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CHAPTER I

THE ART OF VISITATION

VISITATION AS A MEANS OF DIAGNOSIS

GEORGE RUGG, PRINCIPAL OF QUINSIGAMOND SCHOOL, WORCESTER,
MASSACHUSETTS

THE ELEMENTARY SCHOOL PRINCIPAL cannot hope for long to guide successfully the activities of his school unless he keeps in constant and close touch with his plant and personnel. And this implies that he is not primarily an office man, but rather an alert, observing, frequent visitor in all parts of his special field. He must see things at first hand in order to judge competently of motives, results, or needs.

Perhaps his first and greatest concern is with his teachers. Their strength and weakness will not be properly revealed to him unless he meets them often in the midst of their classroom work under varying conditions. Furthermore, his presence in a room at any time of the day should seem to the teacher as part of the natural order of things, reassuring rather than disquieting. A certain successful principal of a large New England grammar school once remarked to me: "When I approach a classroom, I always give an extra stamp of the foot to announce my coming. I am not a spy." By just such an open, free, disarming attitude, and without any sacrifice of dignity, a principal can best diagnose a teacher's capacity for service, and thus be in an assured position to advise and help whenever need arises.

Take the matter of the teacher's personality, that sum total of the qualities which give her power over children. Has she vitality that remains unquenched through the day? Has she poise, confidence, a ready smile, a bright, steady eye, a clear, modulated voice that carries easily to all parts of the room? Is she accurate of statement? Does she give evidence of some familiarity with current literature and the general progress of thought? Does she know her subject-matter? Has she imagination? Does she love childhood in general and children in particular? Does she control her school largely through force of character?

Where will a principal secure adequate knowledge of such aspects of a teacher's personal fitness save by direct observation in the schoolroom?

And how about the quality of instruction in various basic subjects of the curriculum? Take, for instance, the matter of reading. Fortunately, our primary children nowadays are usually very well taught in phonics and the mechanical pronunciation of words and short phrases. The subject-matter in primary readers is often delightfully simple, appealing, and well-arranged. The children's minds are pliable, interest is fresh, story-telling and dramatization abound. A certain glibness in oral reading is perhaps secured and all seems well. But somewhere in the third grade, let us say, the situation hardens. Children are losing some of their spontaneity. But

the acquisition of thought from the printed page, always a fundamental thing, now becomes imperative. Meanwhile other subjects of study are "crowding in" upon the reading time. The young pupil, it is evident, must be taught from this time on how to read by himself in silence and with gathering comprehension. More and more must sentence and paragraph, whether printed or in script, convey correct messages to his mind. And when he does read aloud to his fellows he must be taught how to stress the right words, a veritable task. Our principal, then, is looking all through the grades for teachers who discuss reading content with their classes, who exemplify correct and convincing expression by reading aloud in their best manner, and who, in short, act as interpreters of thought. Of what avail is it for a class to drone aloud in concert a Memory Gem, if stresses are continually laid on wrong words and the general content and fine finish of the poem are either misconceived or not conceived at all? Verily such efforts are as sounding brass or a tinkling cymbal. This whole reading problem touches closely every academic subject of the elementary course, and a principal may well take time to "sit in" with all his reading classes, to determine wherein his teachers fail to train children to uncover thought and pass it on.

And this leads us to consider the matter of instruction in the proper use of the mother tongue. For one thing, the principal will aim to discover and check such solecisms on a teacher's part as "He don't know." "Everybody take their pencils." His classroom visits will tell him whether the children, young or older, are given ample opportunity for original expression on topics within their ken. He will want to know how, for instance, a sixth-grade teacher accepts the challenge of a written paragraph like this:

Birds of a feather floc together.

In trees the birds have rests all the time the young ones follow there mother wherever she because the little do not like to stay home alone.

A long chapter could be written on the type errors in this broken, futile effort of the child. Note the lack of sentence sense, the absence of punctuation, the omissions and transfers of letters and connecting words.

And what a revelation for a principal who finds an eighth-grade boy writing on the "topic sentence" as follows:

There rain fell in torents last night. As I was coming home from a nickel show when a man said its a going to pour and I said to myself "that fellow thinks he is a wether profit, it wquld rain tonight for any money.

Could any evidence be more complete of inconclusive, drifting, confused thought, lack of word visualization, and so on? No textbook in grammar, however up-to-date or handsomely typed, will cure this condition. The call is for straight thinking and straight teaching. What an opportunity, then, for teachers all along the line to reconstruct, preferably at the blackboard, the maimed words and the sentences that run up blind alleys; to call equally close attention to successful attempts in language expression by their pupils, and to strive unceasingly to inculcate "sentence sense," the

"follow through" of a thought. Will the principal see to it that they do these things?

And then there is the cultural side of English training, a vital thing indeed. Appreciation, judgment, the choice of the better way, are qualities to be cultivated, as well as accuracy. Such things are a part of life in the living.

What of the simple appeal and uplift of that dainty little poem, "Daisies"?

At evening when I go to bed,
I see the stars shine overhead;
They are the little daisies white
That dot the meadows of the night.

What of the charm of Tennyson's "Brook"?

I chatter, chatter, as I flow
To join the brimming river.

And what of the summons to courage in Sill's splendid poem, "Opportunity," wherein the King's son, wounded, weaponless, and sore bestead, seized the craven's broken sword

And saved a great cause that heroic day.

Can teachers tune their intelligence and imagination to such a pitch that through their interpretations some of the rhythm, grace, and elan of classic phrase will lead their pupil's minds to higher things? Happy the principal who finds such a quality of mind and heart prevalent in his teaching staff!

Coming to the subject of arithmetic or number, what difficulties will a principal encounter in his rounds of the classrooms? Here is one: The work on essential number combinations, the adding of columns of figures, the manipulation of the multiplication table—in short, the whole attack on those fundamental concepts of abstract number, which only constant drill will perfect, is usually not speeded up sufficiently as the child works through the grades. For, be it remembered, that up to a certain point speed and accuracy go hand in hand. The principal has a right to expect that a drill test, which takes a fourth-grade pupil ten minutes to finish, will be handled in half the time by the eighth-grade child and with even greater accuracy.

Another point of perplexity, and oftentimes of partial failure, is the arithmetic problem. The difficulty lies chiefly in the inability or unwillingness of pupils to unravel thought, to consider two, three, or four conditions in one connection, to see the goal from the beginning. Unless the teacher can rise to something better than unit analysis and can train her children, in fair measure, to sort the given material of a clearly-stated problem, and then run through the needed steps to the final requirement, she has missed her opportunity to help fit for life in one of its most practical aspects. A principal will hardly let such a condition remain static, even if he has occasionally to teach a class himself.

We come now to the two so-called *fact subjects*, geography and history. These are especially adapted to pupil participation, or what is commonly known as the socialized or "stunt" recitation. The desirable form of training by no means excludes the teacher from her preëminent place as instructor and leader, but it does presuppose a higher and finer type of teaching. When a pupil will go to a wall-map, and, pointer in hand, will give a five-minute, carefully prepared talk on Brazil; or another pupil devotes an equal time to a discussion of the Monroe Doctrine, the substantial basis of our foreign policy—either child is sure of rapt attention from his fellows. Comment and criticism from these same classmates will just as surely follow the conclusion of such an effort, and the end of that lesson is better than the beginning.

To particularize, then: a principal has a right to expect in his geography classes much inspection of maps, and a growing power to associate the big natural features of a country, such as mountain, river, bay, or climate, with the development of life and human society. By the same token, he will look to find in history classes a zest for research in the story of the past, a habit of willing participation in the thought of the hour, and an increasing recognition of those great issues which, like the negro problem, run their course through a nation's life structure, like the warp threads of a fabric.

If unhappily he does not find these characteristics prevalent in some schoolroom, he will know all too well that the teacher is not studious, not professional, is a teacher of one book, and that her chief interests are elsewhere. A dead teacher, of course, means a dead school.

The recent and insistent demand for strong teaching in the upper grammar grades in elementary civics and economics is a good sign indeed, and a principal will surely not neglect to strengthen this work by every means at his command. Thus he will no doubt emphasize some adequate consideration of our Constitution and Declaration of Independence, a memorizing of the Gettysburg Address and the American's Creed, and a clear conception of certain essential political and civil rights of the citizen.

I was pleased the other day to find in the note-book of an eighth-grade child this paragraph: "Some of the principal duties of a citizen are (1) to obey the law; (2) to earn an honest living; (3) to defend my country; (4) to study public questions; (5) to take part in the Government."

With such principles of action inscribed in millions of school note-books, the coming generation of Americans may safely be trusted to "carry on." The elementary teaching process must serve from time to time to plant certain fundamentals beyond forgetting in the child's mind. No course of study is such a tyrant that it may not be curtailed in a measure to gain the higher purpose. The things that the child brings with conscious assurance into manhood's "fling at Fate" are the high lights and positive successes of schoolroom days. To be master of a few things is to gain a chance to be ruler over many.

Here is a most interesting professional problem for the supervising principal—how to check the all too-prevalent habit of guessing at answers, of

approximating, of remaining mediocre through lack of concentration. We all know the child who habitually spells correctly only seven or eight words out of ten, or four out of five; and the one who gives memoriter a paragraph from the history page, but fails completely to grasp its essential thought. Fortunate that school where teachers and principals combine their skill and will to minimize these failures; to train children to rationalize, to compare, to make rapid, sure decisions between right and left, right and wrong, fair and fine.

And happy that principal who encounters on his visits a generous measure of good-will. This is something which cannot be bought for a price. It is based upon a general recognition by the children of superiority, reliability, kindness with decision, and a certain high-minded sense of justice in the characters of their teachers and principal. When confidence abounds, then order, regularity, neatness, enthusiasm, all such desirable ends, may in the large be secured and held. The watchful principal will guard this condition as the apple of his eye. He will search out the occasional recalcitrant or restless child and give of his best to cure. The faithful pupil he will commend, and the brilliant one will likewise meet his word of praise. For, after all, he is not more a diagnostician than a director and friend.

HOW TO MAKE VISITS PROFITABLE TO TEACHERS

LEONARD POWER, PRINCIPAL OF THE FRANKLIN SCHOOL,
PORT ARTHUR, TEXAS

The chief function of the principal is to improve instruction. This assumes that he knows present methods in his school. This assumes that he visits the classrooms.

He must have definite standards well in mind else he cannot distinguish differences in degree of efficiency. This assumes that his visits are carefully planned. He may wish to visit the work by grades or by subjects; he may wish to see the work of a certain subject in just one or two grades, but his plan will prevent him from aimless drifting from room to room. Before making his visits he carefully reviews books on special methods, if he be studying the work in a given subject; he carefully reviews the course of study if he be studying the work in a given grade. In either case I have found it best to tell the teachers just what I wanted to study. Then, when visiting arithmetic classes, I was confident of seeing a high quality of teaching. Then, when visiting the fourth-grade teachers, I was pretty sure they were doing a little better planning than if they did not know my plan.

The carefully planned visits encourage the teachers to do their best and are in themselves an expression of confidence in the teacher's plans and purposes. I always have a waiting list of invitations to visit classes in grades or subjects that are not upon my schedule. It does not unbalance my plan, therefore, when Miss A tells me in the morning that she would prefer

I defer my visit a day or so. She has been ill, or perhaps, has had worries unknown to me and feels that my visit at that time would be unfair to her. I have had teachers tell me that they were in the midst of a plan which was proving to be of doubtful value, and on that account have deferred my visit. I have had teachers request me to come a day or so before my scheduled visit to see the beginning of a fresh project or the successful completion of an old one. In all of my planning I make allowance for the human factor. These teachers are the choicest of this city's womanhood and manhood. They need sympathy and they need constructive criticism. We all need both. To operate on any other basis is unthinkable to me. The tyrannical principal cannot fail to develop tyrannical teachers. Teachers will have faith in themselves in the same degree that the principal has faith in them.

I always assume that each teacher is fully conscious, that I believe she is doing her work as best she can, that I think her work in the school is very important, that I expect her to find herself in her work, and that I am here only to be of assistance. She knows my visits cannot be very frequent and she has no fear of "surprises."

I have said it is good to visit by subjects. The technic now needs to be explained. First, I make a schedule showing the exact time that a subject is taught to each class with the teacher's name and the number of the room in which the subject is taught. This is my Building-subject Schedule. In the two highest grades the work is departmentalized and each subject has one teacher for each grade. Second, I plan to visit each teacher twice on a given subject before calling the conference of teachers. This usually means a two weeks' schedule for me if I follow a subject through two or three grades. Third, I pay careful attention to what the teacher does while I am in the room but, as a rule, make no written notes. Fourth, I go from the teacher's room to my office where I dictate her a letter which is written while I am visiting the next teacher. I formerly wrote these letters myself and that necessitated my mastery of the typewriter, because I wanted two or three copies of each letter. Fifth, I generally confer with the teacher about the suggestions offered—this is usually after school hours. Sixth, I always stay throughout the entire period to hear the assignment and to get the opening of the next lesson. Seventh, I always consult the teacher's plan book. A carefully planned lesson is always assumed.

As noted already, my plan includes a carefully prepared report of each visit which is forwarded to the teacher in the form of a letter. When possible I offer helpful suggestions. When I cannot offer any helpful suggestions I report on the method only. I find that every time I visit the teachers during their arithmetic class time certain errors in method recur often enough to become typical. In any subject that is true. The best means for showing this is to reproduce here some letters covering typical errors. The following three letters on arithmetic show an attempt to correct the same teaching error. It was finally necessary to call all of the teachers of this subject together to witness a demonstration lesson in which

the element of measuring the accomplishments of the individuals was controlled.

Arithmetic 1.—Method: The children were learning how to multiply and divide small fractions. They were using cancellation. They did not write the figure (1) as a quotient when cancelling.

The class was divided into two parts and about half of the class was sent to the board at a time. The first half of the class worked ten problems and the last half worked three problems.

Suggestions: Why give all children the same example? If each child were given a different example or different examples, there would be no chance for copying, you could help the slow child while the bright child works ahead, and you could measure the progress of each member of the class. The children at their seats could also be working. Why not write the quotient (1) just as other quotients are written when canceling?

I suggest that you write a row of fractions across the front board, thus:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$1/8$	$2/3$	$3/8$	$4/5$	$1/2$	$3/5$	$5/6$	$5/8$	$2/5$	$4/9$

Then, on a little card you could have brief instructions, as:

Card 1. Multiply each of these fractions by $2/5$.

Card 2. Multiply each of the first three fractions by all that follow.

Card 3. Multiply 1 by 3, then multiply 2 by 4, and continue until you have completed multiplying by every other one.

The directions could increase the difficulty of the task and you could give most difficult tasks to brightest children. It may be worth while to give the plan a try out. If you use it call me in some day to see it work.

Arithmetic 2.—Method: Eight children lined up at front of room for oral drill in fractions. Questions were as follows: "What is $1/4$ of 12?" "What is $3/4$ of 12?"

After a few minutes of this oral drill eight other children passed to the boards where they had a drill in column addition. They were taught to prove their sums by a method new to me. They added the digits in each number. If the sum of these digits equaled the sum of the digits in the sum of the numbers the work was proved.

235	10	1	plus 0	equals 1
148	13	1	plus 3	equals 4
267	15	1	plus 5	equals 6
134	8	0	plus 8	equals 8
784	46			19

7 plus 8 plus 4 equals 19; therefore, the problem is correct.

Suggestions: Not more than half of the class did any work during the entire period. Provision of supplemental assignment for those at their

seats should be made unless the lesson is a development lesson. While your plan of proving the addition is correct I think the method of casting out the nine is simpler. I am of the opinion that these children would better prove by simply adding from top to bottom and then from bottom to top. They may even write partial sums or column sums as follows.

235 I also suggest that you have many problems prepared for the
 148 children to add. If these are on cards and the cards handed
 267 to the children, each will be forced to do his own work. You
 134 could have a key card with correct sums and could rapidly
 — check all work. Then you could give your time to the slow
 24 children and you would also have a means of knowing how
 16 many problems each child can work in a given time. This will
 6 help prepare for the Courtis Test No. 1.

— I liked the rapid oral drill in fractions but think the same
 784 drill could have been given to all and all asked to write the
 results. Any plan that will keep all of the class thinking will
 be appreciated by me.

Arithmetic 3.—Method: Problems in long division were used. The teacher gave a problem to the entire class after 15 children had been sent to the board. After waiting some time, the teacher asked all of those who had the quotient to hold up their hands. Then another problem was given to the entire class and the same question. This method continued to the close of the period.

Suggestions: This is a very old method. In drill of this kind we need to make provision for putting every child on his own responsibility. Then we can tell how much an individual is doing and how much the class is doing in exact terms.

I suggest that you prepare about 300 examples in long division. Group these examples by tens. Put these problems on a card and give each child a card. Have the quotients on a key card that you can quickly use to check the work of a child.

Then you can give your time to those who need it most. The cards can be graded in degree of difficulty. Your present method loses time for the bright child and encourages the dull child to steal from his neighbor.

I am inviting all arithmetic teachers of fourth and fifth grades to a demonstration lesson on January 20, during period IX in room 206. Please permit me to use your children at that time.

Every principal knows these are common teaching types. Just one thing is lacking—a plan which measures the results and keeps every child on his own work.

The letters marked "History I" and "History II" show the regular textbook type of history lesson. No discrimination was used. Topic by topic the lesson was recited. All was a dull monotonous grind for the children, but I did not say so in so many words.

History I—Method: The teacher called upon individuals to read a paragraph at a time. There was no discussion and no audience situation.

Suggestions: I suggest that at least a part of the class be made into an audience in any oral reading lesson. This is done by having them close their books and get the meaning out of what is read. This will cause the reader to feel that he needs to read well. If all of the children have books the reader has no motive for reading other than to get to sit down again.

I also suggest that as this is rich material there be some discussion of those parts that are within the comprehension of the children.

I notice that you had every paragraph read. Some of the topics were discussed in the text in a manner that is beyond the children. It is not necessary to follow a book down to the paragraph or to the page. It is better to choose a few topics in history and develop them carefully than to cover so many at one recitation.

I should like to talk to you about your plans for this class and I realize the disadvantage at which you are placed by the class being held in the auditorium.

The discipline of the class was very good throughout.

One of the purposes of history, and I think it is a vital one, is to fill the hearts of these Texans with a patriotism that comes by relieving the conditions presented in the book. That is why I should insist on more discussion.

History II—Method: The topics which had been studied in the textbook were discussed by the class with very little supplemental suggestions from the teacher and no special reports from any of the children. This was a very good textbook lesson.

Suggestions: When was this lesson studied? I wish you would undertake a type study with one of your classes or one of your grades. I have in my office a type study of "The Development of the Constitution," and if you have not already read it I shall be glad to lend you a copy.

As a history teacher you have a splendid opportunity to work out something which will have the stamp of originality and of your own mind. If the work of some one half year was carefully planned for a period of, say two weeks, you can in a few years, find that your plans are much more helpful than the old textbook type of lesson. I commend your lesson of today.

I am including two letters on Reading to show how the principal may refer to mimeographed bulletins he has issued and to books on method which he has recently read. The plan includes careful preparation on his part before visiting the classrooms.

In reading we find need for creating an audience situation. One typical error in method is the one which calls the children to the front of the room to read something already familiar to all.

Copies of all these letters are sent to the teachers at the close of the day. I frequently have stencils made of these letters in order that discussion may be intelligently directed at the teachers' meeting which follows each study of a subject.

Here follow the letters on reading and also two letters each on English and spelling.

Reading No. I—Method: The teacher called upon the children in irregular order and each child came to the front and read two or three paragraphs. When the child encountered a difficult word, the teacher prompted the child. No comment was made by the class or by the teacher on the contents of the lesson.

Suggestions: I suggest that you read my bulletin on the teaching of reading; also bulletin on the motivation of reading.

The children in the class were quiet while the reading was going on. Different individuals were reading further over in their book, but there was no motive for a clear distinct reading except to you. I shall be glad to talk about creating an audience, and I believe that for at least a part of each reading lesson there should be an audience or that at least a part of the class should be an audience in every reading lesson.

Reading No. II—Method: The children came to the front and read. Each child read two or three short paragraphs or one long paragraph. During the time of the class each child read twice. The selection was from the story of "Pandora's Box."

Suggestions: Here again we are confronted with the question of how to adapt the reading lesson to the child who reads. This lesson was well within the reading ability of the average child of your class, but there were some children who read haltingly because the vocabulary of the story was beyond them. I think that we should provide different material for these children or we should work this material over with them to such an extent that they can read it fluently. The former plan seems to me to be best.

I wish to commend your plan of having the children come to the front to read and your plan of selecting the children whom you wish to do the reading. There was absolutely no confusion at any time, and each child knew when his turn had come. I have just completed reading Mr. Klapper's book called, *Teaching Children to Read*, and I find in chapter 9 some splendid suggestions, particularly on pages 129, 130, 131, 132, 133, 134, and 135. On page 141 I find some splendid suggestions under topic headed, Suggestions for Procedure in Oral Reading, and on pages 143-5, How to Judge Oral Reading. The whole chapter, in fact, is fine and if you have not read it recently, a review of this chapter would help you. I wish to commend the very good order of your class during the recitation.

English No. I—Method: The class period was taken up with hearing the letters read. The children had as their subject, My First Day in School. After reading the letter, the teacher would inquire if they thought

that was a good letter and would get criticism from the class on the contents of the letter.

Suggestions: I suggest that during your English period you have your class write some real letters and send them to their friends. The children may have the privilege of not letting others read the letters, but may come to you for corrections before putting the letters in the postoffice and those who do not care to come to you may send their letters without corrections. Many of the children would not care to have their letters read except by the one the letter was intended for. Your criticism of the letters was based on what you heard and so were the criticisms of the class, but most of the errors were probably in the form or the punctuation. How do you find out what they are?

English No. II—Method: After a development lesson of adverbs the teacher was having the children pick out the adverbs from selected passages that were printed in the text. The teacher called on volunteers and each time the correct answer was given she had the child state why the word was an adverb.

Suggestions: These sentences are too complicated for the children to handle at present. Your method of calling on the volunteers who know is all right when 90 per cent of the class are volunteers. When a child who volunteers gives the wrong answer, take time to have him learn why his answer is incorrect.

Spelling I—Method: The method used was similar to one outlined by me at my demonstration lesson. The method provides for testing the ability of each child to spell a word before he studies the word. The close of the period was used to work the words into sentences.

Suggestions: I am of the opinion that where we have a spelling book for all of the children we may give out the words for the lesson and then instead of writing them on the blackboard we may tell the children to look in the spelling book, mark the words that they have missed, and then study from the spelling book. This would leave the teacher free to help some of the weaker children while they are studying. I think that a little oral work in sentence building should precede the written work in sentence building.

I commend your spelling period in that it is a period during which the children spend their time studying words. So frequently the spelling period is a period for just silent, undirected study.

Spelling II—Method: Two rows of children sent to the blackboard to write words as dictated by the teacher; children seated; teacher passed on each child's work and with the help of the children who had remained seated made all corrections. The remainder of the children were sent to the board to write while the children who had first gone to the board studied the words they had missed.

Assignment for the next day made by pronouncing words in unison and using them in a sentence.

Suggestions: Is the blackboard work a part of your daily exercise? I suggest that the children who are at their seats be writing at the same time the children at the board are writing.

I suggest that when a correction is made of a child's work at the board, he make that correction at once on paper.

Do you keep a record of the work of the individual and the class? I suggest that the ability of each to spell be less openly presented to the other children. This would mean an elimination of the blackboard work. I should like to discuss this with you.

It is possible by tactful direction to influence teachers to study their problems. I am of the opinion that the teacher should do her additional professional reading, because she sees her need for it. The second and third years that my teachers work with me find fewer suggestions coming from me and more questions coming from them. They ask me where to go for help. The group meetings lead to questions of content, subject-matter, and the course of study, as well as to questions of method. The meetings are organized and the chairman usually makes special assignments for further report. Last year this led to the complete revision of the course of study for the elementary work. In all of these studies I lead because I expect the teachers to *lead* their children. Neither children nor teachers are cattle to be *driven*. This leadership costs much. It means many weary hours of reading and careful preparation, but it pays. The teachers who fear projects are lacking in knowledge and afraid to face the hours of special effort necessary to acquire it.

In conclusion I wish to state that the carefully planned visits to classrooms where entire recitations are studied will be most helpful if, while in the room, the principal: (1) Expresses confidence in the teacher's plans and purposes; (2) gives constructive suggestions; (3) leaves written summaries with teachers; (4) suggests experiments or general changes in method; and (5) suggests devices for saving time and effort.

As follow-up devices after the visit the principal may: (1) Hold detailed conferences with individual teachers; (2) hold group conferences by subjects or grades; (3) write bulletins of suggestions to teachers; (4) suggest special references in books and periodicals; (5) provide bibliographies on special problems; (6) teach demonstration lessons; (7) send the teacher to visit other classrooms; and (8) reclassify pupils and reorganize classes when necessary.

THE RATING OF TEMPORARY TEACHERS AFTER A SINGLE SUPERVISORY VISIT¹

ROSE A. CARRIGAN, PRINCIPAL OF SHURTLEFF SCHOOL DISTRICT,
BOSTON, MASSACHUSETTS

A statement of the problem—In a certain large city of over seven hundred thousand inhabitants there are employed in the public-school system more than three thousand five hundred permanently appointed teachers. Changes in conditions of the school population and the teacher service bring about the annual appointment of at least from fifty to eighty new teachers. A large majority of these appointees are drawn from an eligible list of teachers who, before permanent appointment, are employed by the city temporarily as substitute teachers or teachers of overflow classes. It is obvious that the judicious selection for permanent appointment of the ablest among these is a matter of grave importance as it is a major factor in determining the growing efficiency of the entire corps. An annual re-rating of all who are on the eligible list determines absolutely the order of permanent appointments during the ensuing year. It will readily be seen that the factors which determine what credits a candidate shall receive for position on the merit list warrant the most careful consideration. The credits for service are derived from two sources—namely, marks assigned by principals of schools in which the candidates teach and marks given by the visiting supervisors. The principal of the school records monthly ratings, and monthly ratings are also given by the supervisors who are Assistant Directors in the Department of Practice and Training. These last are usually five in number.

The Assistant Directors visit in turn all the candidates in whatever grade from the first to the twelfth they may happen to be. Most of the candidates are graduates of the City Normal School; all the men and a few of the women are graduates of a college as well. Each Director remains with the teacher from three quarters of an hour to an hour and is required to pass judgment upon any lesson which is on the daily program at the time of the visit. The final estimate is always made known to the candidate though this is often delayed until after a conference which is arranged by appointment whenever constructive help seems desirable and welcome. Teachers who wish to grow educationally always welcome this constructive criticism as also do those who are merely ambitious for a high place on the merit list. Four candidates are visited daily by each supervisor whenever the distances make this number of supervisory visits possible. The substitute teacher is rated at every visit except when unusual conditions prevail. These ratings are all factors in the annual re-rating mentioned above.

The present study suggested itself to one of the former Assistant Directors as a means of obtaining a consensus of opinion from judicious sources regarding the qualities which should receive credits and the proper apportionment of these credits to the respective qualities chosen on the basis of

¹ Printed in the *Journal of Educational Method* 2:48-55; October, 1922.

a total of 1000 points. The resultant score card is offered as suggestive for a common basis for marking which may be used by principals and other members of the supervisory staff who wish to estimate observed teaching.

Method of investigation—An explanatory sheet and a score card on which estimates of the qualities thereon mentioned were omitted (see below, facsimile including the estimates determined by the present study) were submitted to a class in supervision at Teachers College, Columbia University, at the summer session of 1919. The class, taught by Dr. James Fleming Hosc, was composed chiefly of supervisors and principals of schools who came from various sections of the country. The merits of the items named on the card in its first draft were open to discussion by this group. Suggestions for omissions or additions were encouraged. A few recommendations for minor changes, almost negligible in their character and number, were made. These were introduced in a recast of the score card which is shown below and was again submitted to the same class for evaluation of the separate qualities. It was also submitted to five other classes in supervision in the same college. The personnel of these classes was made up of principals, supervisors, and teachers who recorded in the final sheet, home addresses scattered throughout the United States in city, town, and rural districts from the Atlantic to the Pacific and from the Canadian line to the Gulf of Mexico. Each person was given the sheets to carry away in order that the rating might be the result of careful and deliberate thought. Many of the blanks were retained three weeks before they were returned. Presumably, the values entered against each quality were the result of more or less mature deliberation. The following is a copy of the explanatory sheet which was sent out with the score card:

A special problem in supervision—Problem: In a large city system, to rate at a single visit the work of a temporary teacher who is a candidate for permanent appointment from an eligible list which is newly graded each year, and from which appointments are made in exact order of the occurrence of the names thereon printed.

Conditions: 1. These candidates for permanent appointment are visited, while in temporary positions, by five general supervisors whose ratings, with monthly estimates from the principal of the school, are the sole factors in an annual re-rating. It is probable that the supervisors' ratings are weighted in the cumulative final estimate.

2. Candidates are visited by each of the five supervisors about twice in the school year.

3. The period of a supervisor's visit varies in length from three quarters of an hour to an hour.

4. Some of the candidates are responsible for a year's work in one class; others have successive short-term assignments in several different sections of the city. The grades in which the teaching is done vary from I through VIII, although a few assignments are made above grade VIII.

5. The supervisor visits in a day four candidates who are often located at considerable distances from each other, an immediate conference being for this reason impossible.

6. Individual conferences with the supervisor are conducted at the central office by appointment after the close of the afternoon session.

7. No supervisor compares judgment with any other supervisor who rates the candidates, as it seems just and desirable to take precautions against influences which might cause a duplication of the same judgment.

8. Each supervisor tries to give an unbiased estimate of work actually seen, and so discourages discussion of the candidate with the principal of the school or teachers who are in the same building.

9. The candidates here under consideration are substitutes, or special assistants who have graduated from the City Normal School and have been certificated to teach in the city but who are not yet permanently appointed there. A few who have secured permanent appointments in neighboring cities or towns, but who wish to maintain their positions on the merit list of their own city, upon request, receive supervisory visits, on the same basis as the others.

10. Candidates are required to keep on the desk at all times, for the inspection of supervisors or principal, a daily plan of work, written in sufficient detail to indicate unmistakably the main topics they intend to treat in each lesson. A complete plan for the entire day must be written before the opening of the morning session if full credit is desired.

The score card follows. The estimates given below are the median judgments of the supervisors who participated in the study. Slight adjustments were made to keep the final total at 1000 points.

SCORE CARD

	No. of points.	
I. The back-ground or workshop.....	....	250
A. Was the atmosphere of the room conducive to learning?	110	
1. Were the hygienic conditions, so far as they were within the control of the teacher, at their best, <i>e. g.</i> , ventilation, seating of pupils, cleanliness of pupils, etc.?	30	
2. Was the room neat and orderly?.....	20	
3. Were there attempts to beautify it in any simple inexpensive way?	15	
4. Were there visible evidences of proper incentives to study, such as display of best work, graphs of achievement, appropriate rewards for effort, material to supply voluntary work to quick pupils, etc?	25	
5. Were the necessary mechanical tools in good condition and ready at hand for quick distribution?	20	
B. Were there evidences present of sufficient preparation on the part of the teacher?.....	....	140
1. Had she put in writing a clear-cut definite plan for a day's work?.....	25	

2. Did her written plan for the day indicate in proper proportion work which aimed at automatic reaction to a stimulus and work which aimed at the development of reflective thinking?.....	25	
3. Did her accumulated written plans evidence in any degree mastery of subject matter and wisdom in handling it?.....	25	
4. Did her book of plans indicate reasonable class progress?	25	
5. Had she provided or caused the children to provide such material for the day's work as would be likely to arouse enthusiasm in the learning?..	40	
II. The work		375
A. Was the subject matter, so far as it was under the control of the teacher, worthwhile?.....	50	
B. Was the specific aim apparent, definite, and of sufficient worth?	50	
C. Was the organization good?.....	50	
D. Was all the time profitably employed, thus indicating that the teacher had a proper sense of values?.....	40	
E. Did the proportion of individual response in the class prove that the teaching was successful?.....	50	
F. Was the work wholly coöperative or merely a guessing game in which the children tried to find out what answers the teacher wanted?.....	45	
G. Was there a checking up of results?.....	40	
H. Was there suggested any vital connection with a future activity?	50	
III. The child		375
A. Did the child have a conscious objective in mind at the beginning of the lesson?.....	95	
B. Was the task set within the power of the individuals provided they made effort?.....	90	
C. Was there a satisfactory proportion of individual children who, throughout the <i>entire period</i> , were absorbingly interested in the work and making effort?	100	
D. Did each child experience the satisfaction of a measure of success, through effort expended?.....	90	
Total number of points.....		1000

The following table indicates on the basis of 1000 points, the range of points which ought to be equivalent to the descriptive estimates given at the left, in the judgment of those making the returns.

Descriptive Estimates

Superior	950 to 1000
Excellent	900 to 950
Very good	850 to 900
Good	750 to 850
Fairly good	700 to 750
Possible	650 to 700
Poor	600 to 650
Unsatisfactory	500 to 600

A defense of the score card in answer to some objections—Agreement with the following theses will, the writer believes, iron out many of the objections which might be raised.

1. No quality can be given credit which is not revealed to a visitor at a single visit. This dismisses as impossible of observation such qualities as health conditions of the teacher, personal characteristics of disposition, coöperativeness in the school, moral efficiency, moral influence on the children, and all other qualities which remain invisible to the visiting supervisor.

2. The habit of faithful preparation for each day's work is essential for a teacher, especially at the beginning of her career. Experience has shown that there is need of a driving force within to ensure this *habitual* preparation of the day's work from the start. A requirement of visible evidence of such preparation is a safeguard which protects both teacher and children. The form of the written lesson plan need not be dictated.

3. It sometimes happens that a teacher is working along *towards* effectiveness in teaching, but has not yet arrived, that is, the pupil reaction may not yet be so superlatively good as is indicated by qualities mentioned in the score card under III. Undoubtedly, such a teacher should have credit for efforts rightly directed. An experienced supervisor can readily detect such efforts in the qualities indicated on the score card under II.

4. Discipline may be omitted from the score card since it becomes a negligible quantity when the child is absorbingly interested in his work. This matter of *absorbing interest* appears in III C.

5. It is probable that the initiative of the child need not be mentioned on a score card which contains a place for absorbing interest; initiative is likely to be an outgrowth of such interest.

Recommendations—It is the belief of the writer that the score card resulting from this study must be tested out before it can merit the confidence of the profession. To prove its value it should be used in many places in connection with the work of teachers of known ability. If, when tried on the work of an eminently successful teacher, it scores her low, undoubtedly it is lacking in some essential characteristics and should be revised through a wholly new study. Modifications brought about by renewed study of the investigation type will, in all probability, be necessary before a fairly satisfactory score card can be evolved. This work should begin at once.

If the present study has accomplished no more than to point emphatically to the need for principals and supervisors to unite on some standards by which teaching can be judged in definite situations, it will not have been attempted in vain.

Editor's Note: Complete data, showing frequencies of judgments in the returns, quantity ranges, and the like, were submitted by Miss Carrigan. Considerations of space, however, made it necessary to eliminate all figures save the summaries as expressed by the median values indicated on the score card itself.

THE USE OF STANDARD TESTS enables the principal to substitute measurable and standardized results for personal opinion, and provides him with a series of clear and incontestable records of the achievement of the pupils and teachers in his school. So important is this new method in education that a principal can no longer be considered prepared for his work unless he is familiar with the use of the standard tests and measures and with simple statistical procedures.—Elwood P. Cubberley, *The Principal and His School*, p. 485-86.

CHAPTER II

THE MEASUREMENT OF EFFICIENCY¹

THE MEASUREMENT OF TEACHING EFFICIENCY BY MEANS OF STANDARDIZED TESTS

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SINCE BY EFFICIENCY we mean the power to achieve, to accomplish, to do, then efficiency in management and instruction will imply the getting of results in keeping with the expenditure of time, money, and energy. Before we can know whether every part of the school machinery in any particular school or school system is giving an educational account of itself, it will be necessary that certain definite accepted standards of achievement be set up, so that we can compare our own achievements with those that have been accepted as satisfactory. A measure of efficiency will indicate the degree to which results have approached or exceeded these established standards of achievement.

From this point of view the measurement of teaching efficiency will be possible to the extent that units of measure and standards of achievement for the various school activities have been established. The teacher cannot be certain of the soundness of her methods of work, unless there is some measure of the results of her instruction, which will indicate whether sufficient progress has been made from month to month, term to term, and grade to grade.

There have always been attempts to measure the formal results of teaching. Among those used, the chief means have been opinion and the old-fashioned written examination. Standardized tests are rapidly superseding or at least supplementing these inaccurate, unreliable measures of efficiency. Such tests are now available in citizenship, drawing, language, composition, spelling, handwriting, foreign languages, history, home economics, journalism, intelligence, mathematics, music, physical training, reading, science, and vocational subjects.

Achievement tests inadequate as a measure of teaching efficiency—Standard achievement tests and scales have been used a number of years in the public schools with great success. It has been estimated that more than two millions of these tests were given to pupils during the year in reading, writing, arithmetic, spelling, history, and geography. Their usefulness in improving the efficiency of teaching is now generally accepted in leading school systems throughout the country, and progressive teachers and supervisors are everywhere using them to supplement the regular school procedure. The time has come when the efficiency of teaching and the progress of children in school subjects can be more clearly stated in terms of standardized tests than in any other way. They offer standards of attainment in school subjects for the several grades, based upon the performance of

¹ The reader is advised to supplement this chapter by referring to recent texts by Kelley, Courtis, McCall, Dickson, Trabue and others.—*Editor, 1929 Yearbook.*

a large number of children to whom the tests have been given, with which the relative performance of any pupil or grade can be compared.

Table I shows the improvement in efficiency that may come as the result of standardized testing. The Monroe Standardized Silent Reading Tests, Revised, Forms 1 and 2, were used.

TABLE I—Median scores in rate and comprehension showing improvement in silent reading from November 14, 1921, to January 17, 1922, in third, fourth, and fifth grades

Grade	Standard Scores		November 14, 1921		January 17, 1922	
	Rate	Comp.	Rate	Comp.	Rate	Comp.
5A.....	142	9.8	107	6.1	135	9
5B.....	142	9.8	85	3.8	98	6
4A.....	122	7.7	90	3.3	118	8
4B.....	122	7.7	78	2.6	105	7
4B ¹	122	7.7	63	1.6	99	5.5
3A ¹	82	3.8	..	..	82	3.5
3B ¹	82	3.8	..	..	73	3.5
3B ¹	82	3.8	..	..	68	3

¹ Not tested November 14.

The results of November 14 show that the average 5A grade pupil reads silently with less than fourth-grade ability, while the 5B grade and the fourth grades compare none too favorably with the standards for the third grade.

These scores proved very unsatisfactory and led the principal and the teachers of this school, a school with an Italian population in the most congested part of the city, to put forth considerable effort to correct these conditions. Upon analysis it was found that the problem in these classes was one of increasing both rate and comprehension in reading. Special effort was then put forward to correct the defects that had become apparent. The limits of this paper will not permit full presentation of the work done in this direction. Suffice it to say that the work in silent reading was more carefully motivated, daily drills for increasing rate were given, and emphasis was placed upon thought-getting. The causes of slow rate such as over-emphasis on oral reading, belief that slow reading is good reading, and the failure of teachers to recognize the fact that rate of reading is important, were carefully discussed by teachers and principal.

It is interesting to note that the test destroyed the smug complacency of the teachers based upon opinion only that the silent reading in this school was very good. After four years of careful work in silent reading, it was discovered that plans, discussion, and time spent, had after all failed to produce satisfactory results. But once the fact became known that results were not what they should be, and standards of achievement became available, teachers rapidly increased their efficiency, as is shown by the splendid record of January 17, 1922, two months later. What effect un-

familiarity with the plan and the failure of pupils to understand directions may have had in the first test is of course unknown.

A careful study of the scores will show that Grade 5B failed to make as much progress as the other grades. Most of the grades made excellent relative progress, and there was no reason apparently why the 5B grade should not have done as well. The teacher is a strong, energetic, intelligent young woman, capable of doing high-grade work, yet she failed to make any startling improvement with this particular class. This is a condition that frequently faces principals and teachers. In accounting for the failure of this class to make adequate progress, the principal and teacher and other interested teachers, after a careful examination of the cumulative record cards, came to the conclusion that this class was below the average mentally. This however was only an opinion and counted for but little in scientific education.

It is at this point that the weakness of the standardized achievement tests as a measure of teaching efficiency becomes apparent. One cannot account definitely for poor results, and it becomes necessary to guess at the causes. To judge the teacher of this class on the basis of achievement alone would have been an injustice. The results indicate how much the individual pupils accomplished in this test, but they do not indicate how much each child should have accomplished. The standard of achievement is a grade standard, representing the achievement of the average pupil of thousands of children in the same grade. No one knows how much each child should have accomplished, and it is evident that this capacity cannot be measured by the achievement test.

A more complete study of this 5B grade will be presented in Part III of this paper.

Intelligence tests fundamental in any scheme of measurement—While intelligence tests have not been used so widely and as group tests have not been in use so long as the achievement tests, their importance as a measure of the capacities of pupils for learning is rapidly gaining ground. The scores of an achievement test may show that one class is inferior to another class, but it is no longer good practice to assume that the instruction has been inferior. An intelligence test may show that the children in such a class are low in capacity to learn and consequently should not be expected to make so much progress as the pupils of the superior class. It is now generally conceded that a pupil may succeed in school work because of either high intelligence or superior teaching; or that he may fail because of either low intelligence or inferior teaching. Strict accountability for the success or failure of the work in a class or a school is possible only when the capacities of pupils for school subjects are known.

A teacher of any class may be regarded as efficient only when provision has been made for all the pupils in her class to work up to the maximum of their capacity. Supervisors are apt to underrate the difficulties involved in putting this principle into practice. The teacher has been trying to vary the assignments so as to meet the needs of children of different capacities to learn, but the realization of what it means for a teacher to assign all the

lessons in all the subjects with this aim in mind probably never occurs to the supervisor unfamiliar with the results of an intelligence test.

Before the teacher can be expected to maintain her work at the highest possible efficiency, it remains for the administrator to classify her pupils more carefully. What has been done in this direction has been largely of an arbitrary nature, based mainly on achievement scores or age. The sins that have been committed by classifying pupils on such a basis will never be known. A superintendent in a large city discovered recently that a number of schools were promoting to high-schools classes whose average mental age was but twelve years. In the same classes were pupils whose mental age was as low as eight years, six months. Assuming that fourteen years or fourteen years and six months is an average age of pupils for promotion to high school, it may be seen how little chance hundreds of these pupils had of succeeding in their high-school studies and also what a problem the teachers had in trying to teach algebra and foreign languages to pupils not able mentally to do the work of the early grammar grades. Mental measurements, wherever made, are revealing similar conditions. The classification of pupils can be carried out intelligently only when the mental ages and capacities of pupils for the various school subjects are known.

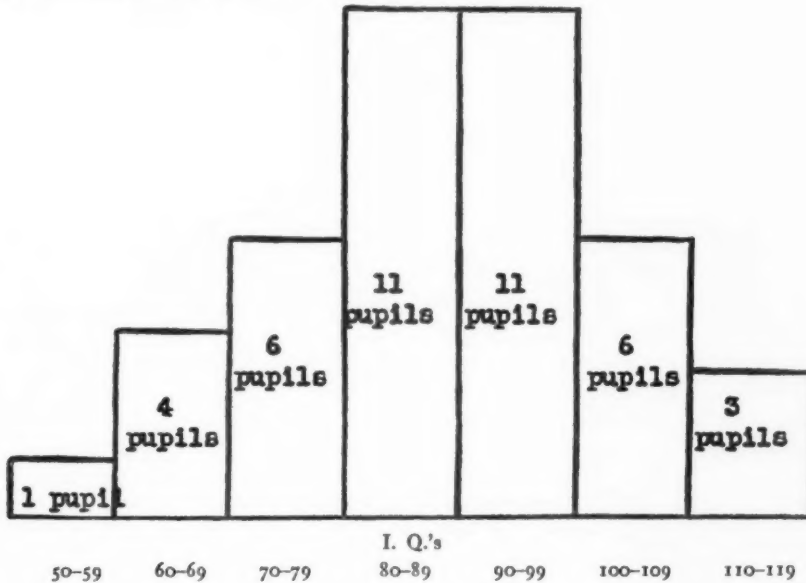
Something has been done, particularly in the cities, to reduce the teacher's burden by eliminating the incapable from the regular classes and placing them in special classes under teachers with special training for the work. But even from this standpoint, the surface of the problem has been barely scratched. Dr. Corson reports that in Newark, New Jersey, there are 477 pupils enrolled in the Binet centers and special classes, but that there are 500 mentally deficient boys and girls still in regular classes who are candidates for these classes. In addition to these there are 516 congenital illiterates, pupils who are repeaters in the primary grades and absolute failures in the grammar grades. These are children who seem unable to cope successfully with academic subjects and finally drop out with practically nothing to show for their years of school attendance. Commenting on these pupils, Dr. Corson says: "Many of these are pupils in grades below the fourth, who cannot be taught to read and spell, and others have so little power that they are seriously handicapped. They must be taught each day what they were taught the day before."

Here is but one instance of the conditions which exist in school systems the country over. With classes clogged by a large number of pupils who are deficient, backward, or slow because of poor inheritance, illness, irregular attendance, and the like, how can we expect maximum efficiency from the classroom teacher?

Dr. Bliss, of Montclair, New Jersey, has supplied a graph, Figure 1, showing the teaching load in a certain class before provision has been made for the exceptionally bright children and the abnormally slow. The pupils in this class were measured by the Pressey group test. Doubtful cases were checked by use of Binet and Stanford Revision individual tests. The results show that there are five, if not eleven pupils, who belong in special

classes, children with I. Q.'s below 80 being rated as very inferior. In addition there are three superior pupils with I. Q.'s of 110 to 119 who ought to be given an opportunity for rapid advancement.

FIGURE I—*The teaching load in a class of 42 pupils before provision was made for the exceptionally bright and the abnormally slow.*



Testing 132 kindergarten pupils with the Stanford Revision intelligence test, Dr. Bliss found them divided into groups as shown in Table II. Figures such as these present a strong argument for the measurement of intelligence and the careful grouping of pupils based on the results of the tests.

TABLE II—*132 kindergarten pupils grouped on the basis of their intelligence quotients*

Number of pupils	I. Q.	Rating	Per cent
14	Below 80	Very inferior	10.6
23	80- 89	Inferior	17.4
59	90-109	Average	44.6
22	110-119	Superior	16.6
14	120-140	Very superior	10.6

In measuring the intelligence of large numbers of children the group tests, such as Haggerty, National, or Otis, should be given first. Those pupils who are classified by the group test as very bright or very slow, and those for whom the classification is at variance with the teacher's estimate, should be checked with an individual test, such as Binet or the Ter-

man Stanford Revision of Binet. Dr. Bliss finds that the teacher will agree with the test in about fifty per cent of all cases.

In Montclair, intelligence tests have been used very widely. Of 482 pupils tested recently, 40 were promoted to a higher grade, 17 were demoted, 17 were assigned to special classes, and for 13 pupils schedules were adapted to their needs. A few comments, taken from one of Dr. Bliss' reports, will be interesting.

"Twenty pupils of high intelligence quotients were assigned to a special class in English. This class will try to accomplish the seventh and eighth grade English this year."

"Six pupils were allowed to drop geography and take eighth-grade English."

"A boy in the seventh grade was failing in all his work. Physical age, 11 years 10 months. Mental age, 13 years 5 months. I. Q., 113. It was found that his home conditions had been completely changed. His father was dead and he had been separated from his mother and placed in a home."

"A girl in the sixth grade, aged 11 years 2 months, tested 13 years 6 months, I. Q., 128. She was sent to the Junior High School and was getting high marks at the second report."

"A boy in the sixth grade was estimated inferior by the teacher and mother. Physical age, 11 years 1 month; mental age, 12 years 9 months; I. Q., 115. He was not interested in school; called it 'grindy.' The teacher remarked, 'If he has that intelligence, it's my business to make him use it.' In a month she reported that she had given him a responsible task in a special day's program and he had made good. She had won his interest. The mother is yet to be convinced."

As we study these results carefully we cannot help but conclude that a measurement of teaching efficiency will involve not only the use of achievement tests to test knowledge and skill but also intelligence tests to arrive at some idea of the child's ability to do the work of the school as now organized. At present achievement standards are for the grade only; there are no standards for pupils younger or older than the grade average. A very bright pupil can make the grade average without exerting himself, while a slow pupil, who has worked diligently, may be regarded as a failure because he has failed to reach the grade standard. It is evident that this is unfair to both pupils.

To accept the results of any intelligence test as a final measure of intelligence would be a dangerous practice and would not give children an opportunity to grow and advance. Many tests of intelligence should be given; seldom, if ever, should we rely on the results of a single test. Our man-made measures may be at fault after all. Results found through the use of tests should be carefully checked in practice the following term or year; it is worse than folly to go ahead and do things and not know whether we are right or wrong.

The joint use of intelligence and achievement tests as a measure of teaching efficiency—Until quite recently there has been but little definite rela-

tion between the intelligence and achievement tests and scales. The school product of cities and States has been surveyed through the use of achievement tests alone, and within the last year or two the intelligence of the pupils of whole cities has been measured without any consideration of the achievements of the pupils tested. The results of intelligence testing have been used mainly for the purpose of classifying the pupils into groups—slow, average, bright, and the like, thus indicating the rate at which pupils might be expected to progress through school. The results of achievement tests have been used to evaluate the school product in terms of definite standards, thus determining somewhat roughly the efficiency of pupils and teachers.

The absence of any relation between the two types of tests has been recognized and efforts are now being made by scientific workers in education to interpret achievement scores in terms of mental age, thereby getting another result which has been called the achievement age. The achievement ages are found by giving any achievement test to a group of pupils sufficiently large whose mental ages are known. The median score of say the twelve-year-olds is the achievement age of pupils with a mental age of twelve years. The value of the achievement age is shown in the following illustration. A pupil $13\frac{1}{2}$ years old in the fifth grade in a silent reading test may read at a rate of 148 words per minute, which would ordinarily be considered satisfactory, the median being 148. But in connection with a test in which the achievement ages are given, we find that 148 is the achievement score of a pupil 11 years old. A $13\frac{1}{2}$ -year-old pupil should read at a rate of 174 words per minute. This pupil has therefore apparently not worked up to his capacity. An intelligence test however shows that this pupil's mental age is only 11 years, I. Q. 82. He is therefore achieving as much as he should.

When we have measured a pupil in respect to his achievement in a school subject and his capacity for that subject, the quotient of achievement divided by capacity is an important measure of accomplishment. This achievement quotient is an index of his efficiency. If a pupil with a capacity of 80 makes a score of 80 in arithmetic, the result is very different from a score of 80 by a capacity of 110. In the first place the achievement quotient is 100, in the second it is only 73. The first pupil is working at full capacity, the second at but 73 per cent of his normal ability. If the standard median in such a test is 80, it is apparent that there is no standard of achievement for a pupil with a capacity of 110. The pupil of capacity 110 should be required to do enough more than the average to bring his score up to 110, so that his A. Q. (achievement quotient) would also be at least 100. On this basis when pupils' capacities for different subjects are known, every pupil will be required to maintain his A. Q.'s at or near 100. Unfortunately it is not a simple matter to arrive at achievement ages and achievement quotients; we must therefore depend upon the tables that have been prepared by those who have tried to correlate the two kinds of tests.

It is possible to use to advantage the results of any intelligence test and

any well-standardized achievement test. By arranging the standard mental ages and the standard achievement scores according to grades a graph may be drawn showing roughly the achievement ages of any pupil. For example, Angelina Delvecchio is a normal girl in fifth grade, 11 years of age, mental age 11 years, I. Q. 100, who entered public school in 1B grade, left in 2B, attended a parochial school where Italian and religion are emphasized, returned in 4A, and is now a member of a very slow class, whose median mental age is 8 years 8 months, or 2 years below standard. Her work in reading, writing, spelling, and composition is decidedly superior, reaching 8th grade ability in comprehension and spelling. Her general ability in arithmetic is normal as shown by Monroe's General Survey in Arithmetic, yet her work is of only third and fourth-grade ability as is shown by the Curtis Tests in Fundamentals. This is partly accounted for by the fact that the more difficult work in fundamentals was not emphasized because of the low mentality of the class. Secondly, the course of study no longer requires emphasis in the fifth grade on examples as difficult as those which make up the Curtis tests. The low scores in States and cities may be accounted for in the same way. The girl is temperamentally a good student.

Such a record card for every pupil in the school would be of great value. At a glance the pupil's standing in all subjects may be known. By comparison with the year of the pupil's mental age, one can see whether the pupil is working at full capacity. Furthermore, one can state roughly the pupil's achievement age in any subject. In reading it is about 13 years 6 months; in writing, 13 years 6 months; in spelling, 14 years; and so on. With special instruction in arithmetic for a few weeks, this girl could probably skip a year. Her I. Q., however, if correct, would indicate that she is in about the right grade for her age. Several mental tests, particularly an individual test, might show a much higher I. Q. By arranging the achievement ages for each pupil horizontally a summary record sheet for a whole class may be easily prepared.

One of the best tests now available in which the intelligence and achievement scores of pupils have been closely correlated is the Illinois Examination. This Examination, Form II, was used to discover the difficulties involved in teaching the 5B grade mentioned in Part I. The examination was given to 41 pupils on the 26th of January, 1922, with results as shown in Table III.

TABLE III—Class record of 5B grade showing mental ages and intelligence quotients; also achievement ages and achievement quotients in arithmetic and silent reading

	Mental Age		Arith. A. A.		Silent Reading A.A.			I.Q.	Arith.	Silent Reading. A.Q.		
	Yrs.	Mos.	Yrs.	Mos.	Ave.	Comp.	Rate		A.Q.	Aver.	Comp.	Rate
Median	8	8	9	6	7-9	8-0	7-6	74	117	94	100	89
Standard.	10	8	10	11	11-2	11-6	10-10	99	102	105	108	102

Table III is to be interpreted as follows: The average mental age of the class is 8 years 8 months, as compared with the standard age for a fifth-grade class of 10 years 8 months. The average arithmetic achievement age of the class is 9 years 6 months, as compared with the standard of 10 years 11 months. The average I. Q. of the class is 74, while the standard is 99. The median A. Q. of the class in arithmetic is 117 as compared with the standard A. Q. of 102. The median achievement quotient in comprehension is 100 as compared with standard A. Q. of 108. All other figures are to be compared in similar manner.

The range in physical age for this class is 9 to 14 years, with a median age of 11 years 6 months. When the median physical age is compared with the median mental age of 8 years 8 months, it shows under what difficulties the teacher has been struggling. The median intelligence quotient of 74 also shows the inferior mentality of this class. Yet the achievement quotients of 117, 94, 100, and 89 compare favorably with the standards of 102, 105, 108, and 102.

Grouping these pupils according to their mental ages the composition of the class is as follows:

	No. Pupils	I. Q.
Feeble-minded	7	Below 60
Borderline	14	60-74
Dull	10	75-84
Normal	10	85-114

In order to reduce the teaching load, the class has now been reclassified and 13 with the lowest ratings have been assigned to an opportunity class where they will be given every advantage to gain the next grade. This however is probably impossible, as the mental ages of most of these pupils are the ages of pupils of a strong third-grade class. A number of them will later be placed in special classes which are maintained for those mentally deficient. Those rated as feeble-minded have been given the individual Stanford Revision test without any change in classification.

Achievement quotients are valuable measures of teaching efficiency. A quotient of less than 100 indicates less than average efficiency. A quotient greater than 100 indicates superior efficiency. In the distribution shown in Table IV the median score in reading indicates average teaching efficiency; in arithmetic, superior teaching efficiency.

TABLE IV—Distribution of 5B pupils on basis of achievement quotients

Quality of pupil achievement	Number of pupils	
	Reading	Arithmetic
Very superior, 165 and above.....	—	2
135-164.....	—	4
Superior, 117-134.....	5	15
Average, 83-116.....	28	20
Poor, 71- 82.....	8	—
Failure, 55- 70.....	—	—
Below 55.....	—	—

A study of this class has been presented to show the necessity for making use of mental ages in interpreting measures of achievement. A rating of a teacher on the basis of the achievement scores given in Table I would be unjust. It is only through the joint use of intelligence and achievement tests that the true success of the teacher can be estimated. A reliable measure of teaching efficiency in any school system means a similar study of the work of every teacher.

Summary—1. A measure of efficiency is a measure of results achieved.

2. Achievement results alone are not a safe measure of the efficiency of a teacher, a school, or a pupil.

3. The mental ages of pupils are valuable for purposes of classification.

4. Mental ages are of further value in estimating the efficiency of teaching by indicating the capacities of pupils to do the work of the school.

5. If pupils are to be kept working at the maximum of their capacity to learn, provision must be made for the conversion of achievement scores into achievement ages.

6. Achievement quotients, or A. Q.'s are indices of teaching efficiency. A. Q.'s above 100 indicate superior efficiency, those below 100, less than average efficiency.

7. Scientific education requires that A. Q.'s be recorded year by year for each pupil in all subjects.

ACCOMPLISHMENT QUOTIENTS AS AN AID IN DIAGNOSIS¹

RENA C. STEBBINS, CITY NORMAL SCHOOL, ROCHESTER, NEW YORK

In connection with the City Normal School, we have an elementary school of about nine hundred children. These pupils are taught by skilful "critic" teachers, aided by normal school students who obtain their practice in teaching in our grade school. The inexperience of the student teachers is, we believe, more than offset by the superior ability of the "critic" teachers and by the close supervision of all student teaching by the "theory" instructors. So the children in our school are probably better taught than is the average child.

Need of educational tests—On the other hand, the pressure for time, the prominence given to special subjects, the importance attached to the "development" of subjects, the large number of visitors, all tend to increase the amount of informational and inspirational teaching, and to decrease the amount of drill in fundamental skills of education. There is a danger that the teacher in the City Normal Elementary School is giving her pupils an education that is extensive, but not intensive.

Any teaching that neglects training in fundamental skills of education is weak. To be sure that our pupils are making normal progress in acquiring these skills, we have made constant use of educational tests. Only by com-

¹ See the recent discussions of this topic as found in such books as Kelly's *Interpretation of Educational Measurements*, World Book Company, 1927, p. 22-25.—Editor, 1929 Yearbook.

paring the attainments of our children in reading, writing, arithmetic, and spelling, with some concrete standard or norm, can we be sure that we are giving them the necessary tools for acquiring more knowledge. Moreover, to measure the teacher's efficiency in securing results in these skill subjects, educational tests to us are indispensable.

Unfairness of educational tests—When the examiner has finished giving a battery of educational tests, he has two groups of data to offer to the principal—first, a record of our grade norms in comparison with standard norms, showing what grades have central tendencies above, equal to, or below standard; second, individual scores for each pupil. And as the examiner gives this record to the principal, he is struck with the unfairness of it all—its unfairness to the teacher, because the records show only how her grade compares in measurable educational abilities with other grades in the country, without taking into account the pupil; material with which she worked; its unfairness to the pupil, because it gives to those above the norm a high rank and praise, and to those below the norm a sense of failure and blame, without taking into account the native capacity or intelligence of these children.

Those interested in educational testing have long realized that the valuable and fair testing program will be one in which the results of educational tests are compared not alone with the norm, but with the results of mental tests of these same children, in which we measure both teacher and pupil not merely by what the child has learned, but by what he has learned in relation to what he is capable of learning. In April, 1921, the City Normal School began its study to find some method of combining intelligence and educational test results so as to measure fairly both its teachers and its pupils. This need for a fair combination has long been felt. The method has been the chief difficulty. Several different lines of approach to the problem have been taken in various parts of the country. In Rochester we have chosen the method which follows because of its simplicity, its fairness, and its possibilities for interpretation.

The field of our experiment—Because of other testing projects in the first three grades, we limited our work to grades four through seven. Each year of work in our school is divided in two, and promotions are half yearly. The first half year in each grade is designated by B, the second half by A. Not only are there B and A grades for each year, but in every grade there are two parallel classes, one composed of brighter children, one of slower children, classified on the basis of teachers' judgment. Thus there are in the fourth grade:

- 4B₁—First half of Fourth Grade, brighter pupils
- 4B₂—First half of Fourth Grade, slower pupils
- 4A₁—Second half of Fourth Grade, brighter pupils
- 4A₂—Second half of Fourth Grade, slower pupils

In the four grades studied, there were in all sixteen classes, taught by fourteen well-trained teachers.

Selection and administration of tests—Since the purpose of our study was to find a wider and fairer use of educational test results, rather than to find valuable new tests, we chose only well-known, widely-used tests, whose value had already been clearly demonstrated. We also chose tests only in fundamental skill subjects, since in our school the danger of under-teaching lies here. The tests chosen were:

Mental

National Intelligence Test, Scales A and B, Form 1

Educational

Reading—Thorndike-McCall

Woody Addition Scale A

Arithmetic processes—Woody Subtraction Scale B

Woody Multiplication Scale A

Woody Division Scale A

Problems—Buckingham Problem Scale

Spelling—Ayres (in lists)

Monroe Timed-Sentence Spelling Test

The group mental tests were given by Miss Leila Martin, Director of the Child Study Bureau of Rochester, under uniform and excellent conditions. The educational tests were all given by one trained examiner under uniform testing conditions, and all corrections, tabulations, and statistical work were done either by this examiner or under her personal supervision. Because of this great care in the administration of the tests, we feel that mechanical error has been reduced to a minimum, and that conditions warrant a close comparison between grades.

The scores—When the tests were given, we had scores in two groups of intelligence tests and in seven educational tests for each child. The typical record for each child follows:

A. J.—Age 10 years 3 months

	Score
National Intelligence Test—Scale A.....	94
National Intelligence Test—Scale B.....	98
Thorndike-McCall Reading Test.....	46
Woody Addition Scale A.....	28
Woody Subtraction Scale A.....	23
Woody Multiplication Scale A.....	27
Woody Division Scale A.....	24
Buckingham Problem Scale.....	6.46
Ayres Spelling Scale.....	77
Monroe Timed-Sentence Spelling Test.....	42

One glance at this record makes the difficulty apparent. When these scores are given to the teacher, they are valuable only in so far as she may compare them with scores of other children in her grade. This comparison

she had already made, however, long before we gave the tests. A more concrete comparison she cannot make. If these scores should ever be given to a parent, he would get almost no information from them, except the judgment that he, who used to be "good in reading," has a child who "stands 46." Even the examiner himself cannot interpret or compare results based upon such varying criteria without further work. Clearly, before we can study the relation of the child's educational achievement to his mental capacity, we must reduce these unrelated scores to some comparable unit.

The method of composite scores and the method of composite ranks seem to yield results less capable of interpretation to the average teacher and parent than the method of the educational age.

Mental and educational ages—In the field of intelligence tests, all efforts to substitute scores, percentiles, intelligence indices, and the like, for Binet's and Terman's contributions of the mental age (M. A.) and the intelligence quotient (I. Q.) have failed. The layman understands M. A. and he wishes the results of the intelligence test stated in terms which he can comprehend. In the field of educational measures, if we could give both the teacher and parent in the case of the child mentioned above, instead of a group of scores, a statement like this, "The child reads as well as the average child of 11 years 6 months; in addition he does as well as the average child of 11 years 10 months; in subtraction, 11 years 6 months; in multiplication, 12 years; in division, 11 years 10 months; in problems, 12 years; in list spelling, 12 years 4 months," we would make test results immeasurably more valuable to teacher, pupil, and parent. This is what we have attempted to do with the scores obtained in our study.

The transforming of National intelligence scores into mental ages was simple. Using the age norms given by the National Research Council, we interpolated for months, forming an age-score table as follows:

TABLE I—Provisional Age Standards, National Intelligence Test—Scale A—Form I

Yrs.	Mos.	Score	Yrs.	Mos.	Score	Yrs.	Mos.	Score	Yrs.	Mos.	Score
8	0	65	9	0	78	10	0	91	11	0	103
8	1	66.1	9	1	79.1	10	1	92	11	1	103.8
8	2	67.2	9	2	80.2	10	2	93	11	2	104.6
8	3	68.3	9	3	81.3	10	3	94	11	3	105.5

From these tables we read the mental ages which correspond to the scores on Scales A and B, and averaged them to find the child's mental age. While no one experienced in the inaccuracies of group testing at its best would care to state that this is the child's true mental age, at least it is the mental age which corresponds to his scores obtained on group tests given under the best possible conditions.

Our next task was to transform educational scores into what we have called an educational age. If we say that a child has a mental age of twelve years when he does as well on a mental test as the average child of that age, then we may say that a child has an "educational age" of twelve years when he does as well on educational tests as the average child of that age. It is clear that, in order to transpose scores into educational ages, the same method of standardization is necessary that is used in finding age norms for mental tests. Large unselected groups of children at each age, taken regardless of the grade in which they are located, should be given the test, and age standards found from the median or mean performance of these children. This has been done in the case of the Thorndike-McCall Reading Scales. In a clear discussion of scale construction Dr. McCall¹ points out how he procured the educational age norms for his ten reading scales. The examiner, by using the table of reading age standard sent with the manual of directions, can find directly and accurately the "reading age" for each child. This has been done with all our reading scores.

Method of deriving educational ages—For the other tests in our study, only grade norms were furnished by the test originators. Our problem was to find some method by which we could use these grade norms given with the tests to find educational ages. We realize that the method we have used has its defects, that it is at best only a makeshift, that it is as accurate as it could now be made, and until test constructors furnish us with age norms, it is the best method for interpreting scores that we have yet found.

Let us take for an example the Buckingham Problem Scale. Dr. Buckingham has found the following grade medians for the end of the term, based on large numbers of pupils tested:

End of	Score
3B	3.66
3A	3.84
4B	4.36
4A	4.74

It is generally accepted by educators, and the 1918 school census reports support the facts, that the standard median ages for the above grades are:

End of	Age
3B	9 years
3A	9 years 6 months
4B	10 years
4A	10 years 6 months

We have said, since the median performance in the problem scale for 3B grade is 3.66, and since the median age for 3B grade is 9 years, we shall

¹ McCall, William A. "Uniform Method of Scale Construction." *Teachers College Record* 22:31-51; January, 1921.

let 9 years be the "problem age" for all children making a score of 3.66 on the scale. Hence we derive the following table:

TABLE II.—*Age Standards for Buckingham Problem Scale*

Score	Age		Score	Age		Score	Age	
	Yrs.	Mos.		Yrs.	Mos.		Yrs.	Mos.
3.66	9	..	5.86	11	..	7.89	13	..
3.84	9	6	6.13	11	6	8.15	13	6
4.36	10	..	6.46	12	..	8.27	14	..
4.74	10	6	6.61	12	6	8.56	14	6

By interpolating for months, we found the complete table, and from this table we read our scores in terms of problem ages. This same method was used in finding age tables for each scale used. With the spelling scales, we were limited by the fact that the scales do not run continuously through the grades. In the Ayres' list it was necessary to make a separate table for each column, using Ayres' standard per cents for each grade. In Monroe's timed-sentence test, we made a separate table for the test for grades 3 and 4, for grades 5 and 6, and for grades 7 and 8.

When we had secured an educational age for each child in each subject tested, we wished to find the arithmetical mean of these ages to procure an average educational age. There were, however, four tests in arithmetic processes and two in spelling, as against one test in reading and one in problems. We wished our mean to give equal value to skills in each subject. It was necessary, therefore, to weight the reading age by four as a multiplier, the Woody ages by one, the problem age by four, and the spelling ages by two each, in order to equalize their value. This was done in every case except in the two spelling ages. Although we considered spelling ability as important as the other abilities, we felt that our spelling ages were not reliable enough to warrant equal weighting with the others, and we decided to weight each spelling age by one only, thus giving only half value to spelling.

TABLE III.—*Chronological, Mental, and Educational Ages of Six 7A Pupils Selected for Showing Interpretative Value for the Child of the Several Measures Presented*

Pupil	C.A.	M.A.	Read.	Add.	Sub.	Mul.	Div.	Prob.	S.Sp.	L.Sp.	Mean	I.Q.	E.Q.	A.Q.
D. M. . .	13-8	11-2	10-10	12-4	13-3	13-2	13-11	12-10	10-10	10-3	12-0	82	88	108
F. Z. . . .	12-8	16-8	13-11	11-8	12-7	11-5	11-10	14-11	13-9	12-6	13-6	132	107	80
E. D. . . .	13-9	13-11	12-8	15-1	12-10	13-5	13-5	13-9	14-10	14-2	13-6	101	99	97
G. M. . . .	16-9	9-6	11-3	11-0	11-9	11-7	12-0	12-11	10-10	9-9	11-8	57	70	123
S. R. . . .	13-4	15-7	14-4	14-5	14-0	14-6	14-8	13-9	14-8	13-5	14-2	117	106	91
S. F. . . .	10-4	16-0	15-6	15-5	14-4	14-6	14-4	15-6	15-2	16-0	15-3	155	148	95

Table 2 illustrates the record of the chronological, mental, and educational ages which was made for each of the sixteen grades. A similar tabulation was made for the teacher of each grade for reference during promotion week, as summing up for her in an intelligible manner the results of the educational tests given to her pupils. Compared with the usual method of representing test results, we feel that this summary is far more valuable for diagnosis of individual differences than the usual "scores in order" method.

With our material now in terms of comparable units, we are able to combine the mental ages and educational ages in one measure, the Accomplishment Quotient. The A. Q. is the ratio of a child's educational age to his mental age; it is the summary of what a child accomplishes educationally compared with what he is capable of accomplishing. In the case of a ten-year-old child who is twelve years mentally, but who does as well as the average eleven-year child in his work, his I. Q. is $12/10$, or 120; his E. Q. is $11/10$, or 110; but his A. Q. is $11/12$, or 92. His I. Q. of 120 shows him to be of superior intelligence. His E. Q. of 110 shows that he is doing better work than the average for his age, but it does not show that he is doing as well as he is capable of doing. His A. Q. tells the whole truth—he is accomplishing only 92 per cent as much as he would normally be expected to accomplish, considering his intelligence. We believe that his Accomplishment Quotient is the fairest and most valuable measure now known of the efficiency both of the pupil and of the teacher.

The Accomplishment Quotient and the teacher—From the point of view of the teacher, the A. Q. is the only quotient which takes into account the material with which she is working: (1) For the teacher of slow pupils, the A. Q. interprets fairly the results of her work in relation to the capacities of the children. Her low educational scores may appear high when we compare attainment with native capacity.

(2) For the teacher of bright pupils, the A. Q. interprets the educational results fairly. Her high scores may not be as high as they should be, when compared with the native ability of the children whom she teaches.

(3) For every teacher and every supervisor who is supplied with the A. Q.'s at the beginning of the term, this measure is a protection against injustice. If the class has not been properly taught for two or three years, the A. Q. reveals to the teacher and to the supervisors the handicap under which the new teacher is working. If the class has been unusually well taught for two or three years, the A. Q. reveals the fact and prevents the new teacher from resting too complacently upon the past laurels of the class.

TABLE IV—Median results of eight tests in the 6A2 grade expressed as per cent of room and results of the same tests expressed in terms of median accomplishment quotients

City Normal School, Rochester, New York, Grade 6A-2

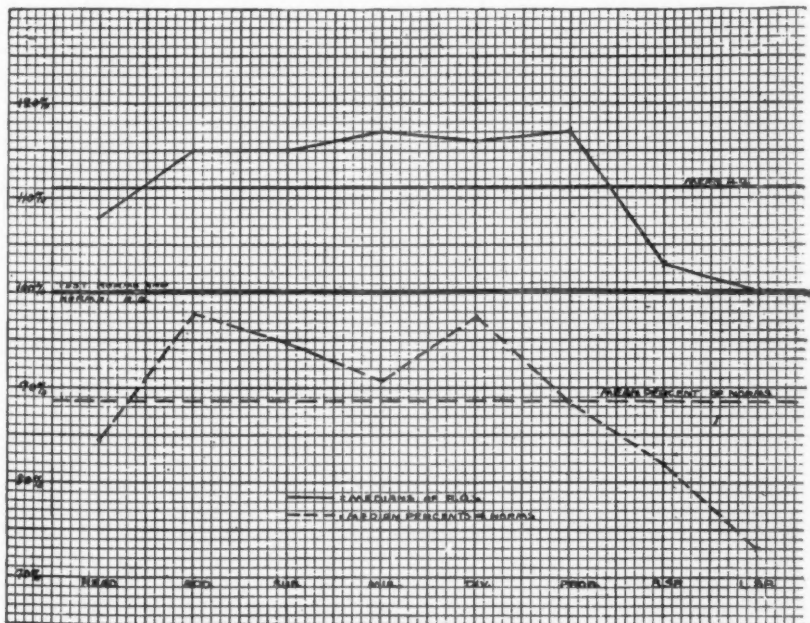
	Read.	Add.	Sub.	Mul.	Div.	Prob.	S.Sp.	L.Sp.	Mean
Per cent of norm.	84.4	97.7	94.8	91.0	97.3	88.4	82.0	73.0	88.4
Median A. Q.	108.0	115.0	115.0	117.0	116.0	117.0	103.0	100.0	111.0

TABLE V—Results of eight educational tests in sixteen grades in the City Normal School, expressed first in terms of mean per cent of standard; secondly in terms of mean accomplishment quotients for each grade

Grade	7A ₁	7A ₂	7B ₁	7B ₂	6A ₁	6A ₂	6B ₁	6B ₂	5A ₁	5A ₂	5B ₁	5B ₂	4A ₁	4A ₂	4B ₁	4B ₂
Mean per cent of norm.....	100	95	103	90	104	88	106	89	103	88	99	85	107	79	116	92
Mean A. Q.....	100	108	100	109	109	111	107	102	108	107	114	127	122	121	113	126

An illustration from one grade (6A₂) will illustrate the unfairness of the "score" method of showing results and the fairness of our proposed Quotient method. If we represent the grade medians in each test as per cents of standard scores (see Table 4), the teacher of this grade faces discouraging results. In every test her grade is below the norm. In only three tests is her grade above 95 per cent of the norm. The teacher and the principal realize that the 6A₂ grade is a slow grade, but the record does

FIG. I—Results of eight educational tests given to a 6A-2 grade in the City Normal School, Rochester, N. Y., expressed first in terms of mean per cent of test norms; secondly in terms of median Accomplishment Quotients.

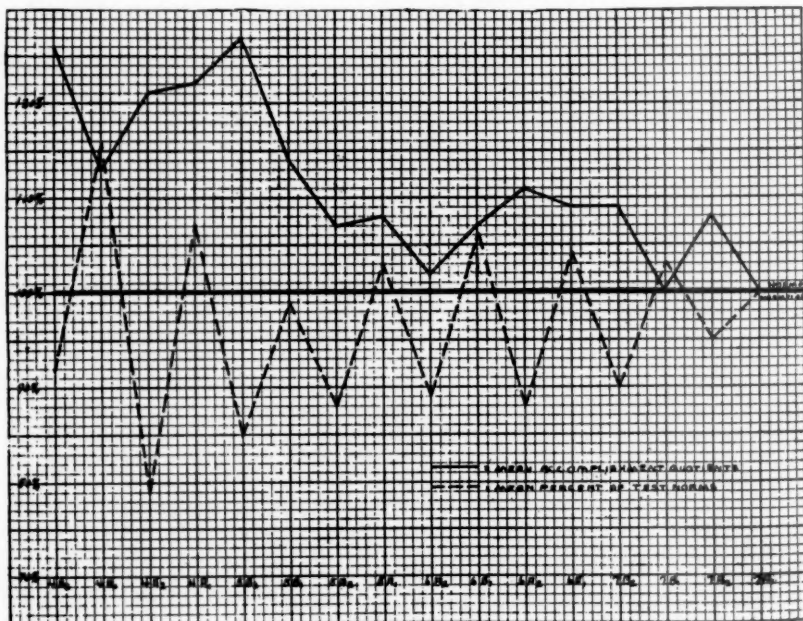


not acknowledge that fact. If, however, we represent these results not as per cents of norms, but in terms of median accomplishment quotients in each test (i. e., the median of the educational ages in each test divided by the median mental age), notice how this grade shifts (see Figure 1). In

every test this grade is doing as well as or better than might be expected from its mentality. This teacher should not be discouraged but encouraged by the excellent progress her children are making in skill subjects in the light of their mentality.

The facts of a grade are consistent for the entire school. Table V shows the average results of the eight educational tests in each grade, expressed first in terms of mean per cent of grade norms; secondly, in terms of the mean accomplishment quotients. Figure 2 shows these results graphically. In every case the duller section of the grade presents a discouraging showing as to educational test results alone. All but one of the brighter sections are above standard in the tests. But when we take into consideration the mentality of these grades, and represent the results in terms of average accomplishment quotients, as shown by the upper line in Figure 2, we find that the teachers who seemingly are doing the best work are those in charge of the slower groups. Two dull sections are achieving over 125 per cent of what might be expected from them. The 4A₂ and the 5B₂ grades, the two grades whose medians were lowest in the school, are accomplishing 121

FIG. II—Results of eight educational tests given to 359 pupils in sixteen grades in the City Normal School, Rochester, N. Y., expressed first in terms of mean per cent of test norms; secondly in terms of mean Accomplishment Quotients.



per cent and 127 per cent, which is more than might be expected from their mental ability. This is the true measure of a grade's achievement—not how much can it score, but how much can it achieve in relation to its ability?

Interesting facts revealed by Figure 2 are that the lower grades in our school seem to be more efficiently taught in these skill subjects than the upper grades, and that all grades in the school are accomplishing as much—if not more than might normally be expected from their mental abilities.

TABLE VI—Median I. Q., E. Q., and A. Q. for All Grades in Rank Order

Rank	I.Q.	E.Q.	A.Q.
1	7B ₁ -103	4B ₁ -107	5B ₁ -127
2	7A ₁ -101	6A ₁ -105	4B ₂ -126
3	6A ₁ -98	7B ₁ -103	4A ₁ -122
4	5B ₁ -97	5B ₁ -102	4A ₂ -121
5	4B ₁ -96	4A ₁ -102	5B ₁ -114
6	6B ₁ -94	7A ₁ -101	4B ₁ -113
7	5A ₁ -94	5A ₁ -101	6A ₂ -111
8	6B ₂ -93	6B ₁ -100	7B ₂ -109
9	5A ₂ -90	5A ₂ -95	6A ₁ -109
10	4A ₁ -85	6B ₂ -94	7A ₂ -108
11	7A ₂ -84	5B ₂ -92	5A ₁ -108
12	7B ₂ -84	7A ₂ -90	6B ₁ -107
13	6A ₂ -81	7B ₂ -89	5A ₂ -107
14	4A ₂ -74	6A ₂ -89	6B ₂ -102
15	4B ₂ -72	4A ₂ -89	7A ₁ -100
16	5B ₂ -69	4B ₂ -89	7B ₁ -100

Table 6 represents a summary of the median I. Q.'s, E. Q.'s, and A. Q.'s of the sixteen grades in order of their rank. The brightest grades tend to have the highest educational age, but they tend, after all, to be laggards, for it is the duller grades that have relatively superior performance. It is this information yielded by the accomplishment quotients that makes the standard testing in our school this past year a real and fair measure of the teachers' work in these subjects tested. For the first time teachers and pupils in dull grades have received the credit due to them. For the first time the actual efficiency of the brighter grades can be compared with that of the slower grades. Principals, supervisors, and teachers find satisfaction in such results.

While this year our Accomplishment Quotients are not an entirely just measure of the teacher's efficiency in these eight phases, since they do not take into account with what quotients the grade came to her, they are valuable in revealing the results of one year under her teaching, and in another year, we feel, a similar record will show very fairly the teaching efficiency of every teacher in these skill subjects.

We have confined this paper to a discussion of accomplishment quotients in their relation to the teacher. It does not lie within the scope of this article to discuss the equally valuable use made of our data—namely, the individual diagnosis of pupil efficiency on the basis of A. Q.'s, and the reclassification of our pupils on the basis of our combination of educational and mental tests. Here, we feel, the A. Q. has been equally valuable and fair.

In conclusion, then, may we state our faith? We believe (1) that standard test results alone are not a fair measure of a teacher's efficiency in the subjects tested; (2) that a fair measure must consider the results of her teaching in relation to the mentality of the pupils; and (3) that the Accomplishment Quotient is the fairest measure of the teacher's and pupil's efficiency in the subjects tested, because it exacts from every pupil and every teacher results in proportion to the native capacity of the pupils.

CHAPTER III

FOLLOWING UP THE INTELLIGENCE TEST

INTELLIGENCE TESTS AS A BASIS FOR CLASSIFICATION

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A FEW YEARS AGO all of the elementary schools of Kansas City were organized along traditional lines. Classes were promoted as wholes from grade to grade, little or no effort being made to secure homogeneous groups. On the contrary, each teacher was given her share of "undesirable" pupils. No teacher was willing to have a room full of slow pupils, because each teacher felt that she was expected to bring her class up to standard in every respect. "Besides," she said, using the old arguments, "the bright children are an inspiration to the dull ones; slow children gain great benefit from association with children who can think more quickly, and talk more interestingly than themselves." The teacher looked upon her brighter pupils as the pace-setters for the class, and labored long and faithfully to speed up her slow ones, and brighten up her dull ones, so that her class might rank as high as the class of her fellow teacher.

The exceptionally bright child's right to special attention received no recognition. He would get along very well anyway, he would always make a creditable showing, why should the teacher worry about his progress? Occasionally, indeed, the teacher found a child of such active mind and body that she could not keep him busy; such a child she "specially promoted" to a higher class. This, however, frequently proved to be an unsatisfactory method of acceleration, because in the promotion, topics were "skipped" which were necessary parts of the foundation for higher grade work. These special promotions, therefore, were not regarded with great favor and were not nearly so frequent as demotions.

Gradually, the feeling grew in Kansas City, as elsewhere, that neither the very bright child nor the very slow child was being given a square deal. The bright child's time was being wasted, he was bored or in mischief while waiting for slower children to comprehend points that he had grasped at once. Drill, repeated for the laggards, was deadly dull for him. Never did he have enough work to call forth his best effort, and bad habits of thinking and of working naturally resulted.

The slow child, on the other hand, was hurried along, half comprehending, until the work became too difficult for him even to attempt, then he became a failure and a repeater, or left school altogether.

Attempts to remedy these evils resulted in reorganization of classes into more homogeneous groups. I shall describe the beginning made in one elementary school in Kansas City, the Bancroft.

It was not the desire of the faculty of this school suddenly to overturn the established organization of the school. Violent revolutions in school policy are apt to arouse so much suspicion and opposition that only disaster can result. It seemed wiser to proceed slowly and to be sure of each step than to attempt so much at one time that mistakes were inevitable and failure almost sure. Our readjustment, therefore, began at the bottom with the beginning pupils.

Classification—On the first day of school in September, 1920, the first-grade children were divided into two groups. Group I consisted of children who had had a full year of kindergarten experience and who were considered by the kindergarten teacher to be strong pupils. Group II was made up of all average or poor pupils who had attended kindergarten for a full year, and of all first-grade pupils entering Bancroft school for the first time.

During the first two days of school, the kindergarten and first grade classes became so crowded that it was decided to form a third first grade group composed of (a) pupils who had attended kindergarten for half a year but were not yet six years old, and (b) the least mature children of Group II. No children are admitted to first grade under six unless a mental test shows their mental age to be six or more years.

We had then in first grade these three groups: (1) A strong group of six-year-old children; (2) an average group of six-year-old children; and (3) a mixed group, most of whom were under six.

During the first ten days, all of the children of Group III were individually tested by the Terman revision of the Binet test. The testing was done by a kindergarten teacher who had made special preparation for the work, by study with Dr. Schwegler, of Kansas University, and with Dr. Dickson, of Berkeley, California. After the test, thirteen of the five-year-olds were returned to kindergarten for another half year. The other eleven, who were chronologically under six years, were considered mature enough to remain in first grade.

Individual testing was continued with the other groups, and adjustments made as rapidly as wrong classifications were observed. By October, we had three fairly homogeneous groups of first-grade pupils:

	Average Chron. Age		Average Mental Age		Average I. Q.
	Yrs.	Mos.	Yrs.	Mos.	
Group I—43 pupils.....	6	4½	7	3	114
Group II—36 pupils.....	6	4	6	7	104
Group III					
(a. 11 pupils.....)	5	9	6	7	114+
(b. 11 pupils.....)	6	3	6	2	96

The distribution of I. Q. in these three groups was as follows:

TABLE I—*Distribution of groups by percentages according to intelligence quotients*

Group	Below 100	100 to 110	111 to 120	Above 120
I.....	2.3 ¹	28.0	58.0	11.7
II.....	19.4	80.6	0.0	0.0
III(a).....	0.0	44.4	55.6	0.0
(b).....	91.0	9.0	0.0	0.0

¹ One pupil chronologically eight years old.

With few exceptions, this grouping was kept during the first half of the school year, new pupils being tested as they entered, and placed in the classes where they seemed best to fit. The teacher of Group III was able to give individual help not only to her own slowest pupils, but to a number of backward children in Group II.

Progress of the groups—It was not expected that the three groups would accomplish the same amount of work. No definite changes had been made in the content of the course of study for any group; but adjustments to the needs of the children were left largely to the three first-grade teachers. These teachers were fortunately alive to the situation, deeply interested, and anxious to coöperate with each other, with the principal, and with the primary supervisor.

From the first, it was thought that Group I would do more work than either of the other groups, because they were mentally mature for first grade, and all had a background of kindergarten experience. No pupil of this group failed during the year. All except those transferred to other schools were promoted in June, 1921, to second grade—a strong, self-reliant, enthusiastic class, a class that had, all year, kept the teacher busy keeping them busy. These pupils did more reading, both oral and silent, more writing, more drawing, more dramatizing, more hand-work than either of the other groups. They wrote letters to absent classmates; they followed written directions for study and hand-work, they made booklets of free cut-outs and stories which they wrote about their pictures. The quality of all this work was above the average for first grade. Their health was good; there was very little absence. Parents were constant visitors, interested and eager to coöperate.

Group II was a more irregular group. Some of the children had attended kindergarten in Kansas City or in other cities; but many of them were entering school for the first time, without kindergarten experience. All were six years of age or older. They were slightly inferior to Group I in mental ability; they were quite inferior in attitude toward school.

This indifferent attitude was found also in the parents of these children; probably the parents' lack of interest accounted for the children's lack of response. Many of the children were frail, physically, and the attendance

was not as good as in Group I. Six pupils failed during the first half year. The teacher gave the following reasons for failure:

- One pupil, I. Q. 99, irregular attendance
- One pupil, I. Q. 100, irregular attendance
- One pupil, I. Q. 96, poor health: Adenoids and bad tonsils
- One pupil, I. Q. 108, absence caused by illness
- One pupil, I. Q. 102, no English at home
- One pupil, I. Q. 101, lack of response, indifference

All of these six repeated the first half-year's work during the second semester, the remainder of the group completed first-grade work and were promoted in June to second grade.

Group III contained two divisions: (a) Eleven children who had attended kindergarten only half a year and whose chronological ages ranged from 5 years 8 months to 5 years 11 months, but whose mental ages ranged from 6 years to 7 years 4 months, and (b) a slow group, all of whom needed special help and special care. The plan with Group III was to allow them to do all the work that they could do easily, but not to crowd them. Section (a) however, was so alert and eager that every one did a full year's work with no apparent strain, and all were promoted in June to second grade. Of the slow section (b), five completed first grade, three left the city, two were absent much and hence completed only half a year's work, one, who was chronologically 6 years 1 month old in September, but only 5 years 6 months mentally, failed all year.

Thus, of the 102 tested in September, nine failed to do a full year's work. Eight of these nine, however, did complete a half year's work and were in June promoted to A class of first grade. Only one pupil failed both half-years; a child whose I. Q. is 90 and whose M. A. in September, 1920, was 5 years 6 months, and who came from a very poor home. It must be admitted that this per cent of failure is very low for first grade.

Attitude of teachers and parents—The teachers of these groups were and still continue to be enthusiastically in favor of grouping according to ability. The teacher in charge of the very slowest group exclaims, "Why, see the way Rose developed! I never could have interested her if she had been with the children of Group I." Rose's I. Q. is 84.

The children are happier in such classes, because the work is suited to their ability; the slow ones do not experience failure every day, their work is not compared with that of children who far excel them. The bright ones are happy, because they are busy, which they cannot be in a class of "average" or slow pupils.

Parents, we find, are satisfied if their children are happy and interested. Not one complaint was heard from parents in regard to this first-grade classification.

The further progress of these groups during the first half of their second year, which is just completed, fully justified our classification.

Group I is still a happy, eager class, growing in civic spirit and in unselfishness as they grow in knowledge. They are very busy and always interested, they read and reason as well as ordinary third-grade classes do.

The youngest children, those of Group III (a) are mastering second-grade work with as much zeal as they showed last year.

The slowest children are plodding along at their own pace and forming habits of steady work, even if it is slow work.

We intend, therefore, to continue such classification, by individual tests given during the kindergarten year and the first part of the first grade, and by group tests given from time to time as the children progress through the grades. These test results, combined with other factors, such as health, attendance, school attitude, and the like, should furnish us data for the classification of each child, so that he may work with the group with which he can work best.

USING THE RESULTS OF TESTING

JESSICA MARSHALL, PRINCIPAL OF THE NEWTON SCHOOL, TOLEDO, OHIO

The combined use of intelligence and educational tests is of twofold benefit to principals:

1. It has awakened us to the fact that the greatest problem in our work today is that of individual differences among the children of any school group.

2. It provides us with a scientific means, from which the old hazard of opinion has been eliminated, for measuring the degree of success with which we are solving this problem by giving to every child the type of education best suited to his needs.

Tests Applied to the Problem of Individual Differences

In October, 1920, Newton School, Toledo, was selected by Dr. Goddard, of the Ohio State Bureau of Juvenile Research, as one of the schools to be used in making a survey of public education in this State.

The examiner sent by the Bureau gave the pupils four tests, a non-language intelligence test with a corresponding educational test, each arranged by Dr. Rudolph Pintner, of the Psychological Department of the Ohio State University, an Army Alpha, and a literacy test. The two tests prepared by Dr. Pintner were those upon which the success or failure of our work was to be estimated, the others being used as a basis of comparison. These tests were given to about six hundred children in the second to eighth grades, inclusive.

The intelligence and educational tests are designed to show (1) the relation between each pupil's intelligence, or his capacity to learn, and (2) his knowledge, or what has actually been learned. The tests also show the great overlapping of abilities and attainments in each group. There has been no effort to measure such qualities as perseverance, honesty, or desire

to coöperate, which are also important factors in learning; "but it is probable that the ability to form these desirable traits of character is itself largely dependent upon the degree of intelligence and capacity to change with which a child is endowed." On the other hand, educational tests when used alone merely establish a comparison with other pupils of the class, or with the grade norms. There is really no other fair way to measure the work of a child than that of estimating his achievement in terms of his capacity to learn.

According to the score on the intelligence test each child is classified as very bright, normal, backward, or dull, while according to the score on the educational test he is rated as very good, average, poor, or very poor. The comparison of the two scores then shows whether the pupil is doing as much, more, or less than is to be expected of a child of his mentality.

The findings in the Newton survey showed that in the case of 53 per cent of the pupils the mentality and attainment were very closely correlated, while 14 per cent were doing less and 33 per cent more than the average child of the same mental level.

The most reassuring fact brought to light was that most of the failures were in the lower grades, the number constantly decreasing up to the eighth, where there was but one whose educational rank was below that of his intelligence. On the whole, the report was very satisfactory, but the present study of individual differences is establishing new standards of success, and our aim now is to study the abilities and characteristics of each pupil and adapt the work to his particular needs.

Fortunately, teachers are no longer forced to be solely responsible for an estimate of what each child's particular needs may be, for a large number of standardized tests can be brought to their aid in determining this question.

The tests used at Newton School showed that our greatest need was for regrouping. The regular division of classes showed a scattering of abilities ranging over eight years of school work if expressed in terms of grade norms, and over ten years in mentality if expressed in terms of mental age. Pupils of the same mental age were likewise found to be in widely scattered groups; for example, pupils testing nine years mentally being found in every grade beginning with the second up through the eighth. The chronological age of the mental nine-year-olds also varied from seven to fifteen.

It was then seen that the results on the intelligence tests alone could not be used as a basis for regrouping, especially as one test will not always place them in the same class that another might.

Regrouping in the upper grades—To get more light on the subject of regrouping, standardized tests in various subjects were next given. In this way we were able to diagnose more accurately the particular points of divergence. The tests given included those of Gray, Monroe, Ayres, Courtis, Van Wagenen, and Woody-McCall. These tests in specific subjects, like the intelligence tests, showed a very great scattering in ability among the

pupils of the same grade. In addition they proved that it was very rare for any pupil to be altogether good or altogether poor in scholarship. Nearly every child had at least one subject in which he excelled and one in which he encountered difficulty.

It was therefore determined that the groups should vary according to the subject and that the division should not be hard and fast, but so arranged that a pupil might at any time be changed from one class to another if his work showed sufficient improvement. This adjustment is virtually an experiment in remedial work, and is made possible by a modified use of the platoon system.

A follow-up system is now being worked out to meet the needs of the new groups along the lines given below: (a) Development of special types of remedial work; (b) study of minimum essentials; (c) consideration of methods of measuring progress; and (d) study of the means of making more complete use of special talents.

Types of remedial work—The goal of the remedial work is reached when the attainment of the child is brought up to a point commensurate with his ability. His present rating is given by the tests.

A series of close case studies was started in order to make a better estimate of the improvement that might result if the instruction were more exactly fitted to the individual, and also to determine, if possible, the rate of advance that might be expected from a child of normal ability as compared to one whose rating was less than average. In working along this line it has been our good fortune to come under the direction of Dr. William S. Gray, of Chicago University, who has selected a few pupils from Newton School as subjects for special training in reading.

Each pupil's ability to read is measured by a series of tests until the cause of every difficulty has been disclosed. The outstanding defects are then classified and the corrective work directed along the most needed lines.

One of the greatest contributions to scientific remedial work is the series of graded tests prepared by Dr. Gray, which can be given frequently, and the effectiveness of the instruction thus determined.

All the methods that accomplished their purpose in the laboratory of case studies have been found to produce equally good results in the classroom. Our reading in general has been greatly improved by the use of Dr. Gray's system of closer analysis of difficulties and subsequent concentration on points to be improved.

In the case studies a marked correlation has been shown between grade of intelligence and rate of improvement, but there has been no uniformity in types of weakness among pupils of the same mentality, nor have we found any particular point beyond which it seems hopeless to try to advance with the pupils on the lower mental level.

The findings have brought us to the conclusion that individual limitations, though largely matters of heredity, may be overcome to a great extent by improved methods of education so long as "the potentialities of development are found to be so much greater than the actualities."

Another type of remedial work is being prepared for the pupil who is doing excellent work in his grade but is falling short of the work to be expected from a child of his mentality. Case studies have shown that there are possibilities of great increases in attainment, particularly in the upper ranges. However, placing a young child with an older group destroys the social adjustment to such an extent that there is grave doubt as to the wisdom of such an arrangement. An alternative when working with a bright group is to have mental development as an objective rather than the acquisition of facts. Assignments are given that provide "stretching exercises" in the power to select, evaluate, and organize, while many school projects are chosen because of the opportunity afforded for the development of the much-desired qualities of initiative and leadership.

Minimum essentials—After the pupils have been regrouped in accordance with some specific need, the courses of study must be altered to meet the new requirements. The greatest difficulty arises from a lack of courage to cast out things that are not indispensable. As a basis for elimination an effort has been made to take out the various phases of the work which studies in relative difficulty have shown would require an undue amount of time on the program. Development of a good method of attack has often been found to take the place of much detailed work now in the course of study. Drill on only the simplest form of any type work required has also been a help in bringing retarded pupils up to grade without seriously weakening the foundation.

A close study of many varieties of standardized tests gives an insight into the things considered essential in the learning process, and these essentials furnish in turn a scientific basis for the estimate of the value of subjects taught.

One thing is obvious: it is useless to make a diagnostic study of individual needs and then make no differentiation in the curriculum.

Methods of measuring progress—Both teachers and pupils are anxious to have some scientific method of measuring progress, for the age of opinion in education is past.

Of course, the most satisfactory method is by giving those standardized tests which come in a series. Such tests have already been prepared for measuring spelling, reading, and fundamental processes in arithmetic, but their use for frequent testing by the average principal is out of the question because of the cost.

As a substitute for the tests many teachers have prepared specific drills upon which the pupils can easily measure gain, such as that provided by the mastery of "books" of new words added to a child's vocabulary, as suggested by Dr. Gray. These "books" are merely a series of cards upon each of which has been printed a new word with which some child in the class has difficulty. The cards are then flashed before the pupil, and when he is able to recognize every word the book is put away to be used later in review.

Similar drills can be prepared in each subject. Any type of lessons can also be made into a series, provided that they are so arranged as to be graded on points that can be easily recognized by the children.

Giving these lessons at a stated time—as every Friday, every two weeks, or even once each month—makes them still more valuable as incentives. It is desirable that whenever possible standardized tests in specific subjects be given at the beginning and close of each school year. The joint intelligence and educational tests can be given profitably every two years.

Progress on drills and tests can be represented objectively, and individual record and classroom charts have both been found very effective in stimulating the pupils to increased effort.

Making use of the special talents—The constant overcrowding in the school curriculum has resulted in the overlooking of special aptitudes for much the same reason that the dull child has received more consideration than the bright child. That is, the attention has been fixed upon grade standards and not upon individual possibilities. In the rush of work the talents, even when discovered, have often been left to take care of themselves. A study of the economic situation shows the inadvisability of this method, for success in life has been found to depend largely upon the peculiar fitness of a man for his calling.

The use of tests has shown that nearly every child has genuine ability along some line, or, at the worst, finds some line less difficult than the others. Our problem, then, is to provide the environment in which talents will grow. The flexible system of grouping furnishes one means of meeting this need, for a child can be placed in a class which will require the stressing of the talent in order to hold his own. This arrangement is usually of particular benefit to the retarded child, for he is apt to be placed, for a part of the day at least, with pupils of his social age. One of the first responses obtained is that of an increase in happiness, which is essential to growth. The child also learns faster, because he is going at a rate suited to his ability, and this fact encourages him to greater effort.

The bright child who can do things quickly can also be given tasks requiring all his energy, and habits of industry will be developed because he is allowed to work at his maximum speed.

When regrouping is not possible, other means may be found to make use of the talents. Some responsibility for helping a slow student in the class helps in a child's own development, and special assignments often serve to keep the bright child busy and interested.

On the whole, new methods of discovery and encouragement of superior ability are much needed, for when sufficient stimulus is provided the upper limit in attainment is greatly extended even among pupils of elementary-school age, and nothing that gives promise of achievement should be neglected.

Grouping in the first grade—The wide scattering in ability and attainment in the higher classes which was revealed by the tests raised the question as to whether it would be possible, by using improved methods of grouping when children first entered school, to avoid much of the confusion and overlapping that are found in our upper grades today. This need for re-classification is not a local one. Hoke, of Richmond, Virginia, in exam-

ining 743 children from a typical school, found that almost one half of all those tested were above or below normal mental age for the grade; while Garver, in a study made at the University of Pennsylvania, found that in any of the upper grades examined there existed a range in ability to do work according to the grade norm of six or seven grades.

An experimental classification was made in the first grade, based on the standings on an intelligence test prepared for young children who cannot read or write. The test here used was the Pintner-Cunningham test, brought out under the auspices of Columbia University.

The first result hoped for was to establish a rate of progress, each group being allowed to work at maximum speed. At the end of the first semester the best group had completed the first-grade course and was ready to start on the second year's work at the beginning of February. The slowest group had taken eleven rhymes, but was doing nothing in writing or spelling and very little in number work. The intermediate divisions were at different points in the course, but both supervisors and teachers agreed that all except the slowest division were ahead of the mixed classes in the city.

However, the most noticeable improvement was not in the greater ground covered, but that above the very slowest division every pupil was sure of every step of the work. The scattering in educational attainments in the upper grades ought, then, to be materially reduced if a satisfactory plan of grouping in the lower grades results in developing pupils who "know what they know."

This experiment seems to indicate that group intelligence tests can be relied upon for the trustworthy placing of individual pupils at the beginning of the school course, and when followed by diagnostically directed teaching may do much toward lessening the variations now found within all school groups.

Tests Used in the Measurement of Teaching Efficiency

The joint use of intelligence and educational tests furnishes the only standard of measuring efficiency in teaching which takes into account the individual differences among children. It places the emphasis on the progress of the child being commensurate with his ability, not demanding a fixed standing for all the pupils of a grade. It also provides an application of the statistical method in measuring teaching success.

An analysis of comparative scores indicates that these tests may be relied upon to show the success of the teaching from the standpoint of the individual taught, and they can also be used to measure accurately the effectiveness of the educational system as a whole. But they cannot be used to measure justly the efficiency of an individual teacher, as the weaknesses brought to light are usually in the line of administrative procedure, or limitations of curricula and time schedules over which the teachers, and sometimes the principals, have no control.

The results of the tests are more valuable when considered as diagnostic rather than as furnishing a means of measuring teaching success. They

also make a trustworthy basis for experimental investigation of the improvement in the effectiveness of teaching due to controlled causes.

One of the most practical uses of the joint tests, from the point of view of the head of an elementary school, is the help given in bringing his specific educational problems clearly before the superintendent and supervisors. This is possible because the findings on the tests can be represented objectively and the standards used easily defined. The wide range in abilities can also be seen at a glance, and the differences may then be provided for by wider range in curricula, smaller classes, more individualization of instruction, or any other readjustment which the superintendent may deem advisable.

Summary—1. The joint use of intelligence and educational tests shows the range in ability and attainment of the various pupils and helps in determining their individual needs.

2. The tests are an aid in solving the administrative problems of classification and grouping.

3. They show the significance of individual differences upon which remedial work and curriculum changes can be based.

4. They furnish the best standard of measuring the success with which the educational system is providing for the fullest development of each individual.

INTELLIGENCE TESTS AS A BASIS FOR RECLASSIFICATION

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After being assigned as Supervisor of the William T. Harris School on West Seventeenth Street, New York City, I felt the need of giving attention to the "educational misfits." This led to a study of the entire problem of grading and classification. In fact, even before the larger problem was considered, studies of individual cases of "misfits" were made.

A psychiatric worker, interested in the boys of our school, undertook this work in order to discover, if possible, the causes of backwardness and conduct, irregularity in the school, and to help in suggesting ways of overcoming these difficulties. It consisted necessarily in as thorough a study as possible of "misfits" and the various elements in their separate problems. The work was begun by interviewing the boys referred to us and getting facts as to their home conditions and their own ideas as to the cause of the difficulty. It was interesting to find how frank they were and how quickly they responded to straight talk, combined with friendliness and concentration, on their problems. One colored boy who had been troublesome in school and on the street gave a clear account of gang organization and the reason why gangs existed. He became a member of the Terman Opportunity Class and did splendidly.

Neighborhood conditions—A further survey of the neighborhood of the school showed the following: an environment that was poor as facilities for proper living or playing; small shops and cheap tenement houses inhabited by longshoremen and other unskilled laborers; several centers for the rendezvous of those who had little regard for law and order and much less for coöperation with such institutions as cared for the proper development of the boys of the neighborhood; parents who understood very little what the school was attempting for the welfare of their boys and who made life for their youngsters not always a bright one; a barren condition so far as socially helpful agencies was concerned.

The school building is about eighty years old, with no school playground—only a basement and the most minute of yards—only one inadequate shop, no assembly-room, and no gymnasium.

Mental survey of school—Traditional methods of reclassifying the boys from kindergarten to 8B grade in order to make for better teaching and healthier adjustments of the individual boy were discarded as having not proved successful in Public School No. 11. Accordingly, it was decided to make a mental survey of the entire school, so as to determine the native capacity of each boy.

The Department of Psychology at Teachers College, Columbia University, was invited to survey the school. The Department of Ungraded Classes of New York City's Department of Education also coöperated in this work, with the thirteen graduate students of psychology working under the immediate supervision of their instructor, Dr. Leta S. Hollingworth. It should be mentioned in passing that each person had had technical instruction in the task which he or she was set to perform, the reliability of the results being thus assured.

The original plan for the survey included the following:

1. Group tests in each grade as indicated in Pintner's Mental Survey because it gives norms of performance, and Public School No. 11 not being a typical school, we would see the abnormality;
2. Individual tests of a large alphabetical sampling of 8B's to determine how much good high-school material there may be in 8B;
3. Individual tests of a large number of problem cases;
4. Measurement of the product of instruction: Reading for the understanding of sentences—Thorndyke; Spelling—Ayres; Arithmetic—Woody-McCall—Mixed Fundamentals; Trabue—Language; and Thorndyke—Penmanship.
5. Study of special disabilities as revealed by discrepancies between mental and educational tests;
6. Sensory examination of a random selection;
7. Motor tests.

The following tasks were, however, accomplished:

1. Group intelligence tests were made of all boys between grades 3A and 8B inclusive by means of Pintner's tests.

2. Group intelligence tests were made in grades 1A to 2B inclusive by means of devices original with one of the graduate students assisting in the survey.

3. Tests of spelling, arithmetic, language, and reading were made.

4. Individual intelligence examinations were given to all boys in grades 8B, with a view to determining the frequency of median high-school intelligence in the graduating class.

5. Individual mental examinations were given to boys between the fourth and sixth grades who ranked at the top in group tests, for the purpose of selecting a Terman Class for the gifted children of the school.

6. Individual mental examinations were given to boys falling lowest in the group tests, and selections were made for membership in the Ungraded Class.

7. Partial case studies were made of some of the problem cases reported by teachers.

Study of results of mental survey—A study of some of the results submitted by Dr. Leta S. Hollingworth indicated the following:

1. The distribution of I. Q.'s in our school gives a curve tending strongly towards subnormality. The school has not its normal share of the gifted children of the city, while it has less than average capacity for learning. The school has a great many boys who need vocational training and who can profit relatively little from following the present prescribed curriculum for eight years of their lives. The modal intelligence of the school lies between 85 and 95 I. Q., whereas in the juvenile population chosen at random the modal intelligence lies between 95 and 108 I. Q.

2. In each class a wide range of intellectual ability was found. In many of the classes the brightest boys were five or six years above the dullest in mental age. This was true despite the fact that the writer had already made a systematic effort to grade the school according to ability as well as can be done by separating the over-age pupils from those who are average or young for the grade.

3. In the graduating or 8B classes a relatively small proportion of the boys gave promise in mental tests of being able to pursue high-school work successfully.

4. Between grades 4A and 6A were found thirteen boys with I. Q.'s of 120 or more. These were selected for a Terman class and several boys between 110 and 120 I. Q. were added to complete the register as required. The most intelligent of these boys stood as high as 146 I. Q.

5. Several children who fell below 70 I. Q. were placed in the Ungraded Class by the Department of Ungraded Classes acting upon the evidence adduced. In a group of 743 boys it was found that only 143 were normal—i. e., their mental age corresponded with their chronological age. Of the remainder, 428 were below normal and 172 were above normal.

Reorganization of the school—Utilizing the findings of the Mental Survey, the school was reorganized to give every boy in Public School No. 11 the opportunity to develop in harmony with his powers and capacities and

with the realization of the localized difficulties and diagnosed capabilities of the boys.

The boys (3A-6B) of chronological ages ranging from 13 to 15 whose mental ages ranged from 8 to 15 were organized into five "opportunity" classes as follows:

	Chronological age	Mental age	I. Q.
Class A.....	14-12	8-9.5	65-85
Class B.....	14-12	8-10	65-85
Class C.....	14-12	9-11	65-85
Class D.....	15-13	10-11.7	70-85
Class E.....	9-11	11-15	112-146

Other special classes organized as a result of the observation and conclusions drawn from the mental survey were: (1) Class for anæmic boys; (2) class for foreigners; and (3) classes for normal boys more homogeneously classified.

Every boy found himself in a class where he seemed to be able to do much better work, and the teacher seemed to have a class which she better understood and led in school activities. Bright, normal, and low mental type, all knew that work was expected of them; work that was rather hard, yet valuable and pleasant—a rather new experience for the smartest boys of the school as well as for the boy of low mentality.

The organization of our classes showed gradual improvement in homogeneity.

	1918—I. Q. Range	1921—I. Q. Range	1922—I. Q. Range
8B-1	115-60	147-85	145-107
8B-2	115-85	111-71	118-91
8B-3 .....	.....	.....	92-72
8A-1	133-78	145-80	142-98
8A-2	108-67	108-66	110-97
8A-3 .....	.....	.....	93-71
7B-1	128-64	110-77	139-100
7B-2	120-64	119-74	106-93
7B-3 .....	.....	.....	90-77

Not only were intelligence-test results employed in the grouping of boys, but their physical and nervous condition as well as the chronological age were considered. The school was fortunate in having a psychiatrist. A certain amount of home visiting was done, and boys were referred to clinics (mental and medical) as well as to various welfare agencies. At no time did parents hinder us. In fact, they were enthusiastic coöperators, knowing, as they soon learned, that we were closely linking school with the life of the boy and developing his capacity for leadership.

CHAPTER IV

THE PROBLEM OF THE INDIVIDUAL CASE

THE INDIVIDUAL CASE—AN ADMINISTRATION PROBLEM

CHARLES C. KRAUSKOPF, PRINCIPAL OF THE VICTOR F. LAWSON SCHOOL,
CHICAGO, ILLINOIS

IN INSPECTING, examining, or administering a graded school, one of the first things to attract attention is the presence, in any group or grade, of pupils who do not fit, who are unable to take part fully in the work of the group. In the past these unfortunates were often slighted or ignored until increasingly rigid compulsory education laws revealed the large number of them who were leaving school with no adequate preparation for life's struggle. Of late years, however, these atypical pupils have been receiving much attention from investigators both in the schools and in the laboratories of schools of education. These investigators have treated these pupils as "individual cases" and have attempted to diagnose and prescribe for them as individuals. In all this work, little or no attempt has been made to solve the difficulties of administration arising from the presence of these children in classes of normal pupils.

It might be interesting to approach this problem from the side of school administration, to outline some of the difficulties encountered by the principal in handling these pupils and to make a few practical suggestions.

In spite of foolish criticism from within and without the profession, the graded school has been a marked success. Further, there always will be certain backward, slow, erratic, unstable, atypical, peculiar, unfortunate children who will not easily fit into any scheme for group work. Teaching a "graded" room is a group proposition. The teacher as leader secures the best results from the reaction of each individual on the group and the group on each individual. If at any time the teacher of such a room is compelled to stop the group work to give special assistance to one or more individuals, she ceases to teach, and the group either pauses in its work or proceeds without a leader while the teacher tutors or coaches the individual case.

Enter, then, the "individual case" as an administrative problem.

This problem, in its statement one of the simplest, is, in its complete solution, one of the most difficult of any with which the administrator has to deal. To the principal of a graded school it is, first, a matter of relieving the graded divisions of individuals who are misfits, and who, as such, interfere with and delay the regular group work of the classes; or, in other words, the task of the partial, temporary, or permanent exclusion from the regular rooms of the "individual cases"; second, a matter of arranging instruction for these excluded pupils which will be more thorough and adequate than that which, on account of their handicap, they can get in the

regular group or grade. It is easy to imagine the beneficent effects on the graded room of the removal of these individual cases, but any plan is a failure that does not give the excluded pupils at least as much as they can secure in the regular room, and no plan is a complete success that cannot show that these special cases receive greater benefit than they did before.

It might be well at this point to consider how this important problem has been received. The actual amount of progress made in its solution has been pitifully small. The interest displayed by the superintendents of school systems in the United States is almost negligible. At the last meeting of the Superintendents' section of the National Education Association only one paper, that of Susan M. Dorsey, of Los Angeles, mentioned the subject, and that address made no analysis and suggested no solution. These superintendents, who are supposed to outline the policies of our school systems, are constantly crying for better trained teachers and better teaching. The attempts made to relieve and help the grade teacher have frequently taken the form of appointing: (a) Supervisors of special subjects, who are too often enthusiastic specialists, over-emphasizing subject matter without helping instruction; or (b) supervisors of grades, too many of whom are mere peddlers of methods and devices that tend to destroy the initiative and freedom of the teacher and thus deaden the work. But no matter how skilful these supervisors may be, they never can do more than increase the teacher's knowledge and improve her skill as a teacher. In a consideration of "individual cases" it is like trying to overcome friction due to sand in the bearings, by an increase of motive power. The engineer should remove the sand. The administrator is still confronted with the problem of making some additional classification which will relieve the regular classes of the "individual cases" (who hamper group work), and which will also provide special accommodations and special teachers to care for these excluded pupils.

In a way this neglect simplifies the first administrative steps necessary to approach the situation, *i. e.*, the selection of those pupils who are to be excluded from the regular classes. We are at the beginning of the work and the first attack will naturally be with the most obvious cases. These are easily selected. Like "mavericks" in a well-kept herd, they are easily detected even by the uninitiated. To the earnest teacher, busy with her group problems, they bear the same relation to the rest of the class that a sore thumb has to a busy hand, and frequently their presence produces much the same condition as the offending digit. The normal order of the class work is thrown into confusion, and delay and irritation result. Ignoring the irritation, it is easy with these obvious cases to set an arbitrary mark where the delay and confusion due to their presence is great enough to warrant exclusion from the regular classes.

At first thought this might seem a point where the intelligence tests, which have been produced in such quantities by our universities, might be invaluable. There is no wish or intention to flee at the efforts of our co-workers of the schools of education. However, the first care of the

principal, the administrator, the head of a school, is to keep both feet squarely and solidly on the ground. He must see the school as a whole. He must make workable decisions.

The exclusion of these pupils from the regular classes is a *class* problem. Therefore, whatever use may be made of such tests and however illuminating the results may seem in regard to any individual pupil, the best guide in the selection of these obvious cases will be the judgment of the grade teachers who have been, day after day, witnesses of the failure of their struggles to do group work.

The study of the excluded pupil is an *individual* matter and should include every available test, examination, investigation, and observation that can be made and, at least, should include: (1) A thorough physical and medical overhauling; (2) a careful estimate of any difference between intellectual and chronological age; (3) an exact determination of scholastic standing in school studies; (4) an estimate of judgment and ability in every-day matters; and (5) the securing of all available information in regard to home life, heredity, family history, and the like. The more complete the information secured, the more "individual" each case will appear, and the more hopeless will the problem seem. This fact prompts another word of caution. While no item of this information should be ignored, the practical decisions of the principal may, and often will, set aside for a time, apparently sound conclusions of the theorists and experimenters. His task is to produce a workable plan for the handling of these pupils.

In attempting the construction of such a plan for the more obvious cases the following rough groupings may be found useful:

(1) The pupil well advanced in one or more school studies and very poor in others.

(2) He who, apparently competent in every-day matters, finds it difficult to interest himself in intellectual work or school studies.

(3) The delayed pupil, the unfortunate, who, finding himself placed with much younger pupils, resents working with a group less mature than himself.

(4) The backward pupil who acquires knowledge slowly and who loses out in group work on account of lack of mental agility.

(5) Those distinctly below par mentally, a large and varied group often termed subnormal.

(6) The mentally unstable, the erratic, the weak-willed.

(7) The physically handicapped—crippled, deaf, blind, or epileptic.

Other groups or sub-groups may be made as the work progresses.

Where the school is large enough or where a number of schools contribute to a "center," divisions may be formed on the basis of some such practical classification and some little group work may be possible, but for the most part the problem remains one of personal, individual instruction, and this factor governs the size of such divisions. Where, for any reasons, the members of such divisions are markedly disparate in age, normal-grade, mental condition, ten will be none too few for good work, while, under the

most favorable conditions, twenty pupils per teacher is a dead line which is dangerous to approach.

The selection of the teacher for this work is of prime importance. Tact, sympathy, directness, alertness, ingenuity, resourcefulness are only a few of the definite qualities to be hoped for, to which must be added a real interest in, and desire to attempt, such work; nor is superior ability in the group work of the regular grades a certain proof of ability to succeed in this comparatively new field. May the gods be kind to the principal in his search for the next-to-impossible. Having found the teacher, let nothing interfere with the work; let nothing come between teacher and pupil. Supervisors of grade work or special subjects should be absolutely barred. Superintendents, district superintendents, inspectors, might be allowed to visit and observe but had much better be attending to other business. The principal, whose decisions created the division, may well keep his mouth shut and tread softly. It should ever be kept in mind that these pupils are just what the term implies—individual cases—and the instruction is often, nay usually, a pedagogical wrestling match, catch as catch can, no holds barred.

The broad test of the success of such instruction will always remain this: Are these pupils happier, more intellectually alive, progressing more rapidly toward worthwhile citizenship in school and after-life, than they could be in the regular grades? The constant application of this test will disclose a vertical cleavage through any strata of classification made for purposes of instruction, and there will be at least three classes of pupils—those partially, those temporarily, and those permanently excluded from normal class work.

An attempt at the handling of the more serious cases of the atypical and unfortunate children may be seen in the special divisions of the Chicago schools. Of the groups listed in the rough classification given above Chicago has partially provided for:

(1) The physically unfit: Rooms for anemic and tubercular, deaf, blind, crippled, and epileptic have been provided. Of the deaf and blind a few have attempted to enter and follow the work of the upper grades and high schools after a course of special instruction, but the vast majority pass to the special state or private schools, or are cared for privately.

(2) The epileptic: This work is still in the experimental stage.

(3) The crippled, anemic, and tubercular: These are cared for in special divisions in quarters especially fitted for their treatment. They are patently surgical and medical cases where instruction either waits on successful medical, hygienic, or surgical treatment, or is modified and specialized to assist the child in overcoming his physical handicap and become self-supporting in spite of misfortune. The mortality is naturally high. A few of the crippled and a large number of the anemic and tubercular recover sufficiently to return to the regular divisions.

(4) The mentally low grade pupils: On account of lack of room only the younger and more serious cases can be cared for. Very few of these become able to carry the grade work, and when replaced in the grades on

account of lack of room, drag along and are later withdrawn from school to enter custodial institutions, or are cared for at home and become a menace to the community as they grow older. For the large number of border-line cases, the ones who might receive the most benefit from special instruction, no provision has been made.

For all the other thousands of individuals who (while not receiving proper attention themselves) are hampering to a greater or less extent the regular work, a few divisions of pre-vocational classes are provided. These classes are so few that only a limited number of the oldest and most backward can be received and attendance is voluntary. The large majority of these children reach these classes too late to derive much benefit from the careful attention and the liberal courses (including much manual work) which they receive. The vast majority leave school and drift into poorly paid, blind-alley jobs, often a prey to the unscrupulous employer and a dupe to the criminal and vicious. Compared to most school systems, Chicago's pitiful attempts to approach this problem stand out as a shining light. The results of these experiments, while woefully meager, give almost certain indication of success if adequate facilities could be provided.

In conclusion, it might be said that theoretically and emotionally the United States has had, during and since the Great War, a wonderful enlightenment on the subject of education. Practically this awakening has resulted mainly in vastly increased demands on the public schools: business demands better trained employees; society demands special and specific instruction, mental, moral, and physical, on every subject under the sun.

Legislatures pass mandatory laws providing for special instruction, special schools, higher grade and age limits, and then, at the behest of those same business groups, refuse appropriations to carry the added burden.

The day has passed when the public looks with indifference upon the withdrawal from school of a child inadequately equipped for life. It objects to the individual case, the misfit, dropping out of school to become a misfit in society.

In other words, the public has developed an abiding faith that the public schools can solve any problem put up to them. Some day it may awake to the necessity of furnishing adequate sinews of war. Meanwhile it is the principals and teachers in daily contact with the work who most clearly see the need for more careful classification of pupils to meet the complications arising from these new demands, and on them will ultimately fall the burden of this new work. In any attempt to make a closer or more accurate classification the problem of the "individual case" looms large.

Conclusion—(A) The greater demands now made on the schools must be met by more careful and closer organization and classification of pupils.

(B) This organization and classification is the work of the principal of the school.

(C) The "individual" forms one of the most serious problems in this better classification.

FINDING THE INDIVIDUAL

MARGARET H. SMITH, PRINCIPAL OF THE 61ST STREET SCHOOL,
LOS ANGELES, CALIFORNIA

Educators everywhere are searching for a method of instruction that will more adequately and successfully train our youth for effective citizenship—for a method that will permit the pupils to develop the full range of abilities possible to each individual. In October, 1921, a method was installed in part of our school which solves many of the problems which prevented this desired training under the present public-school method.

Dr. Arthur Sutherland, Director of Psychology and Educational Research, of the Los Angeles City Schools, is the author of the basic principles of this method, and his able assistants, under his direct supervision, have worked out the material which makes it in fact as well as in theory, an individual method of instruction. The plan was first tried in adjustment rooms, where the retarded child was permitted to work on the subjects in which he was weak to the exclusion of all others until he had strengthened these subjects sufficiently to return to his regular grade. But in the present experiment the material is being used in regular grades under normal conditions—in classes containing slow, average, and bright pupils.

The most important of the basic principles are: first, that the child be properly placed in each subject; then, that he be trained to think quantitatively; to read with comprehension; to organize his ideas for self-expression through the use of definite guides within his comprehension; that the subjects of the curriculum should be used as tools in obtaining real educational objectives; that there should be a distinction made between training [habit and attitude formation] and appreciation [a broadening, deepening, and extending of the intelligent and emotional comprehension and organization]. That these principles may be realized, each step in the material was worked out with a definite goal or purpose in mind.

The material is prepared in twelve levels, each level corresponding to a class of the first six grades of the elementary schools. The content of the *Reading Exercise Books* is based on the *Horace Mann* and the *Riverside Primers* in the second grade, on *Tree Dwellers* and *Robinson Crusoe* in the third and fourth, and on the regular geography and history work of the fifth and sixth grades. Each level has twelve goals or purposes, each representing a definite mental attitude; and so that the child may study more intelligently, each goal is printed at the head of each exercise. Steps are worked out so progressively that the child may measure his own growth by his ability to work the problems as they are presented in each successive level. Four of these reading goals deal with number problems. These are placed in separate booklets for convenience in the classroom. Formal number exercises, the processes of association and memory, are presented by cards of the Studebaker type. In the written *Expression Exercises* emphasis is placed on the ideas to be expressed and definite guides within the comprehension of the pupils are given before any free expression is at-

tempted. There are three types of exercises: copying, reconstruction, and completion of a structure; or imitation, organization, and constructive imagination. The language content follows the city curriculum and it is a group of minimum essentials. A student self-analyzing card directs the self-criticism of the written work. This criticism includes penmanship, spelling, language, and form—rhetorical and literary.

A very adequate system of project tests has been prepared whereby a careful check may be kept of each pupil's progress. There is a series of tests for each level, a test for each goal, each representing a particular mental attitude—comprehension, analysis, reason, speed and accuracy, together with imagery and memory; they are given scientifically and are in effect intelligence tests, the use of which soon discloses the level of each individual mentality.

In order that the conditions in the present experiment might be as normal as possible, the first twenty-three odd-numbered children on the registers were chosen from each class from the B2 to A5 inclusive, giving one hundred and eighty-four children in all. They are under the direction of six teachers, thus averaging thirty-one to each teacher. The day is divided into four periods: two are devoted to individual work while two are spent in group work. The child is a social being and must learn the importance of the social group. In the individual-education room there are two teachers, each responsible for twenty-three pupils or one class each period. In the recitation-group room there is but one teacher who has forty-six pupils or two classes each period. In this room the penmanship, music, drawing, nature study, oral language, history, and geography are studied in groups. During the first period in the morning the second grade works in the group room while the third grade is in the individual-education room; they exchange rooms for the second period, then the second grade returns to the group room for the third period and to the individual-education room for the fourth; the third grade being in the opposite room at the same time. The fourth and fifth grades alternate in the same way. All subjects are given the full State schedule allotment of time.

After the children were chosen they were very carefully tested individually by specially trained teachers, to determine the weaknesses and powers of their "performance abilities." In reading the Starch Test was given for speed; the Gray for accuracy; the Monroe for comprehension; the Sutherland Reading Number Problem Test for comprehension of problems; the Courtis for the four fundamentals in Arithmetic; the Arleigh Fraction Test; and the Spelling from the Ayres list. The results were carefully tabulated on cards showing the grades as well as the levels reached by each of the individual pupils. The results were startling. Many cards showed a variation from A2 to A6—in fact not one of the one hundred eighty-four pupils registered the same grade in all of the reading tests. Many of the 4th and 5th grade pupils made a second-grade score in addition and subtraction while making a 4th, 5th or even 6th-grade score in multiplication and division; while some made satisfactory scores in the fundamentals but

fell low in the problem scores. The speed and accuracy in reading was usually above grade and the comprehension was generally one or two classes below. Whenever there was a question the pupil was placed lower rather than higher, the examiners feeling that the child needed the review in any subject in which there was any doubt as to his performance ability.

PRELIMINARY PLACEMENT CARD

READING		LEVEL		<table border="1"> <tr><td>A1</td><td>A2</td><td>A3</td><td>A4</td><td>A5</td><td>A6</td><td>A7</td><td>A8</td></tr> <tr><td></td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td></tr> </table>								A1	A2	A3	A4	A5	A6	A7	A8				X		X							X	X						X		X			X					X												
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Mult. and Div.	Test 5																																																												

Date 11-7-21NAME Katherine KGrade A5

Age _____

After the scoring was finished the pupil was given a program showing just which level he was to work in each subject [he was not told his grade score] and was taught to use the material. Then he became his own teacher, analyzing his own weaknesses and judging of his own needs. He is privileged to ask help of any neighbor, or he may go to the teacher for assistance at any time. In the 4th and 5th grades were found the greatest variations of levels; and in almost every case, without any suggestions, the child worked on the lowest levels until they were brought up to the levels of the other subjects. Sometimes a little time is given to the higher level, but the larger share is given to the lower ones. When one level is extremely low in comparison, it is because of one or two weaknesses which are soon overcome and the child finds, maybe for the first time, that the subject that he has always considered difficult is easy after all; his confidence is strengthened and he enjoys conquering the subject and is anxious to take the test to prove his power. Many children who had been having difficulty in doing the long division work discovered that the difficulties lay in the addition and subtraction and not in the long division at all. The same was discovered in relation to fractions.

The pupil works from an exercise book and the required text, writing his results in a notebook. When he has finished a certain task, he passes to a rack on which hang other exercise books like the one he is using but

in which the answers have been written. He takes the two books to a large table, where he corrects his work. Pencils are left at the seats and the corrections are noted with colored crayons. If the answer in his notebook differs from that in the answer book he does not check his answer as wrong, but makes a note of it, returns to his seat and tries to obtain the correct results from his own work. If he is unsuccessful, he questions the correctness of the book and takes it to the teacher for final judgment. There is no promotion given on this exercise work, so there is no incentive to be dishonest. The few who tried to get through the exercise book, by copying a good part of the answers, found that they were unable to pass the test. The same time and energy spent in good honest effort brought results, while copying only brought disappointment and the need of spending more time on the same work.

As soon as the pupil feels that he has gained the ability that he has been working for by using a given exercise, he writes his name on a paper provided for that purpose, signifying his readiness for a test, which is given at the teacher's earliest convenience. A child rarely fails in a test because he is sure of himself before putting up his name, he knows that the test has been worked out similar to the material he has been working with, and that if he has conscientiously worked the exercises he will find the test easier than the text. These project tests are given at the teacher's desk; no variations as to time or procedure, no questions, interruptions, nor suggestions being permitted. In giving these individual tests the teacher has an opportunity to judge the powers and abilities, to analyze difficulties, and to advise wisely as to the best methods for further study.

The results of the tests are recorded on progress cards, on which squares are laid off; vertical columns representing the levels and the horizontal columns representing the goals. When a test has been successfully completed the pupil blocks in the proper square, while the teacher writes in the date on her duplicate card. The completed tests are put in large envelopes made for that purpose. If a pupil passes his test with exceptional ability, on a goal of speed in reading for instance, he may be excused from a test on the same goal in the next level. In that case the square is crossed out.

This child's card varied from the B2 in problem work to B5 in speed in reading. She is now doing straight B6 work in reading, while she has finished the required work in the fundamentals of arithmetic.

The following represents typical portions of the Adjustment Progress Card:

ADJUSTMENT PROGRESS CARD

School—61st Street	Class	Card No. 21
Pupil—Katherine K.	Teacher	
Date of Birth.....	Age	
Date of Entrance.....	From Grade A5.....	
Date of Ltr.....	To Grade	
Time in Room.....	Weeks Prog.	

PRELIMINARY PLACEMENT

Reading	Level	Arithmetic	Level
Accuracy	XII	Addition	V
Speed	IX	Subtraction	X
Comprehension	VII	Multiplication	XII
No. Placement	III	Division	XII

FINAL PLACEMENT

Reading VII

No. III

W. E. IV

To Teachers: Cards should be numbered in order of entrance, and one card sent to the Department of Psychology and Educational Research on the first of each calendar month. When pupil leaves, this card is sent in for permanent record.

To Pupil: You should have two of these Progress Cards. Keep one at your teacher's desk and one at your desk. When you complete a project, block it in on your card. Copy your record on the other card as your teacher directs.

When pupils are placed low in subjects the review soon discovers the difficulties. These are rapidly overcome and the progress is very marked. Some children have done the work of six terms or three years in the twelve weeks that the experiment has been in operation. Some have made even more progress in one or two subjects especially those who were placed low in the fundamentals in arithmetic. One little girl who was a normal A₄ is now doing straight B₆ work; one boy who was an A₅ is now doing straight A₆th. The aim is not to shorten the time in the elementary grades but to build a firm foundation for the work of the intermediate and high schools. Supplementary material is being prepared that the children with the quicker minds may have a broader and richer experience along the lines of the elementary grade subjects.

The one great fault in the present plan is the fact that the children have two teachers during the day. A new room has just been opened with twenty-five sixth-grade children at work all day under one teacher. She will have charge of the individual work, using the Sutherland material; and also the group work, which will be based on citizenship. Objections will be raised because of the numbers. Many consider that it is expensive to have small classes; but when it is understood that there will be no failures—no repeaters—as every child will find his own rate of speed and travel accordingly—that there will be no marking time for the brighter pupils—no dragging along for five months of the slow ones, who then probably drag over the same work for five months more without finding where their difficulties are—considering all these things it is not expensive to guide successfully twenty-five pupils into correct mental habits, attitudes, and appreciation.

Under this method the pupil is placed at the beginning of his difficulty in each subject; he spends his time in studying and making definite, business-like reports; he is allowed free rein for developing self-reliance by independent and honest industry. He develops abilities at a rapid rate and forms habits and attitudes of intensive and intelligent control by working towards a definite goal. The independence and responsibility developed is evident in the general character of the child; discipline as such is reduced to a minimum. The individual is learning the true foundation of citizenship—to compare, to evaluate, and to choose or determine intelligently and independently.

IT SHOULD go without saying that a nation's resources of intellectual talent are among the most precious it will ever have. The origin of genius, the natural laws of its development, and the environmental influences by which it may be affected for good or ill, are scientific problems of almost unequaled importance for human welfare.—Lewis M. Terman, *Genetic Studies of Genius, Vol. I*, Preface, p. vii.

CHAPTER V

PROVISIONS FOR THE GIFTED CHILD

AN EXPERIMENT IN THE EDUCATION OF GIFTED CHILDREN IN THE FIRST GRADE

GEORGE C. KYTE, SUPERVISING PRINCIPAL, UNIVERSITY ELEMENTARY SCHOOL, BERKELEY, CALIFORNIA

DURING THE PAST FEW YEARS the writer has had the opportunity of directing a number of experiments in the education of gifted children in various grades of the Emerson School, Berkeley. This public school is admirably adapted to administration of this nature. It is located in a residence district adjacent to the campus of the University of California. The fathers of the pupils are highly trained, successful men; professional men, engineers, financiers, and other equally well-trained and successful men constitute the greatest number of male adults. There are a few skilled mechanics and practically no unskilled laborers. Almost all of the mothers are free from other duties except the care of their households. Accordingly, the school draws its pupils where high levels of intelligence prevail.

This desirable condition makes possible experimentation in the education of gifted children. Intelligence tests, given throughout the school, indicated that the rate of progress or development of this upper group needed more attention than the others. One of the readjustments made possible the application of mental tests as one of the means of reorganizing the first grades. The adjustments of classes over a period of six months resulted in the reduction of the new high first grade to nineteen pupils. The entering class enrolment exceeded forty-five. It was decided to reorganize the two classes so as to secure two groups as nearly homogeneous in ability as possible. Therefore, a study of each child was made with respect to his possibilities.

About one half of the new receiving class had previously attended kindergarten, and from their former teacher information was obtained regarding their general intelligence, attitude toward school-work, industry, and health. She was also able to supply data indicating parent coöperation. Similar information was collected about the rest of the class through such sources as parents, older brothers or sisters. The high first-grade teacher made a similar study of her small class. The entire receiving class was kept intact for two weeks to give one teacher an opportunity to study the group with the above points in mind while the enrolment was being completed. This made possible a tentative rating by her, which, with that of the kindergarten teacher, served as an index of progress possibilities.

Meanwhile, each child was tested by means of the Stanford Revision of the Binet-Simon Scale. On the basis of the results and all other information accumulated, we selected a group of fifteen children to be moved from the large low first to the small high first grade. Each one of these selected

children seemed capable of completing the first year's work in much shorter time if given the opportunity. The two groups were placed under the one teacher, in one room. The first group consisted of the entire class of high first-grade pupils who had completed more or less successfully a half year of school work. The second group included only the fifteen carefully selected pupils. Because the former group was the entire high first grade, it constituted a control. The latter, with one exception, as indicated further on, was composed of gifted children.

TABLE I—*Teacher Judgment and Recorded Information with Respect to Individual Pupils in the Two Groups*

Group	Number	Sex	Teacher Gen. Int.	Judgment Sch. Work	Health	Kinder- garten Training	Occupation of Father
Gifted Group	1	G	2	3	1	Yes	Merchant
	2	B	1	1	1	Yes	Sales Mgr.
	3	G	3	4	1	Yes	Broker
	4	B	1	1	1	No	Exp. Engineer
	5	G	1	1	1	Yes	High-Sch. Teacher
	6	B	2	1	1	No	Agriculturist
	7	B	1	1	1	Yes	Mgr. Wholesale
	8	G	1	1	1	Yes	Univ. Professor
	9	G	1	1	1	No	Mgr. Wholesale
	10	G	1	1	1	Yes	Phys. & Surg.
	11	B	1	1	1	No	Accountant
	12	B	1	1	1	Yes	Merchant
	13	G	2	2	3	Yes	Insurance Agent
	14	B	2	1	2	Yes	Bank Representative
	15	B	1	1	1	Yes	Civil Engineer
Lower Q.			2	1	1		
Median			1	1	1		
Upper Q			1	1	1		
High... First....	1	G	3	3	1	Yes	Com'l Artist
	2	G	5	5	1	Yes	Marine Survey
	3	B	3	3	1	No	(deceased)
	4	B	3	4	2	Yes	Lithographer
	5	G	1	3	1	Yes	Attorney
	6	G	3	1	1	No	Mining Engineer
	7	G	3	4	1	No	Mining Engineer
	8	G	2	2	1	No	Farmer (Jap.)
	9	B	5	5	5	Yes	Phys. & Surg.
	10	G	2	2	2	Yes	Accountant
	11	B	3	3	1	No	(deceased)
	12	B	5	4	1	Yes	Farmer
	13	G	3	4	1	Yes	R. R. Brakeman
	14	G	1	4	1	Yes	Musician
	15	G	4	4	2	Yes	Mgr. Wholesale
	16	B	2	3	1	Yes	Auditor
	17	B	2	5	5	Yes	Adjuster
	18	B	1	2	1	No	H. S. Vice-Principal
	19	B	2	2	1	No	Asst. Mgr. Mfg.
Lower Q			3	4	2		
Median			3	4	1		
Upper Q			2	2	1		

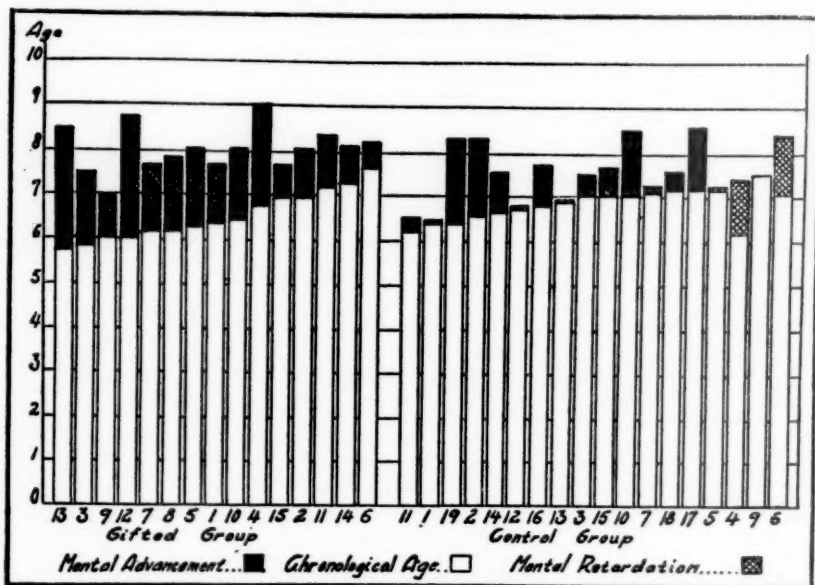
Table I gives the data obtained from teacher judgment and enrolment cards. The ratings by the teachers were based upon the following seven-point scale: "Very superior" was marked "1"; "superior," "2"; "above average," "3"; "average," "4"; "below average," "5"; "inferior," "6"; and "very inferior," "7." In making the division, we had given no thought to distribution according to sex, but upon checking up this item found that each group was divided about equally with respect to the number of boys and girls. The table also shows that a very large majority of each group had received training in the kindergarten. Both groups seemed to be healthy, with the gifted group having a slight advantage. This was partly due to the fact that health was considered in selecting the members.

TABLE II—*Teachers' Judgment of Intelligence, the Age and Mentality of the Individual Pupils in the Two Groups*

Group	Number	Teacher Judg't of General Intelligence	Chron. Age		Mental Age		Intelligence Quotient
			Yrs.	Mo.	Yrs.	Mo.	
Gifted Group	1	2	6	4	7	8	121
	2	1	6	11	8	—	116
	3	3	5	10	7	6	128
	4	1	6	9	9	—	133
	5	1	6	3	8	—	128
	6	2	7	7	8	2	107
	7	1	6	2	7	8	125
	8	1	6	—	7	—	117
	9	1	6	2	7	10	127
	10	1	6	5	8	—	125
	11	1	7	2	8	4	116
	12	1	6	—	8	9	146
	13	2	5	9	8	6	148
	14	2	7	3	8	1	111
	15	1	6	11	7	8	111
Lower Q..		2	6	—	7	8	116
Median...		1	6	4	8	—	125
Upper Q..		1	6	11	8	4	128
High First	1	3	6	4	6	5	101
	2	5	6	6	8	3	126
	3	3	7	—	7	6	107
	4	3	7	5	6	2	83
	5	1	7	3	7	2	98
	6	3	8	5	7	1	84
	7	3	7	1	7	3	102
	8	2	6	6	No test; lang. hdep.		100
	9	5	7	6			100
	10	2	7	—	8	6	121
	11	3	6	2	6	6	105
	12	5	6	9	6	8	98
	13	3	6	11	6	10	98
	14	1	6	7	7	6	113
	15	4	7	—	7	8	109
	16	2	6	9	7	8	113
	17	2	7	2	8	7	120
	18	1	7	2	7	7	106
	19	2	6	4	8	3	130
Lower Q..		3	6	6	6	8	98
Median...		3	7	—	7	6	102
Upper Q..		2	7	2	7	8	113

The data on the intelligence of the individuals in the experiment are contained in Table II. The teachers' judgment with respect to the general intelligence of the pupils has been included again, so that immediate comparison may be made with the intelligence records obtained in the tests. The intelligence quotient in the table is the ratio of mental age to chronological age. The mental age and intelligence quotient could not be accurately determined for Pupil Number 8 in the control group because of her language handicap and experience. She was a little Japanese girl with a limited command of English, living in an oriental home. Her rapid grasp of school work and successful efforts led the teacher to rate her a "superior" child. It seems safe to consider her at least an average child.

Diagram Showing the Chronological and Mental Ages of the Two Groups, Etc.



An analysis of the chronological ages of the pupils discloses that the control group consists of children older than those in the gifted one. The youngest pupil in the former, though only six years and two months old, is nearly a half year older than the youngest in the latter. The oldest in the high first grade, eight years and five months, is ten months older than the oldest in the corresponding pupil in the special first group. The median ages differ by eight months. The gifted group of the low first grade is at least one half year younger than the high first grade. The age range shows more homogeneity in the special division than in the other.

Probably the most significant fact that we find in analyzing the mental ages of the pupils is that the gifted group, though younger chronologically, is older mentally than the control group. The youngest, median, and old-

est mental ages of the former when compared to the corresponding ages of the latter show the gifted children to be about a half year older mentally than those of the high first grade. The child with the youngest mental age in the selected group, seven years, is older in this respect than five of these in the control group. Two of the former group are older mentally than the mentally oldest in the latter. The median mental age of the special section is older than the mental ages of fifteen out of the nineteen pupils in the regular high first grade. The upper quartile of this control group is the same as the lower quartile of the other.

The diagram constructed from Table II clearly shows the mental superiority of the gifted group. The pupils have been arranged in the two groups according to chronological age, from the youngest to the oldest. The solid black extension indicates the mental advancement of each child beyond his actual age. Mental retardation has been presented by a shaded section superposed upon the chronological age bar. The graph of the gifted section shows mental advancement of all its members. The graph of the high first section indicates a more normal distribution of cases from almost as high mental advancement to marked retardation. Tables III and IV have been compiled from the previous one for the purpose of presenting the distribution of intelligence of the groups. The classification of intelligence in the fourth table is that used by Professor Terman.¹ Hence we have two fairly comparable tables of ratings on seven-point scales. The distribution based on the intelligence tests is more accurate than the one based on teacher judgment. However, the corresponding distributions are strikingly similar. By teacher judgment we have all of our gifted group rated "above average" or higher. According to actual test, one of the pupils is normal. In Table II, we find the one case to be Pupil Number 6, a boy much older than the rest of the group and mentally able to achieve what eight-year-old children are capable of doing. Therefore, there seemed to be no justification for eliminating him from the gifted group. The girl, Number 3, rated by the teacher as only "above average," was next to the youngest pupil in the group, but by test was shown to be a very superior child. According to teacher judgment and intelligence tests, the control group presented a nearly normal distribution from "below average" and "dull" to "very superior."

The occupations of fathers of the children have been listed in Table I. Although in general most children in the two divisions come from homes where success in life is no stranger, the gifted group show to advantage in this respect. The farmers are men who are able to maintain very good homes in the university city in order that their children may have the best of educational opportunities. Pupils number 6 and 7 in the control group are daughters of the one mining engineer. In the gifted group all fathers except one are highly successful professional or business men, while in the control group there are one parent classified as an unskilled laborer, one skilled mechanic, and three others slightly more successful.

¹ Terman, L. M. *The Measurement of Intelligence*. Houghton Mifflin Company, 1916.

Other points of contrast between the two groups can be made from the various tables. The most important have been noted and indicate definitely the difference between them. The one, a special group of gifted children, young, healthy, capable of doing exceptional work; the other a nearly normal group of children ranging from dull to superior mentality, older in actual years, younger in mental age, healthy with a few exceptions, and capable of varying degrees of success and even retarded progress. Of the latter group, pupils number 3, 4, 11, and 17 had spent at least one year in the receiving class. All members of the high first grade were considered

TABLE III—*Distribution of the Two Groups on the Basis of Teacher Judgment of Intelligence*

Score	Definition of rating	Gifted number	Group per cent	High number	First per cent
1.....	Very superior	10	66.7	3	15.8
2.....	Superior	4	26.6	5	26.3
3.....	Above average	1	6.7	7	36.8
4.....	Average	....	....	1	5.3
5.....	Below average	....	....	3	15.8
6.....	Inferior	....	....	....	....
7.....	Very inferior	....	....	....	....
Total.....		15	100.00	19	100.0

TABLE IV—*Distribution of the Two Groups Based on Intelligence*

Intelligence Quotient	Classification	Gifted number	Group per cent	High number	First per cent
Above 140....	Near genius or genius	2	13.3	—	—
120-140....	Very superior	7	46.7	3	16.7
110-120....	Superior	5	33.3	3	16.7
90-110....	Normal or average	1	6.7	10	55.6
80-90....	Dullness	....	....	2	11.1
70-80....	Borderline deficiency	....	....	....	....
Below 70....	Definite feeble-mindedness	....	....	....	....
Total.....		15	100.0	18	100.1

ready to begin the second term's work; a few were somewhat advanced. Only one pupil of the gifted group was able to read a few simple sentences and none could write.

To insure to both groups more individual attention and to prevent any possibility of handicapping the high first-grade class, or the special group the daily program was organized, so that each group attended school approximately four hours of the day, while the teacher's program consisted of a five-hour teaching day. This type of program required each group to be in the room at nine o'clock and one o'clock. But one group was dismissed at eleven in the morning and the other at noon. The latter group

was dismissed at two o'clock, while the former remained until three o'clock in the afternoon. Thus, during the third hour in the morning, the teacher could give her undivided attention to one group and during the last hour in the afternoon to the other group. During the term the programs of the groups were interchanged, so that for a part of the term the special group attended school two hours in the forenoon and two in the afternoon, and the rest of the term three hours in the morning and one in the afternoon.

Another reorganization was made at this time. The teaching procedure was modified in the interest of motivated methods. For example, language

TABLE V—*Achievement of the Two Groups in Reading at the Close of the First Half Year Together; Haggerty Sigma I Test*

Pupil	Scores in Haggerty Sigma I			
	Gifted Group		Control Group	
	Test 1	Test 2	Test 1	Test 2
1	10	—	11	1
2	15	7	4	—
3	Left; tr.	—	—	—
4	12	1	6	5
5	10	2	10	4
6	1	2	8	2
7	14	5	18	8
8	21	12	1	—
9	9	2	4	2
10	12	6	18	7
11	Left; tr.	—	8	3
12	17	4	11	3
13	Absent;sick	—	11	5
14	8	3	4	4
15	6	2	Left; tr.	—
16	....	....	4	—
17	....	....	11	—
18	....	....	19	16
19	....	....	Absent;sick	—

and numbers were developed and reading taught through projects. A hat store was built and furnished and hat sales were conducted. A doll house was built, furniture and decorations were made, and various home activities portrayed. With these projects as motives, the children made their own primers, developing their own stories of their activities.

Three months after classwork began the teacher requested that plans for a new distribution be made. In her judgment, a very small number of the selected, gifted children were able to do work as good, if not better, than that of the average pupil in the control group. She felt certain that a few of the latter were achieving results poorer than most of the pupils in the former. There was available no standard scale of scientific nature simple enough to determine accurately the need of redistributing the pupils on the basis of achievement in the work of the grade. In our efforts to regroup into two new comparable divisions, we found that the one pupil of the

special class, who had entered school able to read a little, and two pupils in the regular group seemed to be ready for advancement beyond their class. By trying them in the low second grade on a "visitor basis" under a second teacher, one from each group was found capable of doing satisfactory work in that advanced grade. If there were any doubt with respect to the two pupils' preparation, it applied to the one from the control rather than the pupil from the gifted group. Before the close of the term the second pupil of the regular division had adjusted himself sufficiently to join the two previously advanced. These three, Pupil Number 8 of the selected group

TABLE VI—*Distribution of Scores of the Two Groups in the Haggerty Test in Reading Achievement*

Score	Test 1		Test 2	
	Gifted Group	Control Group	Gifted Group	Control Group
Over 15...	2	3	..	1
15.....	1	..	..	..
14.....	1	..	..	..
13.....	..	..	..	..
12.....	2	..	1	..
11.....	..	4	..	..
10.....	2	1	..	..
9.....	1	..	..	..
8.....	1	2	..	1
7.....	..	..	1	1
6.....	1	1	1	..
5.....	..	..	1	2
4.....	..	4	1	2
3.....	..	..	1	2
2.....	..	..	4	2
1.....	1	1	1	1
0.....	..	1	1	5
Total.	12	17	12	17
Lower Q..	9	4.63	2.25	.85
Median...	11	8.75	3	3.25
Upper Q..	15	11.7	6	5.38

and Numbers 10 and 18 of the other, were promoted to the high second grade at the end of the term. Pupil Number 12 of the gifted children was advanced also early in the new term.

When the half year ended, the pupils were tested in reading achievement by means of the Haggerty tests.¹ Table V contains these data. In Table VI this has been arranged according to the distribution of scores in the two tests. Of the pupils marked "transfer" in Table V, Number 3 in the gifted section was in the school only a short time. There is, therefore, no way of

¹ M. E. Haggerty. Achievement Examination in Reading, Sigma I.

estimating what she would have achieved. Pupil Number 11 in the group would have scored very high, undoubtedly, because he was placed in the high first grade of the school to which he was transferred, and was reported as doing satisfactory work. While still in the Emerson School, he had been selected as one of those pupils to be placed in the most advanced division when the first readjustment was made. Pupil Number 13 would have scored low, because of several prolonged illnesses during the half year, which necessitated remaining at home without studying. Pupil 15 in the control class was in the weakest section of the readjusted groups when she moved away. Her score would have been low. On the other hand, the absent boy of this section was exceptionally good and would have done better than the average. Hence, the transferred and absent pupils would probably have affected to only a very small degree the median and the quartile scores.

We found Test 1 of the Haggerty examination a more effective measure of reading ability and comprehension with respect to little children than Test 2, because of its longer period of twenty minutes of reading. This was borne out by the data obtained in this test as well as the standard scores for each one. The scores of the individuals, as well as median and quartiles, indicated how much greater was the achievement of the gifted children than that of the control first grade. In spite of the fact that the schooling of the gifted children covered one half year, as compared with not less than a year for all pupils in the regular high first grade, at least seventy-five per cent of them had become better readers than fifty per cent of the control first grade. About one half of the special group were better than three fourths of the pupils in the other division. That the medians were about the same in Test 2 was due, very probably, to the advantage of drill during a longer period of time experienced by the regular high first class. In spite of this factor, five absolutely failed in Test 2, as compared with only one in the special class. An inspection of Table V shows that in Test 1 this latter pupil had scored very much higher than four of the five in the control group failing in Test 2.

TABLE VII—*Standard Scores and Medians of the Two Groups in the Haggerty Reading Examination*

	Test 1	Test 2
Control Group Medians	8.75	3.25
Gifted Group Medians	11.00	3.00
Standards for Grade I	4.00	2.00
Standards for Grade II	12.00	8.00

That no child had been handicapped by the experiment is indicated in Table VII. The medians of the control and special divisions were higher than the standards established for both tests. In Test 2 the achievement for both groups was at least one half year beyond first-grade standard. In Test 1 the selected group was within one point of finishing second-grade standard.

Two administrative sources of data disclosed how markedly successful the experiment had proved. The promotion records at midyear were as follows:

Of the eighteen pupils with complete term records, two were regularly promoted to the high second, fifteen to the low second grade, and one was given a trial promotion. The same type of information was available for fourteen members of the gifted group. At the completion of the half-year period, two pupils were regularly promoted to the high second grade, eleven to the low second, and one to the high first. The last case was that of the pupil previously mentioned as having been compelled to remain home much of the term on account of illness. During the broken periods of attendance she seemed to respond but slowly to special attention. Whether this would have been true if she had been in school regularly we were not able to determine.

The division of the pupils after eight weeks of the second term indicated that those of the gifted group were doing better work than those of the control. In the new low second, ten of the eleven pupils of the special group were in the upper division. The exceptional case was the one pupil, Number 6, with an intelligence quotient less than 110. Evidently, he was able to maintain the rate of the gifted section only as long as his chronological age, and mental age as well, was far beyond that of the normal age for his grade. With the eleven gifted children in the upper division there were only seven of the pupils of the larger original high first.

Some of the most important advantages are summarized in conclusion:

1. Special groups of gifted children make possible rapid progress of the individuals.
2. The rapid rate of progress is in reality the normal rate of the gifted children.
3. Rapid progress is achieved with and through enriched curricula and motivation of school work.
4. Individual pupils within selected groups move at different rates even when more highly selected than ordinarily.
5. Drill is greatly lessened, explanation required on the part of the teacher is minimized, and yet gifted children achieve better results in shorter time than do normal ones.
6. The natural poise and social normality of bright children is not warped by the knowledge that they are able to accomplish more than other children. No incident occurred which would indicate that they felt themselves better than others.
7. Careful selection of such a group will eliminate possible failures. Health, age, mentality, teacher judgment of ability to do school work, and home conditions are important factors to consider.
8. Normal children are not handicapped by experiments permitting more rapid progress of their brighter classmates. They do their best under the incentive of promotion whenever ready.
9. The use of tests gives the administrator a feeling of confidence in carrying on such experiments.

TAKING CARE OF THE GIFTED CHILD

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To assist the child of supernormal ability to get more than the ordinary normal child is a problem that interests every teacher. Such children exist in every school. Their native ability enables them to accomplish more than the normal children. Usually much valuable time for them is wasted and often their energies are perverted into activities of positive harm to themselves and to their associates.

They either should be accelerated till they reach the point in the course corresponding to their mental age, or they should be given a broader and richer curriculum all along the line, retaining them the full period in the grades and in the high school. To require them to spend eight years in the grades and four years in the high school before graduating does not seem fair to them. That they would be stronger and better at the time of graduating by doing so is certain. But if they wish to do so they could enrich their knowledge by taking graduate work and be better prepared then to choose their own courses.

I think the ideal scheme would be to have a sufficient number of supernormal pupils to constitute a class by themselves and then to give them a broader and richer course and also take them over it more rapidly. This can be done in a very large school or in groups of schools aggregating 3000 or 4000 pupils. Three thousand pupils ought to furnish sufficient exceptionally bright children to make a good-sized class in each grade. These ought to be segregated, beginning about the third grade and kept in a separate class throughout the grades and the high school. We are doing this for the subnormal type; why not for the superior?

These superior children, when they have completed creditably the high-school course, should be admitted into the Freshman class at college regardless of their chronological age. Our school being small, only about 1000 average enrolment, we could not follow the plan of permanent segregation. We are following this plan for the subnormal type, but we draw for those classes from the surrounding schools.

As the most feasible scheme possible within our limitations we hit upon the following plan:

Children selected for acceleration are taken from their regular room and placed in the room devoted to this work. These pupils continue the work as in the regular room, though more rapidly, till they have caught up in all the main subjects with the class ahead. They are then placed in the room with the advanced class, thereby having gained a special promotion.

Usually another class for the special room is then selected from the class to which the special promotion is made to prevent overcrowding; and in this manner the work is kept up through the school year. Two classes, or grades, aggregating from twenty to twenty-five pupils, are kept in the room at the same time.

The time allowed each class to accomplish the work of catching up with the half grade just ahead is nine and one half weeks, or half of the semester. Thus four sets of pupils, aggregating about one hundred, have an opportunity in the room each school year.

Selecting the pupils—Two kinds of children are eligible: those with superior native mental ability and those who have, for some reason, become retarded and are capable of restoration to their proper grade.

The following factors are considered in the selection: (a) Class standing; (b) mental ability, as determined by the Stanford Revision of the Simon-Binet Intelligence Test; (c) effort; (d) physical condition.

Of these, the two most important are the class standing and the mental age. Experience in this room has proved that a child is capable of acceleration until he has reached the grade corresponding to his mental age. Thus a child of nine with a mental age of eleven, if he has the proper opportunity, can be accelerated at this age till he reaches the sixth grade. He ought not to be pushed beyond. On the contrary, a child of eleven with a mental age of nine ought not to be beyond the beginning fourth; but, if he has not yet reached the fourth he is capable of acceleration up to that point. In other words, a subnormal child retarded below his mental age is capable of acceleration to the grade corresponding to his mental age.

In some instances, when we were unable to find a sufficient number of bright pupils of the grade selected to fill up the class, the slower pupils of the grade just above were permitted in the class, thus giving them an opportunity to strengthen themselves in the work just gone over, and at the end of the period to be restored to their regular class. It was found that these pupils were always inferior to the bright pupils in the lower class. It did some good, but would hardly pay for the expense of an extra teacher.

Pupils who cannot, under proper conditions and incentives, be made to do the regular work of the class, are usually found to be subnormal and should be segregated from the rest of the pupils and given a course suited to their mental ability.

The plan is simple, inexpensive, and easily operated, one teacher being able to care fairly well for the bright pupils in a school of from 1000 to 1500. The reason it is so little used, I think, is the ignorance of the principals and teachers of the actual number of superior children they really possess. These children exist everywhere, just as do the subnormals. Both ought to be sought out and cared for. Many a time in the last twelve years have I sat in my office and wondered where my next class was to come from, but on investigation the class every time was found, and very rarely have we pushed a child beyond its mental capacity. Since the intelligence tests have come into use, there is no necessity for this to happen at all. Before we used the tests we had to consider the chronological age largely as a factor, which is not reliable. Even here we were doing what many are still doing—accelerating the subnormals and retarding the gifted.

We have in this room at present (February, 1922), a 4B class of thirteen children working for 4A and a 5A class of twelve children working for 6B.

The 4B children were selected from a class of 57; 19 were given the intelligence tests, 14 were selected, some doubtful cases being taken, in order to reduce the number of those remaining so one teacher could handle them where two had been employed before. Within a week, two were found unable to do the work in arithmetic and were returned to the regular room. Tables I and II show the ratings of the groups who were served during the third quarter of 1922.

TABLE I—4B for 4A, entering January 30, 1922

Pupil	Sex	Chron. age		Mental age		I.Q.	Teacher's estimate of intelligence	Class standing	Effort
		Yrs.	Mos.	Yrs.	Mos.				
1...	G	9	6	10	3	108	Av.	A-B	A
2...	G	8	7	9	5	110	Av.	B	A
3...	B	8	9	11	5	130	Av.	A-B	AA
4...	B	11	5	10	7	93	Av.	B	AA
5...	B	12	10	10	1	79	Av.	B	AA
6...	G	12	1	9		75	.....	B	B
7...	B	10	6	8	6	81	Slow Av.	A-B	A
8...	G	8	2	10	3	125	Av.	A	A
9...	B	9	8	10	4	107	Below Av.	B	B
10...	B	8	11	9	9	109	Av.	B	B
11...	B	9	9	10		103	Av.	B	B
12...	G	10	6	(Foreign—I.Q. not obtainable)				A	A

TABLE II—5A for 6B, entering January 30, 1922

Pupil	Sex	Chron. age		Mental age		I.Q.	Teacher's estimate of intelligence	Class standing	Effort
		Yrs.	Mos.	Yrs.	Mos.				
1...	B	11	2	13	10	124	Ex.	AA	A
2...	B	11	1	11	2	100.7	Fair	A-B	A
3...	G	10	3	11		108	Above Av.	A-B	A
4...	B	12	1	13	11	115	Av.	A-B	B
5...	B	10	2	10	9	106	Av.	A-B	A
6...	B	11	5	11	1	97	Av.	A-B	A
7...	G	10	2	10	6	103	Av.	A-B	A
8...	B	10	7	11	6	109	Av.	A-B	A
9...	B	10	9	10	1	94	Above Av.	A-B	A
10...	G	10	4	11	3	109	Above Av.	B-A	A
11...	G	11	1	13	2	111.2	Good	A-B	A

The following table shows the rating of ten upper-grade pupils during the second quarter, 1922:

TABLE III—*Standing of 7B class entering November 14, 1921, and becoming 8B on January 27, 1922*

Pupil	Sex	Chron. age		Mental age		I.Q.	Teacher's estimate of intelligence	Class standing	Effort	Standing in special room
		Yrs.	Mos.	Yrs.	Mos.					
1...	B	11	5	13	9	120	Av. plus	B	B	B
2...	B	11	11	13	7	123	Superior	B-A	B-A	B
3...	B	13	3	15	4	116	Av.	B	A	B-C
4...	G	11	9	15	3	130	Very Super.	AA	AA	A
5...	G	11	2	14	..	125	Very Super.	AA	AA	A
6...	G	11	9	12	..	102	Av.	A-B	A	A-B
7...	G	12	..	16	8	140	Very Super.	A	AA	A
8...	G	13	7	12	4	91	Av.	B-C	A	B-C
9...	G	11	1	14	9	130	Very Good	A	A	A
10...	B	10	11	17	1	155	Very Super.	A-B	B	B-A

From the very best of this class and from other 8B classes in surrounding schools we expect to select a good class for our last quarter and prepare them for 9B in June.

To illustrate the exact manner in which the plan is carried out, we give the formation of the four different groups of children in the room for 1918-19:

(1) First quarter, beginning September 3, 1918: 10 pupils in 4B working for 4A; 3 pupils reviewing in 4A working for 4A; and 14 pupils in 6B working for 6A.

(2) Second quarter: 8 pupils in 4A working for 5B, becoming 5A at end of semester; 5 pupils reviewing in 5B working for 5B, becoming 5A at end of semester; and 10 pupils in 6A working for 7B, becoming 7A at end of semester.

(3) Third quarter: 11 pupils in 5A working for 6B; and 9 pupils in 7A working for 8B.

(4) Fourth quarter: 11 pupils in 6B working for 6A, becoming 7B in June; 9 pupils in 8B working for 8A, becoming 9B in June; and 1 pupil in 8A working for 8A, becoming 9B in June.

An analysis of these figures shows that had any pupil beginning with either class in September continued with the class until the end of the year in June, he would have made three full years' work in one. This would be phenomenal and would likely be too great a tax upon even a very superior child; but by giving only one promotion at a time, or at most two in succession, the four special promotions have frequently been accomplished before leaving the eighth grade. These specially gifted children generally receive one or more special promotions before leaving the primary grades.

If a child is capable of making more than one special promotion, he is retained in the room with the new class entering, or he may be returned to the regular school and be selected again when the opportunity comes. Some

children have made as many as four special promotions before leaving the eighth grade. Our aim is to advance the pupil to a point where he will find opportunity for the exercise of his superior intelligence. It is based on the theory that when a child has once reached the grade corresponding to his intelligence quotient he will then be required to put forth a normal effort to keep up with his class.

In the spring of 1919, the Pressey Group Intelligence Scale was used in testing two hundred and fifty-four Whittier School pupils of the fifth, sixth, seventh, and eighth grades for the purpose of determining the correlation between the school rating and the intelligence score of the pupils selected for the classes for accelerates and retardates. The authors of this scale believe that children who score above the 90 percentile show superior endowment and that below the 10 percentile we may look for cases of mental deficiency.

The tests were given to three groups, and the results are stated in detail in a previous discussion.¹ They showed the correlation to be high for the accelerated group.

The following table indicates the general character of the achievements of the pupils for four years:

TABLE IV—*A summary of the teacher's record for four years*

	1916-7	1917-8	1918-9	1920-21
Total number of pupils in room during year.	107	105	92	92
Number receiving special promotion.....	82	77	82	84
Number pupils saved from demotion. . . .	20	18	7	0
Number unable to do the work and returned to regular room.....	4	3	2	5
Number withdrawn before promotion	1	7	1	3
<i>Advancement beyond chronological age on receiving special promotion:</i>				
Number advanced 6 months to 1 year. . . .	24	15	12	26
Number advanced 1 year to 1½ years. . . .	10	11	5	11
Number advanced 1½ years to 2 years. . . .	4	0	5	4
Number advanced 2 years or more.	1	2	0	1
Number of normal age.	17	19	28	32
<i>Still retarded on receiving special promotion:</i>				
Number retarded 6 months to 1 year. . . .	8	6	12	7
Number retarded 1 year to 1½ years. . . .	9	12	9	2
Number retarded 1½ years to 2 years. . . .	3	8	5	0
Number retarded 2 years or more.	6	4	6	1

Careful record is kept and observation made of the gifted children after special promotion and it is found that as a rule the large majority of them continue to be among the best in the class. Rarely does one fail and lose what he has gained.

¹ Zirkle, H. W. "Character and Results of Special Rooms as Conducted in the Whittier School." *Elementary School Journal* 21:180-97; November, 1920.

*History of an individual case—R. C.—*Boy, 12 years 5 months, who had made three special promotions; tested June 14, 1919.

Pressey Score 168. Certified June 27, 1919, to 9B Grade.

Pressey Score 167 is ninety percentile for 15 years, Grade 10.

Entered Special Room January 22, 1917, in 5B Grade, 10 years old.

Promoted March 27, 1917, to 5A, Regular Class.

Promoted June, 1917, to 6B, Regular Class.

Promoted January 21, 1918, to 6A.

Entered Special Room January 21, 1918, as 6A pupil.

Promoted March 22, 1918, to 7B.

Promoted June, 1918, to 7A.

Promoted January, 1919, to 8B.

Entered Special Room May 12, 1919, as 8B.

Promoted June 27, 1919, to 9B, age 12 years 5 months.

Language, A; Penmanship, C; Manual Training, B; Reading, AA; Spelling, A; Effort, B; Deportment, B—.

January, 1917, to June, 1919, completed grades 5, 6, 7, and 8.

This room has been run on this plan continuously for the past twelve years and has demonstrated its usefulness in the lives of nearly 1000 different children, by putting them creditably through the grades from a half to two years earlier than they otherwise would have been. Many of these children have gone on through high school and college, never missing a single promotion throughout their school career. Measured in dollars and cents, reckoned on the number of promotions made by each regular teacher, it has been a saving to the district of the salary of one teacher each year throughout the whole period, which in Denver means nearly \$15,000.

In addition to our room for acceleration we have six rooms for subnormals, aggregating about 120 average enrolment. These represent all the grades and are given a modified course in academic subjects suited to their mental abilities. Much manual work is given, which relieves the mental strain of the academic subjects, and makes life much more pleasant for these unfortunates. In the normal classes, wherever it is possible to do so, the classes of the same half grade are divided into higher and lower according to the mental ability of the pupils. The brighter ones are expected to do more than the others, each according to his ability to acquire. Thus we endeavor to arrange the classes and the work in order to keep each child working to his full capacity and none beyond.

CHAPTER VI

DIAGNOSIS BY MEANS OF THE INFORMAL OR UNSTANDARDIZED TEST

INFORMAL TESTS AS A MEANS FOR THE IMPROVEMENT OF INSTRUCTION

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INFORMAL TESTS as used in this discussion might well be termed unstandardized tests. They are, in many instances at least, patterned after the standardized tests, but lack the tempering obtained through the long process of standardization. They might be termed standardized tests in the making, although many of them will never be completely standardized. The informal tests are similar to the standardized tests in that they are as nearly objective as possible, that is, they are so constructed that the method of administering, scoring, and tabulating is identical with that provided for the standardized tests. They are usually constructed by teachers or supervisors for securing accurate measures of the achievements of pupils in a particular room, grade, building, or city. No definite attempt is made to evaluate each element of the test other than possible comparison with similar existing standardized tests or utilization of the judgments of other interested people, and no attempt is made, for the time being at least, to develop standards of achievement through giving them to a vast number of children in various places. The informal tests are usually constructed in response to local situations and limited in their use to the situations concerned. Obviously, they do not possess all the virtues of the standardized tests and are limited in their application, but it is the thesis of this article that they can be used effectively by teachers and supervisors as a means for the improvement of instruction.

Types of informal tests—The following exercises from the sample examination on the physical features of the United States described by McCall¹ illustrates one of the popular informal tests, the true-false test.

Sample I—Some of the following twenty statements are true, and some are false. When the statement is true, draw a line under TRUE; when it is false, draw a line under FALSE. Be sure to make a mark for every statement. If you do not know, guess.

1. In general the mountain ranges run east and west. . . TRUE FALSE
2. Most of the rivers flow north. TRUE FALSE
6. The Cascade Mountains are nearer the Pacific
Ocean than the Rocky Mountains. TRUE FALSE

¹ McCall, W. A. "A New Kind of School Examination." *Journal of Educational Research* 1:33-46; January, 1920.

13. The Mississippi flows into the Great Lakes. . . . TRUE FALSE

20. The central portion of the United States is on the whole more level than the eastern or western part. . . . TRUE FALSE

Pupil's score = (number right) - (number wrong). Answers not marked are disregarded. In case both answers to the statement are marked, the answer is called wrong.

A slight variation of the true-false test is the test in which all the questions are answered by "yes" and "no." Since the yes-no test is so similar to the true-false test no illustration of it will be given.

The three illustrations below are extracts from informal tests patterned after the Thorndike-McCall Paragraph Reading Test, although one of the extracts pertains to the subject matter of history and one, to the subject matter of arithmetic.

Sample II—Read this paragraph, and then answer the question about it. Read it again if you need to.

Four years ago a garden-club boy in Massachusetts faced what would have seemed even to an adult a hard problem. Born in Italy, but thoroughly inoculated with the American idea of the necessity of an education, Tito, while in the eighth grade, was told by his father that he could no longer be kept in school. His future path was to lie toward the neighboring factory.¹

1. Where was Tito born?
2. What did Tito think he needed?
3. What did Tito's father wish him to do?
4. What problem did Tito have to face?
5. To what club did Tito belong?

Sample III—Read this problem and then write the answers to questions 1, 2, 3, 4, and 5. All questions must be answered from what the problem says. Reread the problem if you need to, but do not work it.

A plumber and his helper leave the shop at 8:20 A.M. to repair a pipe. They return at 11:15 A.M. Make out the bill for the job, counting 60 cents an hour for the time the plumber is out from the shop, half as much for the helper, and 85 cents for the material used. Make the date today. Use any name you choose.²

1. Whose names are to be used in making out the bill?
2. How many items are to be included in the bill?
3. Between what hours was the plumber away from the shop?
4. How much per hour was the plumber to receive?
5. What does this problem ask you to do?

Sample IV—Read this paragraph, and then answer the questions about it. Read it again if you need to.

¹ Lewis and Rowland. *The Silent Readers*. Seventh Grade, page 96.

² The Thorndike Arithmetics, Book III, page 71.

The colonists reached the coast of Virginia in the spring of 1607. They landed on a small island. They began building a town there which they named Jamestown, in honor of James the First, who was then king of England. They built huts, made of branches of trees, to live in. But things did not go well with them. They were not used to such hot weather as they had in Virginia, and by September many of them had fallen sick and died.

1. In what year did the Virginians land?
2. In what season did they land?
3. What did they name their settlement?
4. Whom did they wish to honor by giving their colony this name?

These three illustrations are sufficient to show the possibility of constructing informal tests after the Thorndike-McCall reading test. Other illustrations could have been given from geography, physiology, nature study, or any of the subjects taught. The crude score on any of these tests is the number of questions correctly answered. The number of paragraphs included in the informal test depends upon the time available for testing, although no time limit is placed on the test itself.

Many informal tests are patterned after the information test of the Army Alpha, but only two illustrations will be given.

Sample V—In each of the following sentences underline the word, or group of words which make the sentence most nearly correct.

1. The Capital of the United States is Chicago, New York, Philadelphia, Washington.
2. The germ of malaria is carried by the house-fly, wood-tick, mosquito, bad air.
3. To kill poison from poison ivy bathe afflicted parts with milk, soothing syrup, solution of sugar of lead, kerosene.
4. The mild climate of Seattle is caused by abundance of rain, nearness to the equator, Japan Current, mountains.

Sample VI—Draw a line under the word in parenthesis which is the best definition of the word in capitals.

1. IMPEACH (to accuse, to convict, to deplore, to insist).
2. REGULATE (to commute, to govern, to appoint, to abolish).
3. VETERAN (foreigner, soldier, minister, professor).
4. FEDERAL (national, ancient, municipal, judicial).

The score to tests like Samples 5 and 6 is the number of correct answers. The number of questions in such tests varies from 20 to 100, depending on the purpose for which the tests are given and the time available. The difficulty of tests similar to Samples 5 and 6 depends upon the difficulty of the first part of the exercise involved and the range and similarity of the elements in the second part. Such tests may be given either with or without time limits.

The sample below is an imitation of the so-called "judgment" test used in so many of the intelligence tests. This form of test is used when there

is a desire to test the more involved mental processes. The score is the number of exercises correctly marked.

Sample VII—Read the paragraph and then check the one of the five statements below that best expresses the central thought of the paragraph.

One day Abraham Lincoln was riding with a friend. They came to two little birds lying in the road. The wind had blown them from their nest. One man rode on, but that man was not Abraham Lincoln. He stopped and put the birds back into their nest. Then with a happy heart, he rode after his friend.

1. Abraham Lincoln once found some birds lying in the road.
2. Abraham Lincoln was a very tender-hearted man.
3. Abraham Lincoln went riding with his friend.
4. Abraham Lincoln put the birds back into the nest.
5. Abraham Lincoln stopped when he saw the birds lying in the road.

The principle of the "mixed relations" or "analogies" test employed in the construction of the informal tests is exhibited in extracts from the grammar and history tests which follow.

Sample VIII—Write in column D a word that bears the same relation to the word in column C as the word in column B bears to the word in column A.

A	B	C	D
do not	don't	cannot .....	.....
he	his	she .....	.....
boy	boys	box .....	.....
ran	run	shot .....	.....
Wednesday	Wed.	Friday .....	.....
sweeter	sweet	longer .....	.....
cat	cats	wife .....	.....
go	gone	see .....	.....

Sample IX—Write in column D a word or group of words that bear the same relation to the word or group of words in column C as the word or group of words in column B bears to the word or group of words in column A.

A	B	C	D
Jefferson	Declaration of Independence	Madison .....	.....
Howe	Sewing Machine	McCormick .....	.....
Garfield	Republican	Clay .....	.....
Pennsylvania	Quakers	Maryland .....	.....
New York	Royal Colony	Pennsylvania .....	.....
South	County Unit of Government	New England .....	.....
Webster	Unionist	Calhoun .....	.....

The score on tests like Samples 8 and 9 is the number that are correct. The use of tests similar to these is somewhat more limited than some of the other tests, but they present interesting possibilities.

The final type of informal test presented is of the "matching" variety. Tests of this kind can be devised in almost any field, and they prove to be the most useful instruments of measurement.

Sample X—Write in the answer column the particular number of the civic term given in column 1 which corresponds to the descriptive phrase given in column 2.

Civic term	Descriptive term	Answer
1. Direct Primary	The movement of foreigners to America	No....
2. Initiative	Method of removing public officers by vote	No....
3. Tariff	Power given voters to get new laws....	No....
4. Short Ballot	"Victory," appointments, and removals	No....
5. Conservation	The method of secret voting.....	No....
6. Recall	Power given voters to pass laws.....	No....
7. Immigration	The plan of filling a few important offices at one time.....	No....
8. Australian Ballot	Method of nomination of officers by popular vote	No....
9. Referendum	Tax levied on imports.....	No....
10. Spoils System	Wise use of natural resources.....	No....

The above samples of informal tests are sufficient to show the unlimited possibilities which a classroom teacher or supervisor can utilize in test construction. Had space permitted, illustrations of informal tests could have been given for each and every standardized test now constructed. The possible use of informal tests is in reality much wider than the use of the standardized tests, for informal tests can be applied in many instances where no standardized tests are yet available.

At this point it seems fitting to describe briefly the type of informal test advocated by Gray.¹ He urges having the teachers test the pupils on selections from the subject matter of their own books. He suggests that when a suitable selection is chosen and when the child is situated in a suitable environment, the following formula of directions be given. "I want you to read page — aloud for me. Begin with the first word at the top of the page when I say *Begin!* Read until I tell you to stop. If you find some hard words, read them as best you can without help and continue reading." The teacher should record the exact time required for reading the selection and calculate the number of words read per minute. If desired, while the pupil is reading, she may keep a record of the errors made, following about the same system of recording the errors as used in Gray's Oral Reading Test. She may test the pupil for comprehension by

¹ Gray, William S. "Value of Informal Tests of Reading Accomplishment." *Journal of Educational Research*, February, 1920.

having him reproduce what was read or by having him answer a list of given questions. When she has tested the whole class in such manner, she should have a very good measure of the reading ability of the different pupils. Furthermore, if she has been careful in carrying out the test she may repeat it at a later time to show how much improvement has resulted from a definite amount of training. This procedure can be followed with many selections, and it is safe to say that it furnishes a very effective device for diagnosing the reading situation.

Principles underlying the construction of informal tests—The guiding principles in the construction of informal tests are the same as the principles underlying the construction of the standardized tests, and therefore only two of them will be rehearsed here.

1. *The test must attempt to measure desirable outcomes of the teaching of the subject under consideration.* Only those bits of subject matter should be included which can be justified by the current philosophy of education. Unimportant details have no more place in an informal test than in any other test. The subject matter of the test should be taken from the course of study under consideration and should be varied enough to emphasize all the desirable outcomes to be derived from the teaching of the subject. It may be possible to include all of the different varieties of subject matter within one test, but it is usually better to make different tests for the different objectives.

2. *The test should be objective.* It should be of such a nature that there is perfect agreement in its scoring. The exercises should be terse, clearly expressed, and so chosen that there is only one correct answer to each. This accurate scoring of the informal tests constitutes one of their great advantages over the traditional examinations. The objectivity of the informal tests implies definite methods of administering, scoring, and tabulating. These methods are usually borrowed from appropriate standardized tests, and if properly carried out make possible the repetition of the tests and provision of comparable data. Those constructing informal tests must give heed to these two fundamental principles if informal testing is to go unchallenged.

The use of informal tests—1. Informal tests are a valuable supplement to the standardized tests. Many of the standardized tests have but a single edition and this edition may soon lose its value if extensively used within a school system. This single edition may be sufficient for reliably measuring achievement of a group, but insufficient for reliably measuring the achievement of an individual. Informal tests patterned after the standardized test or after a particular part of it furnish the means for passing judgment on the reliability of the measurement with a standardized test. With the Woody Arithmetic Test, when the emphasis is placed on the measurement of an individual, it is recommended that the individual be given any list of problems similar to the ones in the standard test in order to get a reliable measure of achievement. The same is true with many other standard tests.

2. Informal tests can be used when no standardized tests are available. As yet no suitable standardized tests have been constructed in such studies as nature study, physiology, hygiene, civics, or drawing. Furthermore, in many fields where there are standardized tests they are not applicable to all grades in the elementary school. Very few tests have been worked out for the primary grades. Many of the standardized tests, too, emphasize only certain phases of a particular subject and many times the phase of the subject emphasized is the mechanical aspect. Informal tests will overcome both of these deficiencies. To illustrate, there is no suitable vocabulary test for reading in the primary grades, but a very usable informal test can be constructed from the word lists of Thorndike,¹ Jones,² Packer,³ or Houser.⁴ Again since most of the standardized tests in arithmetic emphasize the mechanical aspects of the subject, the use of an informal test such as Sample 3, which attempts to measure the reading aspect in the solution of problems in arithmetic, will call attention to a most important but often neglected phase of the subject.

3. *Informal tests may be used as a substitute for standardized tests.* While no one would advocate the complete substitution of informal tests, in these times of financial stringency the cost of providing the regular standardized tests makes their use prohibitive. In such cases the informal test, if properly constructed and mimeographed on suitable paper, is an excellent substitute and the cost will be nominal. While there will be no well-established standards of comparison for the informal tests, it must not be forgotten that the most significant standards of comparison for any city are developed within the city itself.

4. *Informal tests can be used as a means of training for the effective use of standardized tests.* The effective use of standardized tests depends upon a thorough understanding of the significance of following specifically the directions for giving, scoring, and tabulating sent out with tests. This understanding comes mainly through practice with test material. Too often testing programs are launched without having given preliminary practice in the technic of testing, and gross errors, which could have been easily prevented, destroys the validity of the testing. In some school systems the first attempt at measurement is often almost worthless. Preliminary practice with informal tests will prevent this and will save the school the price of the standard tests and in all probability will create a real demand for the use of them. Furthermore, the use of informal tests emphasizing various aspects of a single subject and including measures of the high aspects, such as thinking, character, judgment, or appreciation, will prove an excellent antidote to the idea that achievement in a subject has been completely measured when a single test has been given. This fact will certainly make for the more effective use of the standardized tests.

¹ Thorndike, E. L. *Teacher's Word Book*. Teachers College. 1921.

² Jones, R. G. "Standard Vocabulary." *Fourteenth Yearbook*, National Society for the Study of Education. Part I, p. 37.

³ Packer, Paul C. "The Vocabulary of Ten First Readers." *Twentieth Yearbook*, National Society for the Study of Education. Part II, p. 127.

⁴ Houser, E. T. "Analysis of the Contents of Ten Second Readers." *Seventeenth Yearbook*, National Society for the Study of Education. Part I, p. 40.

5. *Informal tests are useful as means of diagnosis.* In this particular, informal tests are almost as valuable as the standardized tests. Informal tests in arithmetic patterned after the Woody tests will reveal the types of errors made just about as well as the original tests. Likewise informal reading tests patterned after the Thorndike-McCall tests or the Gray oral or silent reading tests will portray in a very satisfactory manner the strengths and weaknesses of the reading situation concerned. Of course, accurate standards of comparison for these informal tests will be lacking, but standards of comparison are not needed to tell whether a child has a habit of adding 8 and 9 and getting 15 or a habit of mispronouncing words or misconstruing the meaning of them when reading. Thus remedial instruction and practice exercises can be based about as well on the results of informal tests as on those of standardized tests. The informal tests can be used from the standpoint of supervisory diagnosis as well as from the standpoint of pedagogical diagnosis just mentioned. The supervisor by use of properly constructed tests can measure how successfully and to what extent various aspects of the different subjects are being emphasized. In this way instruction can be directed and motivated.

6. *Informal tests are useful instruments for evaluating the results of educational experiments.* Standardized tests are very useful in experimentation, but they are not adaptable to many of the classroom experiments and dependence must be placed upon the informal tests. In many of the experiments from which most valuable contributions have come to educational procedure the informal tests have been the instruments by which the different practices have been evaluated. Often these experiments have been conducted by the classroom teacher, and it is safe to predict that in the future much more experimentation will be carried on than in the past. Out of it is certain to come much improvement of instruction and a real interest in the professional and scientific aspects of teaching.

THE VALUE OF INFORMAL TESTS IN SUPERVISION

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If we must have standings, they should be determined in large measure from the results of frequent well-chosen tests, so that they may represent as closely as possible the relative ability of the pupils. I know of no better way to test the quality of teaching or the achievement of the class than by the informal test. The preparation of such tests by the teachers is of great value to them, since it demands that they give considerable thought to the outstanding points of the subject under consideration. Many times the difference between a brilliant man and a mediocre one is the ability to give attention to really essential points and let petty details go.

I have heard of pupils of great natural capacity who were so excitable that they went to pieces at the time of tests and failed utterly, but in

twenty-two years of experience in day and evening classes, I have yet to meet the pupil who was not able to demonstrate his ability in frequent informal tests.

I have never been able to understand why a pupil should not be expected to answer questions upon the important facts of a subject which he is studying. I have always used tests to a considerable extent in ranking my pupils, since much of the work has been done at home, and I must be absolutely certain that the papers represent the work of the pupils without help from any kind friends. Of course, if the teacher begins to talk examination day as if it were a day of judgment before a judge who knew no such words as sympathy or pity, the case is entirely different.

The pupils are told that promotion does not depend primarily upon the results of tests and an effort is made to have the tests given in such a way that there will be no fatigue, either to the pupil or to the teacher.

We notify students who are not doing satisfactory work at least five weeks before the end of the term, so that they may try to improve sufficiently to pass. Pupils who are doing satisfactory work are told of their good standing and are excused from the tests near the end of the term, unless they wish to take them in the hopes of achieving higher rank.

SAMPLES OF INFORMAL TESTS THAT HAVE BEEN FOUND HELPFUL IN DIAGNOSIS

AMERICAN HISTORY¹

Mark correct statements +

Mark incorrect statements —

Mark statements you do not know about o

1. Columbus discovered America in 1492.
2. De Soto was a French explorer.
3. John Cabot was sent by Portugal.
4. Eli Whitney invented the cotton gin.
5. De Soto discovered the Mississippi River.
6. Samuel Adams was a President of the United States.
7. The Battle of Gettysburg was fought July 3, 1875.
8. The Battle of Bunker Hill was fought April 19, 1775.
9. The Constitution was adopted in 1787.
10. The French and Indian War was fought before Washington was born.
11. Washington was inaugurated in 1789.
12. Thomas Jefferson believed in the right of all men to vote.
13. The War of 1812 was caused by English trying to tax the colonies.
14. The Stamp Act was passed to help the colonies.
15. Dred Scott was a famous explorer.
16. Magellan was the first to circumnavigate the globe.
17. The Mexican War was caused by a dispute over slavery.
18. Samuel F. B. Morse invented the telephone.
19. Andrew Jackson was the American Commander at the Battle of New Orleans.
20. Benedict Arnold fought bravely at Saratoga.

¹ Submitted by William F. Butler, Principal Belmont Street School, Worcester, Mass.

AMERICAN HISTORY TEST I—ANALOGIES¹

Name..... Boy or Girl.....
 Age last birthday..... Next birthday will be.....
 Grade..... Class..... School
 Teacher

General Directions

This sheet contains a test in American history. Read the directions carefully, and when the signal to begin is given, turn the page, and do the test as rapidly as you can, but remember that it is more important to get it right.

Do not turn the page until you are told to do so.

Samples

	Attempted.....
	Right.....
1. Battle of Bunker Hill—Revolutionary War	Battle of Santiago.....
2. Robert Fulton—Steamboat	Eli Whitney
3. 1513—Balboa discovered the Pacific Ocean	1492

Note example one. Revolutionary War tells you in what war the Battle of Bunker Hill was fought. Now ask yourself in what war the battle of Santiago was fought. It was fought in the Spanish-American War. So you write Spanish-American War after Battle of Santiago.

Now look at example two. Following the name Robert Fulton, you see the word Steamboat. This word should recall to you what Fulton did. He invented the steamboat. Now you must ask yourself what Eli Whitney invented. Of course you know it was the cotton gin. So you write Cotton Gin after Eli Whitney.

Now turn to the third example. 1513 was the year when Balboa discovered the Pacific Ocean. Now ask yourself who discovered something in 1492 and what he discovered. You know the answer. Columbus discovered America in 1492. Write Columbus discovered America.

After you have filled in the blank spaces with your answers your paper will be like the examples below:

1. Battle of Bunker Hill—Revolutionary War	Battle of Santiago—Spanish-American War
2. Robert Fulton—Steamboat	Eli Whitney—Cotton gin
3. 1513—Balboa discovered the Pacific Ocean	1492—Columbus discovered America

Now go through the list on reverse side and write your answers in the blank spaces. They should be brief, and similar in character to those given above in explanation. If you come to one you cannot answer omit it and try the next.

1. Jefferson—Declaration of Independence	Madison
2. Howe—Sewing Machine	McCormick
3. Northwest Territory—Michigan, Indiana, etc.	Oregon Territory
4. 1825—Erie Canal completed	1913
5. Supreme Court—Interpretation of the Laws	Congress

¹ Prepared by Virgil Smith, Principal of the Highland Park School, Seattle, Washington.

- | | |
|--|--|
| 6. Civil War—Battle of Gettysburg | Revolutionary War |
| 7. Revolutionary War—Washington | Civil War |
| 8. Battle of Lake Erie—Perry | Battle of Manila..... |
| 9. War of 1812—Impressment of American seamen | Civil War |
| 10. Revolutionary War—(German) Steuben | Revolutionary War (French)..... |
| 11. New York colony—Royal colony | Pennsylvania colony |
| 12. Alaska—Acquired by purchase | Hawaii |
| 13. Northwest Territory—George Rogers Clark and Daniel Boone | Oregon territory |
| 14. New York—Settled by the Dutch | Florida |
| 15. Jefferson—Purchased Louisiana | Wilson |
| 16. New England colonies | <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;">fishing</div> <div style="display: inline-block; vertical-align: middle;">wheat raising</div> <div style="display: inline-block; vertical-align: middle;">cotton growing</div> <div style="display: inline-block; vertical-align: middle;">mining</div> <div style="display: inline-block; vertical-align: middle;">shipbuilding</div> <div style="display: inline-block; vertical-align: middle;">tobacco growing</div> </div> </div> |

U. S. HISTORY TEST—ANALOGIES—7A¹

1. Jefferson—Declaration of Independence	Madison
2. Howe—Invented Sewing Machine	McCormick
3. Northwest Territory—Michigan, Indiana, etc.	Oregon Territory
4. Supreme Court—interprets law	Congress
5. Civil War—Battle of Gettysburg	Revolution
6. Northwest Territory—Geo. Rogers Clark	Oregon Territory
7. Samuel F. Smith—wrote <i>America</i>	Francis Scott Key.....
8. Massachusetts—James Otis	Virginia
9. Webster—Unionist	Calhoun
10. Cause of Dorr's Rebellion—Property qualification for voting	Whiskey Rebellion
11. Field—Atlantic Cable	Samuel F. B. Morse.....

¹ A. S. Gist, Principal of the B. F. Day School, Seattle, Washington.CIVICS: FACTS ABOUT WORCESTER¹

Fill in the blanks.

1. The Public Library is on.....Street.
2. The Art Museum is on.....Street.
3. Worcester is the.....city in size in Massachusetts.
4. The largest.....mill in the world owned by an individual is in Worcester.
5. Worcester is often called "The....."
6. A building in Worcester owned by the United States Government is the.....
7. The municipal golf links are off.....Street.
8. The Worcester Polytechnic Institute is on.....Street.
9. Clark College is on.....Street.
10. Worcester Academy is on.....Street.
11. Holy Cross College is on.....Street.
12. The Mayor of Worcester is.....
13. The Chief of Police is.....
14. The United States Envelope Company is on.....Street.
15. The industry which gives work to the greatest number of men in Worcester, is the
16. Street cars are built by the.....
17. Chains for trucks are made by the.....
18. An institution which belongs to the State is the.....
on.....Street.
19. A building which belongs to Worcester County is the.....
on.....Street.
20. The member of the United States Congress whose home is in Worcester is.....

¹ Submitted by William F. Butler, Principal of the Belmont Street School, Worcester, Mass.

DIAGNOSTIC TEST—ORAL ARITHMETIC, GRADES 4 TO 8¹

Use the pencil to write the number of the problem and the result only.

1. Cost of 7 yards of baby ribbon at 4c. a yard?
2. How many inches in half a foot?
3. How many days in 6 weeks?
4. At 50 cents a dozen what should you pay for 6 apples?
5. Rachel had a quarter. She spent 10 cents for ice cream; amount left.
6. The divisor is 4 and the dividend 12; what is the quotient?
7. How many half pint bottles could you fill from a quart bottle?
8. At 3 for 5c. how many marbles could you buy for a dime?
9. A blackboard pointer is $2\frac{1}{2}$ ft. long; how many inches is that?
10. At 2 for 5c. what will half a dozen oranges cost?
11. A yard stick is cut into 4 equal parts; how long is each part?
12. A boy's shoes cost \$5.50; what change should he receive from \$10?
13. At 40c. per yard what should you pay for $2\frac{1}{2}$ yards of gingham?
14. Your school room is 24 ft. wide; how many yards is that?
15. At 40c. per lb. what would 8 oz. of steak cost?
16. When milk sells at 2 cans for 25c. what should 6 cans cost?
17. When grape fruit are 3 for 25c. what should you get for \$1.00?
18. How many 6 in. badges could you cut from 5 yds. of ribbon?
19. Which is cheaper, 2 lbs. for 15c. or 3 lbs. for 25c.?
20. At 20c. a pound, how many pounds of chops should you get for 50c.?
21. Gloves that cost \$72 per doz. sold for \$9 per pair. Gain per pr.?
22. Apples that cost \$2.25 per box of 84 apples sold at 50c. per doz. What was gained on a box?
23. Your schoolroom is 24 ft. x 24 ft. At \$3.00 per yard, what would it cost to cover the floor with linoleum?
24. What is the gain per cent when hats that cost \$60 per dozen sell at \$7.50 each?
25. What is the distance around a 7 in. stove pipe?
26. Find the cost of a load of coal weighing 4000 lbs. at \$12.50 per ton?
27. At 50 lbs. per cu. ft. what is the weight of a block of ice 12" x 18" x 24"?
28. Potatoes costing \$30 per ton sell at \$200 per cwt.; what is the gain per cent?
29. At a 25% discount sale what should I pay for a suit of clothes marked \$60?
30. A piece of paper 8" x 12" is cut into squares to cover a 4 in. cube. How much paper remained?

Instructions to teachers—Fourth-grade pupils should solve a minimum of 10 problems, fifth-grade pupils 15, sixth-grade pupils 20, and seventh-grade pupils 25 problems. Eighth-grade pupils should solve all of the problems. Tabulate carefully the number of pupils missing each problem, so as to bring out points of weakness.

The maximum time allowance should be 10 minutes for the fourth grade, 13 for the fifth, 15 for the sixth, 17 for the seventh, and 20 minutes for the eighth grade. All pupils who finish in 5 minutes less than the time allotted should be given 100 per cent in speed.

¹ Submitted by George A. Stanton, Principal of the Washington School, Seattle, Washington.

DIAGNOSTIC TEST—WRITTEN ARITHMETIC, GRADES 4 TO 8¹

Solve the following on this sheet without copying the problems:

(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ +7 \\ \hline \end{array}$	$84 - 12 =$	$\begin{array}{r} 7 \\ 8 \\ 5 \\ 9 \\ \hline \end{array}$	$5 \overline{) 3685}$	$\begin{array}{r} 2846 \\ \times 8 \\ \hline \end{array}$

(8)	(9)	(10)	(11)	(12)
$6 + 5 + 7 + 9 =$	$\begin{array}{r} 87543 \\ -79652 \\ \hline \end{array}$	$\begin{array}{r} 24632 \\ \times 36 \\ \hline \end{array}$	$29 \overline{) 86496}$	$\begin{array}{r} 365 \\ 284 \\ 576 \\ 734 \\ 842 \\ \hline \end{array}$

(13)	(14)	(15)	(16)
$\begin{array}{r} 5\frac{1}{4} \\ 8\frac{3}{8} \\ + 7\frac{1}{2} \\ \hline \end{array}$	$\begin{array}{r} 24\frac{1}{8} \\ -17\frac{3}{4} \\ \hline \end{array}$	$\begin{array}{r} 36 \\ \times 8\frac{1}{4} \\ \hline \end{array}$	$\begin{array}{r} 3 \quad 8 \\ - \times - = \\ 4 \quad 15 \end{array}$

(17)

$$\begin{array}{r} 3 \quad 9 \\ - \div - = \\ 5 \quad 20 \end{array}$$

(18)

$$\begin{array}{r} 4 \quad 2 \\ 2 - \times 4 - = \\ 5 \quad 7 \end{array}$$

(19)

$$\begin{array}{r} 3 \text{ gal. } 2 \text{ qt. } 0 \text{ pt.} \\ - 1 \text{ gal. } 0 \text{ qt. } 1 \text{ pt.} \\ \hline \end{array}$$

(20)

$$\begin{array}{r} 3 \text{ yd. } 1 \text{ ft. } 6 \text{ in.} \\ \times 5 \\ \hline \end{array}$$

To the teacher: Tabulate carefully the number of pupils missing each example, so as to bring out points of weakness.

¹ Submitted by George A. Stanton, Principal of the Washington School, Seattle, Washington.

DICTIONARY TEST¹

This test is diagnostic in purpose. It was devised in September, 1921, as an aid in the discovery of difficulties that children in the 5th, 6th, 7th, and 8th grades have in finding words readily in the dictionary. It has been used in only three schools thus far, so there are no tentative standards of achievement.

Preliminary to taking this test, the pupils of the Salmon Bay School in the grades mentioned above, were required to find a listed group of ten words in the dictionary. As each word was found, its page number and column number were recorded opposite the word. Records for the different classes, showing the medians for number attempted and number correctly found, within a certain time limit, were made.

The dictionary test was then given. During the year, dictionary drills have been conducted which should bring about a marked improvement in this kind of work.

The dictionary test seems to lead to these conclusions: (1) That many pupils, especially in the intermediate grades, cannot write the letters of the alphabet in correct order; (2) that extensive drills on letter groups, like those found in part 2 of the test, should be given; and (3) part 4 of the test is too difficult for pupils below the 7th grade. However, pupils of the 7th and 8th grades enjoy this part of the test.

NOTE—This test serves, to a considerable extent, as an intelligence test.

DICTIONARY TEST

Name..... Grade..... Room..... Date.....

I. Writing letters in alphabetic order:

1. From d to n:.....
2. From m to z:.....
3. From s to x:.....
4. From b to k:.....

II. Rearranging groups in alphabetic order:

1. at ans ax amn ap:.....
2. cond cas comm centi con:.....
3. stu sti sup spi smo:.....
4. fri pre dro per mon:.....

III. Writing words in alphabetic order:

1. Mary Marie Martha Marion Marian:.....
2. Montana Kentucky Indiana Nebraska Illinois:
3. gone get grind game group:
4. hundred hinder hence hour hand:

IV. Writing words in alphabetic order:

1. Five words that begin with "s." The first word is *sand*. Think of four others and write them in alphabetic order:
a. sand b..... c..... d..... e.....
2. Five words that begin with "d." The first word is *day*.
a. day b..... c..... d..... e.....
3. Five words that begin with "ca." The first word is *cab*.
a. cab b..... c..... d..... e.....
4. Five words that begin with "cr." The first word is *crab*.
a. crab b..... c..... d..... e.....

Score: I II III IV Total

Right

Wrong

Note: "Right" means entirely right.

¹ Submitted by W. A. King, Principal of the Salmon Bay School, Seattle, Washington.

ENGLISH—TESTS FOR PARTS OF SPEECH ¹

N. = Noun
 V. = Verb
 Pro. = Pronoun
 Prep. = Preposition
 Adj. = Adjective

Adv. = Adverb
 Conj. = Conjunction
 Inter. = Interjection
 o = Do not know

Write the abbreviation above each word.

"Whilst the camel was speaking, there arose a cloud of dust which opened and showed a short, thin old man, with a basket of carpenter's tools on his shoulders and a branch of a tree and eight planks on his head. When I saw him, O my sister, I fell down for excess of affright."

¹ Submitted by William F. Butler, Principal of the Belmont Street School, Worcester, Mass.

CORRECT USAGE ¹

Write the following exercises on your paper choosing the correct words needed to complete the sentences.

1. Do you think that it was (he him) ?
2. (Who whom) did you wish to see?
3. Was that Mary? I am sure that it was (her, she).
4. I (saw, seen) her on the car last Wednesday.
5. Where (was, were) you last evening?
6. (Can, may) I speak to you at recess?
7. Who was speaking? It was (I, me.)
8. She (done, did) her work very well.
9. John (don't, doesn't) recite so well as he did last week.
10. Will you please (set, sit) down, Julia?
11. Laura and (her, she) are invited.
12. He sent an invitation for you and (she, her) to go.
13. The dog (lay, laid) on the rug by the fire.
14. He has (laid, lain) there a long time.
15. The game (begun, began) before I arrived.
16. There (was, were) several people on the car.
17. Only Rose and (her, she) were present.
18. They were (sitting, setting) on the grass.
19. The rain has (lain, laid) the dust.
20. Was that your father and mother? Yes it was (them, they).

Instructions to teacher—Tabulate results by questions, so as to determine which points the class needs to have better fixed by drills.

¹ Submitted by George A. Stanton, Principal of the Washington School, Seattle, Washington.

GEOGRAPHY¹

Mark correct statements +

Mark incorrect statements —

Mark statements not known o

1. The capital of New York is Albany.
2. Chicago is in Indiana.
3. Seattle is in Idaho.
4. The Mississippi is the longest river in the United States.
5. The deepest part of New York Harbor is 183 feet.
6. Boston is south of Providence.
7. Worcester is the second city in New England in population.
8. Richmond is the capital of Virginia.
9. There are more than 500,000 people in Boston.
10. Worcester has a population of 210,000.
11. Boston exports more shoes than any city in the world.
12. The largest carpet mill owned by an individual is in Worcester.
13. Louisiana is mostly east of the Mississippi.
14. The capital of Maine is Bangor.
15. New York is east of Rhode Island.
16. In 1920 the population of Boston was 132,726.
17. Maine exports great quantities of potatoes.
18. North Carolina is north of the city of Washington.
19. Philadelphia is the capital of Pennsylvania.
20. Providence is not a seaport.

¹ Submitted by William F. Butler, Principal of the Belmont Street School, Worcester, Mass.

GEOGRAPHY—COMPARISON AND CONTRASTS¹

1. Maine is (larger, smaller) than Washington.
2. Seattle is (larger, smaller) than Chicago.
3. Saint Paul has (less, greater) extremes of climate than Seattle.
4. New York is further (north, south) than London.
5. Louisiana raises (more, less) sugar than Cuba.
6. The foreign commerce of Seattle is (greater, less) than that of San Francisco.
7. The distance from Seattle to New York is (less, greater) than from New York to Liverpool.
8. The climate of Florida is (more, less) moist than most of southern California.
9. The area of Washington is (less, greater) than that of England.
10. The elevation of Seattle is (greater, less) than that of Minneapolis.

¹ Submitted by George A. Stanton, Principal of the Washington School, Seattle, Washington.

READING TESTS

The following tests are selected from a number of similar tests made by a study club composed of seven women principals of the Seattle public schools, Belle Dirimple, Chairman. These texts, similar in form to various standard tests, were prepared for the purpose of determining children's comprehension of the Geography, History, Arithmetic, and Reading material used in the Seattle Schools.

The twenty-five sentences in the second-grade tests contain words common to second-grade reading material; the words to be crossed out are found in the minimal list of required spelling words for the second grade.

The words and phrases given in the test for grade 5 are those which most frequently occur in the geography text used in that grade.

The material used in the third-grade text was selected from four readers provided for that grade.

Second Grade

READING TEST—K-1

School..... Grade..... Date..... Name.....

Read each sentence rapidly.

Make a circle around *one* word which does not belong there.

To be done with the teacher (1—4)

1. The bear ran of home.
2. The wolf was angry get.
3. I will play in had the garden.
4. We will buy some had meat.

Now do the same with the following sentences:

1. The lark sang his sweet make song.
2. See he these pretty flowers.
3. I am looking for a boy do.
4. He started to with run.
5. The duck can every swim.
6. They walked any a long way.
7. The bee brings home take honey.
8. The boy up was seven years old.
9. There are many flowers in Holland man.
10. They ride on the horse come.
11. I saw the such elephant.
12. I have a horn each, Ned.
13. Our May baskets are me done.
14. I can great climb a tree.
15. The wigwam was time done.
16. Mother be made bread.
17. The sun shines this.
18. The man built a was house.
19. He got up at little four o'clock.
20. Little Riding Hood put the basket no on the table.
21. The farmer how had a cat.
22. Where are my go sheep?
23. The pine tree lived in the woods out.
24. The bird had a nest can in the tree.
25. The bear likes climb honey.

Third Grade

School..... Name..... Grade.....

Read each exercise. Then answer the question or questions by drawing a line under the right word.

1. George lives on a farm. He rides his little gray pony to school. George helped his father on the farm. When George was ten years old, his father gave him the gray pony.

Where did George live?

city, country, farm.

What color was his pony?

black, gray, brown.

Who gave the pony to George?

father, uncle, mother.

2. Don and Rose made a big snowman. On the snowman's head they put father's tall hat. In his arms they placed mother's old broom. Then they used large, round pieces of coal for buttons.

What was tall?

snowman, broom, hat.

What shape were the buttons?

square, narrow, round.

3. But this poor boy was very happy. The great forest was his playground. The birds, squirrels and pretty flowers were his friends. He was kind to them all. He never threw stones at the birds or squirrels and never crushed the beautiful flowers.

What kind of boy was he?

selfish, kind, cruel?

Where was his playground?

street, forest, school.

4. Crusoe's stay on the desert island had come to an end. When he left the island he carried on board the sailing vessel his goatskin cap and umbrella, also the parrot.

How many things did Crusoe carry on board with him?

seven, one, three.

5. And now at last the sun

Is going down behind the wood

And I am very happy

For I know that I've been good.

What time of day was it?

noon, evening, morning.

6. The Dutch people are always washing and scrubbing and dusting. They give their boats a coat of fresh paint every year. The floors of their homes are scrubbed until you can almost see yourself in them. Every morning the door-steps are washed and the streets swept.

Which word best describes the Dutch people?

wise, saving, clean, healthy.

7. The air is warm in our Eskimo house although there is no stove to be seen. In place of a stove there is a big bowl made of stone, in which seal oil is burning. This makes a lamp which is used for cooking and for warming the house.

What do the Eskimos burn?

coal, oil, gas, wood.

8. Now look at those huge ivory tusks on the ground over there. They came from an elephant. The man who killed the great beast has brought the tusks to sell to a white trader.

For what do men hunt the elephant?

skin, ivory, flesh.

9. The Desert of Sahara in northern Africa is almost as large as the whole United States.

Which is larger?

United States, Sahara Desert.

10. There are many rivers in the world. The source of a river is the place where it begins. Its mouth is the place where it ends in some larger body of water.

The place where the river begins is called what?

mouth, bed, source, banks.

Fifth Grade

DIRECTIONS FOR TEST I—PART I.

Time: This is not a time test, but it would be interesting to note the time of pupil who finishes first and also the last to finish. Do not consider any pupil who is unusually dull or clever.

Place the list of words upon the board concealed from view, or give individual copies if possible.

Pupils place papers on desks face down.

I am going to show you some words and phrases. There will be two or three words or phrases on each line like this:

_____ good—bad

(Write on board)

_____ fair weather—pleasant weather

If the words or phrases on a line seem to mean the same thing, write *Yes* at the beginning of that line; if they do not mean the same, write *No* at the beginning of the line. Do *good—bad* mean the same? Then what shall we write? *No*. Do *fair weather* and *pleasant weather* mean the same? Then what shall we write? *Yes*.

There are some phrases like these on the paper before you. When I say "Begin," you are to turn your paper over and start with the top line; read each line through; write *yes* at the beginning of the line if you think they mean the same; write *no* at the beginning of the line if you think they do not mean the same. Be sure to read each line.

Ready—begin.

TEST I—PART I

- _____ area—size
- _____ inhabitants—people—population
- _____ principal occupation—leading occupation—chief occupation
- _____ barren soil—productive soil
- _____ well suited to farming—adapted to farming
- _____ commerce—trade
- _____ dense population—scattered population
- _____ located—situated
- _____ raw products—finished products
- _____ tributaries of the Mississippi—branches of the Mississippi
- _____ collected—distributed
- _____ prairie—forest
- _____ region—district—section
- _____ natural highways—artificial highways
- _____ densely populated—thinly settled
- _____ vapor—moisture
- _____ arid—dry
- _____ tropical climate—cool climate
- _____ cold belt—torrid zone
- _____ straight—irregular
- _____ prominent city—important city
- _____ industry—business

TEST I—PART II

From the list of words or phrases below, select the ones you think right for the spaces in the sentences:

- | | |
|----------------------|-------------------|
| mineral products | navigable |
| abundant water power | extensive trade |
| transportation | republic |
| metropolis | valuable deposits |
| irrigation | |

1.has changed much of California from a desert to a paradise of flowers.
2. Seattle has an.....with Alaska.
3. The United States is a.....
4. Oil and natural gas are important.....
5. Railroads run in all directions, so there is good.....
6. The Mississippi River is.....
7. The New England States have.....for manufacturing.
8. New York City is the.....for manufacturing.
9.of gold have been found in Alaska.

Possible score—9.

Score for each correct answer—1.

TEST—THE BURNING OF THE RICE FIELDS¹

Instructions to teachers—Allow 15 minutes for the test. Explain the following words: Japan, precious, brand, solemnly, hearth, honored, torch, tidal, ablaze, Yone.

The questions are in form of a completion test. Illustrate on the blackboard with such sentences as:

Detroit is a

Apples grow on.....and grapes grow on.....

All the blanks in each sentence must be filled in correctly in order for it to count. The words used do not necessarily have to be those suggested in the key, but they must be reasonable and have direct reference to the story.

Key to the questions—

- | | |
|----------------------------------|--|
| 1. Grandfather | Japan |
| 2. mountain | the sea, or village, or people of the town |
| 3. rice | food |
| 4. village, or sea | some fire, or a brand, or a torch |
| 5. brand, fire, or torch | rice, or grain |
| 6. ran, or hurried | save |
| 7. angry, bitter, or cross | set fire to, or burned |
| 8. water | village, field, houses, or town |
| 9. honored, loved, praised, etc. | lives. |
| 10. tidal wave. | |

The Burning of the Rice Fields

Once there was a good old man who lived up on a mountain, far away in Japan. All 'round his little house the mountain was flat, and the ground was rich; and there were the rice fields of all the people who lived in the village at the mountain's foot. Mornings and evenings, the old man and his little grandson, who lived with him, used to look far down on the people at work in the village and watch the blue sea which lay all 'round the land, so close that there was no room for fields below, only for houses. The little boy loved the rice fields, dearly, for he knew that all the good food for all the people came from them; and he often helped his grandfather watch over them.

One day, the grandfather was standing alone, before his house, looking far down at the people, and out at the sea, when, suddenly, he saw something very strange far off where the sea and sky meet. Something like a great cloud was rising there, as if the sea were lifting itself high into the sky. The old man put his hands to his eyes and looked again. Then he turned and ran to the house. "Yone, Yone!" he cried, "bring a brand from the hearth!"

The little grandson could not imagine what his grandfather wanted of the fire, but he always obeyed, so he ran quickly and brought the brand. The old man already had one and was running for the rice fields. Yone ran after. But what was his horror to see his grandfather thrust his burning brand into the ripe dry rice, where it stood.

"Oh, Grandfather, Grandfather!" screamed the little boy, "what are you doing?"

"Quick, set fire! Thrust your brand in!" said the grandfather.

¹ Submitted by Helen Davis, Department of Measurements and Special Education, Jackson, Michigan. The sample test is typical of informal tests used in upper auxiliary classes. The term "auxiliary classes" is here used to designate specially selected groups of dull over-age pupils.

Yone thought his dear grandfather had lost his mind, and he began to sob; but a little Japanese boy always obeys, so though he sobbed, he thrust his torch in, and the sharp flame ran up the dry stalks, red and yellow. In an instant, the field was ablaze, and thick black smoke began to pour up, on the mountainside. It rose like a cloud black and fierce, and in no time the people below saw that their precious rice fields were on fire. Ah, how they ran! Men, women, and children climbed the mountain, running as fast as they could to save the rice; not one soul stayed behind.

And when they came to the mountain top, and saw the beautiful rice-crop all in flames, beyond help, they cried bitterly, "Who has done this thing? How did it happen?"

"I set fire," said the old man, very solemnly; and the little grandson sobbed, "Grandfather set fire."

But when they came fiercely, 'round the old man, with "Why? Why?" he only turned and pointed to the sea. "Look," he said.

They all turned and looked. And there, where the blue sea had lain, so calm, a mighty wall of water, reaching from earth to sky, was rolling in. No one could scream, so terrible was the sight. The wall of water rolled in on the land, passed quite over the place where the village had been, and broke with an awful sound on the mountain-side. One wave more, and still one more, came; and then all was water as far as they could see below; the village where they had been was under the sea.

But the people were all safe. And when they saw what the old man had done, they honored him above all men for the quick wit which had saved them all from the tidal wave.

Yone

(Fill in the blank spaces so that the sentences will be true).

1. Yone lived with his.....far away in.....
2. They lived upon a.....and down below they could see the.....
3. They took care of the.....fields which furnished most of the.....for the people.
4. One day as the grandfather was looking toward the.....he cried to Yone to bring him a.....
5. He took the.....and thrust it into the fields of ripe.....
6. When the people in the village saw the fields on fire they.....as fast as they could to.....the rice.
7. At first the people were very.....because they thought that the old man had.....the rice without any good reason.
8. When the people looked below they saw nothing but.....where a few minutes before the.....had been.
9. When they understood what the old man had done for them they.....him because he had saved their.....
10. What the old man had seen was a.....

MOST of the failures in educational reform have arisen out of the fact that the initial steps taken in a given subject have not been adequately followed up.—Charles H. Judd, "Scientific Methods of Supervision," *Educational Administration and Supervision*, May, 1926, p. 345.

CHAPTER VII

THE FOLLOW-UP WORK OF THE PRINCIPAL

THE IMPROVEMENT OF INSTRUCTION AND CREATING PROFESSIONAL ATTITUDE

REINHARD H. RUHNKE, PRINCIPAL OF THE MINERAL STREET SCHOOL,
MILWAUKEE, WISCONSIN

THE VITAL fundamental function of the principal of a school is the improvement of the methods of instruction of the teachers in his charge. Only through the exercise of this function can the product which passes through his school be improved.

One of the factors which is most essential in improving instruction and stimulating professional attitude is the observation and analysis lesson. This is more important and effective in improving classroom efficiency than any other agency. It has never been worked out to its fullest value. At the present time some of the most expert teaching power of our best teachers is going to waste as far as imparting the essence of this power to others is concerned. These best teachers should be used as ideals in creating classroom efficiency for the others in the school. The principal can easily arrange matters so that the teachers of this school can attend a demonstration lesson by an expert. After the lesson the most valuable and important work in the matter of growth is to be done. The work should be discussed and analyzed, not from the standpoint of destructive criticism, but from the standpoint of reaching a higher plane of teaching through analysis. Such work as this should go on in the school at frequent intervals. The teachers during each semester should be able to observe the work of an expert in every subject at least once, more than once, if possible to so arrange. If properly handled, especially the analysis factor after the lesson, resulting in wholesome constructive, mass-discussion on the part of the teachers, it will spur everyone with an extreme, wholesome, self-desire to improve.

It is true that most school systems now provide for visiting days but these individual, isolated visits do not create mass discussion and hence do not create mass desire to improve.

No principal can improve the condition of the product which passes through his school unless he consistently improves the methods of teaching of the executives who directly handle this product.

STIMULATING PROFESSIONAL STUDY AMONG TEACHERS

ARTHUR S. GIST, PRINCIPAL OF THE B. F. DAY SCHOOL,
SEATTLE, WASHINGTON

Among the many responsibilities of the principals, none is more important than that of stimulating professional study, growth, and interest among his teachers. This is especially essential in cities where the length of service is long and the tenure fairly secure. Often the teacher's work is sufficiently well done to warrant her retention year after year, yet she is not working or developing up to her limit of capacity. With this teacher of experience and training, the elementary-school principal in the large city has a real problem, as most of his new teachers come to him with enthusiasm, well-trained, and with the modern viewpoint. The writer has tried four means of arousing interest in professional study.

Scientific study of pupils and standard tests—An interest in this phase of work has been attempted from two standpoints; from that of the pupils and from that of the tests. Every class has its problems, which means study for both the teacher and the pupil. In some cases it may be the individual cases, but in large schools, where the pupils are carefully classified, an entire class may present a real problem. It has often been possible to arouse an interest in a scientific study of individuals and of classes as the problems present themselves. When standardized intelligence or achievement tests are given, the principal has a real problem in interpreting and arousing an enthusiasm for standard tests.

Professional reading—To be of service to teachers in recommending professional reading, it is necessary for the principal to be familiar with current school literature. Professional reading can often be suggested to the teacher when problems arise. Sometimes quoting the contents of an article arouses sufficient interest. An article which does not meet with the teacher's approval will often cause critical study and discussion. Ten professional magazines are taken by our school. The writing of schoolroom practices by teachers in the school always arouses interest in professional study and reading.

Extension work—We are fortunate in having our State University with a willing and efficient College of Education close at hand. Some fifteen to thirty per cent of the writer's corps take work at the State University. The courses and professors in charge are generally discussed with the principal before registering, as well as many times during the course. Material of a practical nature is made available to them and the papers written for these courses are often read and discussed with the writer.

Professional meetings—For several years we have met as a building group and discussed some professional topic at each meeting. These discussions have been short but specific. For three years we have held one professional meeting each month, when the afternoon program is shortened and school is dismissed thirty minutes early. At these meetings, the teach-

ers often take the lead in the discussions; the topics having been selected in advance. Attendance and discussions at these meetings are always optional with the teachers, but never less than twenty of our thirty teachers have attended. Because our school is departmentalized, the topics are often general in character, that special teachers may not become too narrow in their outlook. Following is a list of such topics discussed: The Junior High School; Practical teaching of democracy to elementary-school pupils; How to plan and give drill; The interpretation of standardized tests; Correlation of subjects; Advantages and disadvantages of the semi-departmental elementary school; The teacher as a student; Special study; Study of texts, their contents and arrangement of material; Classroom repetition wise or otherwise; Reports by teachers of vocational trips; The value of home assignments, and home assistance; The securing of home coöperation by sending home papers; and The vacation school and its purpose.

REDUCING THE PERCENTAGE OF FAILURES IN THE DETROIT ELEMENTARY SCHOOLS WITHOUT LOWERING STANDARDS

JOHN MERRILL, DISTRICT PRINCIPAL OF THE LINGEMANN SCHOOL,
DETROIT, MICHIGAN

For the purpose of ascertaining the number of failures in the elementary grades of the Detroit Public Schools, the promotion rolls for January, 1920, were tabulated. Following an extended period of carefully planned, well-sustained effort, two more tabulations were made and a comparison of the figures showed that somewhat striking reductions had been made in the "flunkage." The following table and diagram tell the story of what was accomplished in one year.

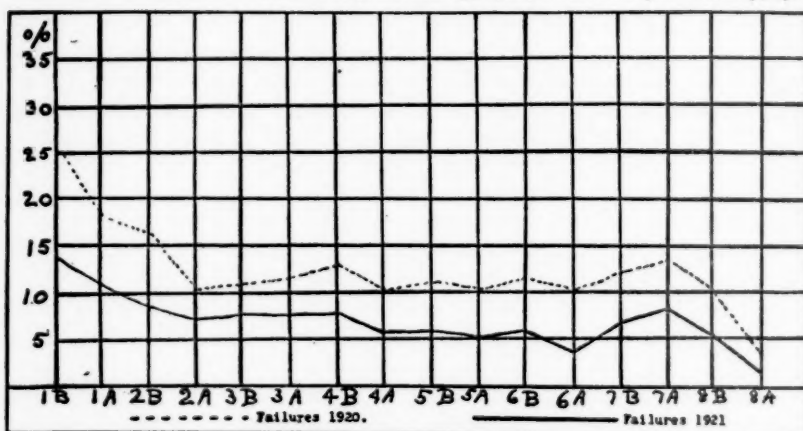
TABLE I—Comparison of failures in January, 1920, with those for January, 1921

Grade	Per cent failed 1920	Per cent failed 1921	Grade	Per cent failed 1920	Per cent failed 1921
B1	27	14.3	B5	10.4	6.6
A1	19	10.3	A5	10.4	5.5
B2	16	9.2	B6	12.7	6.4
A2	11.3	7.2	A6	10.5	4.9
B3	12.6	7.3	B7	12.6	7.2
A3	12.8	7.1	A7	13.4	7.9
B4	10.8	7.6	B8	10.4	6.6
A4	10.8	6.3	A8	3.1	2.6

Total failures in January, 1920..... 14.7 per cent
Total failures in January, 1921..... 8.4 per cent

When the promotion rolls for January, 1921, were tabulated it was found that out of a total of 85,804 pupils in the eight grades of the elementary schools, 7214, or 8.4 per cent as indicated by the table, had failed. This amounts to a reduction of 42.8 per cent from the amount of failure at the end of the first term of the previous year. On the basis of the enrolment of the semester ending January, 1921, it meant that 5405 more pupils were saved from failure.

DIAGRAM 1—Comparison of failures for January, 1920, with those for January, 1921



For the semester ending June, 1921, "flunkage" was reduced to 6.7 per cent. Credit for this low percentage is due to the teachers and principals who early in the term began remedial work.

It was made clear that the object was not to lower the standard so as to pass pupils, but rather to center attention and assistance upon their difficulties and needs, thus enabling them to raise the quality of their work in the subjects found difficult. The final scores¹ in the Courtis Standard Tests indicate that the quality of work did not suffer but was slightly strengthened by the plan.

The initial standard tests of September, 1921, were compared with those of September, 1920. The results likewise indicate that the grade standards were maintained in spite of the reduction of failures from 14.7 per cent to 6.7 per cent during this time.

The failing pupils in ten elementary schools for 1921 made scores as good or better than did those who failed in 1920. This was shown by a comparison of test results for arithmetic and spelling, whereby it was discovered that the pupils failing in 1921 had scored slightly higher in those subjects than did those who failed the preceding year. This also serves to show that the reduction in "flunkage" was not obtained by lowering standards.

¹ Editor's Note—Detailed figures, which considerations of space make it necessary to omit, were submitted by Mr. Merrill to cover this statement.

The procedure followed in obtaining the results that have been stated was carefully worked out. By a series of detailed investigations of the various districts, by tables and graphs worked out by the district principals and presented to the principals of the various groups, the condition of the city, of each district, and of each school in relation to the failure problem, was shown. The principals were urged to study with their teachers the problems as found in their particular schools. This material was presented in December, 1920.

It was suggested to the principals that they make lists of the pupils who would probably fail at the end of the semester, showing the cause of each failure, and that attention be centered upon the weak subjects and every available assistance be given to the pupils in overcoming weaknesses during the time that intervened before the date of promotion.

Briefly stated, the following are some of the means that were found effective in raising the quality of the work of the weak pupils:

1. Attention was centered upon the needs and difficulties of each individual.
2. Principal or teacher interviewed privately each pupil, and the situation was frankly discussed in the effort to arrive at the cause and find a remedy.
3. Parents were visited, called into consultation, or otherwise informed of the impending failure and their coöperation was requested.
4. Pupils were allowed to devote more time to the subjects in which they were weak.
5. Special help was given by the regular coaching teacher, or by brighter pupils during study periods or after school.
6. Weak pupils were required to make special reports to the office at stated intervals, daily or weekly, upon their scholastic progress.
7. Outside help and study were encouraged.

SYSTEMATIC PROFESSIONAL STUDY¹

This year each teacher has reported to the group on the work for her grade in each subject in the new course of study; thus everyone got an idea of the whole course.

Last year, for one semester, we took up the reviews of new books on the "Curriculum," each teacher reporting on a certain number of chapters at each meeting. For the other semester, two teachers each month gave a resumé of two excellent articles in educational journals.

¹ Belle Dirimple, Principal of South Seattle School, Seattle, Washington.

EXAMINATION OF PUPILS' REPORTS¹

I always examine all report cards just before they are sent out. This is done at the teacher's desk while the room is in session. We then count up the number of unsatisfactory marks and record the number somewhere to see if we cannot reduce the number the following quarter.

A general letter is sent to the parents calling attention to the report cards which are about to be issued.

AN EXECUTIVE COUNCIL²

Title and composition—An Executive Council of the Daniel Bagley School shall be elected consisting of twenty-four (24) members—twelve (12) boys and twelve (12) girls. Three (3) boys and three (3) girls being chosen from each of the four upper rooms—not grades, of the Bagley School.

Purpose—The purpose of the establishment of this council is to arouse a keener sense of the responsibility of each grammar-grade pupil as a citizen of his room and of the school in general.

Eligibility—The members of this council shall be chosen by each room acting as a committee of the whole—any pupil or teacher may make nominations. The basis for such nominations should be high citizenship in the classroom, in the halls and basement of the building, about the grounds, and in the community in general. It is especially desired that scholarship not be the main quality in the selection of the members of this council, though the attitude of the boy or girl toward the assignment of school tasks should be the chief factor perhaps in the selection of the members. In other words, a student who is doing "C" work should be eligible to election to this council if this "C" work represents the best of his ability and if his citizenship is of a high order.

Certification—Each of the teachers of the four upper rooms shall certify to the principal the first of each calendar month the six pupils who have been selected from her room for the previous month. These names shall be made a part of the permanent record of the Bagley School and certification will be made of such selections when the boy, or girl, passes on to high school. The list becomes then, in a way, an honor roll not conditioned on scholarship alone.

Meetings—Each Executive Council shall hold one formal meeting and then adjourn, *sine die*. The business which will be brought before the Council will be business pertaining to the general good of Bagley, though the business to be transacted will always be of importance secondary to the election of this honor group of the list. We propose to put before the first meeting of the executive Council, the matter of restoring a fence between the Bagley School and an adjoining orchard, which was destroyed some years ago by former pupils of this school. The principle of bringing this item of business before the council is to emphasize the responsibility of each group of citizens not only to a succeeding group, but to those who have gone before them. Our plan is that refreshments will be served at every meeting and everything possible done to make their one meeting a happy occasion for all the members. The advisors of the Boys' and Girls' Clubs and the principal of the school will be *ex-officio* members of the Council. Guests may be invited by these *ex-officio* members of the Council.

¹ William A. Blair, Principal of T. T. Minor School, Seattle, Washington.

² J. W. Graham, Principal of the Daniel Bagley School, Seattle, Washington.

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