-1	76	8-7	94
4	9-2	113	10-3	112
5	9-5	117	10-3	109
6	10-6	111	9-6	91
7	9-8	125	9-10	102
8	8-10	113	9-10	111
9	10-10	81	10-6	96
10	8-8	115	10-9	124
11	8-6	94	8-0	92
12	9-3	70	9-0	97
13	9-0	90	8-5	94
14	11-10	58	8-5	71
15	8-4	115	9-11	119
16	10-0	66	7-10	78
17	10-10	91	10-1	93
18	9-5	98	9-4	99
19	8-11	94	8-0	90
20	9-1	101	9-0	100
21	8-10	106	8-7	97
22	9-6	84	8-10	114
23	8-9	108	9-2	105
24	9-2	105	9-5	103
25	9-5	92	7-5	79
26	8-11	94	8-4	93
27	9-6	100	8-4	79
28	9-11	96	9-2	92
29	7-10	90	7-5	95
Av.	9-4	92	9-1	97

TABLE 111.   GRADE V1.

GROUP 1.

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	12-8	92	11-1	88
2	12-6	84	10-2	81
3	12-7	105	10-10	86
4	10-11	120	12-0	110
5	13-6	100	11-0	81
6	11-7	95	10-0	86
7	10-5	100	10-5	100
8	10-8	90	10-11	102
9	10-1	100	10-2	101
10	11-7	105	11-7	100
11	11-3	103	10-10	96
12	11-7	99	11-5	99
13	11-5	124	12-8	111
14	11-5	95	9-11	87
Av.	11-7	106	11-0	95

TABLE IV.   GRADE VII.

GROUP 1.

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	11-7	105	10-9	93
2	15-5	62	10-2	66
3	11-5	115	13-1	115
4	12-7	69	9-5	75
5	12-5	112	12-6	101
6	12-1	85	10-1	84
7	12-1	87	10-6	87
8	14-2	62	9-5	66
9	11-10	100	10-6	89
10	12-8	114	12-6	99
11	11-8	104	11-3	86
12	15-10	88	10-6	66
13	12-10	105	11-11	93
14	13-6	85	10-10	80
15	11-9	85	10-1	86
16	13-1	106	12-8	97
17	17-7	71	11-9	67
18	13-3	118	12-6	95
19	11-10	115	11-10	100
20	14-3	98	11-1	84
21	11-11	85	11-4	95
22	11-9	107	11-9	100
Av.	13-0	94	11-5	88

TABLE V.   GRADE 111.

GROUP 11.

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	7-2	115	8-4	116
2	9-3	90	6-1	66
3	7-2	110	6-6	91
4	9-5	98	8-6	90
5	9-7	94	8-0	80
6	8-6	100	7-11	93
7	8-7	90	6-1	65
8	9-5	95	6-1	65
9	8-5	86	5-7	60
10	7-6	105	7-6	100
11	8-6	90	6-1	81
12	8-0	85	5-9	72
13	9-0	92	6-8	74
14	9-5	95	7-4	78
15	11-5	88	8-7	82
16	13-0	76	7-2	55
17	13-6	88	9-3	69
18	8-6	96	6-4	76
19	10-1	100	6-10	68
20	9-0	95	6-6	72
21	12-7	92	8-2	65
22	8-5	106	10-10	13
23	7-1	100	7-6	106
24	10-11	90	8-1	74
25	8-9	115	7-4	60
26	12-4	85	7-4	60
27	10-6	88	8-0	76
28	8-6	92	7-5	87
29	10-10	90	7-4	68
30	8-2	110	7-11	95
31	8-4	106	7-11	97
32	8-8	107	8-0	92
33	8-3	110	7-6	91
34	9-9	105	9-7	98
35	8-7	90	6-4	60
36	8-5	98	8-2	98
Av.	9-3	94	7-7	82

TABLE Vl.   GRADE V.

GROUP 11.

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	12-0	81	9-0	75
2	10-2	104	10-6	103
3	11-4	96	10-0	88
4	10-2	100	10-0	98
5	11-6	90	9-6	83
6	10-2	105	10-4	101
7	9-7	103	10-1	105
8	9-9	96	8-9	89
9	9-6	106	11-0	115
10	10-0	100	10-9	108
11	12-4	88	10-0	81
12	10-2	105	10-4	102
13	9-11	96	9-9	98
14	10-7	103	10-3	97
15	12-8	97	10-4	82
16	9-11	98	10-5	105
17	9-7	112	11-3	117
18	11-11	78	8-10	73
19	11-7	85	9-11	90
20	14-2	70	10-5	73
21	10-4	86	9-8	94
22	11-1	88	9-11	89
23	10-2	94	10-1	99
24	10-9	98	9-11	92
25	9-9	104	10-5	107
26	11-9	92	9-9	83
27	10-8	99	9-9	91
28	10-7	102	11-1	105
29	10-9	106	9-8	90
30	10-7	101	10-9	102
31	11-2	93	10-0	90
32	11-10	94	10-6	89
33	10-10	96	10-7	98
34	11-6	92	10-6	91
35	9-11	100	10-1	102
36	11-11	82	10-9	90
Av.	10-10	91	10-0	92

TABLE V11.   GRADE V111.

GROUP 11.

Case No.	Chron. Age Yrs-Mo	IQ	Edu. Age Yrs-Mo	EQ
1	12-10	106	12-10	100
2	11-8	133	16-0	137
3	14-5	101	15-6	108
4	13-3	118	16-3	123
5	14-1	79	10-10	76
6	12-8	100	12-0	79
7	14-3	106	11-10	83
8	13-8	82	11-3	82
9	12-8	89	11-5	90
10	13-1	117	12-10	98
11	12-6	114	12-0	96
12	13-8	95	11-11	87
13	13-10	87	12-0	86
14	11-6	122	13-1	114
15	13-1	99	13-9	111
16	13-4	111	12-7	94
Av.	13-2	104	12-11	98

TABLE V111.   INTELLIGENCE QUOTIENTS FOR EACH GROUP.

GROUP 1.

Grade 6	106 X 14	equals	1484
Grade 2	93 X 20	"	1860
Grade 7	94 X 22	"	2068
Grade 4	92 X 29	"	2668
	85	V 8080	equals 93.88 IQ

GROUP 11.

Grade 5	91 X 36	equals	3276
Grade 3	94 X 36	"	3384
Grade 8	104 X 16	"	1664
	88	V 8324	equals 94.59

In the above data the IQ was multiplied by the number in the grade and the sum of the total weighting was divided by the number in the group. The same was done for Group two. This gave the average IQ for the groups.

TABLE IX.   EDUCATIONAL QUOTIENTS FOR EACH GROUP.

GROUP 1.

Grade 2	80 X 20	equals	1600	
Grade 4	97 X 29	"	2813	
Grade 6	95 X 14	"	1330	
Grade 7	88 X 22	"	1936	
	85	V	7679	equals 90.34

GROUP 11.

Grade 2	82 X 36	equals	2952	
Grade 5	92 X 36	"	3312	
Grade 8	98 X 16	"	1568	
	88	V	7832	equals 89.-

In the above data the EQ was multiplied by the number in the grade and the sum of the total weighting was divided by the number in the group. The same was done for Group two. This gave the average EQ for the groups.

TABLE X. COMPARATIVE ACHIEVEMENT IN READING.

	Group 1.					Group 11.			
Grade	2	4	6	7	Av.	3	5	8	Av.
No. of pupils	20	29	14	22	21	36	36	16	29
Mean of Sept. Test	1.3	3.2	5.0	5.3	3.5	2.5	4.1	6.8	3.6
Mean of May Test	2.7	4.3	6.2	6.2	4.5	2.9	4.8	7.4	4.2
Mean Improvement	1.4	1.1	1.2	.9	1.0	.4	.7	.6	.6

Group one, which was taught with the use of standardized tests, showed a mean improvement in reading of 1.4 years for the second grade, 1.1 years for the fourth grade, 1.2 for the sixth, .9 for the seventh, and 1.0 years average for the four grades of this group.

Group two, whose teachers did not use the standardized test results, made the following improvement in reading: grade three gained .4, grade five gained .7 and grade eight gained .6 years. The average improvement for this group was ,6 years

In the subject of reading we find the difference in improvement between the groups to be .8 years in favor of group one.

TABLE X1.   COMPARATIVE ACHIEVEMENT IN SPELLING.

	Group 1					Group 11			
Grade	2	4	6	7	Av.	3	5	8	Av.
No. of pupils	20	29	14	22	22	36	36	16	26
Mean of Sept. Test	1.6	3.3	5.3	6.1	3.8	2.6	4.5	7.8	3.9
Mean of May Test	3.0	4.3	6.3	6.7	4.6	3.3	5.1	8.2	4.6
Mean Improvement	1.6	1.0	1.0	.6	.8	.7	.6	.4	.7

Group one, in spelling, shows a mean improvement of 1.6 for the second grade, 1.0 for the fourth grade, 1.0 for the sixth, .6 for the seventh and .8 year average for the four grades of this group.

Group two made the following improvement in spelling: grade three gained .7, grade five .6 and grade eight .4 of a year. The average improvement for this group was .7.

The difference in improvement between the groups is .1 year in favor of group one.

TABLE Xll.   COMPARATIVE ACHIEVEMENT IN LANGUAGE.

| | Group 1 | | | | | Group 11 | | | |
Grade	2	4	6	7	Av.	3	5	8	Av.
No. of pupils		29	14	22	21		36	16	26
Mean of Sept. Test.		3.7	5.0	4.7	4.3		4.0	6.3	4.5
Mean of May Test.		5.8	9.0	7.4	6.8		6.2	9.2	7.0
Mean Improvement.		2.1	4.0	2.7	2.7		2.2	2.9	2.4

Group one, in language, shows a mean improvement of 2.1 for the second grade, 4.0 for the sixth and 2.7 for the seventh and 2.7 years average for the three grades in this group.

Group two made the following improvement: grade five gained 2.2, grade eight gained 2.9 and the average for these two grades was 2.4.

The difference in improvement between the groups is .3 year in favor of group one.

TABLE X111.   COMPARATIVE ACHIEVEMENT IN HISTORY AND CIVICS.

Grade		Group 1					Group 11		
	2	4	6	7	Av.	3	5	8	Av.
No. of pupils		29	14	22	21		36	16	26
Mean of Sept. Test.		3.1	4.3	4.5	3.8		3.7	7.2	4.4
Mean of May Test		5.3	7.1	6.3	5.9		6.8	9.2	6.3
Mean Improvement		2.2	2.8	1.8	2.1		1.8	2.0	1.8

Group one, in History and Civics, shows a mean improvement of 2.2 for the fourth grade, 2.8 for the sixth and 1.8 for the seventh. The average for the year for this group is 2.1.

Group two made the following improvement: 1.8 for the fifth grade, 2.0 for the eight and an average of 1.8.

The difference in improvement between the groups is .3 year in favor of group one.

TABLE XlV   COMPARATIVE ACHIEVEMENT IN GEOGRAPHY.

	Group 1					Group 11			
Grade	2	4	6	7	Av.	3	5	8	Av.
No. of pupils		29	14	22	21		36	16	26
Mean of Sept. Test		3.3	4.8	5.2	4.2		4.5	6.8	5.2
Mean of May Test		5.7	7.1	6.1	6.1		5.9	9.3	6.8
Mean Improvement		2.4	2.3	.9	1.9		1.4	2.5	1.6

Group one, in Geography, shows a mean improvement of 2.4 for the fourth grade, 2.3 for the sixth and .9 for the seventh. The average for the year for this group is 1.9.

Group two made the following improvement: 1.4 for the fifth grade, 2.5 for the eighth which makes an average of 1.6.

The difference in improvement between the groups is .3 year in favor of group one.

TABLE XV.   COMPARATIVE ACHIEVEMENT IN PHYSIOLOGY AND HYGIENE.

	Group 1					Group 11			
Grade	2	4	6	7	Av.	3	5	8	Av.
No. of pupils		29	14	22	21		36	16	26
Mean of Sept. Test.		3.4	5.4	5.5	4.4		4.3	7.4	5.0
Mean of May Test.		5.5	7.5	6.7	6.2		5.7	9.3	6.6
Mean Improvement		2.1	2.1	1.2	1.8		1.4	1.9	1.5

Group one in Physiology and Hygiene, shows a mean improvement of 2.1 for the fourth grade, 2.1 for the sixth, 1.2 for the seventh and an average for the year, for this group of 1.8.

Group two shows a mean improvement of 1.4 for the fifth grade and 1.9 for the eighth and an average of 1.5.

The difference in improvement between the groups is .3 year in favor of group one.

TABLE XV1.   COMPARATIVE ACHIEVEMENT IN ARITHMETIC.

	Group 1					Group 11			
Grade	2	4	6	7	Av.	3	5	8	Av.
No. of pupils		29	14	22	21		36	16	26
Mean of Sept. Test		3.2	5.0	5.5	3.5		2.6	6.7	3.9
Mean of May Test		4.4	5.9	6.3	4.6		3.4	7.6	4.7
Mean Improvement		1.2	.9	.8	1.1		.8	.9	.8

Group one, in Arithmetic, shows a mean improvement of 1.2 for the fourth grade, .9 for the sixth, .8 for the seventh and an average of 1.1 for the group.

Group two made the following improvement: .8 for the fifth grade, .9 for the eighth, making an average of .8.

The difference in improvement between the groups is .3 year in favor of group one.

TABLE XV11   DISTRIBUTION OF NET IMPROVEMENT OF
GROUP L.

Scores	Grade 2 Freq.	Grade 4 Freq.	Grade 6 Freq.	Grade 7 Freq.	Total
4.0 - 4.2			2		2
3.7 - 3.9		1			1
3.4 - 3.6					
3.1 - 3.3					
2.8 - 3.0		2			2
2.5 - 2.7		4	2	3	9
2.2 - 2.4	2	1		2	5
1.9 - 2.1	3	3	3	1	10
1.6 - 1.8	7	5	3	1	16
1.3 - 1.5	3	6	1	5	15
1.0 - 1.2	3	4	2	4	13
.7 - .9	2	1		5	8
.4 - .6		2		1	3
.1 - .3			1		1
Total					85

Range   4.3
Mean   1.69
Sigma av.   .08137
Sigma   .7503

TABLE XV111   DISTRIBUTION OF NET IMPROVEMENT OF
GROUP 11.

Scores	grade 3: Freq.	grade 5: Freq.	grade 8: Freq.	Total
2.8 - 3.0		1	1	2
2.5 - 2.7		1	2	3
2.2 - 2.4		2		2
1.9 - 2.1		4	3	7
1.6 - 1.8	2	8	1	11
1.3 - 1.5	5	6	2	13
1.0 - 1.2	8	1	2	11
.7 - .9	7	5	1	13
.4 - .6	4	3	2	9
.1 - .3	9	4	2	15
.2 - .0	1	1		2

Total   88
Range   3.2
Mean   1.124
Sigma   .7257
Sigma Av.   .07735

TABLE XIX.

	GROUP ONE					GROUP TWO			
Grade	No. of pupils	Sept Test	May Test	Gain	Grade	No. of pupils	Sept Test	May Test	Gain
2	20	1.42	3.00	1.59					
4	29	3.43	5.20	1.77	3	36	2.43	3.22	.79
6	14	5.05	7.05	2.00	5	36	4.27	5.60	1.33
7	22	5.40	6.90	1.51	8	16	7.11	8.57	1.46
	85			1.69		88			1.12

The above table shows a kind of a summary of the results found. The mean for each grade is given for both the September and the May tests. Subtracting we have the mean improvement for each grade. Under the gain columns we have the mean improvement for each group. The mean difference is .56 year with a sigma distribution for group one of .7503 and for group two .7257. The sigma average for group one is .0814 and for group two .0774. The sigma of the difference is .1123. Therefore the obtained difference between the two groups of .56 is a reliable difference.[1]

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1 Henry E. Garrett, Statistics in Psychology and Education.

CHAPTER lV.

SUMMARY AND CONCLUSION.

The specific purpose of this study was to discover whether diognostic Standardized Survey Test results in the hands of the teacher would aid materially in advancing the pupils achievement level.

The equivalent group method of the two-test type was used in conducting the experiment. The subjects used in the investigation were 173 pupils of grades ll to Vlll inclusive, of the Dale Consolidated School in Pottowatomie County, Oklahoma.

The New Stanford Achievement Test was used to measure the progress of the two groups and at the same time to give the teachers of Group one a key or index to what was most needed in their respective teaching situations. The National Intelligence test was used as an aid in checking the equivalency of the two groups mentally, in addition to supplementing the Stanford achievement test as one of the two diagnostic instruments used by the teachers of Group one. The reliability of the differences found was evaluated by use of well known statistical techniques such as mean, standard deviation, sigma average and sigma difference.

Some of the most important facts discovered by comparing the achievement of the two groups are: 1. In the teaching of spelling no significant difference was found,

only .1 of a year between the two groups.

2. In language we find the greatest difference in the achievement of the two groups, .7 of a school year. This is probably due to the fact that the language is divided into two parts namely language usage and literature and in this experiment it was found on the September test that the pupils were lower in literature than in any other function. Group two teachers, of course, were never apprized of this fact.

3. History and Civics is next to language in the difference found, this being .6 of a school year.

4. Geography and Physiology come next, with .4 of a school year difference in achievement.

5. In the function of Arithmetic there was .3 of a school year difference in the achievement of the two groups during the year.

6. That when the differences in the seven functions are averaged we find .56 of a school year more progress made by Group one.

7. That in no one of the seven functions did Group two exceed Group one.

8. That the general school spirit was much better throughout the year than was in evidence the two previous years which the author had the opportunity to observe. The percent of attendance was higher than any one of the previous six years according to records on file in the superintendent's office. The patrons, teachers and pupils alike were pleased with the project, and begged for tests of some kind during the following

year, which closed in May, 1933.

What conclusions may we justify in drawing from the facts revealed in this study?

That the splendid showing made by Group one over Group two can not be accounted for other than by the fact that the teachers of Group one had the standardized test results as a guide to their teaching problems while the teachers of Group two taught without being fully aware of the capibilities or the achievements of their pupils in the various functions.

In conclusion, my opinion is that the use of a good standardized test can be made indispensable in any school. however, I would not advise the withholding of the results of a survey like the one given in this study from half of the school, unless there was some particular reason for so doing. This, of course, had to be done in this particular experiment or else we would have had no method of obtaining evidence that a survey test of this kind could be of so much value.

TYPED BY

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