

**A NEW METHOD FOR
DETERMINING RATE
OF PROGRESS IN A
SMALL SCHOOL SYSTEM**

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EXCHANGE

A New Method for Determining Rate of Progress in a Small School System

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A THESIS SUBMITTED TO THE FACULTY OF THE GRADUATE
SCHOOL OF THE UNIVERSITY OF PENNSYLVANIA IN
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I.

Almost all of the articles appearing within the past few years on retardation and elimination have been based upon a study of large school systems, because, in the first place, city systems furnish uniform conditions of grading; and in the second place, large masses of statistics preclude the erroneous conclusions which would result from insufficient data. In this paper, on the contrary, care has been taken to study the school history of each individual pupil in a small school system, and to ascertain accurately the vital statistics necessary to define the true state of affairs.

The present investigation was undertaken with five purposes in view:

1. To find out the actual conditions existing in a small school system over a number of years;
2. To learn the real extent of retardation, acceleration, and elimination of pupils by following their progress from the day they entered school until the day they finally left it;
3. To draw a valid contrast between the number beginning and the number leaving school;
4. To compare actual with hypothetical results; and,
5. To make such suggestions as may help in ameliorating the conditions which are found to exist.

The facts have been obtained largely from the reports of the white schools of Elkton, Maryland, and through the cooperation of many teachers and students in the schools and of friends outside it was possible to obtain much valuable data which the reports could not furnish. Many of the teachers had taught in the schools for a period as long as that covered by the investigation, and the writer himself, a citizen of the town, was for some time connected with the schools. The facts are considered under two heads: (1) the elementary and high school history of 295 males and females during the years 1891-1892 to 1908-9, inclusive; and (2) the progress of pupils (1514 in all) in the elementary

and high schools for eleven years, from 1898-9 to 1908-9, inclusive.

The town in question is a small county seat. Its population has remained about the same for the past twenty years, and the few industries and the number of employees have not changed materially in that time. The economic conditions are such that practically all the children *could* remain in school until graduation.

The high school was for a number of years the only one in the county, and is still much the largest and best equipped. Until 1902-3 there were six grades in the elementary school, and four in the high school. In that year one grade was added to the elementary course, thus requiring the normal child to remain in school eleven years before graduation. The high school course of study was not affected in any important degree by the change. Two additional facts have an important bearing on this investigation: (1) the age of entrance is six years, and (2) there is no compulsory attendance law in Maryland.

The writer believes he is justified in calling his method "new" for the following reasons: (1) the complete school history of 295 pupils and the school history of 1514 pupils during the time spent in the Elkton system are the basis for obtaining his results; (2) elimination is based on the actual number of beginners; (3) the rate of progress and retardation is based on a system of units of progress; and (4) his measure of the efficiency of a school system is new.

The conclusions arrived at in the following pages will not, of course, apply in all respects to every city school system. They will be indicative, however, of what may be found in communities where conditions are similar to those here prevailing, and a knowledge of the facts of retardation, elimination, etc., is quite as indispensable in the administration of a small as of a large school system.

Retardation.

At the outset of this discussion it seems necessary to define certain terms already in use in the study of school statistics and to introduce some others.

There are three classes of pupils who drop out of school: (1) those who graduate; (2) those who transfer to other schools; and (3) those who leave for other causes. It is to this latter class that the word *elimination* usually refers.

The rate of progress for a school means the average progress of all pupils through the grades; that is to say, the record of the

school system will be a summation upon the records made by the individual pupils in it. The movement of a pupil through his course may be composed of three elements or forces; (1) a normal forward movement, of a unit of work done in one term; (2) a doubly rapid movement of two units of work in one term; and (3) a retarded movement of one unit of work in two or more terms. When a pupil moves faster than the normal rate, *i.e.* does a unit of work in less than the required time, he is said to be accelerated in his movement through the grades. This term is properly the converse of retarded in its customary meaning.

Among those interested in the work of our public schools there is a demand to know not only that a pupil is moving at an abnormal rate of speed, but what the rate of that movement is. Most writers on the subject of retardation have used the term retarded to mean that a pupil is above age for his grade, irrespective of the reason. Thus a pupil twelve years of age and in the second grade, would be considered retarded whether he had attended school two years or six. For others the word signifies that a pupil has failed of promotion one or more times, and is in consequence behind his class for as many years. The first interpretation of the word has no doubt arisen out of the method necessary for the study of large masses of school statistics, and it has been tentatively accepted by most persons with the recognition that the results are only approximately correct and in most cases merely indicate a tendency. Its second use has been advocated by some who believe that the former method does not give exact results; that it is unfair to the school because it considers a pupil retarded who has entered school late, and because it takes no account of a large number of pupils who have advanced faster than one grade per year.

In the present study the second point of view (progress method) has been accepted principally because it shows the actual condition of retardation. At the same time comparisons of results with the aggregate standard will be made to note how far the schools from which the facts have been collected agree in this respect. One would hardly be justified in applying this method to a large school system. The vast amount of time necessary, and the utter impossibility of securing certain facts, would make it impracticable. In the judgment of the writer, it is of great importance in the present state of school records that a method approximating as nearly as possible the real conditions, be devised for measuring the degree of retardation in our schools. Such a

one is herein described. It will show definitely the extent of retardation for which the system is responsible.

Since the word retardation, in the second sense, refers to the progress of a pupil through the grades, it is necessary that a new set of terms be adopted to designate the different degrees of retardation. Three boys may begin school the same year; at the end of the eleventh year one may be in the last year of the high school, one in the second year, and the third in the fourth grade of the elementary school. It is obvious that these pupils have passed through the grades at different rates of speed, and it is important to measure the rate. For this reason the terms units of normal progress, minus progress, and plus progress are here proposed to convey the manner and rate of movement of a pupil through the grades. A unit of normal progress means that a pupil completes a term's work on time; a unit of minus progress, that he completes the term's work in double the required time; and a unit of plus progress, that he completes two terms in the time required for one. For example, a pupil in the fifth grade in the eighth year of his school life may be there because he has made one unit of plus and four units of minus progress, or three units of minus progress, etc. Instead of saying that a pupil is retarded or accelerated so many years, it is possible to express his school status in terms of so many units of plus, normal, or minus progress, thus using a definite terminology for designating the manner by which he has arrived at any point in his school career. The word retardation may still be used as before to denote the condition, but without the duty of serving also as the measure of this condition.

As stated before it was not possible to secure absolutely complete records, yet 295 pupils were found who had passed their whole school life in the Elkton schools and had either dropped out or graduated. It is first attempted to show the exact amount of retardation among these pupils, and subsequently, to study it among 1514 pupils who attended school during some part or all of eleven years. Table I (B) shows the distribution of these pupils from the first year of their school life until the last one dropped out in the fourteenth year. The numbers above the black line give the percentages of those making normal progress, while the numbers below the line indicate the percentages retarded.

Instead of finding an ideal attendance of 100 per cent in the next higher grade each succeeding year, we find the real condition as displayed in the table. Here are 295 different pupils

who have started the race of school life together, scattered along the course, further and further apart with the passing of each year. In the eighth year eighteen are beginning another lap together, having kept up the required speed, two have gained a lap, and 178 are falling behind, some one lap, some three, and a few as many as six laps. Again, in the eleventh year, when most of them should have crossed the finishing line together, only six do so without having lost ground. One has lost one lap and regained it, and still another has lost a lap and not regained it, but finishes with the other seven on account of the shorter course. What has become of the other 287 in these eleven years? Two hundred and forty-two have dropped out and the remaining forty-five are found in all the grades from the fourth up to and including the third year of the high school.

Taking as a basis the number of children in school, about one out of ten in the eleventh year of school life has passed through the grades without failure, and considering the number of beginners as a basis the ratio is almost one to fifty. Ayres (1) says: "In our city schools on an average, three out of every four have failed at least once by the time the eighth year of school life is reached, and the whole number of failures is so large as not to fall far short of averaging two for each pupil who has failed." By reference to table I (A), it will be observed that the whole number of pupils in school this year average 2.28 units of minus progress. Of the pupils in school during the eighth year, 45 have failed once; 68, twice; 39, three times; 27, four times; 10, five times, and 3, six times, an average of 2.5 failures for 192 pupils. Hence, the average number of failures is somewhat larger than that found by Ayres.

In the same table are given the percentages of the retarded and non-retarded for each year according to the progress (exact) method and the age-grade method so extensively applied by many investigators, the latter considering as retarded all pupils of the first grade who are nine years or over, all in the second grade, ten years or over, and so on. We are struck with the great disparity in the results obtained from the two methods. In the first few years the age-grade standard shows a low percentage of retardation, with a gradual increase in the later years; for example, only 19 per cent were retarded the third year, 30 per cent the fourth year, 38 per cent in the fifth year, and 47 per cent the sixth year, whereas the actual retardation for these same years based on the number of pupils in school was 79, 86, 89 and 91 per cent,