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ABSTRACT

This yearbook is a report of the papers presented at the Fourth Annual Meeting of the North Central Reading Association. The titles and authors of the papers included are: "Recent Research in College and Adult Reading" by Edward G. Summers; "The Definition of Reading" by Earl F. Rankin; "The Effect of Reading Training on College Achievement" by Eugene S. Wright; "An Evaluation of Forty-one Trainees Who Had Recently Completed the 'Reading Dynamics' Program" by Stanford E. Taylor; "The Use of Closed-Circuit Television for Teaching College Reading Courses" by Patricia Donisi; "The Compulsion to Read" by Forrest L. Vance; "How Sound is Your Reading Program?" by Robert Karlin; "Training Inexperienced Graduate Students as Instructors in a Reading Program" by Ernest W. Kinne; and "Initiation of Reading Clinics" by George L. Watson. (TO)

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COLLEGE and ADULT
READING

I

The
First Yearbook
of the
North Central Reading Association

Edited by

Alton L. Raygor

Reading and Study Skills Center
Student Counseling Bureau
University of Minnesota

May, 1962

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COLLEGE AND ADULT READING
I

1962

Minneapolis, Minnesota

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Preface

This yearbook, the first published by the North Central Reading Association, is a report of the papers presented at the Fourth Annual Meeting of the Association in Minneapolis on October 20-21, 1961.

In the fall of 1958, thirty-three persons from the Middle West met at the General Motors Institute in Flint, Michigan for a two-day conference. They assembled at the invitation of Harry O. Patterson, who has long been interested in the person-to-person and group exchange of ideas about developmental reading, particularly at the college and adult level. At that conference, the NCRA was formed and a seven member executive committee was set up.

The group has met twice at Purdue University in addition to the meeting at which the following papers were presented at the University of Minnesota. Future meetings will be held in other sections of the six-state area served by the NCRA.

One of the major purposes of the NCRA is to give encouragement to research and experimentation in the field of reading. Reports of such research form part of this yearbook. Whatever success the NCRA has enjoyed in its brief history is due in part to the efforts of those who prepare and present papers at the annual meetings.

Alton L. Raygor

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Recent Research in College and Adult Reading

Edward G. Summers
University of Minnesota

The purpose of this paper is to present research in college and adult reading which has appeared since the report given by Daniel Sayles at the last North Central Reading Association Conference in October of 1960. This is by no means considered to be a comprehensive summary of all published research related to college and adult reading. For such a summary, the reader is referred to the yearly reviews published by Bliesmer (2) (5) (6) in the Yearbook of the National Reading Conference.

The research reported here includes studies which evaluate existing college reading programs, present methods of teaching reading, analyze reading habits of college and adult readers, explore the relationship of variables such as handedness and interest to reading, and present information relative to the preparation of high school and college teachers of reading.

As one might suspect, the largest number of studies appearing relate to evaluating programs of college and adult reading. A number of summaries of such studies in the past allow us to make the following generalizations: (a) the great majority of programs reported are conducted for college groups; (b) reported programs represent wide variation in method, materials and mechanical devices used, testing procedures, and length of training; (c) roughly 50 per cent of the programs

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use some type of evaluation, few evaluations are done with control groups and tests of the significance of the results in terms of probability statements are rare; (d) practically all reports indicate that improvement or gain was achieved for those participating, and (3) the major gains reported are in speed rather than comprehension.

A comprehensive study to determine the status of adult reading improvement programs in military, government and business agencies was reported by Acker. (1) A carefully validated questionnaire was sent to 177 agencies with reading programs. The author notes that this was close to a total sample of existing programs. Stated objectives of the participants centered around development of speed, vocabulary and comprehension. Training in vocabulary and study habits were thought to be helpful, word analysis moderately helpful, and oral reading and library training of little help. Textbooks and workbooks were utilized most frequently with a combination of mechanical and non-mechanical aids of most value. The reading pacer was recommended while the tachistoscope and reading films were thought to be less helpful. Almost every agency reported using at least one standardized test with many agencies developing their own tests for local use. One third of the respondents reported use of vision tests, while intelligence and personality tests were thought to be of lesser value. Ninety-eight per cent reported some evaluation of the program with improvement reported in all but a few individual cases. Increases were reported in speed, vocabulary and comprehension in that order. The adults taking the programs registered overwhelming acceptance of the classes and thought that the time taken in improving their reading was well spent.

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The author concludes by noting the following trends in reading programs offered by these groups. (a) Trend towards group and combination group and individual methods of instruction. (b) More use of non-mechanical equipment, use of mechanical equipment has not decreased but the time spent with it has. (c) Development of reading tests for adults by local agencies for their own use.

Legere and Tracey (9) reported results of a reading improvement program for officers at an Army service school at Ft. Devens, Massachusetts. The authors emphasized the exploratory nature of the data presented. Pre and post test information collected on a small number of students indicated that after twenty hours of instruction and practice the mean reading speed increased from 298 words per minute to 313 words per minute. Comprehension scores increased from 60 to 70 per cent. This sample, of course, constitutes a somewhat select ability group. No tests of significance were reported for the data. A local reading test and the Cooperative Reading Test were used for evaluation. The reading program described used materials and methods which would classify it as "typical" reading improvement approach.

An interesting study exploring academic achievement and drop out rate of reading students and students in an honors program was reported by Hinton. (8) After considering the difficulty involved in adequately matching a control group on the "twin" principle the author decided to use a group of honors students as a control on the assumption that their motivation toward seeking a degree was comparable to the motivation displayed by students desiring instruction in reading improvement. The progress of 47 reading students and 18

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honors students was followed for three semesters. At the end of that period 75 per cent of the honors students and 71 to 77 per cent of the reading students were still pursuing a degree. This compares favorably with figures reported by the U.S. Office of Education which reports that four out of ten freshmen do not go on to earn a degree. The author concluded, "Both groups appeared to be equivalent in their motivation towards a degree as both had drop out rates less than the national average."

Grade point averages covering the period were computed for both groups. The reading students showed a significant increase in grade point average when the current semester was compared with the previous semester. The honors students showed a decrease in grade point average when the current semester was compared with the following and previous semesters. The author states that the decrease in grade point average for the honors students is difficult to explain. A number of reasons for this could be advanced relative to the initial definition of an honors student and the change in academic demands from high school to college.

Reporting the results of seven years of teaching reading in the English department at the Purdue Calumet Center, Tuckey (15) presented beginning and ending scores on test selections in Cospers and Griffin's Toward Better Reading Skills. For 703 students under 25 years of age and 234 students over 25, ending rate scores were considerably higher than beginning rate scores and ending comprehension scores were also higher than beginning comprehension scores. No statistical analysis was made of the results. A more or less standard reading course is described including films, comprehension checks, talks on reading, vocabulary drills and reading papers.

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An eight week summer reading program comparing gains in reading speed with academic aptitude and initial rate was described by Heftel. (7) The program was offered by the Chicago Undergraduate Division of the University of Illinois. Students who concentrated primarily on increasing speed were analyzed after instruction on narrative type reading material and the Strang, Study Type Reading Exercises. Generally, students tripled their rate of reading narrative material, more than doubled their rate of reading study type material, and at the same time increased their comprehension. The correlation between an index of academic ability and gain in reading rate was .65, significant at the .01 level. The correlation between gain in study type reading speed and academic ability was .45, significant at the .05 level. Results of dividing the group into fast, middle and slow readers indicated, as one would expect, that the students who show the greatest academic aptitude are also initially the fastest readers and will probably profit the most from reading training.

Spache, Standlee and Neville (13) evaluated three methods of teaching reading at the University of Florida. The reading rate, vocabulary, comprehension, reading habits and attitudes of students receiving instruction under a group method centered around a workbook, a group method utilizing an audio-visual approach, and an individualized, self improvement approach were compared. To mitigate the non-random assignment of students to groups an analysis of covariance design was used controlling on initial reading ability. Using the Diagnostic Reading Tests and a local inventory of reading habits and attitudes no significant differences were found between the

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three groups on reading rate, vocabulary and comprehension as measured by the Diagnostic Tests. When considering reading habits and attitudes the group pursuing the individualized, self-help approach did achieve significantly more favorable reading habits and attitudes. Differences at the .05 level of confidence were obtained. A larger scale study is under way to further explore the above results.

In a well controlled study Mayhew and Weaver (10) compared gains in reading skills of university students taught under four methods. Ninety-six students comprised the sample. The reading groups met for two hours a week for two semesters. Experimental condition I used only the Harvard Reading Materials, written at about tenth grade level. Experimental condition II used only the SRA Better Reading Book and the SRA Reading Progress Folder. These materials were considered to be of a lower difficulty level than the Harvard materials. Experimental condition III used both the Harvard materials and the SRA materials in addition to the tachistoscope and reading films. The visual treatment was alternated with the Harvard material until it was completed, then with the SRA material. Experimental condition IV used the Harvard material and the SRA material alternating them each period. One point the authors wished to investigate was the value of alternating materials of two difficulty levels in instruction. A statistical design employing analysis of covariance to partial out the effects of initial reading ability and intelligence was utilized. For evaluation the comprehension section of two forms of the California Reading Test were used.

The authors concluded that it was not profitable to alternate materials of dissimilar difficulty

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as had been done under condition IV. No significant gains were made under condition IV. Gains under conditions I, II and III were nearly identical. Gains were significant at the .01 level of confidence. Group III, using the audio-visual approach, was felt to be easier to motivate than groups I and II. The authors stated that on the basis of the results obtained in this study it is not necessary to own expensive equipment for the reading program. Any selection of good reading materials will suffice. However, mechanical equipment does seem to have a positive motivating function in the reading program.

A pilot study in teaching reading skills by programmed learning techniques was reported by Raygor and Wark (12) of the Reading and Study Skills Center of the University of Minnesota. The authors attempted to assess the automated learning of a transferable reading skill, reading for the main idea. The research was carried out under the assumption that a generalized reading competency could be taught which would transfer regardless of the subject area. Three groups of 28 college students each were used. Experimental group I was exposed to a weak program of automated reading instruction. Experimental group II was exposed to a strong program of automated reading instruction designed for optimal learning. Experimental group III was a control group drawn randomly from students who had been registered in the reading program prior to the introduction of programmed learning techniques. Pre and post-testing was done with a locally developed 20 item paragraph comprehension test. An analysis of covariance design controlling on initial reading ability was employed.

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The adjusted post test means of groups I and II significantly exceeded the control group II mean. The above significant results appear to attest to the transferability of a generalized reading skill developed by exposure to a programmed learning technique. However, the expected superiority of the strong program group over the weak program group did not develop. The study is being replicated using a strong program group and a group which follows a standard, non-programmed reading approach.

Bryant and Barry (3) described a study in which freshmen students enrolled in a developmental reading program were used to explore the relationship between reading interest, reading rate and comprehension. Subjects read two articles from the SRA Better Reading Book 3 and answered comprehension questions. A record was made of the reading rate and comprehension of the students as they randomly completed the articles. Interest of the articles was checked on a six point scale by the students. Scores in rate and comprehension were transformed into standard scores and compared to a difference score in interest for the two articles. The authors concluded that, "Interest does not significantly influence reading rate or comprehension when reading relatively simple narrative type materials."

McConville (11) presented results of a study which investigated reading rate, comprehension, intelligence and reaction time of college students relative to handedness. Initial rate and comprehension scores from the test exercises in Cosper and Griffin's, Toward Better Reading Skills, of right, left, ambidexterous, and mixed dominance students in a psychology class were used. A simple reaction time test was administered and

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the 35 item Adaptability Test was used as an approximate measure of intelligence. No significant differences in mean reading rate, comprehension, intelligence, and reaction time were found between the four groups.

McDonald and Craig (4) presented the results of a questionnaire study which investigate the claimed reading of books and magazines by college students and adults in an urban area. The authors wished to check the currently popular assumptions that people are reading more and better books than ever before because of the influence of T.V., and that the number of people who read is increasing because the volume of books and magazines sold has increased. The sample consisted of 657 randomly selected adults, a one-third of one per cent sample of the city of Milwaukee, and a representative sample of 300 Marquette University liberal arts juniors and seniors. A free response questionnaire, which had been carefully tested in a pilot study, listing categories of books and magazines, was mailed to the above population. Non-respondents were followed up by telephone and the results were adjusted to prevent a distorted view based only on the respondents.

Briefly, the results were as follows: (a) the most valued communication media of males were local news reports, foreign news, business news, editorials and music programs in that order; (b) among females, local news, foreign news, music programs, editorials, variety shows and sports news were listed as most important in that order; (c) among college males, local news, foreign news, sports, music, business news and editorials were listed as most important; (d) among college females, advertisements, foreign news, local news, music programs and women's news were listed as

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most important in that order. An analysis of book titles read indicated that the respondents did not utilize books to secure the above services. Including adjustment for the telephoned non-respondents, results indicated that 40 per cent of the adults reported reading one book per year, 70 per cent were magazine readers, and 95 per cent read newspapers. For the college population, 76 per cent read one or more books for recreation or leisure.

To check the tendency for respondents to overstate what they read the authors included a number of fictitious books in the check list. Three per cent of the adults and none of the college students listed these books, indicating a very modest degree of overstatement. Excuses given for not reading by adults included too busy, other interests, no liking of books, and non-availability of books. Eighty-three per cent of the college students said that being too busy was the reason for not reading more books. The percentage of those having read at least one book increased with educational level. More single people read books than married people. More males than females read books. The mean number of magazines read for the entire sample was 3.6. Magazine readership declined with age and rose with educational level.

An interesting aspect of the study was the check made by the authors on the percentage of reading done of materials which by various estimates were felt to be obscene. In category X, as it was called, males read fewer books but more magazines than females. Married people read more category X books than single people. A steady decline with age was noted in category X

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reading with the peak in the age group under thirty. Females read significantly fewer category X materials than did males.

In conclusion, the authors state that seven out of ten adults read one or more magazines. Book readers seem to be in the minority. Two in five adults reported reading at least one book the previous year. The typical book reader has at least some college education, is more likely to be a single female, and devotes most of the reading time to best seller type literature. One fourth of the books read and five per cent of magazines read fell in category X. Married females were most likely to read category X books, and single males category X magazines.

On the basis of this study the authors determined that the percentage of adult population with reported book and magazine reading was about the same as that reported in investigations during the forties. They concluded that T.V. and the availability of books and magazines has neither decreased nor markedly increased the proportion of adults who read.

Strang (14) reported the results of a questionnaire study which assessed reading programs available for prospective teachers of high school and college reading. Letters were sent to 95 colleges and universities most likely to offer reading courses. Seventy-seven replies were received. Returns indicated that relatively few colleges and universities offer courses on teaching of reading in secondary schools and colleges. Thirty-eight respondents described one or two high school or college courses. Eleven reported comprehensive programs. Nine were not giving separate courses

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in high school or college reading, but made reference to aspects of these areas covered in other reading courses. Four colleges hoped to begin programs in the near future.

Courses developed are of a wide variety from single courses to a sequence leading to a M.A., professional diploma, or doctorate. The eleven colleges reporting comprehensive programs listed the following sequence of courses: (a) a basic course in the nature and development of reading proficiency, (b) a course in diagnosis and remedial instruction, (c) supervised practice in working with reading problems in groups or clinic situations, (d) a course in language arts to place reading instruction in relation to the total curriculum and growth of the individual, (e) a course in review of research to supplement basic courses, (f) seminars providing opportunity for critical appraisal of reading methods and developments, and (g) an advanced reading development course which focuses on the study of adult reading.

The author lists two general types of program that are being offered in this area: a program which provides training for high school and college teachers who have responsibility for teaching developmental reading in their subject, and a program which centers around providing training for remedial reading teachers, consultants and clinicians. Many more training programs of both types are needed.

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The Definition of Reading Comprehension
by
Earl F. Rankin, Jr.
Texas Christian University

The term "definition" is not used here in its formal sense; it is used to indicate conceptualizations of the reading process as they are reflected in the literature. Definitions of reading comprehension (often the term "reading" is used synonymously) tend to fall at various positions along a "specificity-generalness" continuum. Some investigators imply that reading consists of a large number of separate elements in the form of specific skills, while others imply that it consists of a relatively small number of factors. The literature on the relationship between "general" and "specific" (i.e., subject-matter) reading is often cited in support of the elementalistic definitions. Therefore the literature on the relationship between "general" and "specific" comprehension will be reviewed in relation to the problem of definition.

Empirical Definitions of Comprehension

Empirical observations of the reading process tend to result in elementalistic, multi-factorial definitions of the reading process. In his survey of early literature in the field, Gray (14) concluded that reading was regarded as "...the process of recognizing printed or written symbols, involving such habits as accuracy in recognizing the words that make up a passage, span of recognition, rhythmical progress of perceptions along the lines, and accurate return sweep of the eyes from the end of one line to the beginning of

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the next." In an early empirical attempt to define the components of reading, Thorndike (31) made an analysis of mistakes made in paragraph reading and formulated the following definition: ". . . reading is a very elaborate procedure, involving a weighting of each of many elements in a sentence, their organization on the proper relations one to another, the selection of certain of their connotations or the rejection of others, and the cooperation of many forces to determine final response." Perhaps the extreme in "specific" or elementalistic" definitions is provided by Burkhart (7) who found that ". . . reading is not a single act but is a complex activity made up of at least 214 separate abilities. . ." Similar "skill lists" may be found in several other sources. (25, 29, 6) A number of reading tests with many sub-test headings (e.g., Iowa Silent Reading Tests, Diagnostic Reading Tests) denoting various skills tend to reflect this orientation.

Statistical Definitions of Comprehension

In contrast to the findings of empirical investigations, when factor analysis techniques are applied to reading test results in an effort to determine the number and nature of the fundamental components of the reading process, the results of such studies tend to "define" reading in terms of a small number of skills. In 1938, Feder (12) administered to college students tests of factual comprehension, ability to make inferences, and "appreciation." He found reading for information and reading for inference to be independent factors. In 1940, Gans (13) made a factor analysis of the responses of intermediate-grade children to a battery of reading tests and a battery of tests designed

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to measure critical reading of reference material to solve problems. Her results showed reading ability, as measured by silent reading tests, to be independent of those abilities involved in reading references for problem solving. In addition she found a possible third factor not clearly identified. Both Feder's and Gans' results point to the existence of a "literal" versus an "interpretative" type of reading.

In 1941, Langsam (20), using a battery of 21 tests with college freshmen, found four reading factors: 1) verbal (i.e., interpretation of ideas and meanings), 2) perceptual (i.e., speed), 3) word (i.e., vocabulary), and 4) seeing relationships. It should be noted that the "verbal" factor is possibly an "intelligence" factor, and the "perceptual" factor was involved only in speed tests. This leaves two comprehension factors -- vocabulary and seeing relationships. Davis' (10) 1944 study made use of nine skills which were derived from a list of several hundred in the literature considered important by "authorities." Each "skill" was selected with the objective of producing a cluster of sub-skills with high intra-cluster correlations and low inter-cluster correlations. The tests were administered to college freshmen. He found nine factors corresponding to his original tests, but two factors (i.e., "word knowledge" and "reasoning in reading") accounted for 89 per cent of the variance. Hall and Robinson's (16) study disclosed five identifiable factors. In addition to two rate factors they found verbal or word meaning factors, and "attitude of comprehension accuracy" factor, and a chart-reading factor. As in other studies, their

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word meaning factor was found to be the most important. Anderson's (1) 1949 study, using high school seniors in Scotland, resulted in three factors: 1) vocabulary, 2) intelligence, and 3) analysis-synthesis. These factors accounted for 57.6 per cent, 13.2 per cent, and 29.2 per cent, respectively, of the total variance. It is interesting to note the similarity of these results to Davis' findings. Anderson found 86.8 per cent of his variance accounted for by "vocabulary" and "analysis-synthesis," whereas Davis found 89 per cent of his variance accounted for by "vocabulary" and "reasoning." In 1949, Burt (8) summarized factorial studies of "verbal ability" by himself, Wolfle, Spearman, and Head, and also found two major factors: 1) word factor (words in isolation), and 2) language factor (words in their context).

Thus, if we may assume that factor analyses of the reading process yield more valid definitions of reading (in terms of relatively independent factors) than empirical observation, it appears that reading comprehension is perhaps not quite so complex after all. Factorial and empirical definitions are obviously constructed at different levels of generality. Therefore the "truth" of a definition at one level does not imply the "falsity" of a definition at another level. However, in terms of the criterion of "relative independence of factors," one type of definition is perhaps more "valid" than the other. Admittedly, the outcomes of these factorial studies are not totally in agreement. Their findings are, to some degree, a function of the number and particular type of tests used and the terminology used by different investigators to describe their findings.

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It is likely that Feder's "inferential comprehension," Gans' "critical reading factor," and Hall and Robinson's "attitude of comprehension accuracy" factor are closely related to Davis' "reasoning factor." There is also considerable agreement on the existence and importance of the "vocabulary" factor in all studies which used a vocabulary test. Spache (28) concludes his survey of this problem with the following summary statement: "Analysis of reading tests agree generally in finding the three factors of vocabulary or word meanings, the verbal factor or intelligence, and the reasoning factor or seeing relationships." Other factors may be a speed and a chart-reading factor, although there is some question as to whether they should be considered as "reading comprehension" factors. On the whole, these results support a two-factor definition of comprehension, with intelligence and speed considered as closely related, but extrinsic, factors. It is possible that with further refinement of reading tests and/or greater development of reading skills, other factors may appear, but it is the reading tests as they now exist that play an important role in shaping our definitions both in the laboratory and in the classroom.

General and Specific Reading Comprehension

Statistically derived definitions of reading may be interpreted to support the contention that a "good" reader should be able to read material in one field as well as in another. This point of view, however, has not gone unchallenged for it seems not to be in accord with the subjective experience of scholars within various areas of specialization who find reading in their own

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field to be easier and seemingly more efficient than reading in other fields.

In 1921, Pressey and Pressey (24) obtained correlations ranging from .31 to .49 between general reading and subject-matter reading (i.e., poetry and science) among seventh graders. They concluded, "It appears, then, that ability in silent reading depends largely upon the nature of the passage read." In 1932, McCallister (21), on the basis of classroom observations, study of materials, and interviews with students, produced an extensive list of reading procedures characteristic of seventh grade history and mathematics and eighth grade science. In 1938, Bond (5), in a study of reading and subject-matter achievement among ninth graders, stated: "Scientific and mathematical reading require careful, slow, interpretative reading of comparatively small amounts of material." In 1940, Shores (27) compared the reading skills in science and history of "good" and "poor" readers who had been equated on the basis of mental age and general reading ability. He concluded, "By the time students have reached the ninth grade, their reading proficiency is, to a considerable extent, specific to the content field in which the reading is done." In 1940, Grimm (15) obtained correlations ranging from .51 to .66 between reading skills and ability to interpret data in the social studies at the intermediate grade level. He concluded that general and social science reading abilities were related but that the relationship is not sufficiently high to consider them a single factor.

Not only do we find low correlations between "general reading" and "subject matter" reading

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and between reading in different subject-matter areas, but there is also evidence that reading scores within the same field tend to be highly correlated. Hall and Robinson (16) obtained low correlations between reading comprehension scores by college students in art, geology, fiction, and history, but obtained a high correlation between a reading test based on Canadian history and one based on Russian history. Likewise, in an elaborate factorial study of comprehension in literature among college students, Harris (17, 18) found only one general factor in the field of literature which he analyzed from the point of view of (1) Form: prose, poetry, essay, narrative, and drama; (2) Period: Elizabethan through the twentieth century; and (3) Style. Harris also found only one factor in common to seven components of comprehension assumed to be relevant to the understanding of literature.

Although most of the studies on the relationship between general and subject-matter reading arrive at conclusions consistent with the "subject-matter specificity" hypothesis, the evidence upon which these conclusions are based is not altogether convincing. For example, in a study of the relationships between general reading comprehension and the comprehension of historical materials among eleventh grade students, Artley (3) obtained a correlation of .79 (.86 corrected for attenuation). The correlation was .75 even after intelligence was partialled out. On the basis of this evidence he concluded: "The absence of a perfect correlation between measures of general and specific reading comprehension provides evidence that there exists a

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high degree of specificity in the factors relating to reading comprehension in the social studies." Likewise, Betts (4), in a summary of two doctoral dissertations in which correlations ranging from .60 to .76 are obtained between general reading and reading in science and the social studies, concluded: "There is a high degree of specificity in the type of thinking required in different reading situations." As in many previous studies the effect of test reliability on these correlations was not considered by Betts. Thus, the "true" correlations are probably even higher than has been indicated.

In contrast to many previous studies, Dixon (22), in a well controlled study of reading rate, comprehension, and eye movements relative to different subject-matter fields, concluded: "The idea that different types of material automatically elicit different types of reading is of doubtful validity." Furthermore, he stated: "Training in a special academic field exerts little influence on reading habits, except as the extensive reading which history requires may serve to promote a rapid rate."

To summarize the findings regarding the specificity of subject-matter reading, although most of the studies have concluded that there is a substantial degree of specificity of reading skills within a given content area and a low degree of commonality of skills between areas, the evidence in favor of this hypothesis is not altogether convincing in view of the magnitude of the correlations upon which some of the conclusions were based.

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Furthermore, there is a problem of interpreting a low relationship between reading in two subject-matter fields or between "general" reading and reading in a given field in view of the influence of past experience and familiarity with specialized concepts and style peculiar to a given content field. Irion (19), Artley (3), and Dixon (22) all found a high degree of correspondence between familiarity of material and subject-matter comprehension. Robinson (26) found that students with training in reading legal documents could read such documents better than students without such training, even when the effects of word knowledge was controlled by using easy vocabulary items. David (10) puts the matter in proper perspective in the following quotation:

When one combines the evidence that word knowledge is so important with the fact that the development of an individual's vocabulary is in large measure dependent on his interests and his background of experience, the relatively low correlations between reading tests in different subject matter fields are understandable. There is, however, no necessity to conclude that all the fundamental factors of comprehension in reading are not involved in reading materials in various subject matter fields.

The outcomes of these studies in subject-matter reading are often used to gainsay statistically-derived, non-elementalistic definitions of reading, as in the following statement by Artley (2): ". . .reading comprehension was [in days gone by] considered

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largely as being made up of general factors common to a number of content areas. On this basis the reader who comprehends well in one area of instruction should be able to comprehend similarly in another." This is clearly a non sequitur argument. Comprehension could be made up of a few general factors, and yet, comprehension could still vary among content areas. The fallacy stems from a basic confusion of reading as a "process" and reading as an "end product." The same basic processes (i.e., comprehension of words and relationships between words) may be present in all reading, and yet the outcome (i.e., comprehension) may vary as a function of a number of conditions affecting learning through reading (i.e., previous experience, motivation, etc.) which are not intrinsic to the reading process per se.

Operational Definitions of Reading Comprehension

Although definitions of reading provided by authorities, empirical surveys of usage, or sophisticated statistical analyses of the results of many different tests are valuable from the standpoint of gaining deeper insight into the nature of the reading process, it is the operational definition of reading comprehension provided by specific tests which is often of immediate interest to both the research scientist and the practitioner. And it is precisely this type of definition which is the most difficult to attain. By an "operational definition" of reading is meant a statement of the operations required to measure the phenomenon under consideration. In a very real sense, "reading comprehension," or at least, "measured reading comprehension," is what the reading

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test measures, and studies revealing low correlations between reading tests purporting to measure the same thing (29, 32) underscore the important semantic conclusion that "reading₁ is not reading₂." In the attempt to ascertain precisely what a particular reading test measures, we are not helped a great deal by validity coefficients between the test results and some external criterion such as another test. Such results would permit us to say that Test A measures something in common with Test B, but this may not be particularly enlightening unless we have a precise understanding of what Test B measures. It would indeed be comforting to rely upon sub-test headings, so that we might say that a given test measures, for example, ability to predict outcomes, ability to get the main idea, and ability to use context clues. But the previously mentioned factorial studies suggest that these sub-test headings may not be valid descriptions of what the test measures. The Iowa Silent Reading Tests (New Edition), Advanced Test purports to measure: (1) rate of comprehension, (2) directed reading, (3) poetry comprehension, (4) word meaning, (5) sentence meaning, (6) paragraph meaning, and (7) location of information. However, Pankaskie's (23) factor analysis of the test yielded only three factors: (1) speed of comprehension, (2) vocabulary, and (3) ability to find answers to questions. The Nelson-Denny Reading Test purports to measure: (1) vocabulary and (2) paragraph comprehension, and yet, when Davis (9) correlated the total score of the Nelson-Denny Reading Test with a test of his "word knowledge" and "reasoning" factors, he obtained correlations of .86 and .23 respectively. He concluded that the Nelson-

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Denny Reading Test is primarily a measure of "word knowledge" and "speed of reading." The Cooperative Reading Test C-2 is supposed to include items which measure the nine factors isolated by Davis (9) but separate scores for all nine factors are not provided and, from the standpoint of arriving at an operational definition, it is not of much help to know that the test contains items related to all of these factors. Furthermore, intercorrelations between the three sub-test scores of the higher level test are .75 between vocabulary and level of comprehension, and .87 between level of comprehension and speed of comprehension. (30) In view of these correlations, it would be difficult to define precisely what the sub-tests are measuring. The high correlations with vocabulary suggest that the other two sub-tests may be measuring intelligence. Another often used test is the Diagnostic Reading Tests: Survey Section. This test is supposed to measure rate, story comprehension, vocabulary, paragraph comprehension and total comprehension. However, correlations between story comprehension and comprehension (i.e., story comprehension plus paragraph comprehension) range from .75 to .88, correlations between vocabulary and speed range from .32 to .57 with a median of .48 and correlations between vocabulary and the total score range from .90 to .96 with a median of .93. (11) Here again, the sub-test headings are lacking in operational specificity. The vocabulary test also measures reading speed, and the very high correlation between the vocabulary test and the total test score suggests that the test as a whole is measuring intelligence.¹ The objective of specifying in precise operational terms what a given

¹Correlations ranging from .70 to .78 are reported between the Diagnostic Reading Tests: Survey Section and the American Council on Education Psychological Examination total scores. (11)

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reading test or sub-test measures does not appear to be attainable at the present time. Current college level tests measure a combination of reading skills, intelligence, and (to an unknown degree) knowledge based upon previous experience or training.

In conclusion, it may be said that the "definition" of reading comprehension is a function of the techniques used in its analysis, its conceptualization as a "process" or as a "product," and the "instrument" used in its measurement. Empirical observations of reading result in elementalistic conceptualizations of reading as a large number of reading skills but factorial analyses of reading tend to show that reading is made up of a small number of relatively unrelated factors. The research on "general" versus "specific" comprehension does not, on the whole, give strong support to the contention that reading skills are highly specific to subject matter areas. If one considers reading as a "process" rather than an "end-product", it is probable that all the fundamental factors of comprehension are involved in reading in different subject-matter fields. The goal of defining reading skills operationally is limited by the lack of "factorial validity" of currently used reading tests.

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The Effect of Reading Training on College Achievement
by
Eugene S. Wright
University of Minnesota

There seems to be general agreement that reading training promotes better achievement in college. Faith in this principle lies at the heart of all reading improvement programs; it is implicit in their organization and methodology.

Unfortunately the general acceptance of the principle has tended to retard research and to stifle creative, and possibly fruitful, contemplation of the topic. It has prevented research workers from making analytical investigations of individual programs, a vital step in the refinement of methods of selection, diagnosis, and treatment.

In spite of a number of distinguished pieces of research into the relationship between reading training and college achievement, many reading teachers are still relying on logic rather than research to provide validation of individual programs. Their logic may be examined in the following manner:

Premise 1: Reading ability is related to academic success.

Premise 2: Reading training improves reading ability.

Conclusion: Therefore, reading training promotes academic success.

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The greatest danger in using this approach to the validation of a reading program is that either of the two premises might not be true in a given situation and the conclusion might therefore be faulty. It would seem wiser to first examine the validity of the two premises and then put to the test of research the soundness of the conclusion as it relates to the program being examined. It is with this purpose that the present report is concerned. The two premises and the conclusion, restated in question form, provide a framework for the discussion.

Is Reading Ability Related to College Success?

The testimony of several pioneer researchers lends support to the first premise. In 1927 Witty and Lehman (29) observed that they have ". . . encountered many college students who read slowly and comprehend little, who are handicapped in all academic endeavor because of restricted reading ability." In 1934 Deal (7) stated, "College students are failing and have failed in large numbers due to their inability to read." In 1941 Anderson and Dearborn (1) concluded that ". . . in light of the prominent part that textbooks play in college instruction, it seems obvious that there should be a close relationship between reading ability and college achievement." Numerous other pronouncements could be extracted from the educational scriptures to show that reading ability is related to academic success in college.

Nor is there any dearth of research to establish the truth of our first premise. For example, in 1949 Garrett (9) summarized ten

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studies of the relationship and found correlations ranging from .25 to .67, with the median at .38. Other reports of this type have fallen essentially within this range and have led to wide acceptance of the belief that a relationship does exist.

Fortunately, a few investigators pursued the problem beyond the apparent conclusion and discovered specific qualifications to the principle as first established. Anderson and Dearborn (1) sought to determine the relationship between reading ability and college achievement with the effect of intelligence held constant. They noted a distinct drop in the correlation under this control, but concluded that the relationship was still positive and significant. Vineyard and Massey (26) also controlled intelligence in arriving at their conclusion that vocabulary and college achievement were significantly related even with the effect of intelligence ruled out. On the contrary, speed of comprehension, they found, bore no significant relationship to college achievement. Kilby (11) noted a higher correlation between a reading test and grades in English and Social Studies than with the physical sciences and mathematics. Preston and Botel (19) observed that the score on the Iowa Silent Reading Test added little to the accuracy of predictions of college achievement. Other interesting and important findings in this area were contributed by Humber (10), who found that the curriculum being pursued was a significant factor in the relationship; Munger (17) that no significant relationship existed between scores on the Nelson-Denny Reading Test and persistence in college for

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students admitted from the lower one-third of their high school classes; Chapman (5) that the correlation was higher at the upper levels of achievement than at the lower levels; Bliesmer (4) that the results ". . .continue to be somewhat conflicting"; and Diener (8) that the relationship between reading and college success was not a simple one.

Thus if investigations of this problem had ceased with the first general conclusions reached, the highly useful findings of these later specific studies would have been lost to the field. As it now exists the first premise, that reading ability is related to college achievement, still holds, but now there is awareness of the many important factors shown to play a role in the relationship. Therefore it must be concluded that reading ability is related to college success, but that the relationship is markedly lowered when intelligence is controlled, that certain special facets of reading ability (as measured by sub-tests on standardized reading measures) are much more highly related to college success than are others, that the relationship is higher in some curricula than in others, and that the relationship varies with the college level and with the level of achievement. It is these qualified results that offer the best hope for improving practice at the college level.

Does Reading Training
Improve Reading Ability?

What about the second premise that special training can be given which will improve reading ability? Surely it would be hard to

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find a reading teacher who would admit that he could not improve the reading ability of his students, or at least their performance on reading tests. Literally hundreds of studies, published and unpublished, formal and informal, could be cited to prove the validity of the second premise. For example, the author could dip into a four drawer file of such data and come up with evidence accumulated over a fifteen year period which reveals that rate, comprehension, vocabulary, and performance on several standardized measures of reading can be improved by special training. Many fewer studies, however, have employed adequate and randomly selected control groups to satisfactorily establish this premise. Of the few available, one such study (also made by the author) (30) does establish in a statistically defensible manner that vocabulary, comprehension, and rate as measured by the Nelson-Denny Reading Test, Revised Edition, can be improved by special training.

Does Reading Training
Promote Academic Success?

But what about the conclusion which constitutes the heart of the present report, that reading training promotes academic success? Because of the wise general acceptance of the principle, many workers in the field of college reading have neglected to test its validity in a specific situation or to attempt to isolate the numerous variables which affect the relationship between reading training and college success. It was with these thoughts in mind that the author decided to subject this conclusion to a further test under special conditions.

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In order to minimize the danger of repeating errors in design and execution of previous studies, a review was made of 31 investigations published during the years 1930 to 1959 which sought to determine the relationship between reading training and college success. Nineteen of these studies employed some form of control. It was decided to restrict the summary of findings to these 19 studies inasmuch as control was felt to be vital in arriving at tenable conclusions. Since major differences in the method of control were found to exist, the 19 studies were further divided according to the methods employed. In Group I were placed 11 studies which appeared from the published reports to have employed a similar control method. The method can be described briefly as follows. Voluntary participants in reading improvement activities were measured on the basis of scholastic aptitude, reading ability, and other measurable attributes. They were then matched with a group of non-participating students on the basis of age, sex, curriculum, and predicted scores. Academic achievement for the two groups was then recorded and conclusions as to the efficiency of the training were drawn from the comparisons. Of these 11 studies seven concluded that reading training did have a positive effect on academic performance as measured by honor-point ratio or grade-point average. The investigators concerned were Simpson (23), Wittenborn (28), Kilby (12), Preston and Botel (19), McGinnis (15), Blake (3), and Ranson (20). Four studies by Charles (6), O'Bear (18), Kingston and George (13), and Sternitzke (25) found a negative or non-

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significant relationship. Thus in this group of 11 studies the weight of evidence supports the conclusion that reading training is helpful in improving scholastic performance. Caution must be exercised, however, in accepting the conclusion of the majority, since in each case the control students were drawn from a different population (statistically speaking) than the experimental students and therefore did not provide an entirely valid comparison. In these studies such intangibles as motivation and personality appeared to be uncontrolled.

Group II consisted of five studies in which the control group was obtained by somewhat different means. Both experimental and control students had volunteered for the reading training. A certain number of the later applicants were refused the training on the grounds that all available spaces in the program had been filled. These students were then reserved as a control group. Of the five studies in this group, the four reported by Barbe (2), Smith and Wood (24), Willey and Thompson (27), and McDonald (14) reported positive results. The other, by Robinson (22), found a non-significant relationship. Again reading training appeared to be an aid to college achievement as indicated by the consensus of the studies in this group. Acceptance of the obvious conclusion from these studies is tempered somewhat by the fact that the subjects were not randomly assigned, a basic assumption underlying the statistical methods employed.

In Group III are the studies which appeared to have used control students from the same

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population as the experimental students and to have assigned the subjects to one or the other of the groups by purely random methods. Only two studies met the requirements for inclusion in this group, and even then the methods of fulfilling the requirements were markedly different as can be seen in the original reports. Mouly (16) drew off a control group at random from a group of sub-standard freshman readers. His original control group consisted of ten per cent of the 329 students found to be reading below an accepted standard for entering students. Though sound in conception, the study met difficulties in execution which somewhat confounded the results. Reed (21) set up matched pairs of students of the same sex and enrolled in a single curriculum. By random methods he assigned one member of each pair to the experimental or the control group. Experimental students were given compulsory reading training while the control students were excused from it. A study of subsequent academic results failed to reveal a positive relationship between the reading training and college grades.

In summarizing the results of these 19 controlled studies it will be noted that 13 found reading training to be helpful while six concluded that it was either not helpful or at least not significantly helpful. And even with the bulk of evidence indicating the effectiveness of reading training in improving college performance, it will be noted that some careful studies found it to be of little aid. If these results are not as clearcut and unequivocal as

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expected, it is no doubt due to the presence of several variables which were suggested in these studies. Specifically, the effect of the training seems to be related to the courses or curriculum being pursued, to the personalities of the students studied, to the nature of the reading work offered, to the length of the training, and to the competence of instruction. These factors suggest why it is difficult to arrive at an unqualified answer to the question. But on balance it is perhaps safe to conclude that college reading training programs are helping certain students to survive in the academic jungle.

From the review of the above studies it became obvious that it could no longer be assumed that any reading improvement program, regardless of its individual character, would of necessity improve college grades. It was also felt that an experiment designed to validate a given program would have to be carefully controlled and would have to employ random assignment of students in order to fulfill vital statistical assumptions. The author set about to design such an experiment with the specific intention of avoiding the pitfalls of design and execution which cast some doubt upon the findings reviewed above.

A Study of the Effect of Reading Training
on College Achievement

The present study (30) was designed in the summer of 1959 in the College of Agriculture, Forestry, and Home Economics on the St. Paul

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Campus of the University of Minnesota. The specifications of the study were drawn up well before the first potential student-subject appeared on the campus.

During Welcome Week on the St. Paul Campus, all beginning students appeared for placement testing in the Communication program. At this time the Nelson-Denny Reading Test, Revised Edition, was given to the entering group. Exactly 400 students were present for this initial testing. This figure was later determined to be 93 per cent of the final freshman enrollment. On the basis of the reading test 300 students (the lower three quarters) were selected to comprise the population of the experiment. A further breakdown by curriculum revealed 129 Agriculture students, 74 Forestry students, and 97 Home Economics students.

The experimental procedure then called for each of the curriculum groups to be randomly divided into two parts. The operation was carried out with a table of random sampling numbers. The final result was the division of the experimental population into an experimental and a control group consisting of 150 students each. A summary of the data available on the experimental and control groups revealed that the two were remarkably similar in composition by sex, curriculum, initial reading ability, and ACE score. Factors such as motivation and other intangible features of the two groups were felt to be under statistical control because of the random method of selection.

Students in the experimental group were then programmed in a Communication course which

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emphasized the improvement of reading efficiency and vocabulary. Members of the control group were not permitted to enroll in the course.

At the end of their first academic year (June, 1960) the entire population of the study still remaining in residence was assembled and again tested in reading ability, this time with an alternate form of the Nelson-Denny Reading Test. In addition, two grade-point averages were calculated for each student in the experimental and control groups. One grade-point average was based on performance in English, Humanities, Social Science, and general courses, referred to hereafter as verbal courses. A second grade-point average was based on performance in mathematics and science courses, now considered to be quantitative courses. Eliminated from consideration were grades received in all manual or manipulative courses. The final outcome variables were thus three in number: gains in reading as measured by the pre-post test combination, the grade-point averages in verbal courses, and the grade-point averages in quantitative courses.

Unfortunately mortality had taken a heavy (but no more than typical) toll of both the experimental and control students. At the final accounting 108 students remained in the experimental group and 107 in the control group. This mortality was assumed to have followed random laws between the two groups except as influenced by the experimental treatment. Analysis of the residual groups revealed that they were essentially alike in composition, except of course in terms of number.

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A summary of the statistical analysis must be made in rather general terms. Gains made by the two groups in reading performance were treated by an analysis of variance. Evaluation of the grade-point average data presented a more complex statistical problem. The data were summarized in four six-by-six tables, two relating to the results in the verbal courses and two the quantitative courses. The two sets of outcome variables were thus divided by curriculum and stratified in two different ways, the first by ACE and the second by initial reading ability. This arrangement permitted the application of four analyses of covariance, method of unweighted means, and the testing in the several groups of four general and 36 specific null hypotheses relating to the outcomes of the experiment. Further control was obtained by holding the effects of ACE and initial reading ability constant by the covariance method.

The statistical analysis of the experimental data yielded a number of important conclusions. The first was that the students in the experimental group made significantly more gain during the period of the experiment in vocabulary, paragraph comprehension, total score, and rate as measured by the Nelson-Denny Test. Second, in performance in quantitative courses the experimental group exceeded the control group only by a small and non-significant amount. Third, in verbal courses the experimental students surpassed the control students in grade-point average at the two per cent level of significance. Fourth, the treatment apparently had no effect on mortality in the three quarters of the study. Fifth, no conclusive evidence was obtained regarding the effect of either ACE

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or initial reading ability on response to the training. To generalize these conclusions, it might be said that by virtue of the reading training given a student in one of the curriculum groups involved would likely surpass in grade-point average a similar student who had not received the training.

The results of the present study, when viewed in light of the earlier investigations cited, supports in a general way the original conclusion that reading training can promote academic success.

Some Implications of the Studies

The recurrence in this and other reports of instances where reading training has failed to be of help under all conditions leads to two important questions. Why should there be any negative or non-significant results? Why shouldn't every student profit in a measurable amount from reading training? The answers to these questions, it seems, must be sought in the factors which are suggested but not isolated by research up to this point. In fact these secondary outcomes of research may prove to be of much more pedagogical value than the mere confirmation of a principle already generally held.

These specific factors which tend to minimize the effects of training and confound research can be listed briefly. The first factor involves the differences in the curricula which students pursue. For example, in the study reported here it was found that the

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Home Economics curriculum was 70 per cent verbal and 30 per cent quantitative in nature. On the other hand, the Agriculture and Forestry students followed a curriculum which is 40 per cent verbal and 60 per cent quantitative. This fact suggests that the training in general reading ability most commonly given is not entirely relevant to the pressing tasks of reading in science and mathematics. The relationship of general reading ability to a humanities course may be obvious, but its value in reading a problem in mathematics might be questioned.

Second, it is obvious to anyone who has ever tried to help college students improve reading that personality factors such as persistence, emotional adjustment, motivation, interests, attitudes, and levels of aspiration can play a major role in the response to reading training.

Third, it seems unreasonable to expect that all activities to improve college reading are equally effective. Yet the research seems to minimize the importance of such factors as the instructional method, the length of the training, the materials employed, and the skills of the instructor. Logically it is difficult to conceive that the effects of training are not related to these factors in a real way.

And fourth, needed also are some workable principles relating to scholastic aptitude and initial reading ability with which to increase the accuracy of prediction as to the probable success of a given student. True, a number of studies, including the one reported here, have

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sought to study this relationship indirectly, but few have undertaken to investigate either one or both of these factors in a direct and systematic manner.

The road ahead seems clear. Instead of relying on faith or questionable logic there must be a constant re-testing of the basic hypotheses relating to college reading training. Researchers must also press on to the analysis of the specific factors which are constantly being suggested by general research. Only then will college reading teachers be able to refine their methods of selection, diagnosis, and treatment. No sharply defined principles are like to emerge until such action is taken.

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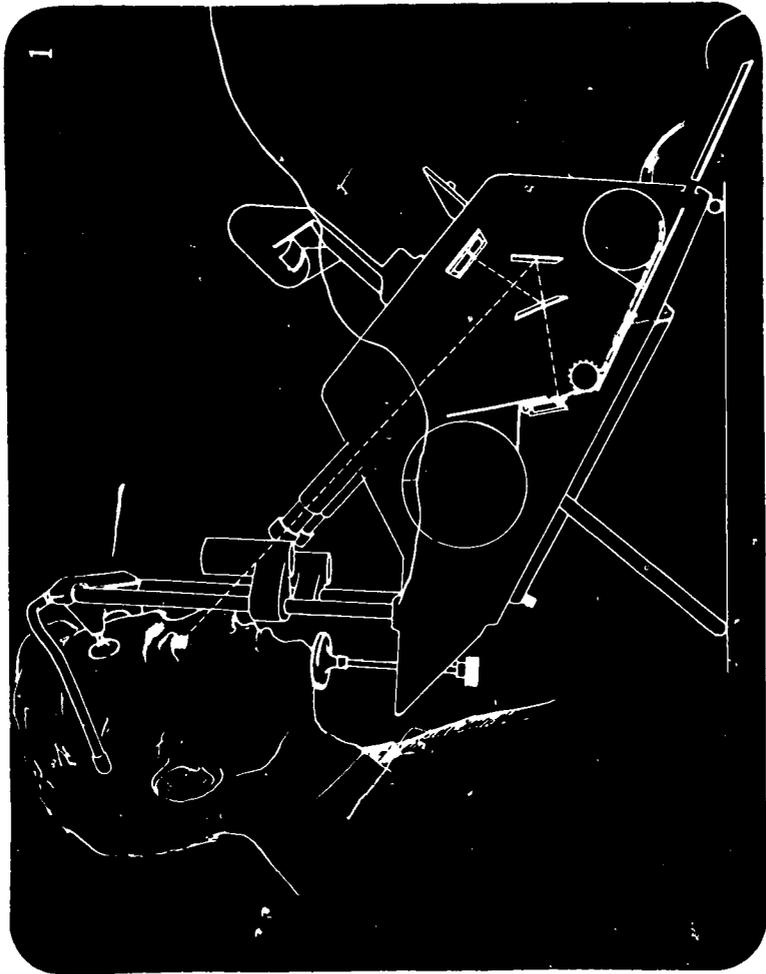
An Evaluation of Forty-One Trainees Who Had
Recently Completed the "Reading Dynamics" Program
by
Stanford E. Taylor

President, Educational Developmental Laboratories, Inc.

A recent course offered by the Reading Dynamics Institute involved a pre- and post-testing program. One portion of the testing program involved eye-movement photography with the Reading Eye Camera. After this course was completed I was sent these photographs for analysis. The testing with the Reading Eye took two forms:

1. Subjects were photographed reading standardized Reading Eye cards before and after the course, followed by a qualifying examination.
2. Subjects were photographed after the course while reading the third chapter of the book, I Looked Right by Elizabeth Denham. The supposition was that this latter form of testing would allow the trainees an opportunity to "warm up" on the first two chapters so that they might read "dynamically" on the third chapter. A comprehension examination of twenty-five questions of a True-False nature followed.

In order that you may better understand the eye-movement data and photographs to be presented, I would like to show the filmstrip "Eye Movement



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Photography" as a brief introduction for those of you who are not familiar with the technique and as a refresher for those of you who are.

The attendees were shown a filmstrip describing the process of eye-movement photography. Briefly the process is as follows:

After an oral pre-test, the individual reads a test selection appropriate for his level of achievement. While he reads, small beads of light are reflected from his eyes and photographed onto moving film. When he has finished, identifying initials are flashed onto the film. After a comprehension check, the filmed record is analyzed, and the reader's performance is compared with the table of national norms derived from a study of 12,000 cases. Norms are shown in Table 1.

Table 2 shows the rate and comprehension of the trainees on the standardized cards used before and after the course. Notice that the group started at an exceptionally high level in terms of rate of reading. You will remember from the table of norms for reading performance that 280 w.p.m. is the average rate with comprehension for the college level. The trainees increased their average rate from 474 to 565 w.p.m., an increase of 90 w.p.m., or 20%. In most college or adult reading improvement courses, a 20% increase would not be considered substantial, particularly with such a superior group of students. One significant factor, however, that will become evident later, is the fact that approximately half of the rate gain was achieved through an excessive shortening of the duration of fixation, or the length of the eye pause.

Table 1

Averages for Measurable Components of the Fundamental Reading Skill

Grade	1	2	3	4	5	6	7	8	9	10	11	12	Col.
Fixations	224	174	155	139	129	120	114	109	105	101	96	94	90
Regressions	52	40	35	31	28	25	23	21	20	19	18	17	15
Span of Recog.	.45	.57	.65	.72	.78	.83	.88	.92	.95	.99	1.04	1.06	1.11
Duration of Fix.	.33	.30	.28	.27	.27	.27	.27	.27	.27	.27	.26	.26	.24
Rate	80	115	138	158	173	185	195	204	214	224	237	250	280

First grade averages are those of pupils capable of reading silently material of 1.8 difficulty with at least 70% comprehension. Above grade 1, averages are those of students at mid-year reading, silently material of mid-year difficulty with at least 70% comprehension.

1. This table of averages is taken from "Grade Level of Norms for the Components of the Fundamental Reading Skill," by Stanford E. Taylor, Helen Frackenpohl, and James L. Pettee, EDL Research and Information Bulletin No. 3, Educational Developmental Laboratories, 1960

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Table 2

Av. Beginning Rate:	474 w.p.m. (R.E.)
Av. Final Rate:	564 w.p.m. (R.E.)
Av. Change	88 w.p.m.
	(45 w.p.m. -- reduction of fixations 1.14 sec.)
	(43 w.p.m. -- reduction in duration 1.00 sec.)
8 Trainees Dropped	479 w.p.m. to 404 w.p.m.
33 Trainees Increased	475 w.p.m. to 603 w.p.m.
Av. Beginning Comp.	78%
Av. Final Comp.	81%
Av. Improvement	3%

In most reading courses which provide for visual-functional and perceptual training as part of the total program, the greatest portion of a gain rate results from a reduction in the number of fixations with only a slight change in the duration of fixation. In cases where the change in rate can be attributed largely to a reduction of duration, and where the final duration is exceptionally brief, the increased rate is usually the result of a greater effort or drive on the part of the student during the test and does not represent a real or lasting change in performance. Looking at this data, with this in mind, I would regard the gain as representing only 10%.

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You will note that eight trainees dropped in rate, while 33 increased.

Remembering that the comprehension test accompanying the Reading Eye cards is a "Qualifying" test only, note that the comprehension scores both before and after are sufficiently high to indicate that the students were reading in a manner that would provide a valid record of performance. You remember that the qualifying comprehension level is 70%.

Table 3

Av. Beginning No. of Fixations	60
Av. Final No. of Fixations	54
Av. Reduction of Fixations	6
Av. Beginning No. of Regressions	10
Av. Final No. of Regressions	6
Av. Reduction in Regressions	4
Av. Beginning Span of Recognition	1.67 w.p.f.
Av. Final Span of Recognition	1.85 w.p.f.
Av. Increase in Span of Recognition	.18 w.p.f.
Av. Beginning Duration of Fixation	.21 sec/fix.
Av. Final Duration of Fixation	.19 sec/fix.
Av. Reduction of Duration	.02 sec/fix.

Table 3 shows the general change in performance skills when the subjects read the standardized Reading Eye cards. While there is a reduction of fixations and regressions, it should be noted that a final number of fixations of 54 is excessive for the final

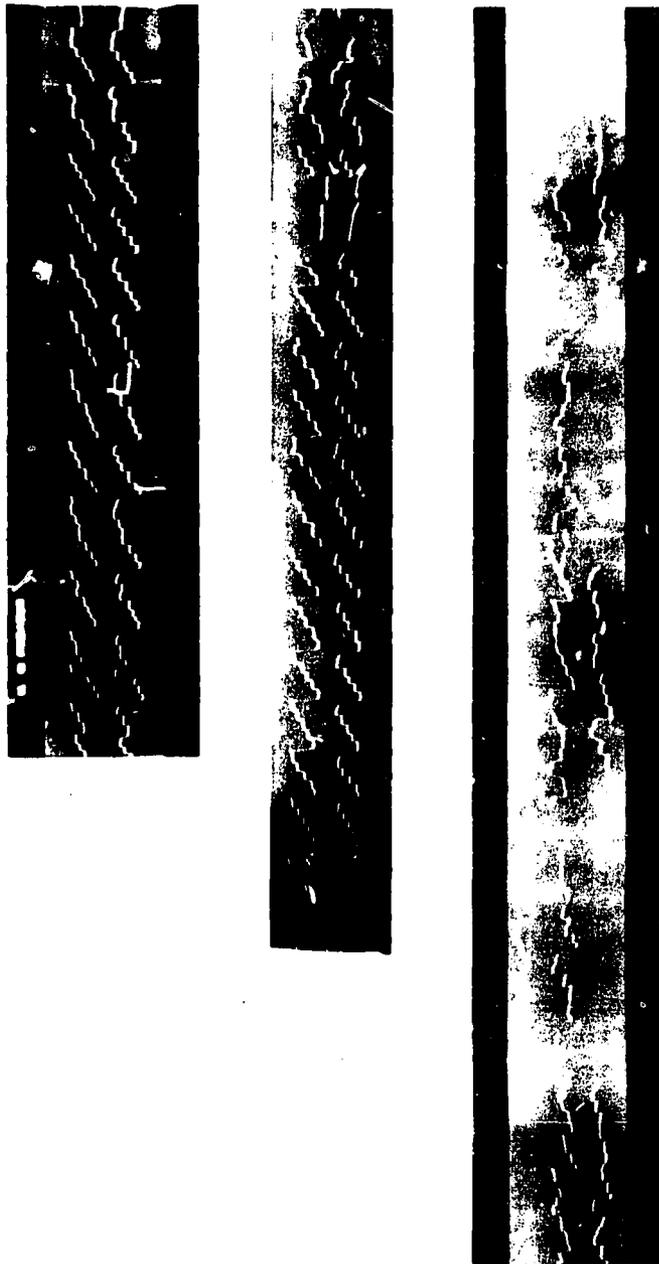
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rate achieved. This is explained by noting the exceptionally short final duration of fixation of .19. To provide perspective, it should be noted that usually an efficient reader assimilating material at 564 w.p.m. would more typically evidence 43 to 48 fixations with an average duration of .22 to .24. This data suggests, as mentioned previously, that the trainees were "forcing" their rate.

On the second test with the Reading Eye, the trainees were given an opportunity to read "dynamically" in a book. Illustrations 2 to 5 show comparisons of performance on the standardized cards with performance on the book material.

Illustration 2 shows the performance of trainee G. He read the first card at 492 w.p.m., and the second card at 533 w.p.m. He covered the book material at a rate of 3300 w.d.p.m. -- words dealt with per minute. I use this term w.d.p.m. to prevent confusion with his initial activity. His performance was 100% on the second standardized card, but only 36% on the twenty-five item true-false test that followed the reading of the book material when he attempted to read "dynamically."

Trainee P in illustration 3 was an exceptional reader to begin with, averaging 729 w.p.m. on the first card, and 784 on the second. He covered the material in the book at 3600 w.d.p.m., but scored only 40% on the book comprehension test. This is in contrast with his comprehension of 80% on the second standardized card. Note the regularity and uniformity of both graphs on the Reading Eye cards, for this characteristic will be referred to later. It is obvious that this person is an extremely efficient and well-organized reader when attempting to read in a conventional manner.



Performance of Trainee G
Illustration 2



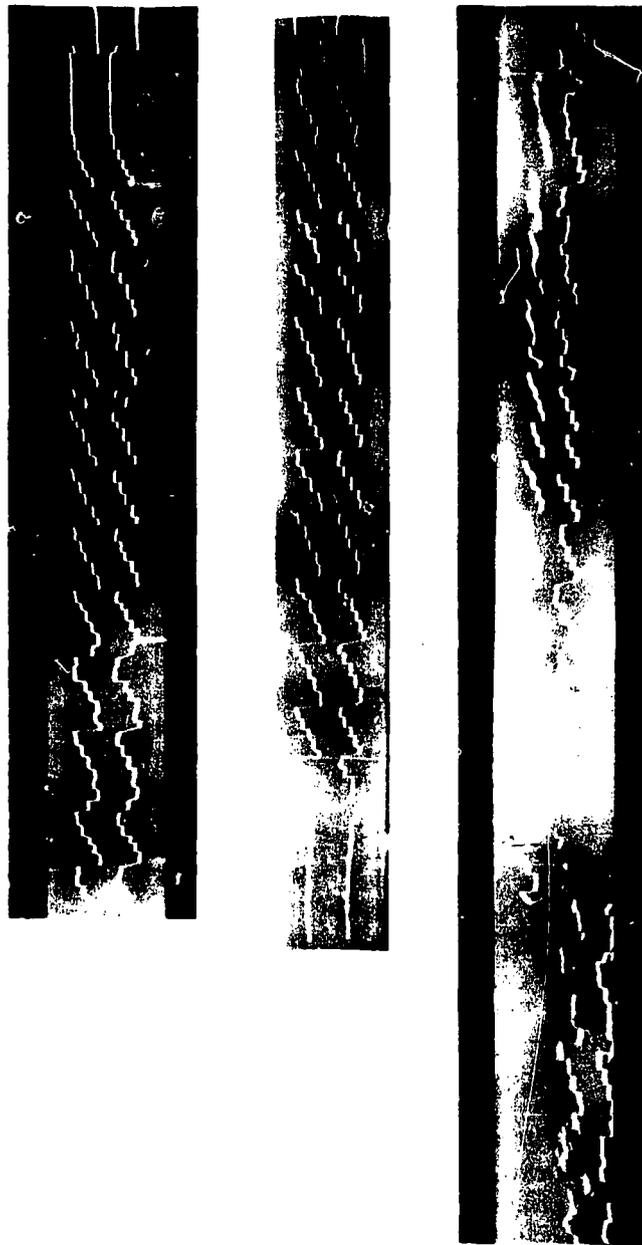
Performance of Trainee P

Illustration 3



Performance of Trainee S

Illustration 4



Performance of Trainee H

Illustration 5

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Trainee S began with a rate of 600 w.p.m. and attained a final rate of 914 w.p.m. You will note, however, that on the second graph he did not read all twelve lines of the card, showing that he was skimming (reading selectively) somewhat. This probably accounts for the decrease in comprehension from 100% on the first card to 80% on the second. Notice that his approach in covering the book material contains definite indications of a left-to-right visual survey. The variation in the excursions suggests that he read some lines and at other times moved in a left-to-right manner across a number of lines. His rate on the book material was 2400 w.d.p.m.

Trainee H started with an initial rate of 446 w.p.m. and increased to 498 w.p.m. Comprehension was 80% on both cards. This person covered the book material at a comparatively slower rate of 1360 w.d.p.m., and attained one of the best comprehension scores -- 68%. Notice the prevalence of left-to-right movement. The severe angles is deleting lines -- moving down several at a time, but reading a number of lines on each page with a fairly deliberate left-to-right approach.

These four graphs were typical of those who improved. Because of time limitations, I have not shown graphs of the eight trainees who decreased in performance efficiency.

Table 4 will provide an overview of the general performance of the trainees when given an opportunity to read "dynamically." This data indicates that those trainees who averaged 60% comprehension or better, the better comprehenders, read at a slower average rate of 2232 w.d.p.m.

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Further analysis also indicates that the 16 trainees who covered the material with some left-to-right movements did read at a slower average rate of 1798 w.d.p.m., but did so with better-than-average comprehension -- 54%.

Table 4

<u>310 Words Per Page--31 Lines--10 Words Per Line</u>	
Av. Skimming Rate	(7.5 sec.) 2509 w.d.p.m.
Av. Skimming Rate (those who averaged 60% comp. or better)	2232 w.d.p.m.
Av. Skimming Rate (left-to-right movements)	1798 w.d.p.m.
Av. Comp.	49%
Av. Skimming Rate (no left-to-right movements)	4030 w.d.p.m.
Av. Comp.	49%
Av. Comp. on Chapter 3	51%

Table 5 indicates the activity of the trainees while covering the pages of the book (attempting to read "dynamically"). They made an average of 31 fixations per page, and since there were 30 lines to the page, this could be interpreted as one fixation per line. But a close examination of the graphs indicates that many skipped some lines and read more of others. It is interesting to note that those who increased their rate on the standardized cards made

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distinctly fewer fixations per page on the book material than did those who decreased their rate. This suggests something that is quite logical -- that the more efficient readers are the more efficient "skimmers," if one interprets their performance on the book material as skimming.

Table 5

Av. No. Fixations Per Page	31
Av. No. Fixations Per Line	1
Av. No. Fixations Per Page (those who increased their rate)	27
Av. No. Fixations Per Page (those who decreased their rate)	42

Av. Duration of Fixations	.25 sec.

Notice that the duration of fixation on the book material has been extended to .25, a more typical duration for mature readers. This lengthening of the duration time is undoubtedly the result of the trainees' need for more time in which to perceive and organize the increased amounts of visual material with which they were attempting to deal.

If I might, I would like at this time to discuss a number of points that have been raised by Mrs. Wood's demonstration last year, the statements found in her publicity, and the findings we have just reviewed.

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1. Mrs. Wood has frequently stated that her students read so rapidly that they cannot be photographed by an eye-movement camera. Obviously they can be photographed.

2. However, last year at this conference, Mrs. Wood did state that General Electric engineers were attempting a new type of photography that would capture the movements of her students' eyes. My inquiries into this revealed that one engineer, an employee of General Electric, who was taking Mrs. Wood's course, stated that he had used a 35mm camera, equipped with a telephoto lens, to photograph eye movements of her students through the use of timed exposures. I mention this because Mrs. Wood has at various times stated that the pattern of her students' eyes on a page sometimes forms a circle or a square and at other times she has said that there is absolutely no left-to-right movement since the eyes move straight down the page. The General Electric engineer told me that many of the students fixated on the center fold of the book, making no movement whatsoever, and read two pages simultaneously. It is important to note that none of the graphs in this study reflected such unique patterns. The unique patterns referred to must have been a result of inadequate photographic technique.

3. Mrs. Wood stated last year and has repeatedly stated that her people are not skimming, but rather are reading. This statement bears further scrutiny. Let's review what the graphs did indicate and a number of fundamental considerations about the act of reading.

a. Is it possible for a person to identify

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and recognize all the words on a page when moving down the page in the manner indicated by the graphs in this study? Aside from the aberration and distortion that would be created by the eyes moving so rapidly, both in terms of the rapidity of the overlapping images (which would not allow adequate perceptual processing time) and the deteriorating of the image resulting from the saccadic movements (which are being employed in the atypical manner), it is important to note that studies by Feinberg (1) and others of foveal and peripheral vision have indicated definite limitations in terms of the ability of the eye to identify word forms very far away from the fixation point.

Illustration 6 indicates the "fall-off" of acuity of a person with normal vision in fixating on a $3\frac{1}{2}$ inch line of print containing ten words. I should mention that an average line of print in the book I Looked Right was 4 inches. Notice that just a half inch away from the fixation point, the emmetropic or normal eye sees with only 50 per cent acuity. One inch away on either side of the fixation point, acuity drops to the 30 per cent level. It would be physiologically impossible for anyone to perceive a $3\frac{1}{2}$ or 4-inch line in a single fixation, even assuming that he was fixating at the center of the line, for form at the end of the line would be unidentifiable so far from the fixation point. This chart undoubtedly explains why most people seldom average even as much as a

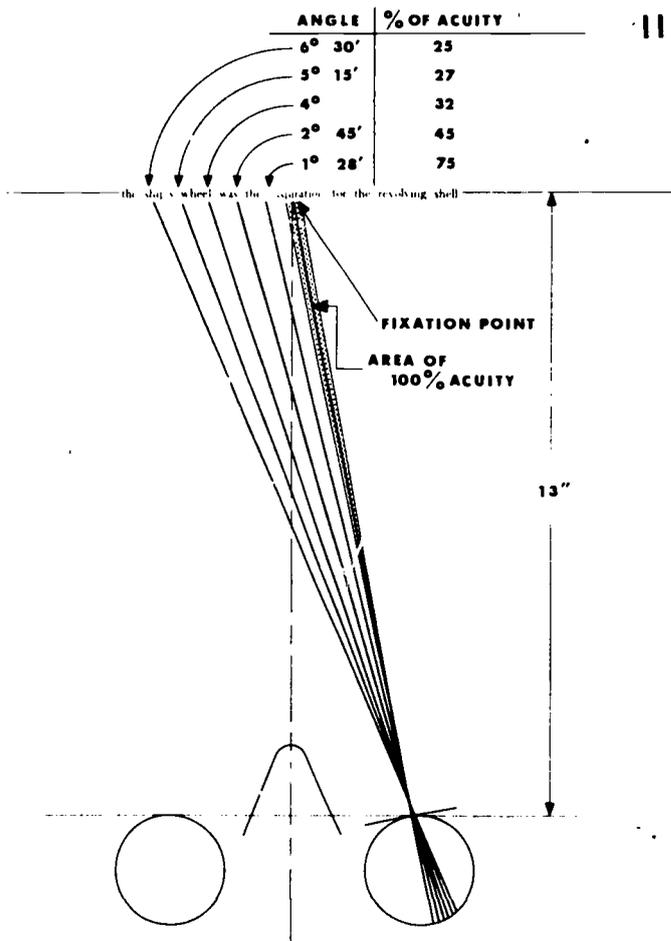


Illustration 6

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2- to 2½ word span and rarely more, for the demands on our discrimination ability would be too great to permit a satisfactory reading situation from the standpoint of perceptual accuracy. An illustration of this is the hyperopic or farsighted person who tends to make a greater than average number of fixations with shorter durations, most probably because of his greater than average "fall-off" of acuity. He has found by trial and error that this practice is more satisfying and accurate perceptually. It should be noted in passing that most of us would be totally unaware of this acuity "fall-off" because of the rapidity with which our eyes move -- 3 to 5 times a second.

You can become aware of more than 2 or 3 words if you stare at print, but this of course allows you more time to identify and process the image, and also eliminates distortions usually caused by overlapping images and the deterioration caused by saccadic movements. But, of course, this prolonged scrutiny does not take place in reading.

Considering the limitations of span, it is logical to hypothesize that Mrs. Wood may stress the development of "the look" as a way on increasing the amount to be encompassed. In developing "the look" a person might be trained to disassociate his vergence and accommodative functions. In other words, he might supposedly be trained to look with parallel lines of sight and to accommodate each eye individually to the page.

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Thus separate images are received by each eye, and if the mind can adjust to this dual reception, the amount that could be identified and recognized would be increased. It is important to know that in most cases in which vergence is disassociated from accommodation and where binocular coordination is below minimal requirements, there is a great tendency for a reader to suppress vision from one eye, or to "block out" one image in order to eliminate perceptual confusion. This is what happens in cases of strabismus, or crossed eyes. Thus the evidence to date indicates that "the look" as a perceptual phenomenon is not likely to be accomplished by many.

b. As the person becomes a mature reader, his oculo-motor pattern reflects his perceptual, functional, and organizational efficiency, and invariably becomes quite regular and predictable. We often say that he "rises above" the mechanics. If the trainees in this study had mastered the ability to read "dynamically," the pattern on the film when reading the book material should have reflected this high level of reading ability in a regular, systematic pattern or perhaps, as was suggested by Mrs. Wood, in an almost straight vertical line. An analysis of the graphs, however, indicates patterns that are very similar to those produced during skimming or scanning activities. These patterns are typically arhythmical and are of the type I have obtained in photographing the skimming activity of various readers. They also closely resemble, in terms of basic

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characteristics, the graphs obtained by Grayum (2) in her 1953 study of skimming, and by Moore (3) in his 1955 study. Further reinforcement for the difference between a skimming pattern and a reading pattern can be found in Dixon's (4) eye-movement photography study of the reading of university professors and graduate students. In this study, Dixon concludes "Swift readers tend to read in a somewhat rhythmical fashion except when they resort to skimming, and then their eye movements are distinctly arrhythmical."

c. Mrs. Wood has made the statement in the brochure distributed by the reading Dynamics Institute that, "You may read an easy novel at 5,000 or 6,000 words per minute, but read technical material at 2,500 words per minute. You should be able to read all types of material by the end of the course at four to ten times your beginning rate."

The graphs in this study did not show that any of these superior trainees were able to attain such performances with any reasonable degree of comprehension. As mentioned before, those who have the higher rates showed the lowest comprehension -- an average of 45%.

In summary, an analysis of these eye-movement photographs shows that the gain exhibited by these above-average trainees was comparatively slight, and there are suggestions that their gain in performance could be, in part, attributed to drive and motivation during the testing, and that when they attempted to

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read "dynamically," they appeared to resort to a skimming and scanning-like process, with a substantial loss of comprehension.

The presentation of this data is in no way intended to discredit Mrs. Wood or those who advocate her methods. My purpose was to present objective data which might aid in better understanding her methods and in later evaluations of her techniques and their effectiveness.

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The Use of Closed-Circuit Television
For Teaching College Reading Courses
by
Patricia Donisi
University of Dayton

Before beginning a description of the closed-circuit television course in reading, let us examine the history of the Reading Center at the University of Dayton.

The reading program began in 1952, entitled "Effective Study"; it was presented to freshmen, and was under the direction of the psychology department.

Within one or two years, it was expanded to embrace those having obvious difficulties with reading in the content areas. The referrals came from the professors of particular courses, and the students were assigned to the various members of the psychology department.

In 1957, the reading program became a full-time service to the University, and was organized into regular class periods and followed the general rhythm of the University.

The program has a full-time reading director and is under the supervision of the Dean of the University.

The students are obtained from screening by the Diagnostic Reading Test given in each entrance battery; a score at the 36th percentile or lower makes a student "eligible" for enrollment. The course is "urged" upon the student, but at no time is the student forced to enroll. This is to be his own decision.

The former program has had several weaknesses.

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To name one, too many students were enrolled at any one time, thus making personal, educational counseling virtually impossible as a part of the program. To name another, the program has been too impersonal because of spreading the instruction very thinly in order to take care of everyone.

The program of the Reading Center is described in the following several paragraphs, as it exists along with the innovation of closed circuit television.

The classes are constantly grouped and re-grouped based on quality of comprehension. The grouping is flexible and is changed about every two to three class periods, depending on the success and progress derived from the previous periods.

Current subscriptions of magazines are always available for reading at free moments; the student has no choice but to read when he has finished his assignments and is waiting for others in his group to conclude.

A reading autobiography is "extracted" from the students at the beginning of the course, and information from it is used in the newly formed counseling sessions. The questions asked in the autobiography include "What do I think are my reading problems, if any? Do I like to read? If not, why not? If yes, what types of literature do I enjoy? What do I expect of the course? What do I intend to put into the course?"

A time schedule is called for, so that use of time may be evaluated either in the lecture given on efficient study procedures or may be discussed in the counseling period.

At the present time, the lectures on closed-circuit television consist of study procedures.

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Attitudes and incorrect work habits are worked on, with questions given to the students over television and answers secured either in the class meeting or the counseling period.

In the regular classes, films using the Controlled Reader are used once or twice a week, and students are grouped according to the comprehension they receive from this exercise, or are removed from the exercise entirely if it seems inappropriate for them. The better the group, the higher the difficulty level of material.

At the end of the course, a retest is given on an alternate form of the DRF. An individual progress report on each student is sent to each dean.

Rationale of CCTV

The use of closed-circuit television is resulting in more evaluation of the student's progress on the personal level, which is the most important justification for its use. The student feels that the instructor is more interested in him in class as a person, since he has had a chance to be seen individually between class meetings.

Putting the lectures on closed-circuit television is also resulting in better use of lecture time; in addition, the students receive more from them because of the close attention they are paying, or so they report.

Questions by the student or instructor are handled through a simple intercom system placed in the TV studio and the lecture room.

The physical facilities of the course include the usual television equipment found in any closed-

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circuit television studio. The administrator of the University television facilities is Professor George Biersack, Director of Educational Television; the reading program TV producer-director is Mr. Richard Beach, of the University staff.

The students' reception room contains approximately one television set per fifteen students. A proctor is in attendance at all times; here is where the materials are passed out by her; she takes attendance and supervises the class.

The television schedule was derived from the students' own schedule of classes made out at the beginning of the course. They were checked through for a common time, with other lecture periods provided for those unable to participate in the television series.

The plans for the future call for a more extensive use of this medium of instruction. The University has had closed-circuit television for approximately four years, and it is proving to be an economical way of providing instruction requiring all or part visual presentation.

Included in the plans for the future is a demonstration using the eye camera, with one or several students volunteering as subjects. Later, films of different kinds of readers will be shown to the students, with no identification being made, and discussion will be held on the reaction.

The University of Dayton feels that the student must be constantly developing as he goes through his academic curriculum, and must be provided with the best instruction available at the time. The Reading Center is endeavoring to cooperate by using the students' time in as an effective way as possible, to help contribute to this academic development.

The Compulsion to Read
by
Forrest L. Vance
University of Minnesota

Some years ago I worked as a clinical psychologist in a large mental hospital in this state. A good part of my time was spent examining incoming patients and writing psychological reports which were integrated with medical and social work findings into a diagnostic summary. In working with one young veteran who had become a patient, I discovered that he couldn't read. He had managed to get through a country grade school and to get himself drafted, but he had faked all study in the service by having buddies read to him, and, with reasonably good intelligence and quick memory work, he was able to get through his hitch somehow without having his disability discovered. With a little help from a colleague in the hospital who had some background in teaching reading, I got this fellow to a reasonably good level of comprehension on newspaper materials in a couple of months.

This is my only experience in remedial work in reading. I quit while I was ahead. I never had much interest in this kind of work, and in some ways I feel like a fraud in trying to talk to you people about reading at all. Dr. Raygor and I have done some joint research which is perhaps as much concerned with personality as with reading, and this is the background out of which the thoughts for this talk have grown. Actually, it is reasonable for me to talk to you only because my topic is something which no one appears to know much about and I suppose I know as little as the next person.

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From looking into research journals and things like the Educational Encyclopedia, I have gotten the strong impression that professionals, like yourselves, working in the reading area, give the vast preponderance of their time and attention to the things which go on in people who read slowly, with poor comprehension, and as little as possible. It is somewhat akin to the situation in special education wherein the large share of effort for many years has gone into investigations of subnormality.

In your field, this may be an even greater error than has been true for other specialized educational fields. The variability in reading is both quantitatively immense and diverges in a multiplicity of directions which have not been well explored. To my knowledge, super-normal readers are not investigated except as they are products of some remedial or developmental program.

What are the outer limits of reading behavior? As one leaves the remedial zone of zero to two-hundred words per minute and the realm of deficient comprehension and insignificant spontaneous reading, where are the psychological and physiological limits on the consumption of printed matter? Here data on this question are not easy to find. However, there are some suggestive and highly entertaining clinical specimens preserved in literary and historical materials.

One of the most striking examples is a self-description of the novelist, Thomas Wolfe, at Harvard, quoted in Gilbert Highest's magnificent little book, The Art of Teaching (2).

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"He used to go into the huge University library at night pulling books out of a thousand shelves and reading them like a mad man. The thought of these vast stacks of books would drive him mad; the more he read, the less he seemed to know -- the greater the number of the books he read, the greater the immense uncountable number of those of which he could never read would seem to be. Within a period of ten years he read at least twenty thousand volumes -- deliberately the number is set low -- and opened the pages and looked through many times that number. This may seem unbelievable, but it happened. Dryden said this about Ben Johnson: 'Other men read books, but he read libraries' -- and so now it was with this boy. This terrific orgy of the books brought him no comfort, peace or wisdom of the mind and heart. Instead, his fury and despair increased from what they fed upon, his hunger mounted with the food it ate. He read insanely, by the hundreds, the thousands, the ten thousands, yet he had no desire to be bookish; no one could describe this mad assault upon print as scholarly; a ravening appetite in him demanded that he read everything that had ever been written about human experience. He read no more from pleasure. The thought that other books were waiting for him tore at his heart forever. He pictured himself as tearing the entrails from a book as from a fowl. At first, hovering over book stalls or walking at night among the vast piled shelves of the library, he would read, watch in hand, muttering to himself in triumph or anger at the timing of each page: Fifty seconds to do that one. Damn you, we'll see! You will, will you? -- and he would tear through the next page in twenty seconds." (2, pp. 46-47)

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This is a type of problem rarely seen in a reading clinic.

A less frantic, but very impressive example is the scholarship of Wilhelm Wundt as given in some of the footnote materials in E. G. Boring's History of Experimental Psychology (1). This relates more to writing than to reading, but a look at Wundt's books and papers will convince you that his own productivity arose on an incredible base of reading and assimilation of the work of others. Here is some of Boring's commentary on this founder of experimental psychology.

"Wundt's penchant for writing can be statisticized, though one must not lose one's sense of humor in so doing. His daughter's bibliography cites 491 items, where an item is taken as any writing, from one of less than a single page up to the entire 2,353 pages of the last edition of the Physiological Psychology. If we exclude mere reprinted editions, but include all the pages of every revised edition, the adding machine shows that Wundt in these 491 items wrote about 53,735 pages in the sixty-eight years between 1853 and 1920 inclusive. In spite of all the many one-page items, Wundt's average adventure into print was about 110 pages long, with over seven such adventures in the average year. If there are 24,836 days in sixty-eight years, then Wundt wrote or revised at the average rate of 2.2 pages a day from 1853 to 1920, which comes to about one word every two minutes, day and night, for the entire sixty-eight years." (p. 345)

This kind of productivity and concomitant assimilation of scientific materials is so

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prodigious that there is absolutely no way of appreciating its full magnitude. Some of Wundt's contemporaries found themselves in disagreement with him from time to time, including William James, but he overcame them all by the sheer mass of his scholarship. Some of the comments which William James made about Wundt are illuminating and also entertaining on this point. Borin notes that:

"Wundt's near invulnerability was due to the mass and speed of his productivity. It was hard for a critic to riddle an argument before Wundt had changed it in a new edition. Nor could an enemy know which to attack among so many kinds of books. James, while appreciating both the power and range of Wundt's campaign, resented both his self-assurance and the fact that his central philosophic theme, if indeed there was one, was lost in the mass of argumentative detail. James wrote to Stumpf of Wundt in 1887: 'He aims at being a Napoleon of the intellectual world. Unfortunately he will never have a Waterloo, for he is a Napoleon without genius and with no central idea which, if defeated, brings down the whole fabric in ruin.' Speaking of Wundt and his critics, James said: 'While they make mincemeat of some of his views by their criticism, he is meanwhile writing a book on an entirely different subject. Cut him up like a worm, and each fragment crawls; there is no vital knot in his mental medulla oblongata, so that you can't kill him all at once.'" (1, p. 346)

These are among the most striking examples that I have been able to find, however, there are many others less well documented, but nearly as impressive. E. L. Thorndike produced

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well over 300 items of bibliography, primarily books, each one of which was a veritable survey of the literature in some particular area of psychology. What we can find out about the reading habits of men like William James and Sigmund Freud is nearly as impressive. It is also phenomenal to remember that the kind of productivity achieved by most of these men depended on manuscripts written in long-hand without the benefit of fountain pens or ball-point cartridges which will last for months without refilling. It might be interesting to see how long it would take a Wilhelm Wundt to completely use up a jumbo-Texas refill.

Even good, competent scholarship, not at this phenomenal level, is so fantastically different from the kind of performance seen in clinical settings that it would not be amiss to look at the work of our typical University faculty with about as much awe as is inspired by the efforts of Wundt and Wolfe.

We have recently lost an eminent scholar at this university, in the death of Professor Donald G. Paterson. Paterson's production of scholarly writing and his concurrent assimilation of published materials would never match the spectacular records we have already discussed, but his bibliography does include something like 300 items which over the total span of his professional life amounted to more than one publication every two months. This is the kind of productivity which one finds in many a good competent, distinguished scholar and can probably be duplicated by several dozen men in the faculties of most large universities in the country. The point is just simply this, that we have a reasonably ready source of information about the nature of exceptional reading and study

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skills available to us in any university faculty and student body, but we have been very slow to take advantage of this situation for our own edification.

And, I really must say a word about students at this point. Since my own work has brought me into contact with Dr. Raygor and other people in the reading field, I have been more interested in talking with the students who come to my office about their reading habits. I think I could produce a substantial number of case histories which would interest those of you who spend all of your time working with people who are for the most part non-readers or very poor readers.

For example, I had a boy as a client for a period of about two years during which my work with him was concerned with his personal adjustment and only in a peripheral and supportive way with his academic work. I took the time to question him about his own reading and received a real jolt, which more or less set me off on the current topic. This young man had come to the University as a freshman, left before his first term was completed because he was unsure of himself, spent a year away from school and then returned. By the time he had returned for a second attempt at University work, he was nineteen years of age. As nearly as I can calculate, he had by then read somewhere between 300 and 500 major literary novels along with thousands of short stories which together make up the backbone of British and American prose literature. He was also familiar with all of the poets that I had ever heard of and dozens that meant nothing to me whatever. It was even

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more perturbing to find that many of the major works which he has read proved to be so interesting to him that he had read them a second, third, fourth, fifth, sixth, eighth, tenth time. He knew parts of Henry James, some of Thomas Wolfe, some of Saroyan, so well that he could quote it and I believe that he could have reproduced a few novels from memory without major departures from the text. I know that he could reproduce many consecutive pages of this kind of material without missing more than a few words.

This boy was not and is not a genius. He is a fluent, able young man who has devoted himself intensely to an area of reading and scholarly appreciation which he says is not a terribly unusual thing among the people who make up his own circle of friends. I am sure that what he has done is not typical of undergraduates, but it is not nearly so rare as we may lead ourselves to believe. This particular man is not well acquainted with natural science nor does he care, and the social sciences tend to leave him cold. Within his own area of interest, which is literature, he is fantastically well read and has managed to become so largely in the six or seven years between puberty and the time he entered the University at the age of nineteen. Much of his own self-description is quite similar to that which I read to you concerning Thomas Wolfe; this boy, too, has haunted libraries, but in his case they were the public library in St. Paul and the University library, after becoming a student. During the time that I have known him his pace has hardly slackened and while conquering most everything available in English literature that has not yet attracted his attention, he has made great progress in reading again, at a more mature age, many of the things which he has already carefully read at least once.

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Readers of this kind are indomitable. Nothing will keep them from books, and they are extremely resentful of any attempt to deprive them of printed material. On our own faculty, some men simply will not return a book to the library unless it is literally taken from them. I have no idea what the record for a number of books taken out of our library at one time might be, but I do know of at least one instance in which an instructor on our campus has had more than 500 volumes in his own office at one time all charged out to the campus library. Furthermore, he will return them only under the most direct kinds of pressure -- and he reads them.

My own ventures into clinical work with youngsters who complain of trouble with comprehension or poor reading ability are restricted to those who show no objective evidence of educational disability, but well-defined problems of attitude and approach to work. A typical example would be the student who comes to my office and says that he is having trouble maintaining a C average at college level work because he doesn't seem to be able to concentrate. He turns out to be a fourth year student in the Arts College who came to the University from a large metropolitan high school where he was in the top five per cent of his class. His college aptitude scores are also very promising and he had no trouble being admitted to the program of his choice. For three years he had done acceptable, but not very impressive work, and is even beginning to pick up a few grades which are not quite up to passing level. He complains of becoming panicky in examinations and becoming tense and restless when he finally gets into his room and should be studying.

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His purposes in coming to the Student Counseling Bureau are to find out why he isn't concentrating, why he is not achieving, and to have someone do something to him that will improve his powers of concentration, reduce his anxiety in examinations, and increase the pleasure which he is getting out of his studies. Everything seems dull and uninteresting to him. None of the work in his major field, which he has waited three years to get at, seems to be worth the effort. There is nothing exciting or really stimulating in any of the books he is required to read, and he is about ready to quit school, unless he can regain his interest.

At this point the student sits back and waits for me to produce my magic wand, or pill, or possibly to kill a black rooster and sprinkle blood on the Arts College Bulletin while I intone the magic words of Freud that will exorcise the academic devils. Of course, nothing like this happens. I stare at the student and he stares at me. When I ask him why better grades are important to him, he answers that he wants to go to Graduate School. When I want to know whatever put such a crazy idea as that into his head, he tells me it is because he is sure that that will be the place where he will finally begin to work with materials that will really be interesting. At this point, I manfully control a growing desire to throw-up.

This student is one of a large group of people who have adequate tools to do competent academic work, but somewhere along the line have failed to be caught by the prosaic, but quite accurate vision of academic performance as work. With such a person, I see my job as

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a matter of gently bringing to his attention the fact that the University is an academic institution and as such we expect the student to bring some things to the learning situation from the beginning. For the most part, this something consists of an understanding that his college years provide an intellectual apprenticeship in the skilled trade of competent thinking. My would-be graduate student has been deceived into thinking that the University is a place wherein he will find the holy grail. enter into the sanctum sanctorum, lie down in green pastures and have his soul restored by painless communion with the gentle company of scholars who reside here. Nothing could be further from the truth.

Academic institutions attempt to develop intellectual discipline and initiative. Frequently those of us who work in personnel settings become forgetful that our work is justified to our colleagues in more traditional academic areas only in terms of its relevance to these basic goals of academic life. Perhaps separate personnel programs must exist because other faculty members are, in general, not competent or not interested in providing such services (or both). The professional personnel worker, be he counseling psychologist, reading specialist, speech and hearing therapist, loans and scholarships officer, or what have you, is not fully effective unless he recognizes that he is a specialized kind of faculty person.

My poor client would be less likely to fall in the error of believing that his lack of motivation for study is divorced from the general facts of life regarding academic work, if it were more clear and obvious to him that the personnel function, the counseling function which I perform

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is based on my belief (and the belief of the other people who teach at this institution) that these activities are part and parcel of the teaching enterprise. My client does not get psychotherapy from me in the situation I have outlined.

What I try to do with this individual and others like him is to instill in them an appreciation of the fact that the goal of his University work should be the development of a competent workman-like approach to some area of intellectual concern. I talk to him about approaching his studies with much the same attitude as any good, skilled tradesman approaches the problems of his work. In many ways the job of mastering mathematics or psychology or physics or history, etc., is similar to the problems faced by a journeyman plumber who is faced with a stopped-up toilet. His skills are put to use first of all in doing a lot of unpleasant, dirty and miserable routine activities before he is able to put on the finishing touches and display the niceties of his skill in which he takes pride and which can be shown off to his colleagues, his customers and his friends.

By pointing out examples among his own teachers, I can show this student that the attitudes taken by the most illustrious of them is not one of rapturous joy in the work that they do, but rather a calm, steady, determined pursuit of excellence in the bothersome and grinding details of everyday work. I am also able to provide for him some guidance to great and exciting reading in his field if it happens to be one close to my own, and thereby save him a good deal of time in discovering that such things exist.

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It is this last aspect of the work which really falls within the province of people who would call themselves reading specialists. It seems to me that people like yourselves are in a unique position to spot the youngster who does not need remediation in the sense that we ordinarily think of it, but needs to be saved from an experience similar to the young man I have just been discussing. It is a mistake to believe that such people are in need of some different form of personnel service than what you can provide. Their difficulty is not neurot-
isism or inappropriate vocational or educational plan, but inadequate ideals and attitudes with respect to the educational endeavor.

Each of you in addition to being a specialist in some aspect of reading also has a background of academic experience and training which gives you a basis for developing the intellectual interests of students, both in areas close to and remote from your daily work. There is something fundamentally deceiving about the departmentalization of knowledge which exists within colleges and universities for administrative convenience. These divisions, that separate your clinical work from classroom experience, are often treated as though they represented fundamental cleavages in the nature of knowledge. We need to remind ourselves that departmentalization has come about not as a result of natural divisions of subject matter so much as through psychological differences amongst academic people. We have lots of evidence that there are psychological differences between those who teach engineering and the people who are faculty members in the College of Education. Economists are not like biologists, and so it goes throughout the

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faculty, although there are all sorts of curious hybrids and intellectual cross-breeds. It is harder to show that there are natural boundaries between subject areas.

The whole point of my remarks boils down to a very simple kind of commentary. Those of us who have worked primarily in remedial and other restorative and thereapeutic settings tend to lose sight of the full range of individual differences within our students. We satisfy ourselves too often with achieving a minimum level of competence in people who are in terrible shape to begin with. We are in danger of becoming, in fact, nothing but a salvage operation for poor academic material. Personnel work is broader than this, we can serve our profession and our students more fully by taking some pains to look for the student who may be a potential Wilhelm Wundt or Donald Paterson or perhaps we may even help to send a Mickey Spillaine or two speeding along his way.

The records in our counseling bureau contain data on many eminent politicians, writers, cartoonists, scholars, etc. Somehow this always provides me with a satisfaction that is different from that derived from the possibly more numerous records of marginal individuals who have, with great effort, been helped to make the grade. This latter function is also satisfying work, but I hope that I have helped to emphasize that it is far, far from the whole job.

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How Sound is Your Reading Program?
by
Robert Karlin
Southern Illinois University

Perhaps it is not coincidence that accounts for the fact that here we are today considering how college and adult reading programs might be improved in a state which has assumed some leadership in up-grading reading programs of its elementary and secondary schools through the certification of elementary and secondary reading teachers and consultants. Our mission here is not to study elementary and secondary school reading programs although there may be much that we can learn from them. We are very much concerned about the quality of our own programs -- what other reason besides good fellowship would bring us together these two days? It seems to me that what is going on in reading at the lower educational levels has some implications for us who operate at the college and adult levels.

May I at the outset state some assumptions with which you may or may not agree completely:

1. A college and/or adult reading program meets the reading needs of all its recipients.
2. It follows, therefore, that these programs are developmental and corrective in nature.
3. The quality of college and adult reading programs presently depends more upon the understanding of their leaders than upon any materials and built-in recipes these leaders may use in reading programs.

Inherent in the last assumption is the belief that those who undertake responsibility for helping

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college students and adults to improve their reading ability and to develop a lasting interest in reading must be qualified to do so. This question of the qualifications of college and adult reading instructors leads me to say a few words about the efforts of the Professional Standards Committee of the International Reading Association to up-grade the quality of reading instruction at all levels.

I was appointed to this Committee because of the concern I expressed over the operations of some reading clinics and centers in our larger cities (and I might add that I am still concerned about them). I'm sure that you are aware of what is going on in some of these centers and may share my concern too. The Professional Standards Committee met over a period of two years under the chairmanship of Charles Letson who at the time was active in the New Jersey Reading Assn. and its efforts to obtain state certification of reading teachers. The Committee which was charged with the job of coming up with a set of standards for the professional training of reading specialists and a code of ethics for the profession sought the advice and thinking of persons in reading and related fields throughout the country. After many meetings and many efforts the Committee recommended to the Board of Directors of IRA its final statement which the Board accepted and approved. The statement about Standards is a compromise in that the Committee members felt it did not go far enough but they recommended it in the hope that further steps would be taken. The standards are intended for elementary and secondary level personnel although there is much in them that apply to the college and adult levels. These minimum standards call for a Masters' Degree

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or its equivalent, 3 years of successful teaching or clinical experience plus specific kinds of courses in reading, psychology and related areas.

I should like at this point to raise a question. Should we expect less of our teachers of college and adult reading improvement courses than of elementary and secondary school teachers of reading? I would not hesitate to suggest that we need to demand more. Of course, I do not wish to imply that professional preparation guarantees competency (is a competent instructor needed for college and adult reading courses?) but not unlike other professions the general public requires some assurances that those who seek to minister to its needs are qualified to do so. We have some assurances for the barber, the plumber, the electrician; we need them for teachers of reading too. I would like to propose the formulation of a group to study this very question.

A closely related issue is one which deals with the validity of college and adult reading programs. Do college and adult reading programs do what they purport to do? How sound are some of the procedures that we find in them? To what extent do these programs rely on what I call a shotgun approach to teaching and learning? (Hopefully expecting that that which is provided for everyone fills an unknown prescription.) I need to say hurriedly that the raising of these questions does not suggest weaknesses in all existing programs nor does it suggest ready answers. But after having had the good fortune of offering such courses and observing others as well as studying the field, the conclusion that all is not as well as it might be seems to be warranted.

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It would seem to me that we have not taken advantage of what is known about learning generally and reading particularly and translated this knowledge into teaching practices. As in any other human endeavor, there are controversial issues and few definitive answers in both these areas but reasonable men have reached some agreements with which few would quarrel. What are some of these?

1. Learning may occur under all kinds of conditions but some conditions are more conducive to learning than others.
2. Reading growth may be explained in terms of multiple factors.
3. There is no royal road to reading success but some roads are harder and longer than others.
4. Reading serves many purposes among which are reading for information, reading for enjoyment and reading for personal growth.

If you "buy" these precepts, then we may be ready to look at existing college and adult reading programs and evaluate them in terms of our criteria. Of course we have to be ready to indicate what conditions of learning we prefer and how we may translate them into fruitful teaching and learning climates for reading. Perhaps I have not made my position clear. If I haven't, let me state briefly what it is:

1. I favor a college and adult reading program whose underlying philosophy is humanistic rather than mechanistic.

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2. I favor a reading program that seeks to nourish all aspects of reading.

3. I favor a reading program which teaches that the nature of materials and the purposes of readers dictate how reading shall be approached.

All of us, I'm sure, are familiar with the weaknesses of some college and adult reading programs. I know of some programs which make no effort to find out what the reading strengths and weaknesses of their participants are. Although testing may be part of the program, nothing more than mere recording of test scores is done. Quite frequently these programs are supervised by persons whose training and experience are far removed from those which I believe qualify persons to head them. Complete dependence upon gimmicks is their major characteristic. You also know of programs for which extravagant claims are made--claims in violation of ethical and professional conduct. It is fortunate that the majority of persons associated with reading programs do not become so enthusiastic over their efforts that they abandon reason and sometimes integrity. I have felt the results of such abandonments on our campus where students who have been exposed to the drum beaters want me to teach them how to complete with understanding the reading of an economics, history or philosophy textbook in less than an hour and retain the content! I must admit that I do not know how.

I believe it is fairly obvious that my biases are showing. Others who are participating in this conference have theirs. It behooves each of us to examine our cherished beliefs rather than stand ready to defend them. I am certain that benefits will accrue from such evaluations not only to us but to all who place their trust in us.

Training Inexperienced Graduate Students
As Instructors in a Reading Program

by
Ernest W. Kinne
Purdue University

"Jammed Classrooms -- Overtaxed Library and
Laboratories -- Crowded Dorms"

DOES 1965 SIGNAL THE END OF UNIVERSITY LIFE AND LEARNING AS WE KNOW IT? So went the headlines of the notice for the series of monthly meetings of the University Club, the first of which would be addressed by no less than a Vice President and Treasurer and the Director of Admissions of the University. To these scare headlines might be added: "Overworked professors overwhelmed by tidal wave of students by 1965." We have all been much impressed - perhaps depressed would be a better word -- by the dire predictions of future enrollments. On our campus already crowded with 16,000 students, or so it seems when one tries to find a parking place, my University looks forward to 25,000 tomorrow and 35,000 by 1970 -- or some such fantastic figure. Meanwhile the Admissions Officer frightens us with more statistics: our present freshmen class of 4,000 (incidentally most of whom will take developmental reading) will grow to 6,000 in four years and to 8,000 by the end of the decade. To the timid soul who asks, "Where do we find the staff?" comes the hearty reassurance, "Teaching machines and airborne TV!"

I need not elaborate further on this alarming future. In anticipating this problem with our reading classes at Purdue, we have already had to turn to inexperienced graduate students, while each fall we frantically search for recruits among the new staff members. It is my purpose to show

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how we have utilized this material after we have scraped the bottom of the barrel for experienced teachers.

Perhaps at this point I should briefly explain our situation at Purdue. Eleven years ago we started a modest program with 250 students enrolled in a non-credit course called Developmental Reading, a most impressive title. Realizing the need for most or ALL students to improve their reading skills, we yielded to the pressure to make this a mass-instruction program. Within two years we expanded from one reading laboratory to two and doubled our staff, with classes running almost continuously six days a week and including some night sessions. Though it was primarily a course for freshmen, we admitted upperclassmen and even had several adult classes. Shortly thereafter we tripled our original capacity, and today we have four laboratories serving over 1,200 students each semester. This factory, production-line system obviously requires more and more instructors. Where could we turn except to graduate students? Purdue also has four extension centers throughout the state, each of which demands reading instructors for its classrooms. Then in 1953 when the Indianapolis schools introduced developmental reading in all of the high schools in the city-wide system, where did they turn for advice and help? To Purdue, naturally. In the first five years their reading classes had served 36,378 pupils. To supply teachers for this great demand, they train teachers in service. These teachers take the course themselves for twelve weeks, and then act as "student teachers" for the last six weeks of the semester. Not only has this program resulted in greater interest in the work, but also it has increased the number of substitutes for emergencies and replacements for the laboratory staff. We too have had to resort to this on-the-job training. Since that first summer work-

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shop in 1953, we have offered a methods course called "Developmental Reading for Teachers." Going even farther afield this summer, I participated in a workshop for reading teachers at Evansville College. One of my colleagues is now giving this course as an evening class to our present group of graduates and other adults in the community who may be interested.

Probably you are wondering just how we proceed to "break in" these youngsters, some of whom look almost as young as the freshmen they are instructing. Naturally we have had to play it by ear, so to speak, carefully feeling our way. From the very outset in 1950, we had two or three graduate assistants who helped with make-up classes or supervised extra laboratory periods for those desiring more practice to improve their reading skills. As these assistants gained experience, they might be given full responsibility for classes of their own, but always under some supervision. Many of these graduate assistants are now successful teachers in our extension centers, in Indiana high schools or elsewhere. At present we have ten graduate students who are learning on the job by teaching two classes. In September before classes started, we gave them an orientation program. A concept quite new to most of them, developmental reading must be "sold" -- hateful word -- we sell the program to them. We explain our objectives and describe our techniques. Since frankly we offer a machine-centered course, we must demonstrate the reading pacers and the reading films, and each student-teacher must have individual practice in machine operation and machine maintenance. We cover several sample assignments, discuss tests and measurements, try to forestall possible problems in their first classes. As personal guide, I was assigned five of these young hopefuls. Fortunately two had had some previous teaching experience, but three of them were facing the ordeal for the first

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time and were properly terrified. After a meeting in my office late in the afternoon just before the opening day of classes, we agreed, in fact they requested, that they be allowed to face their first classes alone. To me they seemed incredibly young, but they are intelligent and capable young people, and obviously very self-reliant. Now after five weeks they have passed their initiation successfully. Of course, during these first weeks I have been available for consultation. After the first week of classes we met as a group for discussion of mutual problems and to plan future work. I recall that they were and are now disturbed by the perplexing question of how to improve reading comprehension. Since that time I have had individual conferences with each of my student-teachers, and my colleague responsible for the other five has followed a similar procedure. We have checked their class records, discussed individual differences of their students, the vast range of reading ability in any given class, and motivation of the slow learner who may become discouraged by his lack of progress. This is a good time to bring up questions about these classes.

Meanwhile, the ten graduate instructors are also attending the evening class on methods of teaching developmental reading. This is a combination of theory and practice, since each person is himself given a practical course in reading improvement combined with lectures and discussion of topics such as the following:

- Need for Developmental Reading
Nature of the Reading Process
Purposes and Objectives
1. Widening the reading span
 2. Decreasing fixations
 3. Decreasing regressions

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4. Decreasing duration of fixations
5. Eliminating vocalization
6. Increasing vocabulary

Using devices such as accelerators,
tachistoscopes, controlled readers,
films, timed essays, oculograph, etc.

Reading rate and flexibility

Reading rate and comprehension

Vocabulary

Testing program

Records and record keeping

Role of the Instructor in a Reading Program

Retention and carry-over of skills to
other reading activities

Other related topics

Besides this formal course, or rather as part of it, each member is visiting other reading classes to observe older, more experienced teachers, in action. It is hoped that they may pick up some new ideas or approaches that may be useful in their own classes, and that they will welcome visits to their own classes by older members of the staff who may also offer them suggestions. This exchange between young and enthusiastic instructors and senior members of the staff should prove very valuable, we believe.

Before I close, one other matter should be discussed briefly. How much can these youthful teachers help or guide their students to become more effective in their academic courses? How much can they aid them in improving study techniques, give hints on note-taking or preparing for examinations? Do their students develop reading flexibility in preparing course assignments or in doing assigned reading in the library? The first step in this direction may be to give a demonstration on the use of a textbook, explaining the purpose of the preface, table of contents, the index, chapter headings and marginal notes -- all of these things

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can be done -- not always through formal instruction but also at opportune moments as questions arise or in individual conferences. Since the graduate students are only a few years older and have recently faced similar problems, they are in an excellent position to help bewildered freshmen. And perhaps their most important function, after all, is to motivate each student as much as possible.

With all of this instruction, supervision, and advice, you may well ask whether we are being too paternalistic. I sincerely hope not. After all, they have assumed considerable initiative, and I am sure will develop into highly competent teachers in our schools of the future. I for one have supreme confidence in them. My confidence was reinforced when about two years ago I visited some of our former students who are now successful teachers in various high schools and in the various Purdue Extension Centers. One example will suffice. At Fort Wayne, this course was offered for the first time in the spring of 1954 to high school students, to college students and to adults, meeting twice weekly for a full semester with a total enrollment of 127. Then in the following year the reading course was taken directly into industry besides being given at the Center. In all, over a span of five semesters these special classes were conducted in the General Electric plant and attended by over 150 men, and the value of the course can be estimated by a small number of drop outs, from 8 to 10 per cent, considering the busy lives of the administrative personnel that made up these classes. In my tour through the state, I was much encouraged by my interviews with reading teachers who had served their apprenticeship at Purdue.

I think that I can say in conclusion that our results with "green help" on the whole have been

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surprisingly, sometimes gratifyingly, good. We have found that with proper on-the-job training and careful supervision the youthful instructor can do very acceptable work.

Initiation of Reading Clinics
by
George L. Watson
The John Marshall Law School

Frequently high school teachers are faced with the problem of starting developmental reading courses, occasionally with little more background knowledge than that which they have accrued from reading magazines and newspapers. They recognize that reading and the mechanics of reading are problems of national concern. They know there is parallel necessity for the development of comprehension and retention skills.

This person usually asks the following questions:

- How do I teach this course?
- What materials do I use?
- What type classroom do I need?
- What type of equipment should I buy?
- Where can the equipment and materials be obtained?

Let us examine and project some of the possible answers to these questions.

Reading is a process whereby material from the printed page is changed into some form of meaningful concept by the reader. It is a psychological, physiological act dependent upon the proper functioning of the eye, the nervous system and the correct perception of the printed word. It involves, first, the correct reading of and contextual interpretation of the words in the sentence, then, second the deriving of the meaning

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of the sentence. Third, the sentence has to be related to the paragraph's meaning. Finally after the reader has mastered the meaning of the individual paragraph the interrelationships of the various paragraphs of a selection have to be discerned, interpreted, and if possible be related to accumulated past experience or knowledge.

This means that underlying the comprehension of printed materials is the process of visualizing, conceptualizing and associating the ideas that the author is trying to communicate to the reader. Approximately eighty per cent of readers establish mental concepts by means of verbal symbols; twenty per cent by kinesthetic processes.

As the material is comprehended we bring into use principles of learning which apply to efficient retention of the material. To the new reading teacher who has not been exposed to the psychology of learning (nor the physiological psychology of learning) but who instinctively recognizes that there is a void or lack of personally accumulated information about reading to overcome, the scope of what to teach and how to teach it becomes an appalling task. Fortunately there are a number of sources of information which will help the teacher gain sufficient knowledge to intelligently attack the problem.

Descriptions of how to improve adult reading give the best suggestions of methods to be used in developmental programs at almost any level. The teacher must modify these methods slightly to make them appropriate for teaching in the high school or junior high school. Some of the same techniques can be applied, simply, but definitely to third or fourth grade level material.

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Sources to which the teacher may turn include:

Leedy, Paul - Improvement of Adult Reading. This book presents an excellent description of main idea, skimming, reading for purpose, retaining what is read and critical reading.

Robinson, Frances - Effective Study. This source reviews, at a level which is quite comprehensible to the lay reader, the learning processes which underly retention; methods of study and how to review for examinations. It includes an excellent exercise portion in the last half of the book.

Glock, Marvin D. - The Improvement of College Reading. The first half of this book contains an excellent series of short articles which discuss the reading process, motivation, vocabulary building, correct study condition and a variety of topics related to improving reading.

Techniques to be Taught

A thorough survey of literature which appraises methods of teaching reading reveals that there are a number of universally accepted concepts which are being taught.

Generally they are presented in this order:

I. The idea that the primary unit of meaning is the sentence. The student needs to read correctly. Therefore he may need to be taught how to attack unfamiliar words. Since the sentence is composed of interrelated words, a vocabulary adequate to

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interpret what is meant is necessary. Correct phrasing helps impart meaning. To accomplish this we must teach "how" to group words properly. A note of caution must be given at this point. The arbitrary breaking of material into groups of two, three or four words may impede proper phrasing. Current research indicates that adults encompass little more than two words per average fixation. Children fixate as little as half a word or less. Attempts to foster greater fixation than are natural can disrupt comprehension.

II. Once the meaning of the sentence is understood the paragraph as a unit of thought is considered. The student is taught to identify the topic sentence, to distinguish the main idea of the paragraph, and to visualize the relationship of explanation, elaboration, illustration or detail to the central idea of the paragraph.

III. At this stage of training the student is usually introduced to methods of appraising the contents of the chapter by means of previewing or surveying techniques. He is shown how the natural structure of the text can be used to establish stopping points at which the student reminisces what he's just read, and then organizes it into meaningful relationships. Some teachers prefer to teach this before they introduce the main idea concept.

IV. Note-making logically follows the teaching of the survey method. In learning this technique the student is led into the process of restating in his own words (preferably from memory) what he has derived as the meaning of one or several subsections.

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V. The skills of skimming and scanning are next in logical order. The methods proposed by Paul Leedy work very effectively and can be demonstrated from seventh grade level to that of executive training. The teacher should make clear the difference between skimming for sequence of main points, skimming for detail, and scanning. All are distinctly different techniques.

VI. If possible the teacher should show the student how to transfer these techniques to the subjects he will meet in the future whether it will be junior high school, high school or college. Specifically this usually will embody demonstration in physical science, biological science, social studies, and history books.

VII. After the student has mastered the skimming and scanning techniques he is taught to vary style with his purpose and with the authors purpose. He may read biology slowly and carefully to understand function and to learn new terms. He may skim outside reading material to see what part is appropriate to reports. He reads different types of printed materials at different rates, one for amusement, another for retention. Whatever he reads he considers why he needs to read the material and the method he will use in reading it.

VIII. Additionally he should be taught to read critically, to be aware of emotionally-toned passages, to evaluate what the writer intends his reaction to be.

Obviously a program such as this is teacher-student oriented. It requires study on the teacher's part, the discovery of material which

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explains what these concepts are, and gives practice in their use. To aid the teacher in locating some of the excellent sources of material an annotated bibliography follows this article.

Physical Facilities Needed

In the last ten years reading training has gone through many changes. New materials are being offered constantly. New machines are appearing. Many new books and training manuals providing explanations of methods and practice materials are available. Requisites of a good program are these, in order of diminishing importance.

First: An interested informed teacher, a teacher who is willing to devote time and energy to develop and implement an effective reading program.

Second: Adequate space and lighting. The type of furnishing depends upon budget. Desk-chairs can be used. Ideally small work tables or individual booths allow student privacy.

Third: A broad source of materials which can be used to demonstrate the methods taught, materials which can be used by the student to practice new skills as they develop.

Fourth: Tests adequate for diagnosing the individual students needs are a necessity.

No one test which is produced today adequately measures all the various skills used in reading.

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Ideally a measure of text book type reading, probably best measured by the Cooperative Reading Tests, should be included. Contextual vocabulary skill, and word attack facility should be appraised. Flexibility should be estimated. Finally, some measure of intelligence not dependent upon reading skill or verbal facility is helpful in ascertaining what a student is capable of doing, and the skill level he potentially can attain.

Machines

Consensus is that machines, properly used, function as motivators. Some may help develop perceptual skills. Machines are of three types:

1. The tachistoscope, which exposes number, word, and phrase images for fractions of a second. This machine reputedly increases perceptual accuracy.
2. The moving or jumping image of segments of contextual story material is the second type. Several film series of this type can be obtained. At least three machines are available with pre-packaged reading materials. They vary in price from over a thousand dollars to one hundred fifty dollars. They motivate the individual and may help develop his speed and concentration.
3. The third type of device is the accelerator, a form of moving straight edge or line of light that forces the student to read down the printed page at a predetermined rate. Prices vary; soon models will be available from as little as ten dollars. Current models range from over

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a hundred dollars to approximately forty dollars in cost. When the student has no marked vocabulary or word attack problem they may increase speed. They too, probably serve as motivators. All should be used with caution. Use should be under conditions where the student strives for comprehension as well as rate.

Visual Screening

Because a small percentage of reading deficiencies are associated with visual problems a good reading clinic should be able to discover these visual difficulties and refer the student to a competent oculist or ophthalmologist. Three types of screening devices are available. Any device used should check for lateral and vertical phorias as well as test visual acuity.

Budget

What to spend to develop an adequate reading laboratory is dependent entirely upon the schools budget and needs. The school with a limited budget needs little more than a well illuminated, pleasant room with seats for the students. As many books and manuals as available should be conveniently and attractively displayed. Good programs have been started for less than a hundred dollars. This requires effort and inventiveness of the teacher who will have the use of some training manuals but will have to find additional illustrating and practice material. She will probably use magazines and the students text books as sources to which they transfer their skills.

As much as thirteen-hundred dollars can be

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spent on an individual training booth, but for classroom or group training, a setting which contains tables, or table chairs which can be arranged so as to allow two or more tasks to be simultaneously performed by several groups is ideal. A fully mechanized laboratory employing all three types of machines, an adequate supply of books, and manuals, and enough accelerators to keep the students occupied can cost no more than one thousand five hundred dollars. A visual screener will add nearly three hundred dollars to the cost.

Education Requirements

The standards established by the ethics committee of the International Reading Association should be adhered to. That is study in reading methods and testing and diagnosis should be undertaken. Additional courses in motivation, personality and in abnormal psychology as well as clinical diagnosis are exceedingly valuable adjuncts since learning is part of the total reacting student as a personality.

Practically, many schools cannot find a reading specialist, so they have to single out a teacher, usually from the English department, to teach reading. The teacher may or may not have an opportunity to attend school for further training before starting a laboratory. If the teacher is in the unfortunate position that several years or summer school will be required to complete her educational needs, she should select, first a good workshop sponsored by a recognized college, to familiarize her with teaching methods and materials; then a school which offers the courses recommended by the International Reading Association on Ethics.

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Additional Considerations

Since success experience is important to progress, the teacher should remember that the initial experience in learning new skills should be accrued in material in which the vocabulary level is a year or two below his reading level.

Most difficult to describe is the feeling which is developed by the teacher so that she senses why her student is making mistakes, the causes of his progress and lack of progress. Intimately associated in what she senses is the appreciation of the total personality reaction of the student to the learning tasks imposed by the developmental reaction.

An invaluable learning experience and one which helps develop the feeling for student reactions is guided teaching in a university reading laboratory. Summer internships or employment are available in many institutions which provide service to the public or pre-college reading and study skill programs.

Though the preparation for the teaching of reading involves much assiduous work the teacher who successfully builds a good clinic will find the work very rewarding. The perception of the growth of the student is reward in itself, the greatest dividend will be the pupil who returns a year, two years or five years later, and says, "it's the greatest thing I had." An unanticipated bonus side product experienced by most teachers is an experienced new breadth of meaning in what they read themselves.

ANNOTATED BIBLIOGRAPHY

Note: This list is far from complete and is a suggested source of material which the teacher may find valuable. The listing in no way implies that the books mentioned are superior to many other excellent sources of information which are available.

Reading and Study Methods:

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Leedy, Paul, Reading Improvement for Adults. New York: McGraw-Hill Book Company, Inc., 1956.

Robinson, Francis P. Effective Study. New York: Harper & Brothers, 1946.

Practice Manuals:

Brown, James I. Efficient Reading. D. C. Heath & Co., 1952. This book contains a selection of articles with accompanying comprehension checks. It is appropriate for use with average to superior high school seniors and college students.

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Gilbert, Doris W. Breaking the Reading Barrier. Prentice Hall, Inc., 1959.

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Spache, George D. and Ber, Paul C. The Art of Efficient Reading. The MacMillan Company, 1957. Designed for the college student, this manual gives an excellent description of what the reading process should be, suggestions as to study and outlining methods, and a series of exercises designed to give the student practice in the various techniques recommended.

Smith, Nila Banton. Be a Better Reader. Prentice Hall, Inc., 1959-1960. Books I-V. This series of manuals was designed for use in both remedial and developmental programs for Junior and Senior High Schools. It presents practice materials in skills needed in the basic subject areas commonly taught. Used with caution lower level manuals can be used with bright grade school students from fourth or fifth grade level upward, to show them how to work more efficiently in their school work.

Teaching of Grade School Reading

Harris, Albert J. How to Increase Reading Ability. Fourth Edition, New York: Longmans Green & Company, 1961. This is a revised book, popular since 1940, which describes difficulties encountered by students and how to teach reading from elementary level upward.

Heilman, Arthur W. Principles and Practices of Teaching Reading. Charles E. Merrill Books, Inc., 1961. This is a review of practices and methods from pre-reading readiness appraisal through grade school teaching of reading.

TESTING MATERIALS:

The Psychological Corporation, 304 East 45th Street, New York, New York. Catalog gives a complete listing and brief summary of tests.

Cooperative Test Division, Educational Testing Service, Princeton, New Jersey. Catalog gives up-to-date information about Cooperative Tests and services.

Representatives in Attendance
Fourth Annual Meeting 1961

Illinois

Karlin, Robert; Southern Illinois University,
Carbondale.

Regier, Margaret J.; 5321 S. Cornell, Chicago.

Stevens, Samuel N.; Psychotechnics, Chicago.

Watson, George L.; 26 W. Chicago Ave., Hinsdale.

Indiana

Cobb, J. E.; Indiana State College, Terre Haute.

Fridian, Sister M.; St. Francis College, Fort Wayne.

Griffin, E. Glenn; Purdue University, Lafayette.

Kinne, E. W.; Purdue University, Lafayette.

Maxine, Sister; St. Francis College, Fort Wayne.

North, Mrs. Marie; North Central High School,
Indianapolis.

Schick, George B.; Purdue University, Lafayette.

Willemin, R. D.; Notre Dame University, South Bend.

Iowa

Moehl, Erna; Wartburg College, Waverly.

Michigan

Johnson, Mrs. Lela; Grand Rapids Jr. College,
Grand Rapids.

Patterson, Harry; General Motors Institute, Flint.

Pepper, Roger S.; Wayne State University, Detroit.

Robbins, Fred B.; Flint Community Jr. College,
Flint.

Terry, Ruth Y.; International Tape Exchange,
Muskegon.

Minnesota

Anderson, Clarence; Bemidji State College,
Bemidji.

Bogen, Iver; University of Minnesota, Morris.

Fergus, Pat; 315 West 15th St., Minneapolis.

Johnson, Dorothy R.; Concordia College, Moorhead.

Maier, Lucille S.; St. Cloud State College,
St. Cloud.

Raygor, Alton; University of Minnesota,
Minneapolis.

Rasmussen, Thue; University of Minnesota,
Minneapolis.

(Minnesota continued)

Roberts, Ruth; University of Minnesota,
Minneapolis.

Summers, Mr. Edw.; University of Minnesota,
Minneapolis.

Swenberg, Corrine; University of Minnesota,
Minneapolis.

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St. Paul.

New York

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Ohio

Adams, R.B.; National Reading Research
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South Dakota

Willowby, Lucile; South Dakota State College,
Brookings.

Texas

Rankin, Earl; Texas Christian University,
Fort Worth.

Washington D. C.

Billingsley, Miss Sally; Department of
Agriculture, Washington D. C.

Wisconsin

Dolora, Sister M.; Cardinal Stritch College,
Milwaukee.

Dummett, Majorie; West Bend.

Harless, James; Wisconsin State College,
River Falls.

Julitta, Sister M.; Cardinal Stritch College,
Milwaukee.

McDonald, Arthur; Marquette University,
Milwaukee.