THE PROGRESS OF PUPILS IN AN UNGRADED CLASS.[1]

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Introduction.

It has been found that in every large school system where the pupils are recruited from the general public, certain percentages are backward, feebleminded, dull, or are retarded because of lack of opportunity. These types of children are a constant source of worry for the teacher and a waste of time and money to the state if they are kept in the regular grades, aside from being dangerous to the morale of the class in general. These evils were greatly accentuated in Austin after the adoption of the compulsory law in Texas, which forced into the school rooms many children who expected to attend only long enough to satisfy the law. This law also brought back into the schools retarded children who had withdrawn because of inability to progress, or because of discouragement.

In the summer of 1916, the authorities of the public schools of Austin took steps to remedy these obstacles to the efficiency of the schools, by instituting three ungraded classes in different ward schools in the city. Special teachers were employed for these classes. It was hoped by this means to help those in need in the branches of study in which they are most deficient, to give them that which they need most, and then to restore them to their respective grades, or to advance them as rapidly as they were able to progress. Thus, instead of holding certain pupils back in a grade for being unable to make satisfactory progress in a certain branch of study, provisions were made to teach those branches that are absolutely essential for efficient citizenship.

Purpose and Method.

It is the purpose of this study to measure the progress of these ungraded classes considered as a single group. In order to secure an objective measure of the progress of the special classes, the follow-

[1] We are deeply indebted to Dr. Truman L. Kelley, Adjunct Professor of the Psychology of Education, University of Texas, for his valuable criticisms, encouragement, and suggestions.

ing standardized school tests were given: Trabue completion,[1] Thorndike reading,[2] Starch arithmetic,[3] and Courtis arithmetic.[4] The tests were given in two sets of equal difficulty with an interval of four and one-half months between them. The time interval marks exactly the period of a grade in the Austin schools. The first set of tests were given during the last week in October, 1916, and the second during the second week in March, 1917, with the exception of the Courtis arithmetic test, which was given a month later, due to a delay in the arrival of the test-sheets. This makes the interval between the tests five and one-half months instead of four and one-half: but it is not thought that the results are thereby vitiated; for in comparing the scores made by the special classes with the Courtis norms, we can take 11/18 of the average increase in scores of the normal children, and compare that with the increase made by the special classes. The Courtis norms were used for comparison because it was thought they are sufficiently reliable to warrant their application in Austin.

In the Courtis arithmetic test only the examples right were considered. The final score was obtained by adding the scores made on the four fundamental processes, addition, subtraction, multiplication, and division. In like manner, total scores were calculated from the standard scores given by Courtis in Bulletin Number Four, page 48. The score for each fundamental process was obtained by multiplying the score for speed by the percentage of accuracy.

For the other three tests, the norms for comparison were secured from normal Austin children in the grades 3A, 3B, 4A, 4B, 5A, and 5B. These particular grades were used because nearly all children in the ungraded classes fell within these grades, although they were much older than the average children in the respective grades. The final score for each grade was composed from those ward schools that ranked relatively high and low in scholastic standing, based on an unpublished survey by Mr. E. D. Jennings, so that the norm represents fairly the condition throughout the city. Different schools were selected for the different grades so that a representative set of norms was obtained for the city. This was thought necessary because the special classes were recruited from the entire city.

The tests themselves were given under carefully controlled

[1] T. L. Kelley. For Scoring Completion Test Language Scales—First and Second Tests. *Teachers' College Record*, Sept., 1917.

[2] T. L. Kelley. Thorndike Reading Scale Alpha 2 Adapted to Individual Testing. *Teachers' College Record*, May, 1917. P. 253. (See Table B, page 259, for scoring reading test.)
For original scales by Thorndike see An Improved Scale for Measuring Ability in Reading, in *Teachers' College Record*, Nov., 1915, and Jan. 1916.

[3] A Scale for Measuring Ability in Arithmetic. *J. Educ. Psychol.*, V. 7, No. 4, April, 1916.

[4] S. A. Courtis. Manual of Instructions for Giving and Scoring the Courtis Standard Tests. 1914. (See manual for the tests, series B.)
Bulletin No. Four, COURTIS STANDARD RESEARCH TESTS. 1913-16 Dept. of Co-operative Research, 82 Eliot St., Detroit, Mich. (See Bulletin, page 48, for data used in calculating norms.)

conditions. All disturbing factors, such as fatigue, tendencies to copy, influence of teacher, and the like were guarded against.

The results of the tests of the ungraded classes were supplemented by a personal investigation of each special case with regard to development and advancement, based on the judgment of the teachers. The results of the two methods were then correlated and compared.

Results of Tests.

The following tables give the results of the school tests.

TABLE I.—AVERAGE SCORES AND AVERAGE INCREASE MADE BY SPECIAL CLASSES.

Grades	Average Age at Time of First Test	COMPLETION			READING			STARCH ARITH.			COURTIS ARITH.		
		No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test
3A.....	13.0	2	3.07	3.83	3	4.17	4.20	4	2.50	1.75			
Av. increase in scores...			.76			.03			−0.75				
3B.....	12.6	4	4.68	5.52	3	3.35	4.89	4	3.50	1.00	2	.50	.50
Av. increase in scores...			.84			1.54			−2.50			.00	
4A.....	15.5	3	4.39	4.92	2	3.95	4.10	3	3.33	.33	1	1.00	.00
Av. increase in scores...			.53			.15			−3.00			−1.00	
4B.....	13.4	3	6.59	7.17	3	5.81	6.20	3	5.66	9.33	1	3.00	4.00
Av. increase in scores...			.58			.39			3.67			1.00	
5A.....	14.9	1	7.00	7.50	2	6.02	5.57	2	6.00	4.50	1	9.00	9.00
Av. increase in scores...			.50			−0.45			−1.50			.00	
5B.....	15.1	3	7.13	6.57	3	5.61	6.23	3	2.30	6.66	2	9.00	8.50
Av. increase in scores...			−0.56			.62			4.36			−0.50	
6A.....	15.1	5	7.44	8.00	4	5.65	6.66	5	7.80	3.40	4	10.50	10.50
Av. increase in scores...			0.56			1.01			−4.40			.00	
6B.....	14.6	2	5.50	6.25	2	4.98	4.98	2	0.00	1.00	2	7.50	6.00
Av. increase in scores...			0.75			.00			1.00			−1.50	

The average scores, as well as the average ages of the ungraded children, may not be considered very reliable; for in no case were more than five individuals involved, due to the fact that many had withdrawn because of sickness, work, and the like before the second examination was made. Out of fifty-five, only twenty-six were left for the second set of tests. This may explain, in part, the irregularity of the increase in scores from grade to grade. The average ages, too, are only approximate, for the different tests both for the normal and the ungraded children, because in many cases a different num-

TABLE II.—AVERAGE SCORES AND AVERAGE INCREASE FOR GRADES FOR NORMAL CHILDREN IN AUSTIN SCHOOLS.

Grades	Average Age at Time of First Test	Completion			Reading			Starch Arith.		
		No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test
3A.....	9.1	31	4.73	5.48	33	3.89	4.40	33	3.54	1.03
Av. increase	in scores...		0.75			0.51			−2.51	
3B.....	9.7	21	5.03	5.74	23	4.32	4.47	23	2.91	1.61
Av. increase	in scores...		0.71			0.15			−1.30	
4A.....	10.5	36	5.73	6.43	36	4.96	5.11	35	4.90	3.22
Av. increase	in scores...		0.70			0.15			−1.68	
4B.....	11.3	44	6.66	6.92	44	5.08	5.57	46	5.17	5.09
Av. increase	in scores...		0.26			0.49			−0.08	
5A.....	11.5	53	7.40	7.84	51	5.85	6.45	50	7.50	6.52
Av. increase	in scores...		0.44			0.60			−0.98	
5B.....	12.0	33	7.55	7.92	33	5.96	6.61	33	7.78	7.03
Av. increase	in scores...		0.37			0.65			−0.75	

TABLE III.—COMPARISON OF INCREMENTS, OF INCREASE OF NORMAL AND UNGRADED CHILDREN.

	Ages at Time of First Exam.			Completion	
	Normal	Ungraded		Normal	Ungraded
Average age.....	10.9	14.2	Increments.....	0.51	0.49
Median age.....		14.4			
Number of pupils....	220	26		218	23

	Reading		Starch Arith.		Courtis Arith.	
	Normal	Ungraded	Normal	Ungraded	Normal	Ungraded
Increments.....	0.45	0.51	1.13	0.80	3.98*	−0.31
Number of pupils....	220	22	220	26	*	13

*See Bulletin Number Four, COURTIS STANDARD RESEARCH TESTS, page 46. Increments were calculated from norms published in this bulletin, and is average increase from 3 to 8, both inclusive.

ber of pupils are involved. The discrepancy is, however, negligible; for in no case does the difference exceed 0.16 of a year.

The scores made by the normal children in the completion

and reading tests show a regular and consistent increment from grade to grade, as shown by table II. But in the Starch arithmetic test the scores are lower for the second examination than for the first by an average of 1.13. Yet when the scores for the different grades are considered separately for each set, a consistent increase is found from grade 3A to 5B, the scores ranging from 3.54 to 7.78 for the first set and 1.03 to 7.03 for the second set. Thus the norms for the second set are consistently lower for each grade than for the first, which seems to indicate that the second set is decidedly more difficult than the first.

A comparison of the increments made by the special classes when considered as a single group with those made by the normal children, as shown in table III, shows that the ungraded class is slightly below the normal in the completion test, slightly above the normal in the reading test, and considerably above the normal in the Starch arithmetic test. Two factors may have operated to make the difference in the last two tests in favor of the special classes. First, the ungraded pupils received special attention; their cases were analyzed, and the remedy applied. Second, reading and arithmetic were especially stressed in the ungraded classes, even to the total neglect of other branches if necessary. The latter explanation deserves emphasis in view of the fact that a smaller increment was made in the completion test than in the other three; for it shows that in real capability, as required by the completion test, the special classes did not improve equally well with the normal children. It is to be expected that if a group of normal children were drilled on the same subjects with as much care and persistency as were the special cases, they would show a relatively greater progress. If the difference in the average ages of the groups is also considered, a rather rapid progress in the fundamental school branches might be expected from the special classes.

Progress According to Teachers' Judgments.

STATISTICAL REPORT.

Enrolled early in term		55
Died	1	
Withdrew to work	1	
Withdrew because of sickness	2	
Withdrew to other schools	6	
	—	10
Remaining in special room		45
Promoted to regular grade during term	4	
Demoted to lower studies in special room	5	
Doing work of one grade	15	
Doing work of two or more grades	21	
	—	45

Of the twenty-one who made more than two grades, two made three grades, three made four grades, and one made five grades. All who were promoted gained their promotion by more or less satisfactory work. Of the four who were promoted to a regular grade higher than the one they had previously attended, two covered partly the work of two grades in the ungraded room; one, the whole work of two grades; and one, the work of three.

Age-Grade Conditions.

In the following table are given the number of years by which the children in the ungraded class are in excess of the average of the normal child for the respective grades. This comparison is based on the Austin standard of February, 1917, which considers seven and one-half years the upper limit of the normal age for the 1A grade.

TABLE IV.

Number of years over age.....	½	1	1½	2	2½	3	3½	4	4½	5	6+
Number of pupils.....	1	1	2	6	9	10	4	4	2	1	3

Two of the 45 remaining in the ungraded room were eliminated because their age could not be determined. The improvement of the twenty-three who made more than one grade, is shown in the following table, the age-grade conditions of the others remaining the same.

TABLE V.

Number of years over age.....	0	½	1½	2	2½	3	3½	4	4½
Number of pupils at beginning of term.....	0	1	0	3	6	6	3	2	2
Number of pupils at end of term.....	1	1	2	8	6	2	3	0	0

At the beginning of the term, four pupils were four and more years over age; and more than half the class, more than three years. But at the end of the term, none were as much as four years over age; and over half of the class, less than two and one-half. This table plainly shows a good record for four and one-half months' work with these pupils.

Correlation of the Results from the Two Methods.

1. *By groups.* The development in ability of the boys and girls who made more than one grade, as shown by their increase in

scores on the standardized tests, does not tally with their scholastic achievement. We have records of both sets of tests for 13 in the completion, 14 in reading, 15 in Starch arithmetic, and 8 in the Courtis arithmetic test. The average increments in scores for the pupils are compared with the normal in the following table:

TABLE VI.

	COMPLETION	READING	STARCH ARITH.	COURTIS ARITH.
Average increase for ungraded.....	0.40	0.55	−0.46	0.38
Austin normal increase for one grade...	0.51	0.45	−1.13	3.98*

* See Table III, footnote.

This table shows a real increase in ability approximately equal to that of one grade in the reading and completion tests, a much smaller falling off for the ungraded class in the Starch test, and an exceedingly poor showing for them in the Courtis test.

The poor showing on the Courtis test may be explained by the fact that this is a speed test. It was the only speed test used. This probably accounts for the peculiarly poor initial and final showings of the ungraded children, who were probably put into the ungraded class because of slowness. Speed was not their *forte*.

The increments in the reading and completion tests could be passed without comment if the pupils had gained only one grade; but since they made on an average two and one-half grades, the teachers seem to have promoted them unwarrantably. However, it must be remembered that these tests measure ability rather than quantity of knowledge. Moreover, when a pupil in the ungraded room covers the work of three grades in one term, it does not mean that he does all the work required of a pupil in the regular grades. The teacher requires of him only the essentials of a subject; he is deprived of the practice and continued handling of each phase which the normal pupils enjoy.

A group of eight who made only one grade during the term, present the average increments shown on p. 283. The average of this and the foregoing group are included in this table. The Courtis figures are omitted because only two took the test out of the group of eight. The number of pupils for the tests in this group are: completion, 7; reading, 5; and Starch, 8.

The norms used for the group of eight are the average increments for the 3A, 3B, and 4A grades; because these pupils were all in these grades.

TABLE VII.

	COMPLETION	READING	STARCH ARITH.
Ungraded	0.86	0.35	−2.63
Norms	0.74	0.28	−1.88
Average of both groups—ungraded	0.56	0.49	−1.21
Norms	0.51	0.45	−1.13

2. *By individual cases.* (1) O. L. was 12 years old and in the 3B grade. For some reason he had been unable to attend school continuously in the past. His work was steadily successful in the ungraded room, and at the end of the term he was promoted to the regular 4B grade, where he continued to do thoroughly good work. The table that follows gives his scores in the standard tests, first in the ungraded room and then four and one-half months later, when he was in the regular 4B grade. The norms derived from the tests of Austin pupils are given just below his scores for the purpose of comparison. An examination of this table shows that O. L. made a very healthy and appropriate improvement. His improvement in reading is wonderful, much poorer than the regular 3B at first, and better than the regular 4B on the second test. The improvement shown in the fundamentals of arithmetic is not as good as would be expected of a boy of his general ability. His case, together with the general showing of the ungraded room in this respect, indicates that it is advisable for the principals to inquire into the facilities afforded for drill and, if the teachers of these classes cannot find sufficient time, to make arrangements to supply the help needed.

TABLE VIII.

	GRADE	COMPLETION	READING	STARCH	COURTIS
O. L.	3B	5.33	2.65	6.00	0.00
		0.72	3.01	−6.00	1.00
O. L.	4B	6.05	5.66	0.00	1.00
Norms	3B	5.03	4.32	2.91	6.72*
		1.89	1.25	2.18	10.71*
Norms	4B	6.92	5.57	5.09	17.43*

* Approximately only. Norms for Courtis are for grades 3 and 4. Figures between and to the right of the regular scores show the average increase made from lower to higher grades.

(2) Case E. T. E. T. was almost 15 years old, and had received small school advantages because of living in an isolated community. He covered the essential work of five grades in commendable manner, and was promoted to the junior high school in February. We have

nothing higher than the 6A norms with which to compare his 7A scores. The increment shown in reading is much larger than that shown by any regular grade above 4A, practically as much increase in ability as was shown by the regular pupils during a year of 4B and 5A school work. The unusually large increment in his scores for the completion and Starch tests shows that the ungraded class was indeed a class of opportunity for him.

TABLE IX.

	GRADE	COMPLETION	READING	STARCH	COURTIS
E. T.	4B	6.00	5.98	1.00	3.00
		2.00	0.62	9.00	1.00
E. T.	7A	8.00	6.60	10.00	4.00
Norms	4B	6.66	5.08	5.17	17.43*
		1.26	1.61	1.86	6.39*
Norms	6A	7.92	6.69	7.03	23.82*

* Approximately only. Courtis norms are for grades 4 and 5.

(3) Case R. J. This pupil, over 15 years old, was in the 6A grade, a dull boy whose previous teachers said that he could do nothing. His term grades beginning with the 3B grade were low; he had failed in 5B and 6A. He did acceptable work in 6A and 6B studies during the term of the ungraded class, doing the best arithmetic work in the room. He was promoted to the junior high school at the end of the term.

TABLE X.

	GRADES	COMPLETION	READING	STARCH	COURTIS
R. J.	6A	6.75	6.07	8.00	19.00
		0.65	1.83	−7.00	5.00
R. J.	7A	7.40	7.90	1.00	24.00
Norms	5B	7.55	5.96	7.78	30.14*
		0.37	0.65	−0.75	4.82*
Norms	6A	7.92	6.61	7.03	34.96*

* Approximately.

The 5B norms are used in order that we may compare his growth in ability with the normal growth during the term; for we have no norms higher than 6A. The Courtis norms, however, are for the sixth and seventh grades, respectively, with an interval of one year. These figures tell an interesting story of mental awakening and growth. The increase in ability to grasp the meaning of the printed page is shown by a score increase of 1.83. This increment is greater than the sum of the increments shown by normal pupils in grades

4A to 5B inclusive, representing two years of school work. The completion test increment is more than the average grade increment. His initial and final scores in the Courtis test are not identical with Courtis' standard for the sixth grade; but the increment is greater, although the ungraded class represents five and one-half months' work while the norm represents nine months' work.

(4) Case M. B. This boy, nearly 15 years old, has been a puzzling problem for several years. His term grades from 3B up have been the lowest possible passing grades, evidently raised as high as the teachers' conscience and judgment would allow. He failed in 6A. When sent to the ungraded class, he soon dropped back to 5B work with one 6A study. He was found to be nervous and exceedingly slow.

TABLE XI.

	COMPLETION	READING	STARCH	COURTIS
M. B. First test	6.00	5.00	0.00	2.00
	0.50	0.66	1.00	1.00
M. B. Second test	6.50	5.66	1.00	3.00

These scores show an appreciable increase in ability, and judging by them it seems fair to say that the term's instruction was well worth while. The scores, however, are low. The normal 4B scores for the first and second tests in reading are 5.08 and 5.57. This indicates that the boy's ability and growth was almost equal to that of a 4B pupil.

His scores in the completion test place him between the 4A and 4B grades. His Courtis scores are lower than the standard for the third grade by over one-half. His Starch scores are also lower than the 3A average. His teacher does not think that the boy is feebleminded, and reports that his work during the second term was more satisfactory than during the first. He was promoted to the junior high school in June. Cases like those of M. B. and R. J. should be caught early, and put in charge of a special teacher while still in the lower grades.

(5) Case W. M. This pupil is a true defective, 18 years old. The special teacher put him in 4A studies, and at the end of the term started him in 4B work. A gratifying improvement was shown during the first term; but it was reported that during the second his work was poorer, and that there was nothing further the school could do for him. The table shows a real improvement in ability in the reading and completion tests, though the scores are low.

Our ungraded classes at present are not fitted to handle such cases. W. M. really belongs in an institution for defectives.

TABLE XII.

	COMPLETION	READING	STARCH	COURTIS
W. M. First test	2.50 0.50	2.18 1.52	0.00 0.00	1.00 1.00
W. M. Second test	3.00	3.70	0.00	0.00

(6) Case L. J. While the ungraded classes are in no sense disciplinary classes, still several pupils found their way into them whose backwardness was due to moral delinquency rather than mental dulness. Not all of them showed the gratifying improvement of L. J. This boy was almost 14 years old when in the 4B grade. He was shifty, untruthful, and a troublesome truant, with poor mental control. Toward the end of the first term he improved in character, and during the second term he was doing good work in the regular 5B grade. The last time he played truant was on the afternoon the president of the school board had made him a present of a much needed suit. Pride and delight caused the relapse. The principal rejoiced with him and pardoned him.

Conclusions.

A consideration of the survey shows that the ungraded classes in the Austin schools have carried out with success the purpose for which they were established. The regular classes have been relieved of the burden of these pupils who would have required special attention. The grading and teaching have been individual, as shown by the different rates of advancement. To more than one-half of the pupils, the special class was a class of opportunity, for they gained one or more grades. The same thing is true even for most of those who succeeded in making only one grade during the term; for they would probably have failed to make one grade in the regular class. That the ungraded class has been largely a restoration or adjustment class is shown by the fact that out of forty-five remaining during the first term, twenty-two were put into the regular grades that were more suitable to their age and maturity.

It must, however, be borne in mind that the special class does not, on the whole, revolutionize the mental development of the children; but according to the standardized tests, it does show a definite, material improvement. Such development is well worth while,

but it is on the average not as great as the scholastic advancement to which the teachers subject their pupils.

Summary.

1. Children in the ungraded class were, on the average, three and one-half years older than the normal children in the regular grades.

2. The ungraded children improved in ability by nearly one grade as shown by the increments on the completion test, when compared with the norms.

3. The same children made slightly greater increments on the Thorndike reading test and much greater on the Starch arithmetic test than did the normal. The good showing in the Starch test may be due to intensive drill.

4. In the Courtis arithmetic test, the special class made exceedingly poor initial and final scores, which is perhaps due to the fact that this is a speed test. The ungraded children are slow, and probably for that reason put in the special class.

5. According to the teachers' judgments as evidenced by their promotions, the pupils were usually placed higher than the results of the standardized tests warrant.