

**THE ACCOMPLISHMENT RATIO:
A TREATMENT OF THE
INHERITED DETERMINANTS OF
DISPARITY IN SCHOOL PRODUCT**

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RAYMOND FRANZEN

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A Treatment of the Inherited Determinants
of Disparity in School Product

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PREFACE

The results of the experiment reported here have become so much a portion of my process of reasoning that duplication of material presented elsewhere is unavoidable. I wish in particular to recognize my indebtedness to the *TEACHERS COLLEGE RECORD* for permission to reprint here revised portions of an article which appeared in the November, 1920, number of that journal. I will warn here any reader to whom the intricacies of a full statistical account are irksome that the logic and conclusions presented in this study are incorporated in a more palatable and abbreviated form in Chapter IV of *Intelligence Tests and School Reorganization* (World Book Company).

The work presented here has been made possible by the cooperation and interest of the two principals of the Garden City public school during the period of my work there, Miss Gladys Locke and Mrs. Edna Maule. I also owe any success that this experiment may have had to the teachers who did the real work of "pushing" abilities to their limit. My indebtedness to Gladys Locke Franzen for help in expression and correction is surpassed only by what I credit to her encouragement and cooperation at its inception.

During the period in which this experiment was planned and executed it grew into a real problem through the advice of two of my teachers to whom I owe all such inspiration and knowledge as I possess—Edward L. Thorndike and Truman L. Kelley.

RAYMOND H. FRANZEN

Des Moines, Iowa, 1922.

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PART I*

AN OUTLINE OF THE EXPERIMENT

THE USE OF QUOTIENTS AND RATIOS

Standardized measurement of educational product has won its way to a recognized place in the school life of this country. Many of our larger cities have research bureaus of tests and measurements, and advanced private schools have departments of measurement. The logic of the use of statistically derived evaluations versus the use of opinion, swayed as it is by the haphazard captions of emotion and condition, has become widely recognized. The case of scientific measurement in education has been argued and won. The objections to older forms of measurement have become the criteria of the value of the new.

Still administrators, although they have been convinced theoretically of its importance, find it hard to see just what measurement does for their schools. They often object that measurements are made, the tests are carried away by the examiner, and some time later they are presented with a neat series of distributions and are told where their school stands in relation to certain other schools or to schools in general. This is undoubtedly a very important piece of information; since a determination of the extent to which a goal has been attained forms the basis of the commendation or condemnation of the methods, curricula, and textbooks employed in the process. But administrators want to know which of the various elements of school procedure are to be praised and which are to be blamed.

We cannot condemn or support a whole school system on the basis of composite results (unless all possible educational objectives have been measured, and show one common drift; or unless it is necessary that the system fall or stand as a whole) since then we should be throwing good and bad into a common discard. We must measure each thing separately. We must build our ideal system of education synthetically, taking the best methods from each of the

* Part of this section is reprinted with revisions from *TEACHERS COLLEGE RECORD*, Vol. XXI, No. 5 (November, 1920).

prevalent groups of theories. There has been too much absolutism in education, too little of a realism that sees the good and bad in all and diminishes the bad and augments the good. If we adopt this point of view we become really empirical in our method, trying through each educational experiment to incorporate it into a growing treasury of tested theory, not deducing success or failure from metaphysical or doctrinaire prejudice. In this administrators have been more scientific than those who measure. They have always objected that they wanted differential diagnoses. Here the answer to their needs must come through experimentation and it is only through nation-wide study and careful comparison and integration of results that methods of teaching can be scientifically established.

Three uses of measurement commonly stressed are: (1) Diagnosis of degree of attainment of goal; (2) selection of method of attainment of goal; (3) definitive outline of goals. We have seen that the first two are of little immediate value to the administrator. The first only gives him an accurate notion of where he stands in any one subject without pretending to tell him why; the second is a promissory note. Some day we shall be able to tell him the best methods for the attainment of his goal. The third has slightly more immediate value. Measurement splits up the goals of education, gives them concrete formulation, allows teachers to see an advance in the class in one function as separate from the rest; allows them, for instance, to distinguish more clearly than they otherwise would between oral reading and silent reading, or between addition and division. But this, too, is rather too general to appeal to administrative economy. One would find it very difficult to sell one's services as a measurer to a school board or a superintendent on the basis of these three values. They answer that universities and scientific research give them as much as they want of these values. What an expert on measurement could add in interpretation of results would seem of small additional value to them.

Still there is a very marked function that such an expert can perform; but he must serve a fourth and fifth use of measurement while he serves a particular school. When he serves the first three he is serving the science of education and, unfortunately, no one school will pay him to do that. The uses of measurement that directly benefit any one school are: (4) Classification by information

and intelligence and (5) diagnosis of individual disability. For the proper prosecution of these aims individual measurements and age norms are essential. Only with such equipment can we make the prognoses of future school behavior which the administrator so urgently needs.

Grade norms cannot be used to make individual diagnoses. Though we can see by them which children are below and which above the level that in their grade they should attain, we cannot see just what administrators most need to know; namely, whether the retardation and acceleration are justified or not—how many children are working at maximum. More than that, computations based on grade norms are very inaccurate in individual cases because the variability within any grade is so great. As it becomes necessary to use new norms for such purposes it is important to have them in terms that are directly comparable to intelligence mensuration.¹

First in importance is an interpretation of the meaning of an Intelligence Quotient. Too often it is stated as a number and left as a number with the belief that somehow or other that is a tag which carries its own divine implication. Its importance lies in its diagnosis of power of adaptation, and it has a high correlation with the maximum possible rate of school progress. Just as a pure information test diagnoses the neural bonds that have been formed in any one field, so an intelligence test diagnoses the ability to form bonds, to meet a new situation and form satisfactory habits—power to learn. It may be thought of as a diagnosis of the neural chemistry of the individual. As such it is not concerned with the connections or quantity, but rather with the quality of the neural tissue.

¹ For scientific purposes we want year-month means and standard deviations, that we may say that Charlie Jones is 2.1 S. D. above the mean for his age level, while Harold Smith is .1 S. D. below that mean. It is in terms such as these that we may be able to compare accomplishment in one function with accomplishment in another, progress in one with progress in another. For many of our problems we need a common denominator of measurement so that we may compare progress between tests and age-groups. The best common denominator is, I believe, S. D. in an age-group. Thus we may locate a child in any age-group in any test and compare that location with the position of any other child in any other test in his age-group.

For practical purposes, however, it is for many reasons more convenient to use quotients in elementary schools. Principals would rather deal with quotients since it is easier to explain them in terms of attainment and capacity. It is the use of such quotients that this thesis discusses.