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ABSTRACT

The full texts of invitational addresses given at the 1965 International Reading Association (IRA) Convention in Detroit, Michigan, by six recipients of IRA citation awards are presented. Gates suggests steps IRA should take to revive and redirect reading research. McCallister discusses the implications of the changing and expanding vocabulary of professional literature and the need to compile and clarify these terms. Smith traces the influences which are responsible for the present status of American reading instruction from the early period of religious emphasis to the present period of expanding knowledge and technical revolution. Strang outlines the reading process and stresses the need to recognize the interacting aspects of product, prerequisites, process, and procedures, in order to understand an individual's reading development. Tinker describes how children perceive words as they begin to learn to read and how they progress to more mature perception. Witty discusses some aspects of reading instruction for the disadvantaged. Each address is accompanied by a brief sketch of the recipient's accomplishments. Some bibliographies are included. (This document previously announced as ED 017 407.) (NS)

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by

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A collection of invitational addresses presented
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FOREWORD

When the Board of Directors approved the plan of asking each of the recipients of the International Reading Association Citation Awards to make an Invitational Address at the 1965 Detroit Convention, it seemed that the papers which would be presented would contain such valuable messages that they should be published in full rather than in abbreviated form in the annual Proceedings. An examination of the papers contained in this booklet reveals the wisdom of the Board's decision.

The authors of the various chapters need no introduction. Each has devoted a lifetime to highly significant activities in the field of reading. Each has presented in his chapter major conclusions, new challenges, and a wealth of information. No person interested in reading can consider himself well-informed without a careful study of this booklet.

Theodore Clymer
President, International Reading Association, 1964-1965

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ARTHUR I. GATES is Emeritus Professor at Teachers College, Columbia University, where he is now engaged in research. He received the International Reading Association Citation of Merit Award in 1961, was the first to receive the award for distinction in research sponsored by the American Educational Research Association and Phi Delta Kappa, and is a charter member of the newly established National Academy of Education. Dr. Gates is the author of numerous professional articles and publications and is widely recognized as a creative and productive scholar and teacher.

ERIC

WHAT WE SHOULD BE DOING SOON

ARTHUR I. GATES

As THE TITLE of my paper implies, I wish to suggest a few things we members of IRA should be doing soon. First in importance is the need to revive and redirect reading research. The extensive studies of Barton and Wilder (2) under the auspices of the Carnegie Corporation leave no doubt that scientific work in our field is at a low ebb. It is low in quantity—too few persons of high competence are devoting their time fully or even mainly to basal research. It is too limited to the more obvious, the more practical problems. It is restricted too much in range; it does not show sufficient activity in many promising lines now developing within sociology, anthropology, experimental psychology, biochemistry, statistics, and other new types of scientific approach such as systems analysis.

Change and Challenge in American Education (8), a 115-page book written by James E. Russell, Secretary of the Educational Policies Commission, presents the main idea so well that I shall quote from it.

> We may hope that specialists in educational research can find ways to alter their efforts in a rather profound way. The present thrust of most research consists in trying out someone's favorite ideas for reform and improvement. I have no resistance to most people's pet ideas. I also like to see the kind of research that tests whether phonics is better than sight-reading and what effect class size has on learning. I think too that educational television, team teaching, and programed learning can be useful. . . . But the notion that all these peripheral actions can add up to profound improvement or change strikes me as fanciful.
>
> When our theoretical base is as incomplete as it is, . . . suggested solutions proliferate on the fringes. What we need is to know more of the mind, its structure and operation, and the forces and factors that influence it. I do not expect to find these insights . . . in programed instruction, or in any fortuitous combination of advances on the periphery. We must plunge into the central question.

> One could wish that educators were highly mobilized on this front, but they are not. Although some years ago educational researchers of national reputation were involved, more recently there has been little educational research at this level. . . . This advance must come and come soon.

I should like to convince you that now, for the first time during my life, we can afford to undertake the kind of research we need to do. During my earliest professional years, I and my research associates prepared close to a thousand pages of experimental material for teaching reading during the first year, but no one would publish them. During the past forty years, reading readiness tests have been nearly squeezed to death by economic pressure. They must be cheap group tests; "we can't afford the time for individual testing." They must be very simple to understand and use; our teachers colleges cannot afford to train teachers to learn to use complicated or subtle techniques. And so the cheap, the quick, the simple, and consequently the necessarily superficial and inadequate appraisal of the beginning pupil prevails, and sooner or later is criticized quite justifiably for being what it is.

Research in the past has been penny-wise and pound-foolish. Let us be done with that policy. Let us assume that those days are over. Our best economic experts express no doubt about it. A recent Kiplinger letter, the big business man's favorite confidential adviser, stated, "Education is the big 'growth business,' now the most valuable of all. Capital will be poured into education but, mind you, we'll have it to pour." Most of our political leaders, including President Johnson, agree. The implications of this conviction are tremendous—we must plan our future on the assumption that we can afford to do almost anything which holds a reasonable promise of improving education.

Next I wish to convince you that truths (facts and principles) most significant for reading shine out of basal, scientific research, even that done in an apparently remote region, for example, on the antics of animals, and by an investigator who wasn't thinking about reading at the time. Indeed, I shall start out by declaring that a study of animals was responsible for the greatest revolution in the teaching of reading ever made.

The animals demonstrated the major principles involved in learning to read in 1898 (*11*). Their demonstrations got to us only because Edward L. Thorndike introduced for the first time a revolutionary method of study—the scientific method. His famous puzzle boxes enabled him to see the main features of learning and problem solving because the activities of cat, rat, and monkey were slower, more visible, and less subtle than those of children learning to read. Later when Thorndike studied reading he realized that when a child or adult tries to read a passage he is faced by the same confusion of possibilities; and he tackles the problem as does a cat or rat, with all the knowledge, skill, insight, and reasoning ability at his command. This idea made explicit in an article entitled "Reading as Reasoning" published in 1917 (*12*) was so fundamental, so far-reaching, that it resulted in a great number of improvements in teaching reading. The idea that reading is as complex, varied, and subtle as thinking itself has been the basis of our thinking about reading and learning to read for a half century, and it has confronted us with a myriad of practical problems which puzzle us even today.

Let me tell you now about another tremendous contribution to the teaching of reading made by a study of animals, especially Pavlov the pig. Pavlov the pig went to school with Pavlov the Professor more than a half-century ago in Russia (*6*). He was the most popular pig in school. He learned quickly. Every day he led the singing. He was always healthy and hungry, but even when he reached the dinner table first he didn't make a hog of himself.

Then one day Professor Pavlov introduced reading. He taught the pig that by pushing a lever when a circle appeared above it he would get some food, and if he pushed the lever when a square was shown, he would get an electric shock. Then the Professor began to introduce figures (that is words) which resembled both the circle and the square in various degrees, such as the outline of a rounded bar of soap or the heel of a man's shoe. As the choices became harder, Pavlov the pig made more and more mistakes. He began to get jumpy and snappy. His singing began to go off key, and eventually he had a real nervous breakdown.

Pavlov the pig really was the first reading disability ever studied in a genuinely scientific clinic. Apparently when a pig suffers a reading disability, it hits him hard. It took over a year of hospital care to restore Pavlov to normalcy. Of course you must realize the pig suffered severe penalties for missing words. A mistake deprived him of food and subjected him to annoying electric shocks.

The majority of psychologists would probably say that the cause of Pavlov's breakdown was frustration resulting from efforts to learn something that is too difficult. And most of us might have continued to believe that mere difficulty did the damage, were it not for another study made on animals. Liddell (5) found that an animal did not become disorganized even when failures were frequent if—and I quote—"some freedom for evasion and procrastination is possible." What heresy is this? Possibly the pig's trouble was that it didn't know how to swear. It just had no way of saying, "the devil take this miserable business. I've had enough of it."

Not one of Liddell's animals broke down when an adequate avenue for escape—a way to save face—was provided. Here is an important principle for teachers of reading that might not have been discovered outside of the pigpen, so to speak. Indeed studies of animals beginning with those by Pavlov and Thorndike have contributed greatly to our present information about motivation in reading and other human activities.

Studies of animals as well as of human beings have shown also that the significance of learning experiences varies, along with other things, with the character of the times—with the social and physical environment. Anthropologists and sociologists have also contributed greatly to our understanding of the influence of our environment on reading. We now know that to improve the teaching of reading the teacher should study all phases of each child's life and have a background of valid information to use in interpreting these data. For example, consider television. Although Paul Witty and others have labored long and hard to guage television's influence, they would be the first to admit that it poses formidable problems as yet unsolved. For example, a positive

correlation has sometimes been found between the amount of time spent by a child in viewing television and his reading ability. I suspect the relationship is spurious. For example, if every child stole as much time from his school work as he dared, the brighter child would spend more and the duller one less, a fact which would produce the positive correlation.

In a recent sociological type of investigation (*9*) it was found that in England youngsters who viewed TV extensively tended to advance beyond the typical low-grade, cowboy, and other violent programs to superior dramatic and informative shows as they grew older. The explanation seemed to be that the BBC did not supply enough programs of the poorer type to fill the youngsters' entire viewing time with the result that they tried other, better offerings and gradually learned to like them. American stations on the other hand pour out such a flood of this low-grade stuff that the youngsters never exhaust the supply and therefore do not learn to view anything better. Indeed, I understand that "Bonanza," full of fights and foolishness, is the most popular TV show in America.

Is it possible that American children are smothered likewise by an avalanche of low-grade reading material? Would we do better with a smaller more carefully selected diet? The child who is gorged all day with ice cream and soda pop is likely to lose his appetite for what my generation of mothers called "a decent meal." Recently at the big Barnum and Bailey Circus where dozens of thrilling events were going on all over the place, I observed a youngster who apparently was bored and confused by it all and spent most of his time playing with a few simple trinkets he had brought along in his pocket. There is here an unsolved paradox.

One of the biggest conflicts in our world today is the battle between pictures and print. Pictures—pictures in newspapers, tabloids, books, magazines, advertising matter, in movies and overwhelmingly on TV—have been gaining on the printed words at a constantly increasing rate. If this recent deluge of pictures does not completely swamp the printed word, it at least poses the overriding educational and social problem of

our time. In the face of this phenomenon, our investigations are pathetically inadequate.

In many other respects, life is different today from yesterday. We must recognize that people as well as physical objects change. When I was a child it was apparent that my elders had grown up during the Sweet Alice, Ben Bolt age. When I reached high school, I, as was the custom, got myself "a best girl." Her name was Alice and she was a very sweet girl, but I doubt that she ever wept with delight when I gave her a smile. Indeed if I offered several of my most bewitching grins, instead of weeping, I suspect she would have said, "What's on mind now?" I am sure she never trembled with fear at any of my frowns.

Teachers' attitudes and techniques have changed greatly during my lifetime. I came into education with a background of premedical training and experimental psychology, and I developed soon the conviction that the teacher of the future would be thoroughly trained to diagnose and deal with children's educational and intellectual life as a physician was prepared to diagnose and prescribe for their physical life. I started in at once to try to develop useful tests, examinations, and diagnostic instruments corresponding to the visual charts, the stethescope, blood sugar tests, etc., of the physician. But alas! this idea got better support in the decade beginning in 1920 than it did thirty years later. Mary Austin (*1*) and her committee's recent report suggests in fact that teacher training institutions have retreated before the stubborn enemies of professional preparation of this sort. The greatest of these enemies has been the old conviction that we can't afford it. I believe it is more needed now than ever and it is financially feasible.

I think that every teacher, at least every elementary school teacher, should be given an internship training during which she learns to make comprehensive case studies of individual children using all of the best technical equipment available. As many of our leaders have been demonstrating for years, we have sufficient information and techniques to enable any good teacher to teach all or nearly all children to read well, provided an adequate internship type of training is provided. To fail to equip teachers with those insights and techniques now is absolutely

inexcusable. The IRA should assume the major responsibility for putting this idea into effect.

One of the areas which is in need of extensive study is suggested by the disagreements between the believers in systematic learning (practice) and progressive or "creative teaching." The quarrel here is older than I am and equally confusing. The advocate of one of these views can blacken the eye of anyone who insists on using his opponent's plan exclusively. So, since I learn from TV that a black eye is a noble characteristic of anyone who refuses to shift from his fixed taste, I must assume that stubbornness is a virtue.

This general issue is involved in various suggestions for teaching phonics and for using many kinds of detailed, ready-made "programmed materials" or machine teaching. (I must note in passing that the person who has been most active during the past twenty-five years in pushing the possibilities of programming is B. F. Skinner, a leader in animal psychology.) I am sure that E. L. Thorndike a half-century ago took a favorable view of programming in general when he said in effect (*10*), "Never let a teacher spend her precious time in doing what can be done as well by a few pieces of paper, but save her time to enable her to do better the things that only she can do." I have been doubtful that programmed materials could do all the "precious things" that a good teacher can do, but a recent cartoon in *Punch* made me pause. This cartoon shows a man reading a message just handed to him by a huge electronic computer. The computer's message said, "I would like to contribute a pint to the blood bank."

I suspect that these new programs and devices can do many useful things. Although I have not as yet seen a program for teaching reading that I thought was very good, the fault was in the materials programmed, not in the principles of programming. Research has already suggested that programs are not, as many persons assume, valuable only for routine drill work; on the contrary they seem to be better adapted to encouraging reasoning and problem solving of certain sorts. They can be made to detect errors very well. They can be adjusted nicely to different rates and to many, but not all routes of learning. Many practical issues are

not solved as yet, but when Mr. Russell and I (and many others) insist that we must get back into much more extensive basic research, we do not mean to say that practical research is without value. All the basic research done since 1900 has not clarified all the general principles of learning, much less the value of the hundreds of specific materials, methods, and devices now used by teachers of reading. Basal research, however, often reveals practical principles and throws doubt on practical policies which many of us might otherwise assume to be sound.

For example, a belief long held by many is that the greater the number of sensory channels employed to feed information to a learner the better he will learn. Thus instead of having him merely see the word, you have him also sound it, write it, type it, you show a pictorial illustration of it, use it in a story, and so on. Let one sense be facilitated by another. Indeed many persons now warmly recommend a "combined method," one which uses many resources. Thus the classroom is filled with every available kind of book, workbook, phonic system, sound motion picture teaching machine, TV lessons, and so on. Sometimes it seems that everything a teacher can get hold of is tossed into the hopper and ground into mincemeat, which she then seasons with additional suggestions as it is passed out.

A series of recent studies done not by us reading researchers but mainly in the psychological laboratory cast doubt on these policies. Robert Travers in his recent address as President of the Educational Psychology Division of the American Psychological Association summed up his review of many studies by saying, " . . . flooding the learner with information and stressing realism are likely to provide poor learning. Some schools do this, as if in the hope that the more information is available the more the learner will absorb. But the fact is that the learner has a limited ability for utilizing information, can generally utilize information from only one source at a time, and has a limited storage capacity . . . what is needed are principles which will indicate how information can be most effectively compressed and simplified . . . " not expanded and elaborated (*13*).

When new investigations like these threaten old convictions we must

not be discouraged. Upsets like these are the inevitable and desirable fruits of scientific progress. The time to worry is not when we encounter changes and uncertainties but self-satisfied agreement among our experts. A state of agreement usually means merely that progress has come to a halt. Despite many such uncertainties we can and should soon be making real improvements in most of our materials and procedures. An enormous number of excellent investigations, both theoretical and practical, both "central" and "peripheral" (to use Russell's apt phrases) have been done in the past. Indeed many investigations in the field of reading compare favorably with the work done in any of the behavioral sciences. Don't ever let anyone deceive you into thinking that the scientific as well as the practical contributions of E. L. Thorndike, Charles Judd, Walter Dearborn, Grace Fernald, Leta Hollingworth, William S. Gray, and David Russell (to mention only those who are regrettably no longer with us) are not outstanding.

The effects of the scholarly work of these fine men and women are sufficient to enable us to make many practical improvements now. For example, the basal reader outfits are still so fragmentary, incomplete, and difficult to use as to require a great deal of really shrewd additional work by a teacher to handle many children individually with them. These books are poor not because we do not know enough to make better ones but because everyone has assumed that we cannot afford better ones. Well, we can. And we should now be making materials that are more detailed, more comprehensive, and built deliberately for individual instruction as well as group activities. They may comprise many more packets, and in general bear little physical resemblance to the present reader-workbook outfits. I could give you many other illustrations but I must move on.

I want to tell you about another problem of greatest significance in reading research which some animals recently called to our attention. Psychologist Robert Rosenthal (7) divided a large group of rats into two groups equivalent in ability to run certain mazes. To one-half of his graduate student assistants he turned over one group of rats, which were said to be "rat geniuses." The other assistants got the equivalent group

but they were described as "stupid rats." The assistants went to work teaching equivalent rats by prescribed, identical methods to run an identical maze. What happened? The "genius" rats learned noticeably better than the "stupid" ones.

This little study radiates with a host of implications of great importance. I am sure I do not as yet see them all but one seems clear. The differences seem to be due to something these teachers did differently while trying to teach in exactly the same way. Things they did differently are very subtle but they cry out that the role of the teachers is an overwhelmingly important factor in the learning situation even when the pupils are rats utterly blind to most of the things, such as the meaning of spoken words, which the teacher habitually uses.

This study demonstrates the unreliability, known for some time on the basis of other evidence, of the typical control group method widely used in education. Most of the control group studies of reading methods, especially those made during these recent years of turmoil and tempest, have yielded data which are mainly useless, indeed often misleading. So-called experiments or "demonstrations" of methods or materials which have been given great publicity are the worst offenders. They are loaded dice.

Only very extensive studies carried out for many years in many neutral schools by neutral teachers supervised by genuinely competent and neutral investigators in comparison with many other procedures will reveal reliably their relative merits of the various programs. We can afford them. We have simply got to have them. Few of us, I am sorry to say, have been trained to the level of expertness in the new science. A fine start in this direction has been made by the Federal Department of Health, Education, and Welfare in launching under supervision of Donald Durrell, Guy Bond, Theodore Clymer, and others some large-scale studies of first-grade reading. Dr. Bond who is serving as the chief critic of evaluation in these studies plays a difficult and extremely important role. I regret to say that too few "reading researchers" are equipped to do expert work of this sort. We need many more men and women capable of doing it well.

It is time perhaps for this association also to undertake the serious business of promoting and appraising the result of studies of principles and practices in reading. Scientific and professional discoveries in our field could now grow by leaps and bounds like the two youngsters who live in the apartment above me. I think that like these two lively children, scientific and professional research activities will need much parental care and discipline. And I think the IRA should consider the advisability of becoming the foster parents. I am pretty sure that, if IRA doesn't do so, other organizations will. Some of the responsibilities the IRA might assume soon are new and strange to it. Its officials may feel like the Maine guide who declared to his obviously disgruntled clients, I still say that I am the best guide in the state of Maine, but I think we're in Canada now." But Canada is not too far afield, and there are other guides like the American Psychological Association and especially the American Medical Association to lend us a helping hand.

I shall offer only a few suggestions of the many things that should be done. The IRA should launch a large-scale program of recruiting able young persons, especially those trained in other areas, to do research on problems in reading. A science progresses rapidly only when it is led by genius.

The IRA might assign a group to investigating chicanery and unsound practices, to guage new proposals and ideas, to evaluate progress and needs, and in general to inform the public and the profession expertly and promptly about teaching reading.

Is it not significant that a committee not of IRA, but of the Social Science Research Council (a committee of very able persons) found it advisable to look into a recent development in our field? I quote their report on one (*3*).

> A similar emphasis on fundamentals pervaded the committee's conference on reading, held in the fall of 1963. There is a bandwagon movement to reform primary reading with new alphabets, such as the Pitman alphabet imported from England. Meeting with proponents of those methods, we were able to clarify the problems of evaluating the claims put forward. But the linguists and experimental psychologists in the conference plunged much deeper. These new alphabets are haphazard artistic creations that have

neither been adequately designed in the light of present knowledge of language and perception nor refined by proper empirical trial. Hence the conference identified questions far more basic than those being raised by reading educators.

The IRA should at least set up standards for professional training and launch a vigorous program to induce teacher training institutions to provide these standards and school systems to honor them. Certification standards should be suggested for classroom teachers, teacher assistants, reading specialists, reading supervisors, reading research workers, and others.

Every such venture can get out of hand and do more harm than good. There is danger of evolving an "Establishment" which defends the status quo, and curbs rather than encourages progress. Our main purpose should be not to perpetuate old views but to initiate and sustain new ventures. I must now say quite frankly that I am not sure that the IRA is the best organization to assume some of these functions. Perhaps the American Educational Research Association, for example, with its wider range of experts, would be better. At least the IRA should give the choice consideration. It should be done carefully and soon.

Despite a century of scientific study of reading, there are many other interesting and vital issues yet to be solved. For example, most persons who have come into the profession since 1940 have been urged to develop a kind of research attitude, learn some research techniques, and engage in some form of research work, such as "action research." Before accepting this as unquestionably good advice, consider this comment made by William James in his *Talks to Teachers*—a book which I regard as the most enlightening, the most warmhearted, the most enchanting ever written for teachers. In one of his *Talks* made in Boston in 1892, James (*4*) said:

> Least of all need you, merely *as teachers,* deem it part of your duty to become contributors to psychological science or to make psychological observations in a methodical . . . manner. . . . The teacher's attitude toward the child, being concrete and ethical, is positively opposed to the psychological observer's, which is abstract and analytic. Although some of us may conjoin the attitudes successfully, in most of us they must conflict.

> The worst thing that can happen to a good teacher is to get a bad conscience about her profession because she feels herself hopeless as a psychologist. . . . The best teacher may be the poorest contributor of child-study material, and the best contributor may be the poorest teacher. No fact is more palpable than this.

I must now gather up the scattered threads of my discussion. Before I do I must make sure that my earlier suggestion that the IRA consider taking on some very serious business not mislead you into assuming that I should wish to curtail the association's service in providing at the annual convention a few days of relief from professional strain, a few days of good will and gaiety. The IRA has become a lively social club, admirably full of fun, food, and friendly frolic. The rapidly swelling membership is evidence that these features fill a need.

My long professional life has convinced me that, except for sheer intelligence, the greatest professional asset is a gay heart. The leaders in educational science I have known were extremely gay men and women. They were dedicated to their work, because they found it full of thrilling challenges. I now regard the deadly ever-serious scientist with some suspicion. He is almost sure to be a bore. When one of these persons has me cornered, my mind is likely to wing off to a sweet vision. It is the vision of my dog. When I get home I shall give him the signal that means, "Let's go for a walk in the woods." He will appear to go mad with joy. All over the place he will explode into geysers of gaiety. Is it not one of the wonders of the world that this beautiful, incredibly lively animal will seem to be filled with ecstasy at the prospect of taking a walk with me—with me, poor dull clod that I am, stumbling along at a snail's pace, insensitive to the thrills of forest smells and sounds that make him tingle with heavenly delight. Is this dog's rapture the outcome of a magic fountain of acquired gaiety or the culmination of inheritances of ages of sensitivity to the thrills of venturing into the realm of mystery? Both contribute, I think; each enlivens the other. And so I express the hope that all of you will discover the excitement of adventures in the hunting grounds which the profession and science of education provide.

We must wake up to the realities of today. We must do away with

the picture of a teacher as a sad creature. Education is now America's biggest business; we are the largest professional group in the world. By any fair test education's promise for improving mankind is excelled by no profession. Education should and can command the best of scientific and scholarly works and facilities. What better tribute could you ask for than the action of one of the world's most distinguished men, a brilliant chemist and scientific theorist, a former President of Harvard University, James B. Conant, in joining our ranks?

Doesn't President Johnson's pride in and commitment to education give you a lift? These and many other world leaders invite educators to enter into a new life—a life new in promise and prestige, a life which can be full of the gaiety of achievement. Let us throw off the ancient shackles of timidity and face the world with self-confidence and pride.

To be sure, in all these ventures, luck and circumstance play a role, and many a hunting ground turns out to be barren of big game. But, lest you worry about such possibilities unduly, let me tell you about my neighbor's elk hound, who although living only thirty miles from New York City has gone forth every day of his long life and will venture again tomorrow, gaily confident that at the foot of the next knoll, or in the thicket surrounding the next bend in the little brook, he will at long, long last come upon an elk. You have perhaps heard someone say that the scientist and the teacher lead a dog's life. I can't imagine a more thrilling life than that of a well-trained, well- treated dog. This hope for a startling discovery on the next voyage into uncertainty makes a richly rewarding life for a dog or scientist or teacher. The great naturalist, Louis Agassiz, understood this kindred spirit of the lively animal hunter and the scientific and professional explorer when he said in substance to his crew standing ready to begin one of his scientific expeditions:

"We may not catch no whale
But we will have a lovely sail."

Education is filled with more mysteries than any of the silent seas. I hope all of you will sail forth into some phase of it with the best scientific or professional tools in your hands and the spirit of gay adventure

in your heart. May you have a thrilling sail; may you catch many a whale.

Bon voyage!

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ERIC

SOME IMPLICATIONS OF OUR CHANGING VOCABULARY

JAMES M. McCALLISTER

OUR UNDERSTANDING of the teaching of reading has been expanding rapidly during the past thirty years and especially during the time the International Reading Association has been in existence. One of the ever-present reminders of this expansion is the rapidly changing technical vocabulary of the reading teacher, and much of the development of the understanding of the reading process can be noted in terminology that we use in describing it. The meaning of many of our commonly-used technical terms are changed frequently, and numerous new terms are introduced as our professional literature grows. Any one who reads carefully the annual Proceedings and other publications of this Association can not help being impressed with the rapidity with which familiar terms take on new meanings and new terms are employed. We have paid much attention to the teaching of vocabulary to pupils at all levels of the school-system, but we have not given comparable attention to the use of the technical vocabulary by which we discuss our own activities.

It is the purpose of this paper to point out some of the implications of this changing vocabulary. This subject might be approached from numerous points of view. I shall limit my discussion to (1) the influence of growth in understanding the reading process on technical vocabulary, (2) vocabulary changes due to shifts in emphases in teaching resulting from social and economic conditions, (3) the expansion of vocabulary through research, (4) the contributions of related fields to reading vocabulary, (5) lack of definitness in our use of vocabulary, (6) some implications of changing vocabulary for the reading teacher, and (7) some concluding suggestions.

Growth in Understanding the Reading Process

The influence of growth in understanding the reading process on technical vocabulary is evident when we examine how a term changes in meaning over a period of years. Many terms might be selected for this purpose, but I have chosen the commonly-used term, retarded reader. When our attention was first focused on the retarded reader it seemed a relatively simple task to identify such readers. We simply gave a reading test, and those readers who failed to achieve certain criteria were selected for instruction. However, we soon discovered that there was not agreement on criteria. Some teachers selected as retarded all pupils who failed to attain the norm for the grade on the test that was being used; others considered as retarded only those who failed to attain the norm for the grade preceding the one for which the reader was enrolled; others, especially in high school and college, selected as retarded a per cent of the readers in the group that was examined; others compared reading scores with some measure of academic achievement and selected as retarded those who were unlikely to succeed academically.

Soon, we discovered that it was desirable to distinguish between the retarded reader and the slow learner, and we sought ways of comparing achievement on reading tests with reading potential as shown by scores on intelligence tests. Then the retarded reader came to be identified as the pupil whose reading achievement was below his reading potential or capacity. Both reading teachers and research workers are still trying to discover satisfactory ways of defining reading achievement and reading potential. Writers seem to agree generally that the term, retarded reader, refers to some degree of discrepancy between the individual's actual achievement in reading and his potential achievement if these characteristics are measured, but here the agreement stops because both actual achievement and potential achievement are measured in so many different ways. Carol K. Winkley[1] reports a study in which she applied seven published methods of identifying retarded readers, which she called,

[1]Carol K. Winkley, "Building Staff Competence in Identifying Underachievers." *Supplementary Educational Monographs No. 92.* Chicago: University of Chicago Press. 1962, pp. 155-162.

"underachievers," to a fifth-grade group of five hundred pupils. The numbers of retarded readers identified by the seven methods varied from six to seventeen per cent of the five hundred pupils. Her study shows that many retarded readers selected by one definition would not be selected if another definition was employed. Stella M. Cohn[2] describes a typical retarded reader as follows:

> This child would be male nine years old, and in the fourth grade. He would have at least average intelligence—usually above average intelligence—and probably would be doing nearly as poorly in arithmetic as in reading. In the classroom he would appear to suffer from severe anxiety, hyperactivity, depressive trends, and fearfulness. He would usually have periods of excessive day dreaming and distractibility.

To identify such a retarded reader requires careful observation of a skillful teacher in addition to testing.

Retarded readers are also referred to by a number of other terms such as non-readers, underachievers, bright underachivers, low achievers, reluctant readers, and emotionally immature readers. These various terms have developed with our increased understanding of the nature and causes of retardation. They are especially helpful in diagnosis and in selecting suitable types of instruction. However, some writers use the terms as synonymous and others use them with different connotations. I read recently a four page article dealing with methods of stimulating reluctant readers. It was a good article but at no point was the term, reluctant reader, defined precisely. The recommendations in the article seemed to imply that the reluctant reader reacts emotionally to situations stimulated by the novelty of the school, by attitudes encouraged in the home, or by remarks made about the school. Apparently, this writer limited the term, reluctant reader, to retarded readers who develop emotional attitudes toward reading. Other writers emphasize lack of interest in discussing reluctant readers. It seems desirable, therefore, that writers define precisely terms referring to retarded readers or use them with connotations that may be understood readily.

[2]Stella M. Cohn, "Identifying and Diagnosing the Retarded Reader." *Improvement of Reading through Classroom Practice*, Conference Proceedings, vol. 9, 1964. Newark, Delaware: International Reading Association, p. 144.

Three other terms which are associated with the degree of retardation or lack of retardation are remedial, corrective, and developmental. Although these terms have been used for years, there is considerable indefiniteness, especially at the high school and college level, in the classification of readers for instructional purposes into these three categories.

It is evident from these usages that our technical vocabulary changes in meaning with increased understanding of the reading process, and that technical terms require careful explanation whenever they are used. We can no longer merely write "retarded reader" or use many other technical terms and expect the reader to know exactly what we mean.

Shifts in Teaching Emphases

Shifts in emphases in the teaching of reading resulting from cultural and social conditions outside the school bring into use new terminology. For many years teachers of beginning reading have given much attention to the preparation of pupils for reading. We called these activities, readiness. More recently the large increase in the number of pupils entering school, the mobility of population, and the varied cultural and social influences of the homes and communities from which pupils come have multiplied greatly the need for such preparation. Reading teachers have been overwhelmed by the many adjustments which must be made for the entering pupils. In describing the handicaps of some beginning pupils we refer to them as educationally handicapped, culturally deprived, socially deprived, educationally disadvantaged, culturally disadvantaged, socially disadvantaged, linguistically disadvantaged, etc. As we examine these terms in our professional literature they have slightly different connotations, but they often refer to similar characteristics so far as reading programs are concerned. Without doubt every school system has beginning pupils who could be classified under two or more of these labels if an attempt were made to do so, but generally each writer about these conditions selects one of these labels to describe all types of disadvantaged pupils. Published reports do not distinguish very precisely among these classifications. Furthermore, the terms are sometimes used to imply new conditions in the classroom when, as a matter

of fact, similar conditions have existed in schools for many years. Formerly, the conditions were less pronounced because the pupils with these characteristics were fewer in number, sometimes they did not remain in school long, teachers were less prepared to deal with them appropriately, and less attention was paid to them. The March 1965 issue of *The Reading Teacher* may have given us the solution of this duplication of labels by referring to these conditions by a single term, disadvantaged children.

These conditions in the schools have led to a number of adjustments in instruction which also increase our technical vocabulary. I have noticed references to preschool instruction, compensatory experience, non-graded rooms, continuous development programs, compensatory reading, individualized instruction, and supplementary teaching assistance. These labels refer to instructional programs which differ somewhat in their approaches, but their goals and objectives seem to be essentially the same—to enable individuals to advance at a rate suitable to their backgrounds, experiences, and capacities. The most significant element in the programs seems to be increased responsibility on the part to the schools to adjust to the out-of-school experiences of larger numbers of pupils. Attention to these out-of-school conditions are bringing into use much new terminology.

In contrast to the great emphasis on the educationally disadvantaged I notice that the educationally advantaged child is beginning to receive renewed attention. I say renewed attention because the bright or gifted child has received attention in reading programs for many years. Perhaps educationally advantaged is only another addition to our vocabulary.

Influence of Research

Research studies are frequently the source of the expansion of our technical vocabulary. When a research worker is ready to write a report he often finds it advantageous to pin point some aspects of his findings that he desires to emphasize, and he may make valuable contributions to the enrichment of our professional vocabulary. The research worker who devises a new instrument may consider it desirable to introduce a new label by which it may be known. In this connection I think of

McCracken's[3] Standard Reading Inventory which, to quote him, "provides measures of a child's independent reading level, his instructional reading levels, and his frustrational level in reading." Again, the research worker may utilize a new theory such as the Hawthorne Effect[4] which refers to " . . . an awareness on the part of the subject of special treatment created by artificial experimental conditions." Or again the writer may employ a teaching device such as the Initial Teaching Alphabet (sometimes known as the Augmented Roman Alphabet) which was invented by Sir James Pitman of England. These illustrations represent only a few ways in which our professional vocabulary is being continually enlarged through research.

Research reports also aid especially in refining our vocabulary by defining more precisely commonly-used terms. In many research reports there is evidence that the writers are disturbed by the varied meanings that are attached to commonly-used terms. These writers are making a genuine contribution to our understanding of the reading process by using terms more discriminately. As an illustration may I refer to N. Dale Bryant's[5] definition of perception as given in the 1964 Proceedings of this Association. He states in part:

> Perception is not the initial stimulation of the brain by an impulse from a sense organ such as the eye. Such sensations are essential to perception, however. Perception is the mental process started by sensations and it consists of organizing the sensory impulses on the basis of past learning so that they are meaningful to the person.

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[3]Robert A. McCracken, "The Development and Validation of the Standard Reading Inventory for the Individual Appraisal of Reading Performance in Grades One through Six." *Improvement of Reading through Classroom Practice,* Conference Proceedings, vol. 9, 1964. Newark, Delaware: International Reading Association, p. 310.

[4]Desmond L. Cook, "The Hawthorne Effect and Reading Research." *Improvement of Reading through Classroom Practice,* Conference Proceedings, vol. 9, 1964. Newark, Delaware: International Reading Association, p. 249.

[5]N. Dale Bryant, "The Perceptual Process and Success in Reading." *Improvement of Reading through Classroom Practice,* Conference Proceedings, vol. 9, 1964. Newark, Delaware: International Reading Association, p. 285.

This definition pin points an important aspect of our understanding of perception.

On the other hand there is a tendency in some research reports to re-name something which has been described many times before. In such cases the new label is merely superfluous and only contributes another term to our rapidly growing vocabulary. This personal labelling by different writers results in the use of different terms for the same concept, and it becomes necessary for the consumer of research to become independent of labels by searching with exactness for what the labels represent.

There is also a tendency to use technical terms without definition, apparently with the assumption that their meanings are known to the readers. For example, one article which I read recently contained nine undefined technical terms, the meanings of which could not be ascertained from the context. These terms had psychological connotations, and the article might be difficult for many reading teachers to understand.

Reading teachers sometimes demonstrate misconceptions of terminology in research reports when they attempt to apply the findings in the classroom. One only has to think of the many things that have been done to improve reading through the training of eyemovements to realize how a little knowledge of research findings may lead to a misuse of terminology. This illustration should not be interpreted as a criticism of research of eyemovements, which has made a tremendous contribution to our understanding of the reading process, but as an example of the misinterpretation of the meaning of research.

The more nearly our research reports can agree on the meaning of technical terms the more effective the findings will be in influencing classroom procedure.

Vocabulary from Related Fields

It is becoming increasingly essential for teachers of reading at all levels to be acquainted with technical terms in a number of fields of knowledge related to reading. The reading teacher who keeps abreast of current

thinking in his field is constantly bombarded with the technical language, ideas, and opinions of specialists in other fields who are interested in problems associated with learning to read. Many of the contributions of other specialists are useful in understanding teaching problems. The teacher who reads reports intelligently must be familiar with statistical terms used in research in reading instruction, the contributions of psychologists and psychiatrists to an understanding of child personality, the roles played by optometrists and opthalmologists in understanding the relation of vision to reading, the revelations of the social worker concerning the out-of-school environment of the child, and the contributions of linguists to an understanding of the reading process. The Introduction to the 1964 Proceedings of this Association emphasizes the relations of other specialists by stating that reading "has drawn the attention of linguists, psycholinguists, psychologists, psychiatrists, opthalmologists, optomotrists, neurophysicians, anthropologists, social workers, government specialists, biophysicists, biochemists, university and college professors, and school administrators." Each of these specialists brings to the reading field a technical vocabulary peculiar to his specialty. Any attempt to profit from the writings of these specialists will bring a number of concepts into relationship with the teaching of reading. May I mention for illustrative purposes just a few examples of technical vocabulary which I have noticed in recent reports concerning reading: (1) from psychology and psychiatry—basic drives, ego defense, massive repression, conscious anxiety, destructive aggressiveness, and constructive aggressiveness; (2) from statistics—correlation, correlation matrix, factor analysis, regression equation, analysis of covariance; (3) from linguistics —morphemes, phonemes, graphemes, and phonological hierarchy; (4) from ophthalmology and optometry—myopia, visual reception disability, binocular accommodation, and flicker fusion threshold. We might extend this list from these and other fields of knowledge, but these examples are sufficient to illustrate this source of our expanding vocabulary.

As we delve into the more complicated aspects of reading we must turn to other specialties for aid because the teaching of reading involves so many elements in common with them. The insights borrowed from

related fields often aid the reading teacher to focus his thinking more clearly, but when the technical vocabulary is unfamiliar to the reading teacher the suggestions of other specialists may only serve to confuse. Therefore, in so far as we use the services of other specialists we must assume responsibility for learning their language. An understanding of the process of reading requires broad enough knowledge so that we can relate the recommendations and suggestions of others to the actual activities of the classroom. This process of relating is the responsibility of the reading teacher because the other specialist is seldom in contact with pupils in the actual classroom.

Influence of Writers' Assumptions

One of the teacher's chief handicaps in interpreting technical vocabulary arises with the writer who assumes that a technical term has the same meaning to the reader that it does to himself and who makes no attempt to define or explain it. This writer is the source of much confusion in the use of technical terms because different readers will give different interpretations to many commonly-used terms. For example, a much over-used term without explanation is the term *reading skills*. When this term is used undefined the reader can only turn to his personal experience for the meaning that the writer intends to convey. Even when the writer breaks the term down to refer to such processes as word-attack skills, comprehension skills, vocabulary skills, rate skills, thinking skills, etc., the reader is still at a loss to ascertain the writer's exact meaning, for each of these terms requires further clarification. Again, when the writer refers, as is often the case, to published materials that are supposed to promote practice in reading skills, the teacher really does not know the exact skills that the pupil is expected to learn unless they are listed.

Many other technical terms also appear frequently without sufficient explanation. For a few more illustrations think of the many connotations that we can attach to the following commonly-used terms: basal instruction, reading sequence, flexibility in reading, primary reading disability, motivation, personality factors, and functional illiteracy. Perhaps, all

reading teachers have some acquaintance with such terms, but when a writer desires to attach a particular meaning to them, it is necessary that he make that meaning known. I am impressed with the large number of commonly-used terms that appear in our professional literature without sufficient clarification or definition. The writers of such reports merely stimulate the reader to formulate his own meaning of what the writer intends to say.

Implications for the Reading Teacher

These variations in vocabulary usage are necessary accompaniments of a growing profession, but they place a burden upon many teachers of reading. The teacher who has selected reading as a major field of specialization in the university or college may have had the advantage of pursuing courses in reading and related fields which build acquaintance with professional vocabulary. However, many experienced teachers have not had the advantage of such study and may find it difficult to keep up with the rapid changes in terminology and their implications for teaching. Furthermore, the demand for teachers is bringing many teachers into the field who received their education earlier in life and who received little, if any, preparation for the teaching of reading. Also, many teachers, especially at the high school and college level, transfer to the reading field after specializing and teaching in some other field of study. The so-called refresher courses and other reading courses required for certification in many places can do no more than introduce teachers into the technicalities of the reading field. Each teacher in these groups must build, in his own way, an understanding not only of terminology in the field of reading but also in related fields which are contributing to our understanding of the learning process.

As they encounter technical terminology they are undoubtedly handicapped by lack of precise definitions of what the terms actually imply. For example, when the term *phonics* is used without explanation how can the teacher know exactly what the writer actually means? There are so many systems of teaching phonics that the term has little meaning unless it is accompanied by descriptions of the teaching procedures to

which it refers. How may the teacher distinguish between remedial instruction, corrective instruction, and developmental reading? As one reads reports by different authors these three terms are often used to describe the same instructional procedures regardless of the groups of pupils with which they are used. How teach critical reading and creative reading? Some writers make explicit distinctions between these terms and others use them synonymously. Furthermore, the sequence of skills in critical and creative reading vary from author to author. Does individualized instruction mean varying instructional procedures to meet the needs of pupils or does it mean teaching each pupil individually? The term is used with these and other connotations by different writers. How distinguish a pupil's independent level of reading, his instructional level, and his frustrational level? These three terms are clearly enough defined theoretically, but the practical application of the definitions to individual cases is difficult because several proposals for identifying these levels in individual cases have appeared in recent publications. These five questions call attention to only a few technical terms which might be confusing as one reads different reports. The list might be extended to a large number of terms.

With the present lack of agreement as to the precise meaning of so many technical terms, each teacher has the responsibility of organizing his thinking and understanding by examining the best explanations available to him and of developing a working philosophy which utilizes his understandings in an effective manner. A superficial understanding of such technical terms can only lead to inefficient efforts in the classroom.

In our development of technical vocabulary we have proceeded more rapidly than many teachers can progress. Of course, we must expect research and knowledge of the specialist in any field to be far ahead of the practitioner. Nevertheless, the refinement of our technical language may be one of the means of closing this gap. The annual Proceedings and other publications of this Association are doing much to clarify technical vocabulary for teachers by recording for study the varied meanings of many of our technical terms. Furthermore, many writers

are attempting to clarify terminology either by giving specific definitions or by using terms with connotations that indicate their meanings.

I have already referred to the inconsistency in the use of the terms critical and creative reading. A distinction of these two terms by Leitha Paulsen[6] will illustrate one writer's clarification of the two terms. She says in part:

> To read critically the reader must first understand what the writer is saying. Then he must in a sense cross-examine and ask himself if what the author says is valid and valuable. . . . Emphasis in a reading class might be on learning to read persuasive material critically. . . . To do this effectively the student must be helped, first of all, to see if his critical reaction is affected by his attitude. . . . The reader must explore not only his own attitudes but those of the writer also. . . . The truth of a persuasive argument should be tested not only by examination of reader and writer biases but also by questioning the logic of the argument. . . .
>
> The ultimate challenge for the bright student is creative reading. Thought to be the highest of all mental processes, it occurs when the reader together with the author creates a new idea, sees a new relationship, finds some topic for further study, or in some way gives evidence, that through reading, he has made a new discovery.

I have selected only a few statements from this article to indicate one writer's formulation of the meanings of critical and creative reading. We need many such formulations to assist teachers in clarifying their understanding of technical vocabulary.

Concluding Suggestions

The purpose of this paper has not been to solve a problem but to present an existing condition. No attempt has been made to present an extensive list of professional vocabulary because, obviously, that would be impossible within the limits of this paper. Instead, I have attempted to present some impressions which have occurred to me as I attempt to keep abreast of professional literature.

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[6]Leitha Paulsen, "Testing and Teaching the Bright Underachiever in Grades Nine through Fourteen," *The Underachiever in Reading*, p. 99. Supplementary Educational Monographs No. 62. Chicago: University of Chicago Press, 1962.

The usage of technical vocabulary in our professional literature is both enlightening and confusing. It is enlightening in that it brings to us frontier thinking relative to the teaching of reading, and the contributions of frontier thinkers must continually lead to improved teaching. It is confusing because our frontier thinkers, at least the persons who write reports, are not agreed as to what they mean by some of the technical terms they use. In a field which is growing so rapidly it is probably impracticable to expect agreement, even among specialists, but recognition of our present state of uncertainty in vocabulary may help in reducing it.

Much of the uncertainty seems to arise from changes in usage growing out of our improved understanding of the reading process, from shifts in emphasis in teaching, from new research, from the large number of specialists in other fields who become interested in reading, and from the mere lack of definiteness in our use of vocabulary. Careful attention to the use of vocabulary may help to clarify much of this uncertainty.

It might be helpful if someone would publish a compilation of the technical vocabulary related to reading by assembling terms in context from a number of sources. Of course, a complete compilation would be an endless task, but even a limited compilation would tend to clarify many of the terms about which there is difference of opinion. I have found it helpful to collect on reference cards quotations which define or indicate as many meanings as possible for some of the terms that I find useful. By comparing quotations from several writers I am able to clarify my own thinking.

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INFLUENCES SHAPING AMERICAN READING INSTRUCTION

NILA BANTON SMITH

THE STORY of American reading instruction from 1607 to 1965 is a fascinating one to pursue. Evolutionary progress in teaching this skill has been marked with a series of turning points. For a period of time methods and materials are quite similar. Then rather suddenly, both of these aspects of reading instruction change in design and in intent. What influences are responsible for bringing about these changes? What causes are sufficiently strong to wrest established procedures from the classroom and to initiate new ones?

More often than not these changes are brought about by the occurrence of a deep stress situation in American life. When an event occurs that threatens the national welfare and happiness of any people, reading instruction changes. Reading seems to be so intricately interwoven with the woof and warp of life that it becomes a part of the living fabric of the American people during crucial epochs in our history.

I shall attempt to sketch the influences that have been basically responsible for change and to indicate ways in which these influences have affected reading instruction.

The Period of Religious Emphasis (1607-1776)

The pioneers of America were, in general, deeply religious. Many of these early settlers came from among those people and from those lands which had embraced some form of the Protestant faith, and their purpose in coming to America was to enjoy a religious freedom not possible in their own country. It was their religious convictions which caused these pioneers to face the dangers attendant upon the establishment of colonies in the wilderness of a new country, and it was these same religious convictions which caused them so courageously to endure the

hardships with which they were confronted in the early years. Since the religious motive was the all-controlling force in their lives, it is quite natural that we should find it permeating and directing the instruction in their schools.

As a consequence, this concern was reflected in their teaching of reading both in the content of their readers and in their method. The materials for teaching reading consisted almost wholly of religious selections which it was deemed necessary for children to memorize in their "green and tender years." Oral reading played an important role in the lives of these people. There was a great dearth of reading materials during the colonial period. The Bible, generally speaking, was the only book the home libraries contained, and many families did not even have a Bible. Furthermore, illiteracy was highly prevalent at this time; so it was customary for the uneducated members of the family or the community to gather in little groups in the evenings and on Sabbaths to listen to the oral reading of the Scriptures by one who had mastered the art of reading, and many memorized long passages of scripture. Oral reading and memorization had strong functions to perform in the social and religious lives of these people. Consequently reading was taught by oral and memorization methods and the content was entirely religious in nature. Thus reading instruction was shaped by the deep out-of-school concerns of early American settlers.

The Period of Patriotic Emphasis (1776-1840)

By the latter part of the eighteenth century the vividness of the early strife for religious freedom had been dimmed in the birth of new generations, who had learned of the ardent efforts and bitter struggles of their forbears only through hearsay, and whose own hearts and minds were completely occupied with the new struggle for political freedom and the business of developing a young nation, strong, unified, and harmonious.

Reader content and method now departed from the religious objective and concerned itself with inculcation of loyalty for the new nation. Readers now contained selections which had to do with the traditions, occupations, resources of America and with orations and poems written by

American authors. Methods now came to lay great stress upon unification of the diversity of dialects, hence phonics was introduced by Noah Webster in his "Blue-Back" Speller to purify different brands of English in America. Memorizing was now replaced with *eloquent* oral reading which might move its listeners to exalted heights of patriotism. So again we see how reading instruction was drastically changed by an out-of-school influence, emanating from a profound national concern.

Emphasis on Promoting Intelligent Citizenship (1840-1880)

We noted in the preceding period that the birth of our nation was followed by an emotional outburst of patriotism. As we neared the second half of the new century the effort to inculcate this intense type of patriotism began to subside and was replaced with a less emotional but still deeply felt national aim—that of preparing the great masses to discharge their duties of citizenship. Leaders now came to realize that the success of the new democracy depended not so much upon arousing patriotic sentiment as upon developing the intelligence of the people, whose ballots were to choose the leaders and determine its policies.

The aim of promoting good citizenry was two-fold: to provide information in all fields of learning, and to develop high morals.

The subject matter of readers now became broader. We find the intensive patriotic type of materials all but disappearing. There were some moralistic selections designed to develop noble and righteous citizens.. With the new emphasis, however, upon reading as a means of obtaining information, we find the upper grade readers filled with a wide range of informative selections in science, history, art, philosophy, economics and politics.

Our leaders in education eager to cooperate in the effort to provide a more effective education for the masses began to visit some of the experimental schools in Europe and came back with the ideas of organizing classrooms by grades and of teaching reading by the word method; hence McGuffey's readers, the first graded series to be published, and Webb's readers titled "The New Word Method" appeared. Methods and materials changed again, abruptly and rather completely.

Emphasis upon Reading as a Cultural Asset (1880-1910)

Sometime in the early Eighteen-Eighties a new movement began to shape itself in the field of reading instruction. At this time in history we have reached a status of tranquility and security. With the success of the American democracy assured, with threats of major wars no longer impending, with a population comfortable in a prosperous economy, a new trend emerged which affected the nature of reading instruction. The nation now had the leisure and peace of mind to turn to cultural pursuits in music, art and literature. This concern for cultural development resulted in an emphasis upon the use of reading as a medium for awakening a permanent interest in literary material which would be a cultural asset to the individual in adult life.

Simultaneously with this settled state of affairs the Herbartian principles exerted a strong influence on reading instruction in America. Johann Herbart, who strongly advocated the teaching of literature, was responsible for a wave of educational enthusiasm known as the Herbartian movement in Europe and America. American educators went to Europe to study Herbart's theories, they returned and wrote books on these theories, and zeal for Herbart's ideas ran so high that the Herbartian Society was organized in 1892, and was very active for several years. It later became our present National Society for the Study of Education. Reading instruction was affected by the enthusiastic acceptance of Herbart's ideas.

Readers now became vehicles for acquainting children with folk-tales in the primary grades and with the classics in the upper grades. Expressive oral reading for appreciation was the method adopted because it best served the purpose of these times.

The favorite procedure for introducing first-grade children to reading was to have them memorize, dramatize and then finally read a folk story. "The Little Red Hen" was a story from literature which was especially appropriate for such treatment and this selection was used as the first story in practically all beginning readers. But finally "The Little Red Hen" was demised, and emphasis upon reading as a cultural asset passed away with her.

Initial Period of Emphasis upon Scientific Investigations in Reading (1910-1925)

The dramatic period beginning within the year of 1910 ushered in the first truly great break-through in American reading instruction. While there was no strong nationalistic aim for education or for reading at this time, a new development suddenly shaped up which had startling effects in changing reading methods and materials.

This era in the history of reading was marked by the birth of the scientific movement in education. In 1909 Thorndike made the initial presentation of his handwriting scale before a meeting of the American Association for the Advancement of Science, and in 1910 it was published. Generally speaking, the publication of the Thorndike scale has been recognized as the beginning of the contemporary movement for measuring educational products scientifically. In the immediately ensuing years scales and tests appeared rapidly: Courtis arithmetic tests, Hilligas' Composition Scale, Buckingham Spelling Scale—and then a reading test —The Gray Standardized Oral Reading Paragraphs. This test was published in 1915. Other reading tests, mostly silent reading tests, followed shortly.

With the advent of these instruments of measurement it was possible for the first time to obtain scientific information about the effectiveness of reading methods and materials and of administrative arrangements for teaching reading in the classroom. As a result more innovations in reading instruction issued forth during this period than in all of the centuries of the past.

The initial period of emphasis upon scientific investigation in reading as described in this era extended from 1910 up to but not including 1925. This was, indeed, an eventful moment in the history of reading.

Up to the date of 1910 only 24 researches in reading had been reported in the English language and all of these had been of the laboratory type. From 1910 to 1924, a total of 436 accounts of reading studies had been published by investigators in the United States. This phenomenal spurt in scientific investigation in reading was due to the development of the basic tools of research,—standardized tests. As would be expected

the majority of the first studies was concerned with tests and testing. As the period proceeded broader interests were reflected in the problems chosen for investigation. The great majority of these studies now had their settings in public schools, but some laboratory research continued.

The first doctoral dissertations in reading which came to my attention were conducted at the University of Chicago in 1917. Among these studies was a dissertation titled *Studies of Elementary-School Reading through Standardized Tests* by William S. Gray, who was our first great reading authority. Between 1917 and 1924 thirteen additional doctoral dissertations on reading were reported and among these there was a study bearing the title, *The Psychology of Reading and Spelling: With Special Reference to Disability.* And who was the young student who did this dissertation? None other than Arthur I. Gates, another "giant" in the field of reading. These two pioneers began their studies early in this initial period of scientific investigation, and continued them throughout the years.

Now to note the effects of this influence: for one thing, research conducted during this period was largely responsible for causing the most drastic change in method that had ever taken place—the change-over from oral to silent reading. From the beginning of reading instruction, oral reading had maintained its supreme and undisputed claim over classroom methods. In marked contrast to this traditional practice, we find a period of years, let us say approximately between 1918 and 1925, marked with an exaggerated and, in some cases, almost exclusive emphasis upon silent reading procedures. Research had revealed that individuals could read silently with better understanding of meaning and with more speed. Thus two new techniques were ushered into the teaching of reading: those of silent reading and of speed.

The content of readers changed accordingly. Reading literary selections for appreciation was not consistent with procedures of detailed checking of comprehension or the development of speed, so readers now came to devote their pages to factual materials.

The use of standardized reading tests also ushered in an entire constellation of other new concepts and practices. Through their use it was

found that wide individual differences in reading ability existed. As a result we first heard about "individual progression" in reading as developed by Washburne in Winnetka and Dalton in New York. Tests also revealed that large numbers of children were having difficulty in learning to read and so the specialized branch of reading instruction known as remedial reading now became established in the public schools. And along with the remedial reading movement concerns began to take root in regard to reading specialization in teacher preparation.

It was a great day when the movement in scientific education began to operate in the field of reading. Even though investigators only scratched the surface during this initial period of research this was a momentous epoch in the history of reading, for it truly marked our first great break-through in improvement of reading instruction.

The First Period of Intensive Research and Wide Application (1925-1935)

While research got under way during the preceding period, during the next ten years it became intensive, extensive and widely applied. The years between 1925 and 1935 were remarkable in productivity of reading research. From July 1, 1924 to June 30, 1935 a total of 654 published studies were reported, dealing with problems related to an extraordinarily wide variety of topics. This wide and extensive research together with its application was the influence largely responsible for the innovations effected at this time.

One effect of this research was a broadening of the reading program in scope. In the new instruction, objectives were not strongly directed toward the development of any one or two skills or end points, but rather toward the development of several different abilities needed in the various purposes for which reading was used in well-rounded living. No one type of instruction was given an exaggerated emphasis overshadowing all others, as had been true in preceding periods.

Without a doubt the various investigations in regard to the reading interests, purposes, and habits of both children and adults were more influential than any other single factor in bringing about this emphasis

upon a broader reading program. This decade was unusually fruitful in producing investigations of this type.

In addition to broadening reader content, skill programs, and methods, other notable developments were made, particularly: the initiation of the readiness concept for beginning reading and major advances in devising techniques for diagnosing reading deficiency.

The growing recognition of the complexity of the reading process and the multitude of problems associated with the teaching of reading, carried in its wake increasing interest in supervision and in reading courses for teachers. The first supervisors of reading were appointed during this period, and colleges and universities began providing reading courses of varied types.

Period of International Conflict (1935-1950)

Once more an out-of-school stress situation began shaping reading instruction, even as it did in the Period of Religious Emphasis, even as it did in Revolutionary days. An event resulting from progress in science overshadowed all other indications of progress during the period of 1935 to 1950. The "birthday of the atomic age" is officially set as December 2, 1942, when Dr. Enrico Fermi turned on the first successful nuclear energy machine in Chicago. The first atomic bomb destroyed Hiroshima on August 6, 1945. The atomic age and reading immediately become interactive.

But we didn't realize this at the time. We were too close to this earth-shaking event to see its import for reading instruction. The full impact did not become apparent until the period to be discussed in the next epoch. However, because of its grave significance in the future I am mentioning the initial release of nuclear energy at this point.

While the explosion of the atomic bomb had a delayed reaction on reading, international problems and World War II had some immediate effects, and I shall briefly review the events which brought about these changes.

During the years elapsing since World War I, the United States and other nations had lived through a period of peace. In the early Thirties,

however, increasing dissatisfaction was heard concerning treaties and pacts, and in 1933 Hitler began to reveal his aggressive tendencies and continued to do so in the immediate years ahead. So the beginning years of the period covering 1935 to 1950 were marked with international strife and stress. This unrest continued and eventuated in the beginning of World War II in 1939. The United States soon became involved indirectly, but it did not declare war until after the Japanese attack on Pearl Harbor, December 8, 1941. Several trying war-torn years followed.

While the war ended in 1945 many problems still plagued the United States in the way of labor disputes; shortages in food, clothing and shelter; and Russian aggressiveness in building up communist governments in other countries and in extending its communistic party activities in our own country.

It is apparent then, that the entire period of 1935 to 1950 was marked with national and international unrest eventuating in another war.

With this brief consideration of national and international conflict in mind, I shall sketch its effects on reading instruction.

Probably the most obvious effect was a reduction in output of research and instructional materials. Research suffered a severe set-back. While accounts of published research had previously numbered over one hundred per year, during the war year 1943-1944 only 54 appeared. Recovery in numbers was not achieved all through the 1940 decade. The number of doctoral dissertations completed was also drastically reduced.

The number of new series of basal readers published during this period decreased sharply. Sixteen basal series were listed as new in the preceding period. During this period, four series were published before the war, and two more got under way only in publishing their primary programs during the last two years of the period.

Another effect of world-wide tension was that it caused a few forethinkers to state a fresh viewpoint in regard to the contribution which reading might make to the American democracy. For half a century we had been concentrating in succession on literary appreciation, silent reading, and a broader program of skills with no mention of nationalism. During this new period the aim of living effectually in our democracy

began to crop up. Social effects and uses of reading became a matter of concern. These indications of changing viewpoints concerning purposes of reading instruction were few in number, but even so they probably were the most significant effects of the new national tensions.

The content of basal reading series did not change drastically. The general acceptance of the readiness concept now caused authors for the first time to provide readiness books for the children and readiness instructions to the teacher. Pre-primers were increased from one to two, three and four.

Advances in method included provisions for utilizing interrelationships of reading with the other language arts, addition of the use of context clues and structural analysis, and extensions in comprehension and work-study skills.

Interest in reading disability increased rapidly. The multiple-causation theory was developed, informal diagnosis was used for the first time, mechanical aids to reading appeared, and there was a beginning trend toward the development of clinics in public school systems.

Finally, a development in reading supervision should be mentioned. A number of school systems at this time had appointed a special person for supervisory service in reading, and the term "reading consultant" made its initial appearance in educational literature.

Expanding Knowledge and Technological Revolution (1950-1965)

In this long journey of reading instruction from 1607 to 1965 we have finally arrived at the epoch in which all of us are now living. Never since Revolutionary days has our national situation been so tense. Never since then have our democratic ideals been threatened. Once more, Americans are living in a critical period of national stress, perhaps the most critical one of our existence. What influences are causing strain in these troubled times? How are these influences affecting reading instruction?

Two of the influences which are fundamental in our current civilization and which are basically influential in shaping reading instruction are: expanding knowledge and technological revolution. Underscoring both of these and adding motive and impetus to them is deep concern

for the survival of democracy. During this period United States citizens have become increasingly aware of the need for vigorous effort in maintaining our leadership as a nation and in preserving the way of life which we as a people cherish.

These combined influences have plunged us into the most serious problems in the history of mankind, and unexpectedly these problems are flinging out many new challenges to those engaged in the teaching of reading. In fact, because of these problems reading has suddenly leapt into a new magnitude.

The key solution and the one most frequently proposed for solving the problems that are currently plaguing humanity is *education* and *reading is basic to education*. Education cannot proceed without reading, hence there is a compelling new objective to increase literacy. This new objective is lifting the horizon of reading far above its established bounds, and revealing vast new frontiers—frontiers of creativity, of responsibility, of obligation and of privilege. The door to an exciting new epoch in the history of reading would seem to be not only ajar, but swinging wide open.

Now let us sketch broadly the more direct effects which these influences are having on the actual teaching of reading.

First, the accumulation of knowledge. We are living in the midst of an explosion of knowledge—social, scientific, ideological, economic and political. This vast expansion of knowledge is changing continuously and will undoubtedly continue to change at ever accelerating rates. We realize now that what a child is learning in school today or what an adult learned in school yesterday may be of little or no use to him tomorrow, metaphorically speaking. Therefore if children in school and adults in present day life are to keep in step with our ever-changing age they must be able to read well and with discriminating understanding in all fields of endeavor. So it is that these expanding and changing accumulations of knowledge are placing heavy new responsibilities on those who teach reading in all subjects and at all levels.

The technological revolution is affecting reading instruction, also. Technology is rapidly replacing man power with machines. Education

will be necessary in holding the jobs of the future. Furthermore, the entire population will be consumers of products of this ever-advancing technology and as such they must read to make decisions as to whether or not to buy some of these technological products, how to use those that they do buy, how to live effectually with those not within their control. This situation in technological developments opens up an entirely new frontier in the field of reading.

Now to discuss the nationalistic concern. All through the late Forties differences between the Western Powers and Russia continued to divide the world, and Russia's intention to expand Communism was plainly evident in the fact that she had taken over seven small countries.

In 1950, shortly after communists had attacked the Republic of Korea, President Truman declared a national emergency as a means of strengthening the United States against Communism. This meant enlarging our armed forces and producing large quantities of weapons. The feeling for nationalism now became strong and its effect was immediately felt in education.

The concern for preservation of our democracy caused changes to be made in materials that children had to read in school, particularly in the fields of social studies and science, in trade books, and in weekly magazines taken for children in many school systems. Teaching reading in the content fields became more important. Interest in the whole subject of improving reading as a national asset picked up quickly.

It was not until 1957, however, that extraordinary concern about the teaching of reading began to manifest itself. This was undoubtedly due to an event of grave international significance—the release of the first Russian satellite, Sputnik. Up to this time the United States had possessed the most deadly weapon of warfare and it had already sent a rocket 250 miles into space. These achievements assured its supremacy as a nation able to defend itself against aggression. But now the Russians were developing atom bombs and furthermore on October 4, 1957 they startled the world by sending Sputnik 560 miles into space where it began its orbit around the earth. The supremacy of the United States was now challenged by the technological achievements of another nation

which avowedly was determined to establish world communism.

Education in all of its branches felt this challenge. As William Carr said in the January 1960 *N. E. A. Journal,* "The first Sputnik was followed by a thundering public demand for education." As a part of this general demand reading instruction now became a subject charged with unprecedented activity.

Educators and laymen alike awakened to the sharp realization that we must put forth more vigorous effort if we were to preserve and improve the American way of life. In all aspects of national endeavor pressures were felt to produce more and more and to do it faster and faster. In reading, pressure to produce higher competency in a shorter time immediately became apparent. This trend reflected the larger motive and tempo which is now controlling increased production in all other aspects of American life. Investigators, authors, publishers have been working feverishly in seeking new methods and in preparing new materials which they hope will produce faster and better results in learning to read. All this following the advent of Sputnik.

The culminating influence of this period and the one which more than any other gave a fresh and hitherto unrecognized status to competency in reading was governmental concern for and support of education for the masses. Former President John F. Kennedy took an unusual interest in education and asked Congress to approve larger amounts to promote education than had previously been requested by other Presidents. In 1964 President Lyndon B. Johnson announced his intention to make war on joblessness, and on poverty, and to provide "Civil Rights" for all citizens. The basic medium advocated for furthering all three of these objectives was education, and, as previously stated, reading is commonly recognized as the foundation upon which education is built.

The strong new interest in teaching youth and adults who are not in attendance at school extends reading instruction far beyond its established bounds. First, in our history, we provided reading instruction to children in primary grades. It was then extended through the elementary school, then to high school students, on to college students and in a limited way to adults outside of college. Now it suddenly has become mandatory that

we teach millions of adults and millions of youths *out of school* to read better in order that they may hold jobs and lead productive lives.

Thus it is that the government's plans for improving the social and economic lives of our people involve education as a basic first step. The present administration fully recognizes the need for this basic step and is providing for it. In his message to Congress delivered on January 13, 1965, President Johnson proposed an expanded aid-to-education program and asked for new spending authority for the unprecedented sum of $1.3 billion for the coming fiscal year to finance the legislation he had proposed, and he received the amount that he requested.

So it is that the President of the United States and Congress in the interest of our national freedom and welfare are advocating policies which require education for solution of our current problems, and are providing financial aid to implement their recommendations. Withal, it is gratifying to note that recognition is given to reading as the stepping stone to educational progress.

Never in the history of our country, has reading been the subject of such high interest. Never have opportunities to learn to read been extended to so many individuals at all age levels, in school and out. Truly reading instruction has grown to entirely new dimensions in the enlarged and important role that it has to play in achieving national goals.

As a result of these stimulating influences authors of basal reading series are enlarging their programs with multiple-texts, and rapidly initiating methods reflecting the most recent research and trends. Many new approaches to beginning reading are being published. New reading materials are being prepared for teaching youth and adults who are illiterate or functionally illiterate. Interest in reading disability is expanding and increasingly making use of contributions from other disciplines. The demand for well-trained reading specialists is greater than the supply. Several states are now setting up special reading requirements in pre-service and post-service preparation, and several require certification for reading specialists. Research, the common denominator in *all* aspects of reading, is now at an unprecedented high both in quantity and quality. And so this story of American reading instruction has a happy ending.

Change in the present century has been most exciting. In looking back in retrospect we might wonder whether ever another sixty-five years could be so productive as those which have elapsed since 1900. In consideration of the newly developed tools of investigation, evidence of our deep-seated motives to learn, the multitude of studies conducted, we might reason that practically all facets of reading instruction have been explored and thus another era could never be so great as this.

If we do reason to this conclusion, we probably are wrong. We pioneered during this period in unexplored territory. Metaphorically speaking we chopped down and cleared away the large virgin trees, but perhaps some of the humble shrubs or creeping vines or fragile mosses may hold even more significance for us than the strikingly obvious, first-sight timbers. These more obscure constituents won't yield their significance with the use of heavy saws and axes. We shall need fresh, piercing insights in choosing which of these to select for dislodgment, and then we shall need unique, delicate tools to pry them loose from their tangled environment and to test the potency of their effect; and withal great ingenuity will be required in shaping reading methods and materials in the image of our findings.

So to you who are involved in any aspect of reading instruction please be assured that there still are thrilling new worlds to conquer. With this expectation in mind, may progress in reading instruction march forward with ever-accelerating vigor and fertility, and may all of us join productively in the procession.

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ERIC

THE READING PROCESS AND ITS RAMIFICATIONS

RUTH STRANG

TOO OFTEN, I'm afraid, I talk like the woman whose husband wanted to get a divorce. The judge asked him, "What is the trouble?" "Oh, my wife just talks and talks and talks," he said. "What does she talk about?" asked the judge. "She doesn't say," the husband replied.

Sometimes, too, like the nurse in "Romeo and Juliet," I'm afflicted with total recall. Even after all these years, I have not learned what a French literary critic described as "the art of not saying everything." To include only the most relevant ideas is in line with the newer emphasis on composition which seems to be, not on sentence structure as presented by linguists, but on logic and rhetoric as set forth by Aristotle and Plato. It was the search for structure in the broad field of reading theory and practice that led me to attempt a synthesis of related aspects.

Let us start, as all effective reading instruction should, with the individual.

Marie is fifteen years old and in the ninth grade. She comes from a non-English speaking home. Her verbal IQ on the WISC is 81; her performance IQ, 99; and her total IQ, 88. Her reading achievement is far below her potential mental ability. On three silent reading tests her grade scores varied from 4.7 to 5.3. On the Gray Oral Reading Test, her grade equivalent was 4.0. This is the information about Marie that is available on the cumulative record. It tells us nothing about the processes by which she acquires—or fails to acquire—meaning from the printed page, nor about environmental conditions that may facilitate or inhibit her progress.

To understand how students read, we need a framework, a paradigm, a pattern that encompasses the major or contributory factors. If we focus on the reading process per se, we immediately see that it is a factor of

the reader's goals, the degree to which he possesses or has acquired prerequisites for learning, and the effectiveness of the teaching procedures to which he is subjected. This broad, complex view of reading may be discussed under four main headings: product, prerequisites, process, and procedures.

Product

Under product, we have included the main competencies, results, or goals that are to be achieved. These include (a) vocabulary—many words recognized instantly at sight; (b) word recognition skills gained through a systematic use of context clues, grapheme-phoneme correspondences, structural analysis, and the dictionary; and (c) comprehension—ability to derive meaning from words in sentences, paragraphs, chapters, and larger units. These abilities enable the individual to "read the lines."

However, the mature reader must do more than get the literal meaning of a passage. He must be able to interpret the author's thought, and to make critical judgments, evaluations, and inferences. This is "reading between the lines." "Reading beyond the lines" involves drawing conclusions, forming generalizations, and applying the ideas gained from reading. The end result of reading is the contribution that it makes to personal development and social welfare.

Of the four categories, the product has been studied most extensively, largely by means of tests. Of the 94 items in Traxler's comprehensive list of reading tests,[1] by far the largest number were silent reading tests of speed, vocabulary, sentence and paragraph comprehension. Next in order of frequency were tests of readiness, measures of study habits and skills, and diagnostic tests—ten of each type. There were seven oral reading tests. There was only one test each of 'reading capacity," library orientation, listening comprehension, dictionary skills, and logical reasoning. Although additional tests have appeared since Traxler's list was published, there is still a serious lack of instruments to measure the

[1]Ruth Strang, Constance M. McCullough and Arthur E. Traxler, *The Improvement of Reading*. New York: McGraw-Hill Book Company, 1961, pp. 352-359.

reader's ability to organize ideas while reading, to recognize the author's purpose, and to engage in critical, creative, and interpretive reading.

Several new tests may prove to be valuable supplements to tests of intelligence. In grades three, five, and seven, Braun[2] found a test of concept formation to be more closely related to reading achievement than tests of mental maturity. The Cloze test proved superior to multiple choice tests as a measure of difficulties in comprehension.[3]

More emphasis is being placed upon informal or teacher-made tests, and upon the practice of making continuous appraisal and diagnosis while teaching.

From concern with reading status or product we often move directly to teaching procedures, with the result that we neglect a very important factor—the degree to which the student possesses or has acquired certain prerequisites for success in reading.

Prerequisites

Certain prerequisites underlie both product and process. Holmes[4] called these "sub-strata factors." He studied the relation of variables to high school students' reading speed and comprehension. Employing a technique of factor analysis, he grouped these separate factors into patterns or clusters. Most closely related to reading "power" were four factors: verbal analogies, vocabulary in isolation, vocabulary in context, and auding or listening comprehension—each of which contributed 16 per cent to the power of reading variance.

Other factors exerted lower degrees of influence. But 25 per cent of the variance remained unaccounted for by all the factors put into the

[2]Jean S. Braun, "Relation between Concept Formation Ability and Reading Achievement at Three Developmental Levels," *Child Development*, 34 (September, 1963), pp. 675-682.

[3]John Bormuth, "Cloze as a Measure of Readability," in *Reading as an Intellectual Activity* (J. Allen Figurel, Ed.). New York: Scholastic Magazines, 1963, pp. 131-134.

[4]Jack A. Holmes and Harry Singer, "Theoretical Models and Trends toward More Basic Research in Reading," *Review of Educational Research*, 34 (April, 1964), pp. 131-133.

factor-analysis hopper. It is possible that such imponderables as the individual's value-system, his self-concept, his purpose or "set," and other motivations may be among the sub-strata factors that affect his reading process as well as what he reads and why he reads.

Reading difficulties have also been attributed to many other factors. Among these are physical defects, especially visual and auditory; retarded development in visual and auditory perception and discrimination; and neurological dysfunction or minimal brain damage. Lack of previously acquired knowledge and skills and the experience of repeated failure in reading also have a cumulative negative effect on the child's subsequent progress.

Several of these prerequisites deserve more detailed consideration: prereading experiences, specific mental abilities, linguistic factors, listening comprehension, and concepts and values.

Readiness for Reading. Prereading experiences are a prelude to success in beginning reading. From the earliest years, the child's normal curiosity can be fostered, his sense of trust developed, his openness to experiences encouraged. He should come to school eager to learn to read. He should have the ability to understand and speak 2000-3000 words. He should have learned to distinguish small differences in word sounds. Without being specifically taught, he should have learned that meaning depends partly on the order, intonation, and stress with which words are spoken. It should not be necessary to "teach your baby to read." Children who have a rich background of prereading experience tend to catch up quickly with other children of the same ability who have had pre-school reading instruction.

However, many children come to school without having had the prereading experiences just described. These are children from educationally and culturally disadvantaged homes, and from homes where a language other than English is spoken. For them, beginning reading may prove difficult. They may fail in their first attempts to learn to read. This initial failure undermines their self-confidence. They become afraid to try. Their parents may respond by acting disappointed or punishing them. Their teachers may express disapproval. Their classmates may

ridicule them. Any of these responses may intensify their concept of themselves as children who can't learn to read.

Pilot studies in New York City, at Peabody College, and in other centers have demonstrated the value of preschool or kindergarten pre-reading experiences. Programs under "Project: Head Start" are now underway in many communities.

Readiness is a prerequisite for any child who is about to take the next step in the sequential development of his reading ability.

Metal Abilities. Although individual intelligence tests are given less weight than formerly, they are still important diagnostic instruments. Analysis of subtest scores and patterns widens their usefulness and enhances their diagnostic value. The individual's total score or IQ often conceals wide differences in his mental abilities. A retarded reader may be weak on certain subtests, and strong on others. One of my doctoral students, Eldon Ekwald, is studying the relationship between the WISC subtests and certain reading abilities.

Retarded readers generally, though not always, score higher on the performance section than on the verbal section of the Welchsler Intelligence Scale for Children (WISC) and the Wechsler Adult Intelligence Scale (WAIS). This discrepancy may be due to an inherent lack of verbal ability; to environmental, emotional, or other factors that are inhibiting the functioning of verbal ability; or to other circumstances that have prevented the individual from learning to read. To be significant, however, the difference between the verbal and the performance scores should be fairly large because the performance IQ has a general tendency to run higher than the verbal.

Of still more diagnostic value are the profiles of sub-test scores. These show graphically the patterns of strength and weakness in the individual's mental functioning. Each represents some mental process involved in reading that *may* be improved by practice and instruction.

Studies of the relationship between reading ability and scores on the sub-tests of the Wechsler have shown a characteristic pattern for retarded readers. They tend to score low on the sub-tests of Information and Arithmetic, and also relatively low on Digit Span and Coding. On Pic-

ture Arrangement, Block Design, Picture Completion, and Object Assembly, retarded readers often score relatively high. Conflicting results were reported on the Vocabulary sub-test.

Each sub-test might well be examined for its significance to the teaching of reading. A low score on the Information test might indicate lack of mental ability to gain information as normal children do. Or it might reflect lack of reading ability—the means by which older children in our culture gain much of their information. Both the Information and the Arithmetic sub-tests are closely related to school learning.

Since the Coding sub-test involves visual discrimination and memory abilities that are also required in decoding printed words, we should expect retarded readers to score low.

The Digit Span sub-test requires a mental ability somewhat similar to that involved in getting the meaning of a sequence of words arranged in a sentence. A low score on this sub-test may indicate that the individual has a short attention span, difficulty in concentration, or the habit of thinking slowly and reacting slowly to any stimulus that involves visual motor skills.

The two sub-tests on which retarded readers generally score relatively high—Block Design and Picture Completion—measure the subject's response to stimuli that are always at hand. These tasks are less abstract than those set by other sub-tests in the WISC. Poor readers, as a group, tend to approach a learning situation in a more concrete manner than do good readers; they are less able to handle abstractions.

Analysis of any test of mental maturity indicates strengths and weaknesses in areas that are often associated with reading disability. Strengths can be developed; weaknesses remedied. To improve visual-motor ability, the Frostig and the Kephart programs are useful. To increase visual and auditory discrimination, teachers give children practice in recognizing details in pictures, and in distinguishing similar forms, letters, and words. Older pupils may be helped to develop the mental abilities that are prerequisite to mature reading by using the Thurstone exercises published by Science Research Associates.

Since reading tasks that resemble other school instruction are often

associated with negative attitudes toward the teacher, toward school, and toward reading, we try to make remedial work as different from regular school instruction as possible. We use concrete, multi-sensory approaches. For example, we use word, phrase, and sentence cards to build sentences and paragraphs. Since retarded readers are weak in information, we build up their reservoir of meanings through avenues that require no reading—pictures, trips, discussions, and listening to stories and articles read aloud.

Thus examination of the mental processes of our readers enables us to find appropriate methods and materials to build the prerequisites for success in reading. Bearing in mind the characteristic patterns of retarded readers, we can study individual profiles to observe deviations that may have special significance.

Linguistic Factors. Linguists put primary emphasis on the spoken language. They call attention to the meanings conveyed in speech by pauses, by differences in pitch and stress, and by intonation and rhythm. Although listening and speaking come first in a child's language development, are prerequisite to reading, and even though there is scientific evidence that vocal cords move very slightly even in rapid reading, we would question the statement made by some linguists that the reader must first reconstruct the spoken sound of a printed sentence before he can comprehend its meaning.[5] This would seem to be a slow, laborious process that would be incompatible with rapid reading. Is it not possible for the mature reader to make a direct association between the printed words and the author's meaning? It would seem that rapid readers achieve speed through clue reduction, and that their reading vocabulary exceeds their speaking vocabulary.

A related factor that linguists emphasize as a prerequisite to reading for meaning is an understanding of sentence structure, i.e. syntactic construction—the meanings conveyed by various arrangements of words in

[5]John B. Carroll, 'The Analysis of Reading Instruction: Perspectives from Psychology and Linguistics," in *Theories of Learning and Instruction*. The Sixty-third Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1964, p. 338.

English sentences. It is their contention that knowledge of these grammatical meanings combines with vocabulary knowledge to unlock the full linguistic meaning of a selection. Children should learn to think of sentences as constructions within constructions, rather than as strings of separate words. Comprehension in reading does depend upon one's capacity to use the English language, as well as upon one's familiarity with the vocabulary of the area of knowledge with which the passage is concerned.

Listening Comprehension. The third cluster of factors that Holmes and Singer found to be significantly related to reading speed and power may be designated as ability to comprehend the meaning of a passage when it is read aloud. Listening with understanding carries over into reading for meaning. Tests of listening comprehension are useful in appraising reading potential, and training in listening has been found to contribute to reading improvement.

Value Systems, Motivation, and Self-concept. These three are interrelated. The desire to read is a resultant of present need, the push of the past, and the pull of the future.

For the little child, desire for approval by teachers and parents is a strong motivation. Intrinsic interest in the content is a more permanent life-time motivation. A specific need to fill out an application blank for a part-time job, to get a driver's license, or to pass the Army classification tests, often spurs a previously indifferent teenager "to get down to work on this reading business." When asked why he wanted to read better, one slow learner gave these reasons: "So no one will laugh at me, so as not to be stupid, so no one will cheat me." In his study of the nature of mature reading, William S. Gray[6] came to the conclusion that the mature reader "has acquired many compelling motives for reading and focuses his attention on the meaning of what he reads."

The most persistent and pervasive influences are the individual's self-concept and self-ideal. The self-concept may be predictive of, a cause

[6]William S. Gray, "The Nature of Mature Reading," *The School Review,* LXII (October, 1954), p. 394.

of, or a result of reading achievement. In a primary group, the children's self-concepts were, in general, more predictive of their reading achievement than were their scores on the Detroit Beginning First Grade Intelligence Test, which was given near the end of Kindergarten.[7] On all age levels, evidence is accumulating about the relation between an individual's self-concept and his achievement in reading.

The Reading Process

What do we really know about the chemistry, physiology, and psychology of the reading process? What kinds of thinking go on in a student's mind when he reads a short story, a popular article, a textbook in science or history? How does he distinguish the main ideas and the supporting details? What associations does he make between what he reads and what he already knows? What kind of questions does he ask? What reasoning takes place? Does he comprehend better when reading aloud or silently? By what process does a child learn to read, and by what process does he continue throughout life to get meaning from the printed page? These important questions have been too long neglected. Satisfactory answers to them would help us determine what teaching methods to use. "The teaching process must take its clue from the learning process." If we can determine the learning process that the child uses, then we can try to create conditions that capitalize on that process.

The reading process may be explored on several levels—chemical, neurological, psychological, and behavioral.

The Chemical Level. Attempts are being made to assess the influence of body chemistry on the functioning of the nervous system, with special reference to reading. It seems possible that the child's nutrition and the stresses and strains that affect the chemistry of his body may modify synaptic transmission, which may govern the speed with which he reads.[8]

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[7] William W. Wattenberg and Clare Clifford, "Relationship of the Self-concept to Beginning Achievement in Reading," *Child Development*, 35 (June, 1964), pp. 461-467.

[8] Donald E. P. Smith and Patricia M. Carrigan, *The Nature of Reading Disability*. New York: Harcourt Brace, and Co., 1959.

However, Staiger[9] obtained no evidence that the administration of a single drug, deanol, improves the performance of retarded readers.

Neurological Processes. Much more extensive work has been done on neurological impairment with reference to severe reading disability. Rabinovitz has recognized two levels of neurological disorganization—the minimal type that is difficult to diagnose, and the more easily recognized brain injury. Rabinovitz, de Hirsch, and others emphasize the importance of detecting neurological impairment at an early age; this will help to prevent the secondary emotional disturbance that often results from expecting the child to accomplish learning tasks that are too difficult for him.

The Psychological Process. This includes all that goes on from intake—the stimulus of the printed word—to output—the individual's response in thought, spoken or written words, or action. Output may take many forms: a mental image evoked by the passage, an answer to a question, a written summary, an illustration or drawing of a character or scene, a motor response to a direction.

The first stage is what Samuel Kirk has called *visual reception*, a process necessary to produce a clear visual impression. When the sensory impressions, visual and auditory, pass to the cerebral cortex, they combine with traces already imprinted on the nervous system to produce meaning. The words have now been perceived.

Perception is a learned process; it is not simple. It is affected by the attention, the previous experiences, the needs, and the expectancy of the individual. Important individual differences in perceptual style have been summarized by Helen Robinson.[10] Three types of perceivers may be distinguished: (1) those who see the word as a whole—these are the more able learners and better readers; (2) those who perceive word parts and tend to be preoccupied with unimportant details—these tend

[9]Ralph C. Staiger, "Medicine for Reading Improvement," *Journal of Developmental Reading*, 4 (Autumn, 1960), pp. 12-16.

[10]Helen M. Robinson, "Perceptual and Conceptual Style Related to Reading," in *Improvement of Reading Through Classroom Practices* (J. Allen Figurel, Ed.). Newark, Delaware: The International Reading Association, 1964, pp. 26-28.

to be poor readers; and (3) those who focus on the sequence of letters in the word as a whole. Tachistoscopic studies have shown that familiar syllables and words can be recognized almost as quickly as individual letters, and short passages almost as readily as single words. As children mature, they perceive longer and more complex spelling patterns as units.

Conceptualization is the process by which the individual puts a single perception in a more inclusive setting. He relates the observed phenomenon to a class of objects or events. A new word is an "empty category" which can be invested with more and more meaning as new experiences enter the mind. This is the beginning of abstract thinking, and the basis for generalization.

There is a reciprocal relation between perception and conceptualization. Concepts screen or filter impressions as they come into the mind. Thus the individual avoids dealing with a bewildering diversity of separate impressions. Traits extracted from perceptions are synthesized into concepts; concepts aid in the interpretation and organization of perceptions.

There is a positive relation between conceptual ability and reading proficiency. Children who fail in reading in the upper primary grades are often deficient in the ability to form concepts.

Research has clarified the first stages of the reading process—sensory impression, perception, conceptualization. What happens next is still a psychological "no-man's land." It has been explored primarily by speculation and by experiments in animal psychology.

It has been hypothesized that at *the higher level of association* there are patterns, schema, or circuits—memory sub-systems that are interrelated. These become larger and better organized when they are activated simultaneously. Thus the "whole perceiver" has an advantage over the "part perceiver." The individual's reading ability increases as the inter-facilitation of the working systems improves. The word-by-word reader makes each association in isolation, rather than activating numerous connections within and among his memory patterns. The way a thing is learned helps to determine how it is used or applied.

Behavioral Level. This refers to the way individuals actually read.

Do the gifted use different processes than the less able? Can the less able learn the more efficient methods, or are the methods they have evolved the best for them? These are fascinating questions to which we have no answers. Fortunately there are many ways in which we can gain insight into students' reading processes. These will be briefly described.

1. Observe the individual's eye movements. Since Buswell's[11] pioneer work on eye movements, more than one hundred similar studies have been reported. These studies explain how the eyes function during reading. We have learned that the span of recognition increases during the school years, but that even adults do not usually recognize more than two words per fixation. Eye movements may provide objective evidence that a reader is having difficulty, but introspection is necessary to show what the difficulty is. The eye movement camera does not show how the mind works. Consequently the informal "peephole method" of observing the reader's eye movements through a tiny hole in the center of the page he is reading is more useful in studying the reading process. When he oscillates on a certain word or makes a regressive movement, the observer can stop him and ask what was going on in his mind at that point.

2. Observe how students respond to reading situations during the school day. During silent reading periods, the teacher may note the way the student approaches the reading assignment, and may chart his periods of attention and distraction. From the student's own questions and from his answers to questions that call for facts, generalizations, or interpretations, the teacher may draw inferences about his reading process. To verify these, the teacher will make further inquiries: "How did you happen to know this unfamiliar word?" "Why did you choose this answer rather than another?"

You will be amazed to see in what devious ways children acquire their vocabulary.

3. Ask the student to read a short selection aloud. As well as obtain-

[11]Guy T. Buswell, "The Process of Reading," *The Reading Teacher*, 13 (December, 1959), pp. 108-114.

ing the usual diagnostic information afforded by oral reading, the teacher may also make inferences based on the student's facial expression, bodily movements, side remarks, and answers to questions involving comprehension.

For example, Marie, the ninth-grader whom we briefly described earlier, showed embarrassment when asked to read the paragraphs on the Gray Oral Reading Test. She made many errors in pronunciation, a few repetitions and substitutions, and two omissions. The repetitions seemed to stem from her struggle with the pronunciation of the words. On the easier paragraphs, her substitutions made sense. On the comprehensive questions, her difficulties became serious at the fifth paragraph when there was a marked increase in the number of key words that she did not know. The examiner could have learned more about her reading process by asking her to "tell what happened" when she pronounced a difficult word correctly, or made a given kind of error. This could have been done very easily while she was being examined in the individual testing situation, or immediately after the test had been administered according to standardized instructions.

4. Analyze the student's responses on standardized silent reading tests. Most of the diagnostic value of tests is lost when we neglect to study individual responses. This kind of study gave E. L. Thorndike[12] his famous insight into the reading process.

On the multiple choice questions of the vocabulary section of the Metropolitan Intermediate Reading Test, Marie made many errors. She associated "glorious" with "independent" rather than "splendid." Perhaps to her, being independent was a glorious feeling. She marked "future" as the correct meaning of "ancient" instead of "old." Here she may have been misled by a vague conception of both words as associated with time. In marking "cause" instead of "result" as the meaning of "effect" she apparently reversed the meanings of two words commonly used together.

These are only tentative inferences that could be made from the an-

[12]E. L. Thorndike, "Reading as Reasoning: A Study of Mistakes in Paragraph Reading," *Journal of Educational Psychology*, 8 (June, 1917), pp. 323-332.

alysis of a student's responses on a multiple choice vocabulary test. To understand her actual thought processes, it would be necessary to ask her to try to explain how she arrived at the answers that she marked.

On the word discrimination part of the same test, we obtained further understanding of Marie's reading process. In the sentence "Be sure to ——— your raincoat" she selected "were" instead of "wear." Similarly, in many of the other items, she inserted a word that begins with the same letter as the correct word. Moreover, she showed little awareness of structural or grammatical clues to meaning; she chose "terminate" instead of "terminal" in the sentence, "The truck driver delivered the trunk to the railroad ———." From this section of the test, it was possible to infer that Marie tended to use initial consonants as her sole method of word attack, to be unconcerned about whether the word she chose made sense in the sentence, and to neglect grammatical clues to meaning.

In the paragraph reading section of the test, Marie seemed sometimes to show a similar disregard for appropriateness in her answers. Some of her choices were reasonable. She said "Some of the boats were probably not very *well made*." instead of *big*, which was considered the best answer. In another paragraph she supplied an idea of her own—"be in a parade," instead of the correct response, "greet visitors." In still another item, she gave overpotency to the word "bicycle" and made up her own conclusion instead of giving one that could be properly derived from the paragraph as a whole.

From the analysis of Marie's responses on this standardized test, we could make several tentative inferences about her reading behavior. She seemed to be misled by irrelvant or partial word associations. Apparently her only method of word attack was recognition of the initial letter. In reading a paragraph, she grasped at any straw that might enable her to make a response. It seemed as though her main concern was to mark some answer, whether correct or not.

5. Analyze the student's answer to the unstructured or creative-type question on an informal reading test. The question, "What did the author say?" may lead a student to reveal a great deal about his reading process

In studying responses to this type of question we find many different reading styles or approaches:

Some students select a few isolated, unimportant, or irrelevant details.
Some select the main ideas.
Some select the main ideas, and cite supporting details.
Some compose a brief, terse summary.
Some offer a vague, general summary.
Some tend to be carried away by their emotional response to the passage.
Some tend to elaborate on details that are purely personal in significance or interest.
Some use a passage as a springboard for creative thinking.
Some make a well-organized summary of the author's pattern of thought.
Some compose a full and accurate summary, and supplement it with their own reflection, and critical evaluations.

You will find examples of all of these reading styles in any heterogeneous class.

Although the unstructured question does not systematically measure the reader's comprehension of simple and definite facts, it may have the more important value of yielding insights into the student's thought processes; it may give a glimpse, as Paul Diederick admitted, into how the reader's mind works.

6. After students have read and completed the comprehensive questions on an informal group reading test or inventory, ask them several questions about the reading method that they used. Although many students, especially the less able readers, find it difficult or impossible to identify and describe their reading methods, others make revealing comments—such as the following, made by a boy in the eleventh grade:

Question: What did you do to get the main idea?
"I thought about the main idea as I went along."
Q.: What did you do to get important details?
"I tried to correlate them with something I already knew."
Q.: What did you do when you met a word you did not know?
"I got the idea from the context. If it's a particularly puzzling one, I try to think up a Latin derivative."
Q.: Do you like to read books of this kind? (a social studies text)
"No, I like to read plays and biographies. I got a big blast out of Van Loon's books. But, in general, I'm bored stiff by this type of stuff."

7. Ask them point blank: "How do you read a given assignment?" Many years ago I asked all the graduate students at Teachers College who had made straight *A* records to describe their methods of getting the author's thought. It became evident that these successful students used a variety of methods, some of which represented wide departures from those commonly recommended. The following is one student's description :

> I find my method of gaining ideas from reading is comparable to building a skyscraper. I first read the material through completely and quickly. On the way, I get a general outline or skeleton of the material. After this reading, I go back and start over more slowly. This time I argue my way through the book and fill in the skeleton which I built the first time. This seems to be my method for reading material which is rather difficult.[13]

Each reader appeared to have certain idiosyncratic methods that were helpful to him.

A similar procedure was used by Michaels[14] to ascertain what methods high school students used in reading four subjects—English, chemistry, plane geometry, the United States history. They were asked to describe their usual method of reading different kinds of assignments in each subject. Two representative responses will give us some idea of their study processes:

> First, I look at the question I am to answer. Then I will look up the subject in the index of a book and turn to the page that has the information on the question. I then read the information available in that book. I usually follow the same procedure with three to five other books. When I have finished these books, I take the most important information from each and begin to compose my answers to the questions.
>
> I always read my text first. Next, I select several books on the subject, noting their differences in details and general feeling about the subject. I

[13]Ruth Strang, Constance McCullough, and Arthur Traxler, *The Improvement of Reading*. New York: McGraw-Hill Book Company, 1961, p. 20.

[14]Melvin L. Michaels, "A Study of Similarities and Differences in Student Perceived Reading Difficulties in Selected Secondary School Subjects." Unpublished doctoral project, Teachers College, Columbia University, New York, 1963.

then write what I feel are the essential ideas that I would be likely to forget, and the major differences in the references in which I found "my" point of view.

8. Use an unstructured interview to gain understanding of how students have read certain selections and answered questions on them. In a study of interpretation of poetry, Letton[15] established the value of retrospective verbalization in identifying the reading processes. She recorded the subjects' oral interpretive responses in a systematic way, and identified differences in the introspective and retrospective verbalizations of high-level readers and low-level readers.

Using a similar technique, Rogers[16] studied the responses of three classes of eleventh grade students—high, average, and low—to a selected short story. She began with a completely unstructured approach—"Try to tell me everything you thought and everything you felt as you read this study. Just go head and talk about the story." This approach elicited a wide range of responses[17], such as the following:

Response on a symbolic level:

> I thought as the story went along the symbolism of the snake became more clear and kind of stood for—for evil, perhaps. . . . But it also symbolizes something deeper. . . . I think it stands for all bad. The snake is black, and black always stands for bad. . . . The mate symbolizes something which all of us would want to find. . . .

Response on a literal level:

> In a way, I thought it was bad, you know, for the dog to kill the snake, but in a way he was doing what the boy's father told him to do. . . .

After the students had responded to this invitation to talk freely,

[15]Mildred Letton, "Individual Differences in Interpretive Responses to Reading Poetry at the Ninth Grade Level." Unpublished doctoral dissertation, The University of Chicago, 1958.

[16]Charlotte Dee Rogers, "Individual Differences in Interpretive Responses to Reading the Short Story at the Eleventh Grade Level." Unpublished doctoral dissertation, University of Arizona, 1965, p. 40.

[17]*Ibid.*, p. 113.

Rogers[18] asked a number of specific questions such as these:

> What are the main events in this story?
> How did you discover these main events?
> What is the main point in this story?
> How did you arrive at this conclusion?
> How do you know what kind of a person he is?

In addition, Rogers used a questionnaire to obtain information about the students' attitudes toward short stories, and their habits of short story reading.

A variation of this technique, combined with several others, was employed by Cafone[19] with an extremely uncommunicative group of ninth grade students who were five or more years retarded in reading, who had a history of school failure, and who scored below average on the verbal section of the WISC or the WAIS. Although silence or "I don't know" were their most common responses to the invitation to tell how they arrived at an understanding of the selections, some of them, including Marie, occasionally brightened these interviews with significant insights.

Marie's attention to context clues seemed to improve as her interest in the story increased. However, she tended to remember the main ideas that were personally significant to her, rather than to distinguish the main ideas logically from the many supporting details. This approach sometimes led her to make errors in interpretation. For example, she said that one main idea of the story was that the boy "should not drop out of school." This was not a main idea; in fact, the author implied that he might as well drop out of a school that had no meaning or utility for him. Her extremely personal approach also led her to insert ideas that were not in the story at all. For example, she said that the reason for the boy's losing his job was his inability to speak well. This was one of Marie's own problems, but it was not mentioned in the story.

[18] *Ibid.*, p. 40.

[19] Harold C. Cafone, "Individual Differences in the Reading Processes of Ninth Grade Retarded Readers." Doctoral project in progress, University of Arizona. 1965.

The technique of retrospective-introspective verbalization may be modified in various ways. Starting with an unstructured approach, the interviewer may allow the subject free expression of his reflections, thoughts and feelings about the selection, and then ask questions designed to promote clarification and elaboration, somewhat like those used by Piaget in his study of children's language and thoughts. This procedure is also comparable to the "Inquiry" technique of the Rorschach test. The interviewer follows up the subject's comments with such questions as these:

How did you know that?
Why didn't you say _____?
How did you know it wasn't _____?
Did you know this before?
Were you especially interested in this (the right answer)? Why was it interesting to you?

The final step, as in the Rorschach, might be a "testing the limits" by asking the subject to respond to a series of "yes" or "no" questions such as: Did you think about the title before beginning to read? Did you skim the selection before reading it carefully?

To delve more deeply into the process that a student actually uses, the interviewer may ask him to introspect while he is reading. By use of this introspective method, in combination with other techniques, doctoral students at the University of Chicago have conducted several very significant researches. Swain[20] asked twenty-nine college students to think aloud as they read passages of literature, social science, and science, and then to answer questions on them. She recorded their verbalizations about how they analyzed the words and restructured the meaning. This approach encouraged the subjects to reveal their conscious thought processes.

Pickarz[21] used a similar procedure with able sixth grade students. She

[20]Emeliza Swain, "Conscious Thought Processes Used in the Interpretation of Reading Materials." Unpublished doctoral dissertation, University of Chicago, 1953.

[21]Josephine Pickarz, "Getting Meaning from Reading," *Elementary School Journal*, 56 (March, 1956), pp. 303-309.

asked the subjects to verbalize freely their thoughts and feelings about the selection as they read it.

Using introspection as supplementary to a more objective approach to ascertaining students' specific purposes in reading certain kinds of material, Smith[22] learned much about their reading processes. For example, she found that some students persisted in reading for the main ideas even when the instructions were to read for details.

In 1956 at the University of California, Berkeley, James R. Squire studied "The Responses of Adolescents to Literature Involving Selected Experiences in Personal Development." His study is now published in pamphlet form. In interviews lasting several hours, Squire[23] obtained responses of ninth and tenth grade students to each segment of four short stories. They were asked to respond freely and completely in describing the "feelings, ideas, opinions, or reactions" which occurred to them while reading or at the end of the story. The transcripts were analyzed according to seven categories: literacy, judgment, interpretational responses, narrational reactions, associational responses, self-involvement, prescriptive judgments and miscellaneous. Wilson[24] used a similar analysis in comparing the responses of college students to three novels before and after class discussion of the novels.

Introspective methods in a case-study setting were employed by Strang[25] in an exploration of reading patterns, and by Gray and Rogers[26] in a study of different kinds and degrees of maturity in reading.

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[22]Helen K. Smith, "The Responses of Good and Poor Readers When Asked to Read for Different Purposes." Unpublished doctoral dissertation, University of Chicago, 1964.

[23]James R. Squire, *The Responses of Adolescents While Reading Four Short Stories.* Research Report No. 2. Champaign, Illinois: National Council of Teachers of English, 1964.

[24]James R. Wilson, "Responses of College Freshmen to Three Novels." Unpublished doctoral dissertation, University of California, Berkeley, 1962.

[25]Ruth Strang, *Exploration of Reading Patterns.* Chicago: University of Chicago Press, 1942.

[26]William S. Gray and Bernice Rogers, *Maturity in Reading.* Chicago: University of Chicago Press, 1956.

Jenkinson[27] used a "cloze test," in which words were omitted within the reading passage at regular intervals. The reader was asked to supply the precise word that the author intended. After taking the test, each student was asked in an interview to explain the reasons for his insertions as he again completed the cloze passages. The students who were able to supply the largest number of correct words also tended to be the students who saw more relationships among the various ideas, had a better understanding of the language structure, and made better use of the grammatical and syntactical clues to meaning. They were, in general, less subjective than those who scored low.

Much can be learned about the reading process through students' retrospective and introspective verbalization. Various methods of studying the reading process have yielded a number of insights:

Able readers differ from those who are less able in may respects:

In their ability to analyze language and reconstruct the meaning of a passage.

In their ways of integrating newly acquired ideas with previous experience.

In the intensity of their responses to what they read, and in their application of new insights to their own lives.

In their grasp of symbolic meanings: The more able readers respond about equally to literal meaning, implied meaning, and opportunities to offer critical evaluations; whereas the less able readers respond almost exclusively to literal meaning. The more able also tend to be more objective and impersonal in their interpretations. The less able are more likely to confuse their own ideas with those of the author.

In the positiveness of their attitudes toward literature.

In their background knowledge of poets and poetry.

In the degree of satisfaction they have derived from their previous experiences in reading literature.

It should be emphasized that individual differences as well as group differences are to be found among able readers and less able readers.

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[27]Marion Dixon Jenkinson, "Selected Processes and Difficulties of Reading Comprehension." Unpublished doctoral dissertation, Department of Education, University of Chicago, 1957.

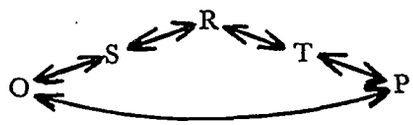
Since the reading process demands an ever active intelligence, it changes according to the nature and difficulty of the reading material. The reader "must select, repress, soften, emphasize, correlate, and organize, all under the influence of the right mental set or purpose or demand."[28]

Adult readers are highly influenced by their interests and attitudes, which affect their interpretation of the author's ideas.

Reading achievement—the product—depends upon the prerequisites that the individual possesses for a given reading task, the processes he uses, and the skill of the teacher.

Procedures

What are the optimal procedures for teaching reading to children at a given chronological or mental age? To answer this we must have an understanding of the product—of what the learner can do when he has realized the objectives; we must know what prerequisites he brings to the learning situation; and we must know what processes he uses. I have often described the teaching process by using this formula :



The focus is on *O*—the individual student. His physical condition, his need and desire to read, his mental ability, his previously learned skills and previously acquired knowledge, his concept of himself—any or all of the underlying factors already mentioned may make him more or less responsive to the teacher's instruction.

Starting with an understanding of the student, the teacher is next concerned with the situation—*S*. This is the classroom situation over which the teacher has most control—attractive physical conditions, an atmosphere conducive to learning, and reading material of suitable format, difficulty, and appeal.

[28]Thorndike, *op. cit.*

The student responses—*R*—are to the situation. Each experience leaves a trace—*T*—on his nervous system; this affects his general perception—*P*—of the next situation in which reading is involved.

This, I sometimes tell students, is the psychology of teaching reading in a nutshell, to which one sprightly student responded: "The psychology of teaching reading is too complex to put in a nutshell, even a coconut shell!"

Concluding Statement

I have outlined the main stages in the reading process, as I understand it. from intake—the stimuli of a printed page or passage—to output in the form of vocal or motor responses.

The first sequential stages have been quite clearly defined: auditory reception, visual reception, perception, and conceptualization. The higher association processes involved in the reading process are beginning to be explored through observation, analysis of errors, the reader's responses to unstructured questions, and introspective and retrospective reports.

I have become more aware of the necessity for a case study approach to an understanding of the reading process by my recent work with ninth grade severely retarded readers, who have experienced years of failure and frustration in learning to read. Marie, to whom I have previously referred, is one of this group. The variation in their responses in different reading situation is astonishing. One boy whose score initially on the Gray Oral Reading Test on first grade level was, after twelve hours of individual instruction, able to pass the official driver's license examination with a score of 96. In the first individual session, the worker, Mrs. E. Louise Knopf, asked him whether he would prefer to learn word attack skills in connection with a story he wanted to read, or begin with systematic instruction in reading and go ahead as fast as and as far as he could. He chose the first of the alternatives. This approach was not successful. The book he had chosen was written on third to fourth grade level of difficulty, and it was not as interesting as he had anticipated. He stumbled over almost every word.

In the course of conversation with the worker, he mentioned his desire to get a driver's license. As a first step he collected and learned a large number of road signs. Then he tackled the driver's manual. The worker read him a section at a time: they discussed it; they formulated questions that might be asked on the examination; he faced and mastered difficult key words like *vehicle* that might be included in the test. Then he would give orally his answer to each question. When he was satisfied that the answer was complete and correct, he dictated it to the worker. She wrote it and typed it for him to read the next period. In this way he made his own driver's manual which he could read and reread fluently and with full comprehension.

Another boy initially scored below fifth grade level on standardized silent reading tests and still lower on the Gray Oral Reading Test. In a series of individual conferences he read and comprehended far more difficult material. He read aloud with few errors paragraphs from Mark Twain, Lincoln's Gettysburg address, a selection from a biology high school text, and articles in *Hot Rod* magazine. Under the stimulus of a friendly tutor, he began to read the newspaper—as much as he could understand of the sports page, the comics, and the front page news.

We can only speculate concerning this discrepancy between test results and performance under the most favorable conditions. Here are some possible explanations:

Interest in the content of the more difficult material generated his maximum of effort.

Content that had little or no meaning, use, or interest to him, was rejected and consequently evoked no effort.

Content that was immature and read by younger children decreased his self-esteem and aroused his resistance to reading.

Previous instruction in phonics, syllabication, and other word recognition skills may have lain dormant until he had a real need or sufficient motivation to apply them.

Although his concept of himself had been lowered by being called "dumb" and "stupid" and by repeated experiences of failure, he still may have retained a deep-seated desire to make himself as "good" and complete as possible. When the opportunity to develop his potentialities was offered and

the boy experienced some success, he was stimulated and challenged to do his best.

The negative influence of his classmates was not operating in the individual learning situation.

The relationship with the worker — a relationship of friendly, sincere, positive regard and an expectation that he could and would improve his reading, supported him in his efforts to use the abilities he did possess in getting the meaning of selections of real interest to him.

Experiences like these have convinced me that what I have called product or goals, prerequisites, process, and teaching procedures are all interwoven. To understand an individual's reading development, we need to be aware of all of these interacting aspects.

MILES A. TINKER, now a consulting psychologist, is also Professor Emeritus of the University of Minnesota where he taught from 1927 to 1959. Results of his studies have provided material for nearly two hundred publications, seven of which are books. Among these books are *Teaching Elementary Reading,* second edition, 1962 (with C. M. McCullough); *Reading Difficulties,* 1957 (with G. L. Bond); *Legibility of Print,* 1963; and *Bases for Effective Reading* (in press). Dr. Tinker has served as consultant for a number of groups in government and industry. He is a Fellow in Distinguished Service Foundation of Optometry; Fellow, American Association for the Advancement of Science.

ERIC

HOW CHILDREN AND ADULTS PERCEIVE WORDS IN READING

MILES A. TINKER

IN BEGINNING reading, children perceive words differently than adult, mature readers. The aim in this discussion* is to describe how children, as they begin to learn to read, perceive words and how they progress to the more effective perception employed by mature readers on the adult level. Since word perception by good readers at the adult level is one of the hallmarks of effective reading, this will be considered first. Then the discussion will describe the immature methods ordinarily employed by beginning readers and how the transition to more effective techniques takes place. The implications for reading instruction in the primary grades will then be noted.

In general, perception includes stimulation, preparation for a response, and the response. The graphic symbol is the stimulus in reading and the perception, which involves the meanings and interpretations, is derived from the reader's past experiences. This perceptual response relates meaning to the printed or written symbol. Vernon (*20*) states that perception and reading of words need to be dealt with apart from perception of other visual objects since they involve processes that are not essential to the latter.

Word identification, recognition and perception need definition. The original inspection of a new word entails identification of its printed or written symbol in terms of its visual appearance and its sound. As the visual form is matched with its sound, the correct pronunciation is

*Based upon chapters two and three in M. A. Tinker's *Bases for Effective Reading*, University of Minnesota Press, 1965. Permission for paraphrasing and quotations given by the publisher.

achieved either aloud or mentally as inner speech. And the meaning present with identification may be slight or great, depending upon associated experiences and the degree of help available from the verbal context in which the word occurs. If the new word is in the reader's usage vocabulary, even though he has not met it in print before, it will tend to carry considerable meaning. Otherwise the meaning is apt to be slight. But increased meaning does come with repeatedly meeting the word in various contexts.

Word recognition and identification are interrelated. Tinker and McCullough (*18*) state that to recognize a word means to identify it as a word previously known. Instant or relatively rapid recognition occurs only for words that are well known through frequent encounters in previous reading. Words that have been met but which are less familiar are recognized less promptly, ordinarily only after a slight delay. Such words require a somewhat more thorough visual inspection and some aid from word recognition clues.

Perception occurs both in identification and in recognition of words. The more meaning present, the more adequate the perception. Because all words are primarily speech units, the word read derives directly from the word as spoken. Some traces of auditory and vocal processes always occur during reading. And word perception involves something beyond apprehension of its visual and auditory form. Awareness of the meaning of word symbol requires some appreciation of the idea or experience it signifies. The perception of words, therefore, depends upon the meanings present in their identification and recognition. Since meanings come from experience, perception is basically associated with experience. It may be emphasized that the person who brings the most extensive experience and verbal facility to his reading gets the most from the printed page.

For the mature, adult reader, word recognition and assimilation are rapid. Furthermore, the imagery, associations, interpretation, and evaluation involved tend to be rich and varied. Thus the adult reader seems to pass directly from visual perception to these meanings and thought processes.

How Adults Perceive Words

Let us now turn to a consideration of word perception by adults who have learned to read well. Keep in mind that facile word perception is essential for effective reading. Without this, the thinking side of reading would be impossible.

Ordinarily, in the investigations designed to discover how words are perceived, a short exposure device called a tachistoscope has been used. The apparatus can be adjusted to give the reader a single glimpse of a word, phrase, or sentence. What occurs in normal reading is similar. In reading, the eyes make several stops, or fixation pauses, along a line of print with very rapid saccadic moves between pauses. The printed material is perceived only during the fixation pauses. These pauses are, on the average, about one-fourth of a second in duration.

Although the area of clearest vision for the eyes covers only about four letter spaces, Ruediger (*17*) found that letters in eleven point type could be perceived fairly accurately at one inch (12 to 15 letter spaces) from the fixation point. There were no distinct boundaries to this area, as the clearness of form definition fades off gradually. The images of words need not be at maximum clearness in all details to be perceived accurately. In fact, the unclear images of words to the right of the fixation point have important cue values. Hamilton (*10*), in studying the reading of continuous prose by means of successive short exposures, discovered at each fixation pause a relatively small area of distinct vision along with marginal impressions of words and letters located mainly to the right of the clearly defined fixated area. These marginal impressions, which vary greatly in clearness, provide preparatory partial perception of successive words. Furthermore, they orient the reader for the perception of successive words in the phrase or sentence as well as provide indispensable stimuli for successive fixation pauses of the eyes. In addition, these vague word forms and letter groups seen in peripheral vision furnish premonitions of coming meanings that are then cleared up sufficiently in succeeding fixations to give correct word perception. Thus, in continuous reading, all words need not be seen in foveal vision and with maximum clearness to be perceived.

The perceptual span in reading is the number of items, such as letters, numerals, or words, that can be perceived and reproduced after the reader has had a single brief view of the material. Usually the glimpse of the material is provided by an exposure of 100 milli-seconds or less. Numerous investigations show that the perceptual span for adults is about 3 to 4 letters in unrelated (not word) arrangement. If the letters are grouped in nonsense syllables (pronounceable units that do not make words as "zap," "tuk," or "gokem") the span is about 7 letters. And when unrelated words are exposed briefly, the number of letters is further increased, although the number of words grasped is comparable to the number of letters in an unrelated arrangement, i.e., 3 to 4 words or up to about 19 letters. But when the words exposed are in a sentence, the span is increased by a word or two. These are typical findings. In general, the literature indicates that there is a natural tendency for a mature reader to combine the various elements of a visual impression into larger perceptual units whenever subjective grouping is possible. This occurs in perceiving letters arranged in the form of nonsense syllables or words, and in the perception of words in phrases or sentences. Thus, in perceiving printed symbols presented briefly as in a short exposure or a fixation pause, adults tend to organize the materials subjectively in accordance with the meaning. Therefore, when the meaning becomes clearer, this organization achieves a greater perceptual span, that is, more letters are grasped in words than in less meaningful material.

What then are the roles played by individual letters, small letter groups, and word forms in perception as adults read? Does the person with considerable skill in reading read by letters or by word units? No simple or unequivocal answer is possible. Later discussion will reveal that both individual letters and total word forms provide cues to perception in reading.

Since an adult may at times read in a sentence words containing 20 to 30 letters, with an average of 8 to 10 in one fixation pause, but can grasp only 3 to 4 unrelated letters per fixation, the indication is that perception in reading must occur by some means other than recognition

of letter after letter as once supposed (*13*). This deeply rooted assumption of earlier days was based largely on the notion that the eyes moved continuously along a line of print as successive letters were recognized. Now that research has demonstrated how the eyes move in reading and that perception occurs only during the fixation pauses, the notion of reading letter by letter has been discarded. It is now clear that, during each fixation, several letters grouped in words stimulate the eyes as a single act of vision, not as one letter after another.

Data published by Cattell (*4*) in 1885 led to the conclusion that mature readers perceive printed material as units—whole words, sometimes even a phrase or short sentence. Single words were grasped as readily as single letters. He states that educated adults perceive a word as a whole.

Erdmann and Dodge (*6*) reported results that support the view that perception in reading is by word wholes by means of the characteristic general shape of the word—the word form. And Huey (*13*) stated that "The arrangement, the total form, is the main thing, whether in the recognition of letters, numbers, words, or objects of whatever sort."

There is not complete unanimity, however, on how words are perceived. Goldscheider and Müller (*8*) emphasize that certain letters and letter complexes (determining letters) are more influential than others (indifferent letters) in determining the recognition of words, particularly the more familiar words. The determining letters are considered important because they give characteristic form to the word. The authors also pointed out that the familiarity or difficulty of a word determines whether it is read letter by letter, by groups of letters, by syllables, or by word wholes. According to them, the characteristic shape of a word, the word form, is conditioned mainly by the determining letters present. And Messmer (*15*) adds that total word form is determined principally by the length of the word and by its vertical profile. This is not in conflict with Goldscheider and Müller. Erdmann and Dodge (*6*), who employed exposures of 100 milli-seconds, criticized the other authors for using very short exposure times, too short for a clearing up of the visual sensation created by the stimulation. With the shorter exposures, prominent features of words would stand out and be remembered to the ex-

clusion of other features of a word.

In their analysis, Woodworth and Schlosberg (*21*) point out that Erdmann and Dodge's "general word shape" probably meant the external configuration of the printed word, while Cattell's "total word picture" covers also the internal pattern of curves and vertical strokes. For instance, the external outlines of the words "consonants" and "communifs" look alike but the internal patterns are different enough to prevent their being easily confused (p. 101). Also, in Pillsbury's experiment (*16*) on perception of mutilated words, the readers frequently noted the wrong letter inserted, or the missing letter, although they perceived the word correctly. That is, the reader often sees details which he disregards in reading a word (for example, "fashxon" read "fashion"). "Now if such details are visible when he cannot use them, correct details must also be visible in an unmutilated word and help to make up the complete word picture. Therefore, the visual impression received during a brief exposure must be much more complete and detailed than is implied by the phrase 'general word shape.'" (p. 102)

In tachistoscope experiments, although the subject can report only a few of the letters, he believes he has seen all of them clearly. Thus, while getting a glimpse of a word either during a fixation pause or a very short exposure, the word is not spelled out letter by letter even though all the letters may be seen. Hence, without verbalizing the successive letters, the reader has all the cues he could desire for accurate perception of the word. Apparently this is what Woodworth and Schlosberg mean when they approve the "total word picture" as used for perception in reading. The bare outline of a word, the *total word shape,* may cease to function in the normal reading situation. But the total word picture, the *total word structure,* which includes the details of the internal pattern, may still function as a cue. Although this may appear to be a minor distinction, it has important implications as we shall see.

In examining the errors made in normal reading, Vernon (*19*) found a tendency to omit letters, especially in long words. Inasmuch as ascending letters were rarely omitted in comparison with descending letters, readers apparently attend to the upper contour or shape of the word

more than to the lower. This is in agreement with the finding of Huey (*12*) that printed material in which the lower half of the words had been eliminated was read much more easily than material in which the upper halves of the words had been deleted. This contrast is illustrated in Fig. 1. Nevertheless, Huey (*13*) notes that, during the fixation pauses

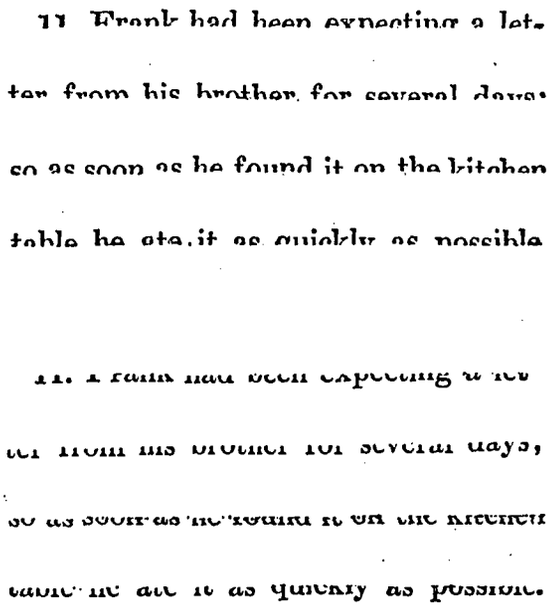


Fig. 1. The upper half of a printed line provides more clues to word perception than the lower half. Adapted from D. G. Paterson and M. A. Tinker, *How to Make Type Readable*. New York: Harper and Row, 1940, by permission of the authors.

in normal reading, many if not all parts of a word can affect consciousness somewhat and provide clues which help in perception. Thus, while

dominating letters may play a prominent role in word perception, the others have an important part, too. This is in harmony with the view of Woodworth and Schlosberg cited above.

According to Vernon (*19*), the part of a word that is most important for perception depends upon the particular word. It may be the first part, the middle, or the last part. Ordinarily, the root is the most important part of a word and must be apprehended to recognize the word. In many words of Anglo-Saxon or Old English derivation, the root is the first syllable, or the word may have only one syllable. But words of Latin derivation frequently have the root in the middle with a prefix before and a suffix after it. For example:

Anglo-Saxon: whaling, home
Latin: unsuccessful, subservient

Although the root must be apprehended, other syllables are also important, i.e., in normal reading, perception is achieved by simultaneous view of the entire word.

What then is the relative importance of the total word form, individual letters, determining letters, vowels, and syllables in word perception? In the normal reading situation it is doubtful if many words are perceived correctly when the cue is merely the word shape as determined by the bare outline of the word. Apparently the process of perception begins with the visual appearance of the total word shape and then is completed when enough details, such as initial consonant or consonant blend, a vowel or a syllable, or the final letter are apprehended to achieve recognition of a word that fits the meaning of the verbal context in which it appears.

This process of perception in reading, in which the word form has an important cue value, operates only for sight words, i.e., words which have become thoroughly familiar to the reader through meeting them frequently in his reading. From beginning reading on through life, if he continues to read, a person keeps adding to his bank of sight words. These words are perceived at a glance. The skillful adult reader has accumulated a large store of sight words. Without this word bank, reading

would remain a slow, laborious process of analyzing practically every word in a sentence. The more familiar words possess greater cue value in their word form.

To perceive unfamiliar words is a different matter, for they require analysis. And the amount of analysis depends upon the degree of familiarity. Any degree of familiarity less than that which produces a sight word requires some analysis for perception. Then the total word structure, which includes details of the internal pattern of which the reader obtains an adequate simultaneous view of all its parts, operates in word perception. However in the case of new words that are completely unfamiliar because they have not been seen before, an exception occurs. Analysis of such words requires rather complete visual scrutiny of their elements in order to sound out the word mentally or subvocally. After identifying the pronunciation, the reader uses the verbal context in which the word appears plus association with any experience he has had with the sound of the word to achieve meaning and perception. At times the use of a dictionary is needed to discover its meaning. Thus, although word form or shape may be sufficient to yield recognition of familiar words, it fails as an adequate cue when words are unfamiliar.

The meaning of the verbal context in which a new word occurs provides an important aid to accurate perception of the word. To pronounce a word accurately without understanding its meaning does not result in perception. But the context of a sentence or paragraph frequently makes it possible to infer the meaning of a new word. The proficient reader makes fairly constant use of clues in verbal context, not only to recognize a relatively unfamiliar word but also to infer its exact meaning and thus enhance perception of it.

From the above, we appreciate how skillful adult readers perceive words. We now turn to a discussion of how beginners in reading perceive words and how they progress to the adult level.

Children's Approach to Word Perception

According to Vernon (*19*), in any perceptual situation, the young child tends to respond in terms of those aspects which appeal to his in-

terest and can be comprehended. He seldom notes minute details of form and structure. With a complex stimulus, the child will report objects and activities familiar to him and may invent others which he associates with those actually seen. And if the stimulus object contains relatively little of interest to him, as for example a single word or collection of letters, the child's eyes will rove around looking for something attractive. If nothing is found, he may invent something. Types of perception in young children are apparently subjective in nature, i.e., the objective stimulus is secondary to the role of familiarity and interest. It is not surprising, therefore, that as they start to learn to read children do not adopt proficient techniques for perceiving words.

Children may have difficulty in learning to read until they are able and willing to perceive the small dissimilarities of form that differentiate letters and words from each other. For the average child this apparently occurs soon after he begins to learn to read. But in the kindergarten and early first grade many children adopt ineffective techniques of perceiving words. This seems to result in part from the method of instruction employed. According to Anderson and Dearborn (*1*), investigators tend to agree that the start in reading is best made with the "word" or "look-and-say" method. Initially a word is learned by viewing it, perhaps with a picture, while it is pronounced. It is assumed that the visual total word structure is associated with the spoken word and the heard sound. Then, when a few words are learned, they can be used in a simple story.

It would seem that the word method also receives strong support from Hildreth (*11*) who states that there is abundant evidence that young children recognize (i.e., perceive) words as wholes. Her argument is largely concerned with teaching the beginner words by the look-and-say method rather than by teaching the separate letters or sounds first. But if the look-and-say method continues to be used beyond the initial stage, and especially if it is used without supplementation by other techniques for teaching word perception, problems are apt to arise.

The word method was introduced to get away from the tedious and irksome practice, common in the early 19th century, of long continued

drill on letter names and sounds before allowing children to attempt reading words and sentences. And when the researches of Cattell (*4*) and Erdman and Dodge (*6*) revealed that adults tend to read words as units rather than letter by letter, the word method received further impetus, for it was assumed, apparently wrongly, that children perceive words the same way adults do. For a time, teachers discarded all forms of word analysis. But it was soon evident that the look-and-say or word method by itself was ineffective. Furthermore, most writers now agree that only a few young children perceive and recognize words by total word structure. As stated by Durrell (*5*), a part of a word often stands out and serves the child as a clue for recall of the whole. This often leads to errors.

Although the alphabet method of learning to read by compounding letters was rightly discarded, the word method, while useful in initial learning, has limitations. If the teaching of reading to children is to be as effective as possible, there must be a more widespread understanding of how children start out in reading and how they can progress most readily to the adult stage.

Cues to Word Perception by Young Children

The word method frequently employed as pupils begin to learn to read assumes that a child will learn each word as a unit by perceiving the word form as a total unified structure. Apparently, however, few children achieve this ability during early reading instruction. For instance, Bowden (*3*) discovered that pupils in learning to read individual words pay little attention to the total word form or general shape. The characteristic aspects of total word form, derived from distribution of ascending and descending letters as well as an alternation of straight and curved letters, do not help children to perceive words correctly as they do adults. The reading of these children was a rather imperfect kind of word perception in which recognition depended upon noting the presence or absence of certain familiar letters. And Gates and Boeker (*7*) also stress the role of individual letters rather than total word form in perception of words by children. Additional evidence presented by

Meek (*14*) led to the conclusion that certain letters or small groups of letters were the chief cues for word perception by beginners. Young children, it seems, recognize words by remembering some small thing or detail that characterizes the word for them. The detail varies from child to child. For instance (*7*), the word *monkey* was remembered by the *hole* (of *o*), or the funny chair (of *k*), or the tall middle or the *monkey's tail* (*y*) at the end. And *pig* was recognized by the dot over the *i* and *box* by the *funny cross* at the end. One child remembered *look* because it had two eyes it used to look at you. An extreme case is given by Durrell (*5*). After a child had successfully read the word *children* on a flash card he could not read it in a book, maintaining that he had never seen it before. He was then shown the flash card again and asked how he knew the word was *children*. The reply was, "By the smudge over the corner."

As put by Anderson and Dearborn (*1*), young readers do not seem to have much of an eye for word shape or structure. Only an occasional bright and able reader among young pupils appears to make much use of word form. Most children, at least during the early stages of learning to read, search out some small detail of the word, usually a single letter or two, a prefix or suffix, or some other letter group, which then comes to stand for the whole word. That is, some small detail that stands out is selected as the cue for perceiving the word. Furthermore, the letter or letters used for word recognition are not necessarily perceived as such. They are only a specific detail that stands for the word. The obvious result is inaccurate word perception, due to lack of attention to the constituent parts of the word.

Obviously young children just learning to read have not yet developed an habitual tendency to attend to the total structure of words. And it would seem that the very method ordinarily employed to teach the initial sight vocabulary, the word method, permits or even fosters a number of problems including inaccurate word perception. As a single technique, the word method imposes a strict limitation on the size of the reading vocabulary, avoids word analysis, and encourages word by word reading. Apparently, too frequently the word method continues to receive undue

emphasis beyond the time at which an initial sight vocabulary is acquired.

It is probable that most first grade teachers fail to realize that their pupils seize upon some minor detail of a word for perception rather than attending to its total structure. The assumption that the child makes use of the whole word picture in attempting to learn the word is for the most part fallacious.

What is to be done to teach the child to move away from his inadequate method of perceiving words? It is necessary at an early date to de-emphasize the use of the word method as the sole technique of teaching word identification and word recognition. That is, there is need to employ teaching methods that make it possible for the child to discard as soon as he can his inadequate technique of perceiving words. This is possible provided the teacher understands the problem and knows how to teach by a combination of methods. When this is done, most children will move along more promptly in the developmental program to the place where they will perceive words as adults do.

Developing Word Perception

Most experienced teachers prefer to introduce their pupils to reading by use of sentences or very short paragraphs (2). This procedure, however, does not avoid for long the task of learning to perceive accurately the individual words the sentences contain. This is achieved by combining the word method with other techniques. The combined approach is intended to furnish the child with the available techniques and to teach him to be versatile in applying them (*18*). Basic to the combined or any other program of teaching word perception is emphasis on adequate visual and auditory discrimination. Word perception involves matching the visual symbol with the sound of the spoken word and the meaning represented by the printed symbol. Therefore, there must be correct discrimination of the sounds represented in a word and precise visual discrimination of both total word form and details of its structure.

It is probably true that most teachers have not realized that young children employ limited and rudimentary methods of word recognition

to the extent described above. Therefore they may not have realized the urgent need for early introduction of instructional techniques to supplant faulty procedures. Any real progress in learning to read will be blocked until this change from the word method is instituted. This does not mean that the word method for getting reading underway should be abandoned. However, it does appear that methods designed to serve the pupil throughout his school years should be adopted as soon as possible. Actually there is no justification for permitting a child to continue identifying words by some minor detail such as the tail on the word *monkey* or the funny cross at the end of the word *box*.

Although some authors suggest that 50 to 100 words be learned by the word method before other techniques are introduced, it is difficult for most beginners to learn even 50 words this way. Fortunately some teachers are departing from a strictly look-and-say method early in the first grade. A beginning of instruction for use of the simpler phonetic techniques is possible after learning only a few words. As soon as these words have common characteristics, such as the initial consonant in *box, ball, boy,* and *bell,* the child should be encouraged to notice that these words begin with the same sound and the same letter. At the same time, the teacher points out the details of the word form such as the middle vowel and the ending letters. In general, consonants are taught first, then vowels. Progress is from the simple to the complex. A complete program of word perception techniques is given by Gray in *On Their Own in Reading,* revised edition (*9*).

As already noted, few children attend to word form in beginning reading. The use of word form clues without special training does not ordinarily occur until a child has made considerable progress in learning to read. Eventually, as a word becomes more familiar by frequent encounters, the visual clues from total word structure become more potent. This happens more readily when a word has a distinctive shape or form. The presence of definite word form is shown in the left column and its absence in the right column below:

mother	come
father	common

stopped	some
school	noise
children	across
largely	seven

Casual inspection of several pages in a dictionary or a textbook reveals that a large majority of words have characteristic word forms due to the alternation of long and short letters.

It might be well for the primary teacher to direct the pupils' attention to word form clues. At the same time she will need to point out that some words have like shapes and may be confused, as *horse* and *house*. Visual examination of the details of such words are necessary. It seems desirable, in the developmental program, to place some stress upon teaching pupils to attend to the characteristic shape of words, and to develop the habit of combining word form and context clues with phonetic clues. This will emphasize the need for close visual examination of a word for accurate perception. As soon as a child has caught on to this procedure, little or no further training in use of word form clues for perception will be necessary.

As the program of learning to read develops, the child progresses toward the adult level of word perception. Clues from word form, verbal context, phonics, structural analysis, and syllabication are mastered as the learning continues through the grades. As the clues are taught, the child learns how to choose the most suitable clue or combination of clues to identify, recognize, or perceive words in any specific situation. For instance, suppose the child meets the word *telescope* in the sentence: "One clear night Jim looked through the *telescope* and saw mountains on the moon." He could use one of the following methods to perceive the new word: (a) letter-by-letter sounding and blend the sounds; (b) note the syllables *tel -e- scope* and blend the pronunciation of the syllables; or (*c*) use the contextual meaning of the rest of the sentence, note the initial consonant, and infer the identity of the word. Ordinarily the last method, using a combination of clues with phonics (sound of the initial consonant, or more if necessary) will be effective and most rapid.

Skilled use of syllabication is nearly as rapid. But the letter-by-letter sounding and blending is laborious, slow and usually difficult to use.

The progression from the initial ineffectual method of word perception to the skillful level of the adult reader is a long but not impossible journey. The main objective of this discussion has been to alert teachers to the precise nature of the ineffective methods most children employ to perceive words as they begin to learn to read. With this realization, the teacher will be better able to guide the child at an early date into the use of procedures designed to bring about smooth progress toward adult word perception.

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ERIC

READING INSTRUCTION FOR THE EDUCATIONALLY RETARDED AND THE DISADVANTAGED

PAUL WITTY

MANY THOUGHTFUL observers have pointed out that education should be looked upon as a process in which we seek the greatest development of every boy and girl according to his unique nature and needs. This worthy objective has been poorly achieved as may be seen by examining the statistics concerning the frequency of poor reading in our schools—especially among children judged to be superior in ability. Never before as within the past few years have so many and varied solutions been proposed to cope with this situation. Indeed, writers frequently and unfortunately find the cause and cure of poor reading in single factors or approaches.

The main problem is not simple, nor can it be solved or even ameliorated by a single approach. In fact, the major problem is largely one of finding ways to cope with individual differences in our varied and shifting school populations. The enormity of this undertaking may be appreciated by examining studies of the ability and attainment of pupils in the large cities of the United States.[1] There are large numbers of educationally retarded pupils whose poor reading is traceable to various factors and their combinations. Of course, many of these pupils are not "disadvantaged."

Recently the number of pupils in our major industrial centers referred to as "culturally deprived," or "socially disadvantaged," has, however,

[1]For facts about one large city, see Robert Havighurst, *Survey of Chicago Schools*. Chicago, Illinois: Board of Education, 1964. See also Walter Barbe, "Who Are the Educationally Retarded?" *Education*, vol. 85 (April, 1965), pp. 451-454.

increased dramatically. Thus, Frank Riessman[2] estimated that in 1950:

> . . . approximately one child out of every ten in the fourteen largest cities of the United States was "culturally deprived." By 1960 *this figure had risen to one in three.* If rapid migration to certain large cities continues, this proportion may increase by 1970 "to one deprived child for every two enrolled in those cities."

Robert Havighurst[3] states:

> Since these children and their families tend to concentrate in the large cities, while upper-income people tend to move out from the cities to the suburbs, the socially disadvantaged children are in the big cities in larger proportions than 15 per cent. Probably 30 per cent of the children in such cities as New York, Chicago, Philadelphia, Washington, Detroit, Cleveland, and Baltimore, fall into the socially disadvantaged category.

A most timely definition of the disadvantaged has been set forth by Havighurst[4] who stresses three characteristics of such children. But first he inquires concerning the nature of the "disadvantaged," and indicates that such persons are disadvantaged for living in modern urban, industrialized communities. He then describes such children who have (a) family characteristics resulting from living in homes in which language facilities and general experience are distinctly meager, (b) personal characteristics which lead to insecurity on the part of the child following a realization of his own inadequacy in meeting school and other demands, and (c) social characteristics which are associated with low income, rural background, or social and economic discrimination.

Repeatedly emphasized by writers is the need of the disadvantaged for improved reading ability and greater proficiency in other skills of communication. Thus, Martin Deutsch[5] states:

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[2]Frank Riessman, *The Culturally Deprived Child.* New York and Evanston: Harper and Row, 1962.

[3]Robert Havighurst, "Who Are the Socially Disadvantaged?" Chapter I in "Educational Planning for Socially Disadvantaged Children and Youth." *The Journal of Negro Education,* vol. 33 (Summer, 1964), pp. 216-217.

[4]Robert Havighurst, *op. cit.*

[5]Martin Deutsch, "Social and Psychological Perspectives on the Development of the Disadvantaged Learner," *The Journal of Negro Education,* vol. 33 (Summer, 1964), pp. 232-244.

Currently 40 to 70 per cent of the total school population in our twenty largest cities consists of children from marginal economic and social circumstances. By the time these children reach junior high school 60 per cent are retarded in reading by one to four years.

Bases for Reading Improvement

In the field of reading improvement, specialized approaches have been proposed for teaching the disadvantaged. However, critics have already emphasized the limitations of some of these approaches.

Despite the recognition of the limitations of certain approaches by many scholars, authorities are generally agreed that efforts to improve the reading ability of the disadvantaged should recognize:

a) The need for establishing pre-school or nursery centers to provide the background in language and related experience essential to successful reading.

b) The importance of enriching the experience of pupils in school so as to equip them with the necessary background which has been denied or precluded.

c) The significance of the use of materials of instruction which are closely related to the experiences, interests, and needs of the disadvantaged.

d) The importance of providing help for disadvantaged pupils throughout the full range of education.

e) The significance of offering adult education to functionally illiterate men and women and to the parents of the disadvantaged and to other citizens.

Preschool Education for the Disadvantaged

One outstanding effort to provide the conditions and experiences essential for the culturally disadvantaged pre-school child is described by C. E. Silberman[6] who states: "The lower-class child, therefore, suffers from an overall poverty of environment—visual, verbal, and tactile—that inhibits or prevents learning, not just in the first grade, but later on as well." Silberman points out further that perhaps the most significant effort to develop an appropriate curriculum for such children in the

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[6] C. E. Silberman, *Crisis in Black and White*. New York: Random House, 1964, p. 274.

nursery sechool has been made under the direction of Martin Deutsch in ten New York public schools and five day-care centers.[7] "The curriculum is designed to teach youngsters the verbal and perceptual skills they need in order to learn to read, and also to bolster their sense of self."

The conspicuous success of these projects has dramatically demonstrated the need for extending education downward for the disadvantaged child.[8]

> The youngsters in Deutsch's experimental classes show significant improvements in IQ test scores. The more profound effects may be less measurable, but they are striking to anyone who spends over a few weeks in one of the classrooms observing children; they change under the observer's eye. Kindergarten teachers who receive youngsters exposed to even as little as six months of Deutsch's experimental program are almost speechless with enthusiasm; in all their years of teaching, they say, they have never had slum youngsters enter as intellectually equipped, as alert, as interested, or as well-behaved.

A noteworthy program was also initiated in the Banneker area of St. Louis in 1958 in which the population is largely Negro. Pre-school experiences were initiated to extend and enrich the backgrounds of young children through field trips, visits to the zoo, opportunities to use colorful toys, varied language and listening activities. These children achieved scores on tests equal to city averages upon entrance to school and excelled the ratings of children from other slum areas.[9]

Materials for the Disadvantaged

One of the basic features of successful programs with the disadvantaged involves the use of methods and materials different from those conventionally employed in our schools. Again and again, it is indicated that the typical reading textbook is inappropriate. Thus it is stated in

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[7]C. E. Silberman, *op. cit.*, p. 278.

[8]Silberman, *op. cit.*, p. 280

[9]Reported by Stanley Krippner, "Materials and Methods in Reading," *Education*, vol. 85 (April, 1965), pp. 467-473.

the *NEA Journal*[10] for April, 1962:

> Reading materials and visual aids should take into account the backgrounds of the children who will use them. The texts and illustrations should not refer exclusively to the middle and upper classes. In addition, special attention to the history, culture, and contributions of Negroes and of Spanish-speaking people in the United States can foster self-respect, mutual respect, and a sense of identification with the school and the nation among children who are now largely ignored in school materials.

Frank Riessman[11] also writes:

> *The New Reader.* There is a great need for readers and materials to be more attuned to the experiences and problems of lower socio-economic groups. The textbooks used in the schools present predominantly middle class illustrations, rarely concerning themselves with problems or heroes of the disadvantaged. . . .
>
> It should not be assumed that these readers would contain the negative features of the deprived person's life such as slums and the like: instead, they would reflect the most positive aspects of the culture, e.g., the cooperative family traditions, the humor, the informality. . . .

Other Efforts to Teach the Disadvantaged

Currently many reports are being published describing efforts to teach the disadvantaged. In some of them, appropriate materials are also described. Noteworthy as background reading is the entire summer 1964 issue of the *Journal of Negro Education,* which is devoted to the disadvantaged. Another very helpful volume especially for the teacher of reading and language is entitled *Improving English Skills of Culturally Different Youth,* published in 1964[12]. Of special interest too is the ALA Bulletin,[13] edited by Jean Lowrie, which from June 1964 through Janu-

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[10]"Education and the Disadvantaged American," *NEA Journal,* vol. 51 (April, 1962), pp. 8-12.

[11]Frank Riessman, *op. cit.,* pp. 30, 31, and 35.

[12]*Improving English Skills of Culturally Different Youth.* Washington, D.C. Office of Education, U.S. Department of Health, Education and Welfare, 1964.

[13]Jean Lowrie (special editor), "Providing School Library Service to the Culturally Disadvantaged," *ALA Bulletin,* vol. 58 (June, July, August, September, October, December 1964, January 1965).

ary 1965, contains cogent articles on "Providing Library Service to the Culturally Disadvantaged." Much of the March 1965 issue of *The Reading Teacher* is devoted to reading instruction for disadvantaged children. Especially noteworthy is the entire issue of *Education* for April 1965, given over to *Reading for the Educationally Retarded and the Disadvantaged.*

There are several notable attempts to provide special instructional programs for disadvantaged children. Less frequent is the provision of such instruction at the junior high school level where the need is also very great. Yet some outstanding work is being initiated. Thus, Warren B. Cutts[14] writes:

> A novel approach in helping culturally deprived students read better is being tried at Addison Junior High School in Cleveland. . . .
>
> To improve reading throughout the school, special reading classes have been set up, with particular emphasis on phonetics, structural analysis, developmental reading, word meaning and comprehension. Two teachers with long experience as elementary school teachers of reading are employed in these classes, each of which is limited to twenty pupils.
>
> Addison personnel also recognize the importance of giving more, than lip service to the old slogan, "Every teacher, a teacher of reading." In a series of six Saturday morning workshops taught by an experienced elementary teacher, fifty-two teachers of English, social studies, mathematics, and science have learned methods of teaching word-attack skills.

In the April issue of *Education* Charles Spiegler[15] sympathetically describes the needs of disadvantaged high school pupils and shows how greatly a program of reading instruction may influence and lift such youth. And Lou LaBrant[16] also describes the work in reading in Dillard

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[14]Warren B. Cutts, "Special Language Problems of the Culturally Deprived," *The Clearing House*, vol. 37 (October, 1962), pp. 80-83. See also Eunice S. Newton "Planning for Language Development of Disadvantaged Children and Youth." *Journal of Negro Education*, vol. 33 (Summer, 1964), pp. 264-274.

[15]Charles Spiegler, "We Had a Dream—Project English," *Education*, vol. 85 (April, 1965), pp. 495-498.

[16]Lou LaBrant, "Broadening the Experience of Deprived Readers," *Education*, vol. 85 (April, 1965), pp. 499-502.

University and demonstrates clearly the need for enriching the experience of the disadvantaged throughout their school careers. In the same issue of *Education,* Charles J. Callitri[17] gives a penetrating analysis of the problem of teaching reading to the disadvantaged.

In addition to junior and senior high school pupils who need help in reading, there are in the United States millions of functionally illiterate young people and adults who require basic reading instruction. What methods and materials shall we use with these groups? Are there any dependable patterns which will encompass the generally acknowledged needs of an effective reading program?

Perhaps the largest and most successful program for deprived persons was developed during World War II for "functionally illiterate" men in the army. Let us examine that program to determine implications for current endeavor.

Instruction of Illiterate and Non-English Speaking Men

In order to satisfy the need for manpower in the armed forces, it became necessary to induct large numbers of illiterate and non-English speaking men. Special training units were organized to give these men the academic training they needed to become useful soldiers. An equivalent to the fourth-grade level in reading and related subjects was the standard believed to be essential. Because of the existence of very large numbers of adults who in America had completed less than four years of elementary education, the army found it necessary to accept such men and teach the three R's.[18] By applying and extending established principles of education, the army succeeded in developing a remarkably efficient program which enabled the typically illiterate or non-English speaking man to acquire the basic academic skills in eight weeks' time.

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[17]Charles J. Callitri, "Cultural Differences in Children," *Education,* vol. 85 (April, 1965), pp. 458-469.

[18]At that time, it was found that about one-seventh, or 13.5 per cent of the recruits might be considered functionally illiterate. From states such as Louisiana, South Carolina, Georgia, and Mississippi the percentages were much higher.

Some of the men had lived in mountainous or rural districts where schools were inaccessible during several months of the year and poor at all times. Others came from the border and coastal states, where immigrants sometimes formed independent groups that managed to get along with very limited proficiency in English. And some came from foreign communities of our great cities. In one special training unit in Texas, 95 per cent of the trainees were non-English-speaking men of Spanish or Mexican background. But in other units, there were trainees from parts of the country in which educational opportunities were good or superior. In some cases, such men had been faced with family needs which had led them to leave school at early ages. Still others had learned little during their years in school. However, very large numbers of the men had lived in states in which educational opportunities were distinctly limited.

Two types of tests were used in the Reception Center. The Army General Classification Test was obviously unsuitable for gauging the ability of these men since it included so many items which required reading ability. Accordingly, a Visual Classification Test was devised, tried out, and a critical score established to indicate ability adequate for success in the Special Training Unit. Tests of reading, language, and arithmetic ability were employed to classify the men into four groups at the beginning of the training cycle. Typically the men were eager to learn. Experience had shown the disadvantage of being unable to read. They wanted to overcome their handicaps and welcomed their new opportunities. "More than anything else, I want to learn to read," said one man. When asked why, he summarized rather fully the reasons of many of his comrades: "I want to be able to read letters from home. And I want to know what's going on in other places." Finally he added, "I want to be able to read the things the other fellows do."

The Use of Functional Methods and Materials

All subject matter was presented in the form in which it was most readily and most frequently used. *The Army Reader* and the *Army Arithmetic*, textbooks for developing basic skills, dealt with familiar

problems such as taking care of the barracks, making purchases at the PX, writing letters, and keeping a budget. Film strips and other visual aids provided additional useful information about how to wear a uniform; whom, when, and how to salute; what to do in the case of an air raid; and how to fire a rifle. Film strips were used also to help the men acquire a reading vocabulary, and to understand widely-used phrases and sentences

Before devising instructional materials, a list of words most frequently used by the soldier in his life was prepared from counts of words appearing in the *Soldier's Handbook* and other manuals, as well as from a study of language usage in various routine army situations. Consideration was given to the frequency ratings of these words in the preparation of teaching materials. Several specialized lists were also developed for devising instructional materials in military subjects such as *Defense Against Chemical Attack* and *Military Discipline and Courtesy*.[19, 20, 21, 22, 23, 24]

When the soldiers were able to recognize quickly and pronounce successfully the words, phrases, and short units in the first language film strip, (*The Story of Private Pete*), the textbook (*The Army Reader*) was introduced and instruction in oral and silent reading advanced rapidly. Instruction centered on basic skills such as getting the central idea of a

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[19]Paul Witty, "The Conquest of Illiteracy," *School and Society*, vol. 62 (July 7, 1945), pp. 1-3.

[20]Paul Witty, "Some Suggestions for Vocabulary Development in Public Schools," *Educational Administration and Supervision*, vol. 31 (May, 1945), pp. 271-282.

[21]Paul Witty and Samuel Goldberg, "The Use of Visual Aids in Special Training Units in the Army," *The Journal of Educational Psychology*, vol. 35 (February, 1944), pp. 82-90.

[22]Paul Witty and Golda VanBuskirk, "Beam in the Eye," *Childhood Education*, vol. 21 (October, 1944), pp. 80-85, and "The Soldier Learns to Read," *National Parent-Teacher Magazine, vol. 36* (February, 1944), pp. 8-10.

[23]Paul Witty, "What Shall We Do for the Undereducated American?" *National Parent-Teacher*, vol. 34 (May, 1940), pp. 10-13.

[24]Paul Witty, "Teaching the Three R's in the Army," *The English Journal*, vol. 34 (March, 1945), pp. 132-136.

paragraph, noting details, organizing information, and following directions. Skill in oral reading was emphasized, with attention given to clear presentaton of thoughts and ideas in natural units. Informal discussions and impromptu dramatizations of personal experiences were also employed as clarity in communication was further encouraged.

Supplementary materials offered the men additional reading experience. About four hours per day were given over to reading, writing, and arithmetic. And approximately four additional hours were devoted daily to military training. The military subjects were presented with the same regard for clear communication and understanding that characterized the presentation of the academic work. Specialized vocabularies and conceptual terms were studied in subjects such as sanitation and hygiene, military discipline and courtesy, and rifle marksmanship. Clarity was enhanced through the use of visual aids such as film strips, films, and graphic portfolios. Even on the drill field, careful attention was directed to the giving and timing of commands. The entire program was one in which the acquisition of language skills was at all times a vital concern.

As the war drew to an end, a second literacy program was articulated around a textbook entitled *Meet Private Pete*. This program was designed for use by functionally illiterate soldiers throughout the world who had not attended special training units. It was devised also as a refresher course for those men who had completed the Army's program. The central character in the materials is Private Pete; with him are Daffy, Joe, Bill, and other typical soldiers. In Part I of *Meet Private Pete,* the reader follows the men throughout their last day in camp; Part II relates their activities on shipboard; and Part III relates experiences of the group in New York, Chicago, and Kansas City. Finally in Part IV, Private Pete is home in Smithtown, Kansas, where friends visit him.

About 1000 of the 1475 words in the W.P.A.[25] list were used and other

[25]The W.P.A. list was made from twenty-three widely used lists for teaching adult illiterates; in constructing the list used in *Meet Private Pete,* about 1,000 words from the W.P.A. list formed the structure to which words were added at each of the four levels. These words were chosen from lists such as those of Thorndike-Lorge and others.

widely used words were added in constructing the list of approximately 1400 words which were employed in the textbook *Meet Private Pete.*

In the teacher's guide, there are forty lesson plans in which each lesson proceeds according to the following steps:

1. Reading the textbook and studying the illustrations
2. Using flash cards and other devices for presenting new words and phrases
3. Using the practice book

Illustrations throughout the text book were made from photographs of a group of soldiers selected to portray Pete and his friends. In the first stages of instruction, every picture is studied in detail. Such study arouses interest through personalizing the text and aids in vocabulary development.

The practice book, *Learning To Read,* provides repetition for words and phrases. The practice book also contains exercises to develop other basic skills and to sustain interest in reading.

The following reading skills receive emphasis in the practice book:

1. Recognizing and understanding a basic stock of sight words
2. Deriving meanings of new words from context
3. Developing and enriching word meaning
4. Reading to follow directions
5. Reading to note details
6. Reading to get specific information
7. Reading of related items in whole meaningful episodes
8. Analyzing words and building concepts

The practice book includes exercises to develop the ability to write letters and other compositions. In addition, it contains fifteen lessons presenting original information and descriptive episodes related to the story in *Meet Private Pete.* Every episode is designed for use in emphasizing one or more of the above skills. In addition to the reader, an *Arithmetic for Everyday Life* was developed to provide the men with the skills needed in meeting recurring problems of civilian life.

All suggestions, recommendations, and lesson plans for this program are found in a single manual, *Instructor's Guide and Lesson Plans for Literacy Training*. These detailed presentations were planned for use by instructors who did not have an opportunity to attend troop schools of the type operated for teachers in special training units. In many other respects, the programs were similar. Both programs have proved remarkably efficient.

The Role of the Teacher

The teachers in the special training units were enlisted men. Most of them had considerable professional and academic training, and many had experience in teaching. Few, however, had specific training or experience in teaching adult illiterates. Training was provided for them in troop schools in which they learned to use the textbooks and other instructional materials.

Perhaps the most important contribution of these teachers was found in the attitude they brought to their work. They emphasized success and steady progress and made it clear that they expected every man to learn effectively and rapidly. This attitude spread to the students who came to recognize and appreciate their ability to learn. Thus, the cycle began and continued; success brought confidence, and confidence brought further success.

The program proved to be extremely successful. With the increased use of functional materials and methods, the salvage rates rose to about 90 per cent in the average instructional period of eight weeks.

Some Implications for Education

The program of special training has certainly shown that the mass of American youth are educable. Moreover, it has demonstrated that widespread illiteracy need not continue as a great social problem among adults in America. In addition, it has established the significance of certain basic principles of learning which are of utmost importance in teaching the educationally retarded and the disadvantaged pupil.

First, the army program for illiterates demonstrated the validity of

employing functional methods and materials of instruction. Examination of these materials will reveal their conspicuously different characteristics when compared with the stilted unrealistic offerings in many textbooks. Reading habits were established and reinforced in situations having maximum meaning because of the close relationship of the goals to the men's firsthand experience.

Second, this program revealed the value of visual and auditory aids in accelerating the learning process. The special training units made extensive use of films, filmstrips, graphic portfolios, and other aids. Thus, clear referents were provided for the words and other language symbols employed in reading instruction.

Third, the work of the special training units showed the importance of strong interest and motive in fostering learning. The program was developed at every level in accordance with interest and need.

Fourth, the army program demonstrated the value of clear objectives and specific goals. In special training units, the objectives in every subject were clearly defined. Steps in their attainment were outlined and tests were used to check progress at regular intervals.

Fifth, the work in the special training units revealed the advantage of correlating activities. Instructors taught both military and academic subjects and attempted to present all training materials in such a way that understanding was unimpaired.

Sixth, the work demonstrated the value of keeping enrollment in classes small. The average class contained only twelve men. Classrooms were equipped for use of appropriate instructional aids, and every man was issued the necessary books and materials.

Seventh, the use of supplementary materials was shown to be an important means of applying and reinforcing academic skills. Every man received a weekly newspaper and a monthly magazine. Additional supplementary reading materials of appropriate difficulty were also developed and made available.

Eighth, the methods of instruction, regarded as appropriate for all training activities, were widely followed in special training units. Demonstrations were frequently given by instructors, and trainees engaged in

applicatory exercises to show that they could perform every step in an essential operation. Some of this work was carried on in small groups while much of it was performed individually.

The foregoing procedures might be employed in the development and use of instructional materials for teaching educationally retarded and "disadvantaged" pupils. Although principles underlying this program seem to be applicable to almost all levels of reading instruction, they are especially pertinent in the effective education of pupils whose opportunities and attainment have been meager. Moreover, they have special importance in the education of functionally illiterate and other disadvantaged adults.