R E P O R T R E S U M E S

ED 020 087 RE 001 245

SPEED READING--IS THE PRESENT EMPHASIS DESIRABLE.

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PUB DATE APR 68

EDRS PRICE MF-$0.25 HC-$1.44 34P.

DESCRIPTORS- *SPEED READING, *READING PROGRAMS, READING SPEED, READING COMPREHENSION, INNER SPEECH (SUBVOCAL), TEACHING MACHINES, RESEARCH METHODOLOGY, DIAGNOSTIC TESTS, POST TESTING, TEST VALIDITY, VAN WAGENEN RATE OF COMPREHENSION TEST, ROBINSON HALL READING TEST OF HISTORY, BRAAM SHELDON FLEXIBILITY OF READING TEST, NELSON DENNY READING TEST,

THE RESEARCH RESULTS FOR SEVEN AREAS OF THE SPEED READING CONTROVERSY ARE REPORTED. TERMINOLOGY FOR THE PROGRAM IS A PROBLEM AREA. MANY PEOPLE CONTEND THAT SPEED READING IS NOT READING IN THE TRADITIONAL SENSE. MEASUREMENT IS OFTEN LIMITED OR EMPHASIZES READING RATE ONLY. FIRMS, ESPECIALLY THOSE NOT CLOSELY CONNECTED WITH SCHOOLS, SOMETIMES MAKE CONTROVERSIAL CLAIMS FOR ADVERTISING. THE ABILITY TO PERCEIVE WORDS SIMULTANEOUSLY IS DEBATABLE. THE DEGREE OF RELATIONSHIP BETWEEN SUBVOCALIZATION AND COMPREHENSION IS QUESTIONABLE. THE EFFECTIVENESS OF MACHINE TEACHING VS NONMACHINE TEACHING IS A MAJOR POINT OF CONTENTION. ALSO, RESEARCH ON READING RATE IS SOMETIMES INADEQUATE. AS A RESULT OF RESEARCH FINDINGS, THE FOLLOWING ARE PROPOSED--(1) THE USE OF AN EYE EXAM, (2) THE USE OF MORE FORMAL PRE- AND POST-TESTING PROCEDURES, AND (3) INCREASED COOPERATION BY COMMERCIAL FIRMS, CORPORATIONS, AND COLLEGE AND UNIVERSITY READING CENTERS IN PROVIDING INFORMATION ABOUT THEIR PROGRAMS. A BIBLIOGRAPHY IS GIVEN. THIS PAPER WAS PRESENTED AT THE INTERNATIONAL READING ASSOCIATION CONFERENCE (BOSTON, APRIL 24-27, 1968). (BS)

[INTERNATIONAL READING ASSOCIATION, BOSTON, APRIL 24-27, 1968]

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SPEED READING: IS THE PRESENT EMPHASIS DESIRABLE?

Speed reading, or increasing reading rate, is a rather sensitive topic. There are many who object even to the use of the term speed reading. The more I prepared this paper, the more I began to realize that I might well be classified among those "fools who rush in where angels fear to tread." My only intent is to draw together, as objectively as possible, information relevant to the topic.

In preparation, a questionnaire* was composed for the purpose of learning what was going on around the United States and Canada. These questionnaires were sent to 1,087 addresses; these included the top 500 corporations (as listed in Fortune magazine), 225 commercial firms (as listed in the yellow pages of telephone books), and 362 reading

*Appreciation is extended to Kathleen Nelson for coordinating the distribution of the questionnaires and for directing the collating of the data from those returned. Financial support for the questionnaire survey was provided by The Reading Center, Southern Illinois University, Carbondale.

centers (as listed in A Directory of College and University Reading ~~Center Clinics~~ Clinics/Centers in the United States 1966/67). (36) Replies came from forty five per cent of the reading centers, nineteen per cent of the commercial firms, and eleven per cent of the corporations. Data from the questionnaire survey will be presented in this paper and, with more specificity, in a later paper.

The topic--Speed Reading: Is the Present Emphasis Desirable?--contains the assumption that there is a present emphasis. Attention will be given to this assumption, then to seven controversial issues involving speed reading, and finally to whether or not the alleged present emphasis is desirable.

CONCERNING THE PRESENT EMPHASIS

One way to determine the present emphasis, or interest, in speed reading, or reading rate, is through the degree of financial activity. The most widely known commercial firm is the Evelyn Wood Reading Dynamics, Inc., which was discussed in the September 27 issue of The Wall Street Journal. (93) The feature article notes that "about 25 per cent of the Evelyn Wood schools are owned by Diversified Education and Research Corporation, a closely held company organized by a Washington, D. C., business consultant. Diversified Education franchises the other schools to independent operators who pay the parent company ten per cent of their returns. Diversified Education and Research bought Evelyn Wood Institutes in 1962. . . ." Today Mrs. Wood is ". . . on the payroll as a consultant, but owns no part of the company. She says she spends most of her time traveling, promoting the schools." The article noted

that "the Wood schools account for nearly all the business of Diversified Education and Research, which is scheduled to be acquired by Famous Artists Schools Inc., in New York, for Famous Artists stock that currently is valued at about $4 million. Shareholders of both companies have approved the agreement. Completion of the acquisition is awaiting a favorable tax ruling, according to a Famous Artists spokesman." Since the article appeared, the transfer has been completed.

Another sign of activity concerns the increasing interest generated by the claims and activities of the Wood Institutes of which there are now some 200 in about 70 cities throughout the United States. Last year, according to The Wall Street Journal article, some 45,000 people took the course, which now costs $175 a person. ~~The August 9 issue of~~ Investor's Reader (42) contains information about the financial activity of the Wood Reading Dynamics Institute.

Some of the activity involving speed reading, or reading rate, is centered around certain locales in the United States. One of the liveliest is the Chicago area; there people interested in increasing their reading rate have a choice of some twenty different programs. Assistance on the early stages of the questionnaire study came from the speed reading committee of the Suburban Reading League, an IRA Council composed of teachers in the Chicago area.

Last month a near full page advertisement on the read-ability system appeared in The Wall Street Journal. (~~39~~ 87) The ad was from Franchises International Inc., "the nation's leading franchise organization . . . and destined to rapidly dominate the proven and profitable

reading skills market." The ad was directed to "executives who can qualify as area directors." The Area Director, the ad explained, "has the exclusive rights to The Read-Ability system in his major market. His area is generously portioned to permit a network of many Speed Reading Centers." Continuing, "the Area Director need not teach classes, although he receives the same intensive training from national headquarters as his instructors do. He is the organizer . . . administrator . . . executive head of his Read-Ability Centers. In these management areas of his business, he receives first-hand help and continuing guidance every step of his way to important business success." In smaller type, the ad notes ". . . and experience as an educator is not needed to control your area network of speed reading centers." Continuing, it explains that if you have "the respectable cash position required, can combine personal drive with true leadership ability, prefer to invest in a franchise where high profits are supplemented by the pride of creative accomplishment in the self-help services you offer, and you want further information on the read-ability area directorship in your major market," phone the ~~Mt. Vernon, Illinois,~~ New York, or Atlanta office. The April 8 issue of The National Observer (58) indicates that the fee required to purchase a franchise is $25,000, and the executive consultant and program director of The Read-Ability System is Dr. Joyce Brothers, described in the ad as "author, columnist, radio broadcaster, television personality, educator."

It would appear that much of the activity concerning speed reading, or reading rate, that appeared in periodicals during the early sixties is now appearing in the form of training institutes. From time to time, however, an article appears in the popular media concerning reading

rate, and Popular Science (31) had an article entitled "So You Want to Read Faster?" which described the reactions of a Popular Science editor who had taken the Wood Reading Dynamics Program. His general reaction was that the course helped him to learn to skim more effectively but that he cannot "read" at 2,000 words a minute. Reflecting the professional interest, the current issue of The Reading Teacher (92) contains a review of 24 studies relating to reading rate spanning nearly a century.

CONCERNING SEVEN CONTROVERSIAL ISSUES

The present emphasis on speed reading, or reading rate, has drawn attention to a number of controversial issues. The following is a discussion of seven of these issues: (1) terminology, (2) measurement, (3) claims and advertisements, (4) perception, (5) subvocalization, (6) machines versus non-machines, and (7) level of research.

Terminology

A major controversial issue involves the terminology used to describe this facet of reading. Tinker (87) says that the "only justifiable or valid definition of 'speed of reading' is 'speed of comprehension,'" and his test is based on his definition. Spache (72) defines reading as "the act of reading most of the words on the page," and uses that as the basis for his frame of reference. Taylor (81) suggests the use of WDPM--words dealt with per minute. Pauk (64) has observed that "the people who deal in selling these thousands-of-words-per-minute rate would do the field of reading a favor if they would coin another word, because what they are doing is not reading in the traditional sense."

The questionnaire contained the statement, "A definition of speed reading that most clearly fits the objectives of our program is:" A multiplicity of responses were received ~~as indicated in the following table.~~

Definition of Speed Reading

Objective	No. of Responses
Increasing efficiency of reading	131
Increasing rate of comprehension	91
Increasing flexibility of reading	81
Increasing rate of reading	35
Speed of comprehension	11
Increasing speed, comprehension, and study skills	11
Increasing speed without comprehension loss	1
Increasing reading rate and comprehension	1
Increasing flexibility and efficiency of reading through use in writing	1
All of the above	14
Recallability	1
Better study habits	1
Increasing vocabulary	11
Increasing word analysis and comprehension	1
Awareness of English language	1

Measurement

Another controversial issue involves measurement. "The measurement of rate of work in reading for various purposes poses many difficult problems," Davis (26) points out. "Number of words read per minute is, in itself, a meaningless score. To be meaningful, it must be associated with a score indicating the extent of comprehension that has been attained." Braam (17) proposed as a tentative measure the multiplication of rate and comprehension to obtain an effective rate; Spache, however, has questioned the logic in multiplying these two factors

together. Davis (26) also pointed out that many people will read 40 to 80 per cent faster simply by telling them to read faster, and this point was substantiated by Maxwell (55), who instructed students to read faster on a test. She concluded ". . . that reported gains in reading rate as a result of a course may be mere artifacts--since the student's initial speed potential (i.e., how fast he could read by forcing himself) is not known. Perhaps the only thing that he learns in a reading program is that it's all right to read fast on tests. At any rate, our evaluations would be more meaningful if we were concerned with assessing initial skills more adequately."

The questionnaire indicated that 187 respondents measured rate by number of words per minute, while 19 used number of words dealt with per minute. The effective rate, which is referred to as the reading index by Educational Development Laboratories (EDL) and others, is used by 20. Other ways indicated by a single respondent included "number of pages read in a given time," "percentile on the Iowa Test," "percentile on the Cooperative Test," "time to read a given chapter," "time to read an entire book," "reduction of time spent on reading," "maintenance of comprehension at an 80 per cent level or speed is not stressed," and the use of "gross and effective rates." Two said that they did not measure rate.

In response to the statement, "Briefly comment on how comprehension is taken into consideration," more than 25 ways were mentioned. These included quizzes, 39; outlines and summaries, 15; ideas per minute, 2. Other ways included the use of standardized tests, group discussions,

teacher-made tests, film quizzes, and testing in relation to purpose and material.

Recently the author examined 25 tests which claim to test rate, comprehension, and/or flexibility for the purpose of finding a test composed of short passages and a test composed of a long passage to allow the reader to perform on these different kinds of measures. Most of the tests had little or no validity or reliability data. Tests found to be most reliable included the Van Wagenen Rate of Comprehension Test (88), the Robinson-Hall Reading Test of History (Forms Canada and Russia) (67), the Braam-Sheldon Flexibility of Reading Test (18), and the Nelson-Denny Reading Test (60). A fifth test (94) which shows promise is in the research stages of development at Case Western Reserve University under the direction of Esther J. McConihe and Byron Svetlik.

Tests indicated as most popular among the respondents to the questionnaire were The Nelson-Denny Reading Test, the Cooperative English Tests, California Reading Tests, the Triggs Diagnostic Reading Tests, EDL Reading Versatility Tests, and various forms of the Iowa Silent Reading Test. Of those responding to the item regarding the use of a pre-test, 161 replied in the affirmative and 14 replied that a pre-test was not given.

Pre and post measurement in the Wood Reading Institutes involves the use of tests based upon two paperbacks--Albert Einstein by Arthur Beckhard (5) and Satellites, Rockets and Outer Space by Willy Ley (49) Also used is The Nelson-Denny Reading Test. In reference to the money back guarantee of three times an increase in reading rate with no

significant loss in comprehension, the reading index is obtained from the tests based upon the paperbacks. (21) To illustrate, if the beginning reading rate is 300 words a minute and comprehension is 80 per cent, the reading index is 240. One of the charges against use of the reading index is that if the final reading rate is 2,000 words a minute and comprehension is 50 per cent, the reading index is 1,000, or four times the beginning reading index, which is actually a spurious increase. Representatives of the Wood Reading Program claim that they refund two per cent of the fees obtained. (21, 91, 93)

Obtaining a measure of reading flexibility is another problem resulting, in part, from a certain degree of controversy over the meaning and nature of flexibility. Carrillo and Sheldon (20) have suggested that the ability to read rapidly is a prerequisite to reading flexibly; McDonald (54), however, reflecting in part the findings of Laycock (47) who observed that sixth graders may be observed as flexible or inflexible, suggests that the ability of a reader to deliberately vary his rate is "a widely prevalent misconception." Spache (74) and Harris (35), however, suggest otherwise. Several tests of reading flexibility have been developed, including those of McDonald, Letson (48), Braam and Sheldon (18). New developments in testing flexibility are discussed by Ironside (43), who compares various tests with criteria suggested by Carrillo and Sheldon. (20) Regarding testing for flexibility, Berg (6) concludes that "flexibility in reading is the product of an attitude and environment that offers the reader a maximum of psychological freedom and safety. Mechanical attempts to produce flexibility within an environment which is coercive and rigid may indicate some immediate results from testing, but testing after a lapse of time will...show little or no permanent gain."

Still another problem involving measurement concerns retention of gains. Ray (66) reviewed fifteen studies dealing with retention of gain. Seven indicated a retention of gains in reading rate, five reported a decline and three reported additional gains beyond the rate attained on the post-test. An additional problem is the interpretation of test results. Fo example, on a test used by the author during his doctoral investigation there was a significant increase for one group at the .01 level of confidence. However, the actual mean gain was only 25 words a minute. Hence the question: (44) Is it ethical to take six weeks of student and instructor time to achieve an increase of only 25 words a minute--even though this increase is statistically significant?

The issue of measurement of reading rate and comprehension is far from resolved and various other ways have been proposed. Rankin (65) recommends the residual gain method of measuring rate; others recommend counting syllables rather than words per minute. In his doctoral study, Hardison (34) contends that the results of a college reading improvement program designed to improve rate and comprehension depends, in part, on the measuring instrument used.

Claims and advertisements

A third controversial issue involves claims and advertisements. Among the most widely known claims related to increasing reading rate are those made by the Evelyn Wood Reading Dynamics, Inc. Their advertisements (59) claim, among other things, to "at least triple your present reading efficiency or your tuition will be refunded." The course consists of eight 2½-hour sessions, one session each week, and the "average student reads 4.7 times faster than his starting speed with equal or better

comprehension." Their ads further state that "conventional rapid reading courses aspire to 450-600 words per minute. Most Reading Dynamics graduates can read between 1,500 and 3,000 words per minute, and many go even higher."

People who wish to read faster than 3,000 words a minute can enroll in the Optimation Rapid Reading Course, which has since been taken over by the Rapid Reading Foundation (3) of Chicago. "Most Optimation students, from children to senior citizens, learn to read at the rate of 5,000 words per minute," an ad (23) claims. "Many are able to read 10,000 words per minute--or more. One 20-year-old university student from Chicago learned to read at the incredible pace of 40,000 words per minute with increased comprehension!"

Yet even these rates are slow in comparison with those attained through a program described in the September and December 1964 issues of Florida Education (52, 53) and the January 1967 issue of North Carolina Education (51) and more recently in the Quincy, Illinois, Herald-Whig. (7) Through this program a five-year-old girl was taught to read 6,000 words a minute; a junior high school girl, 50,000 words a minute; and an 11-year-old boy reached 123,000 words a minute. The essence of Panoramic Reading, a speed and remedial reading program of Vearl G. McBride, is presented in the January 14, 1968, issue of the Quincy, Illinois, Herald-Whig. McBride says that his students are not skimming but are ". . .seeing all of the words and understanding them." He emphasizes the need to consider individual differences in teaching speed reading and recommends an eleven-step approach which includes holding the book at different angles "to determine which angle is best

for you," practicing seeing words fast, "with no comprehension or as little as you can manage, for four to six hours," and then "gradually begin on comprehension as well as speed, trying to answer one or two questions with each reading..." and "gradually increase your comprehension and maintain the best speed you can."

More conservative yet hardly less controversial claims are made by firms that deal more closely with the schools. The publisher (25) of the Controlled Reader, one of the more popular group pacing methods, claims that rate, comprehension, and flexibility (referred to by the publisher as variability) will be increased; however, no astronomical figures are presented. Similarly, the publisher (79) of a popular tachistoscopic method, the Tachist-O-Film Program, claims that rate and comprehension will be increased.

Consideration must be given to individual methods as well as group methods. The Rapid Reading Kit (38), an individual tachistoscopic method, will "double your reading speed--and possibly triple it, or better" as well as "improve your powers of concentration, comprehension, and retention." The Rateometer (30), a widely-used individual pacing method, will increase rate, comprehension, and flexibility, according to the accompanying brochure. Spache (75) has written forcefully against claims of various commercial firms.

A major controversial issue involves the claims made by the proponents of the different methods and programs. For nearly a decade now reading specialists have been arguing sporadically, but steadily. In the November 1960 issue of The Reading Teacher, Stauffer (76) referred to the Wood Reading Dynamics Method as "a magnificent ambition."

That issue contained Evelyn Wood's article, "A Breakthrough in Reading" (96). About a year later, in an article entitled "Is This a Breakthrough in Reading?" Spache (72), citing Stauffer's phrase, questioned the veracity of the claims of the Reading Dynamics Program. Spache, in turn, was criticized by Stevens and Orem (77), who, in their article, pointed to the preliminary results of the research on the Reading Dynamics Method then being conducted under the aegis of Stauffer. Three years later, this fledgling research emerged as a doctoral dissertation in which Liddle (50) found that students taught the Wood method increased their reading rate but "an analysis of the data . . .does not substantiate the claim that exceptional rates are obtained without a loss in comprehension." Similar findings were obtained by Taylor (81) who tested 41 graduates of the Reading Dynamics Program and found that their comprehension level was 45 per cent on a test composed of true-false items. Rovin (69), in a study involving high school students, and Thalberg and Eller (84), in another investigation, also found that the Reading Dynamics program produced rate gains but lower comprehension when compared with other ~~programs~~ methods. On the other hand, Adams (1), in an article entitled "The Phenomenon of Supernormal Reading Ability," cites twelve students who read over 1,500 words a minute with comprehension at 70 per cent or more on the Diagnostic Reading Test. He further suggests that satisfactory comprehension may be obtained at "ultra-high reading speed." (2).

On this point of comprehension, Ehrlich (29) writes in the April 1963 issue of the NEA Journal that he tested "a few graduates of the

Reading Dynamics Institute in New York City on a page of typewritten material and found that they 'read' at speeds close to 6,000 words a minute." Continuing, he notes that "to make certain they understood it, they all reread the page twice. This brought their average effective speed down to something over 1,700 words a minute. Still impressive -- except for one thing. What they had read had no meaning at all! It was a garbled amalgam I had put together from two different magazine articles. I had taken two lines from one article and two lines from the other alternately until the page was full. A mean trick, but I heard no more from these men about how fast they read." Ehrlich asks, "Is there nothing then to speed reading? Is it a complete hoax?" By no means. Practically every student I have met in my classes has been able to speed his reading without sacrificing comprehension." The article ends with his explanation of how this is accomplished.

Additional views on aspects of the Wood Method are presented by Wheeler and Wheeler (95), who write that "when thinking is unrestricted by excessive verbalizing, it is possible to read at rates of thousands of words a minute." Schale (70) discusses three vertical skimming methods, noting that Wood was not the first person to direct attention to rapid vertical reading. Moore (56), in his discussion of the skimming process in silent reading, suggests the need for "open-mindedness."

Perception

A fourth controversial issue involves perception. Writing in the same NEA Journal as did Ehrlich, Evelyn Wood (97) explains that "the Reading Dynamics method is a process of reading down the page, rather than across each line, using the hand as a pacer. The aim is 'visual

reading' with virtual elimination of subvocal speech. Readers who have to 'hear' as well as see words never read very fast because they slow down to listen."

Continuing, she writes, "The first problem, then, is learning how to let words and ideas come into the mind faster, and the second is learning how to get meaning from words and ideas without relying on 'inner speech.'

"The single word is no more important to the total understanding of what is read than the single film frame passing through the projector is to the understanding of the motion picture. As hundreds of single frames pass through a projector much faster than each single frame could be individually projected, they give the viewer the feeling, atmosphere, and detail of an entire film. Similarly, dynamic reading enables the reader to see a story much as the author thought it through."

These statements are disputed by Spache, Taylor, Pauk, Cleland, and the earlier writing of Woodworth and Schlossberg. Spache (72), observes that if we read "... most of the words on a page, it is impossible to read faster than 800 to 900 words per minute. This fact derives from the amount of time necessary for (1) the shortest fixation (approximately 1/6 to 1/5 of a second) during which reading occurs, (2) for the sweep or saccade to the next fixation (1/30 to 1/25 of a second), (3) for the return sweep to the next line (1/30 to 1/25 of a second), and (4) the maximum number of words that the eye can possibly see with a single fixation during continuous reading (probably 2.5 to 3 words)." These views are reinforced by Taylor (81) who observed that "through hundreds of studies involving eye-movement photography, it has been determined that no one has an average span that permits the

intake of a phrase at a fixation. The EDL eye-movement photography study to establish norms for reading performance shows that the average span for the college student reading 280 words per minute is only 1.1 words." In another study involving the photographing of the eye movements of graduates of the Reading Dynamics Institute, Taylor noted that no differences existed between those who did and those who did not take the Wood Program. Mrs. Wood, however, replies that existing eye cameras are not sophisticated enough to record her students' reading patterns. (39) Speaking at the Annual Meeting of the College Reading Association earlier this month, Pauk (63) claimed that there is no evidence to prove that our minds can even handle more than one word at a time. Woodworth and Schlosberg (98) recapitulate earlier work on perception and subvocalization. (Additional views on perception are contained in other writings of Spache (73), Tinker (85), Academic Therapy Quarterly, and Bulletins of the Orton Society (62).

Subvocalization

A fifth controversial issue involves subvocalization. Cleland's U.S. Office of Education-sponsored study (24) has shed new light and interest on the issue of subvocalization or implicit speech. The purpose of the study was to determine the incidence of vocalism among two groups of elementary school readers and to relate methods of reading instruction to vocalism in silent reading. Involved were 211 elementary school children. Findings indicated that (1) implicit speech is manifested to some degree among all subjects, (2) the better reader had more implicit speech that the poorer reader, (3) implicit speech decreased as rate increased, (4) the group who learned through the basal reader showed more implicit speech than the group who learned through

the combined basal and phonics approach, and (5) had better comprehension, (6), as implicit speech increased, so did comprehension, (7) material presented mechanically (e.g., metronoscope) produced more implicit speech than when material was presented non-mechanically, and (8) better comprehension. These findings appear in line with those of Edfelt (28) who investigated facets of this problem at the University of Stockholm.

Machines versus Non-Machines

A sixth controversial issue involves machines versus non-machines. Some may recall the short story entitled "The Reading Machine" which appeared in The New Yorker in 1947. Written by Morris Bishop (14), the story begins:

> "I have invented a reading machine," said professor Entwhistle, a strident energumen whose violent enthusiams are apt to infect his colleagues with nausea or hot flashes before the eyes.
>
> Every head in the smoking room of the Faculty Club bowed over a magazine, in an attitude of prayer. The prayer was unanswered, as usual.
>
> "It is obvious," said Professor Entwhistle, "that the greatest waste of our civilization is the time spent in reading. We have been able to speed up practically everything to fit the modern tempo -- communication, transportation, calculation. But today a man takes as long to read a book as Dante did, or--"
>
> "Great Caesar!" said the Professor of Amphibology, shutting his magazine with a spank.
>
> "Or great Caesar," continued Professor Entwhistle. "so I have invented a machine. It operates by a simple arrangement of photoelectric cells, which scan a line of type at lightning

speed. The operation of the photoelectric cells is synchronized with a mechanical device for turning the pages -- rather ingenious. I figure that my machine can read a book of three hundred pages in ten minutes."

During the rest of the tale, various problems involving comprehension and retention are discussed by the professors.

A review of another type of "literature," relating to the tachistoscope, reveals that Gilbert (32) found a "substantial correlation between the length of the fixation pauses students use in reading simple prose material and the speed with which the students can process tachistoscopically-presented stimuli resulting from single phrases." Buswell, (19) however, found only a .06 correlation between reading rate and a perceptual test involving the tachistoscope. Sutherland (78) found that "the group that had previous training in perceptual span made faster initial progress in improvement in rate rather than a comparable group that had not had training in perceptual span." However, Weber (90) found no significant difference in speed or comprehension between one group using the tachistoscope and another using textbooks.

Like the relatively few studies that have attempted to control the effects of the tachistoscope, the studies that have attempted to determine the effects of controlled pacing devices have yielded conflicting results. In separate studies, Taylor (80) and Wedeen (91) have reported rate increases with controlled pacing devices. However, the population samples using these devices in the studies of Thompson, (85) Barry and Smith (4) did more poorly than groups using other methods. ~~No significant difference in results from different methods.~~ No significant difference in results from different methods was the

conclusion reached in the investigations of Cason (22) and Glock. (33)

For U. S. Office of Education-supported research completed for a doctoral dissertation, the author (16) investigated the "effectiveness of four methods of increasing reading rate, comprehension, and flexibility." Involved were 255 freshmen at Syracuse University, 179 of whom were given instruction in increasing reading efficiency through one of four methods (e.g., tachistoscopic, controlled reader, controlled pacing, paperback scanning). Data indicated that all four methods produced significant ($p < .01$) gains in rate, the paperback scanning method being significantly superior to the other methods. No significant change appeared in comprehension level. All but the tachistoscopic method produced gains in flexibility. All results were maintained eight weeks after completion of instruction.

These results are similar to those obtained by Morgan (57) in his master's thesis, "The Relative Effectiveness of Mechanical and Non-Mechanical Methods in a Reading Improvement Program," completed ten years earlier at Oklahoma Agricultural and Mechanical College. Involved were 159 students from three sections of a reading improvement program at Oklahoma A&M College during Spring semester, 1956. Three groups were formed, one receiving supplementary tachistoscopic training, the second receiving tachistoscopic and controlled reader training, and the third spending an equivalent amount of time on reading practice and exercise work. The control group was from an introductory psychology class. Measuring instruments were the Nelson-Denny Reading Test and the Baker Words Per Minute Exercise. Morgan concluded that, regarding reading rate, all three

groups were superior to the control group with the non-machine group being superior to both the control and other two experimental groups. Bearing in mind the limitations of the study, Morgan further concludes that "time spent, in a reading improvement program, on practice reading exercises and vocabulary drill is more profitable to the student than the same amount of time devoted to training with mechanical devices."

Similar results were obtained by Hooprich and Anderson (41) in their study conducted jointly by the U.S. Naval Personnel Research Activity and the Navy Enlisted Scientific Education Program Preparatory School in San Diego.

These findings involving the use of mechanical devices are in line with results of Karlin's survey (45) of 13 studies involving machines and reading done during two decades. He found that of the 12 studies that measured natural reading against machine reading, 11 of "the groups that received training in the former neither equaled or surpassed the machine groups in rate of reading."

In a doctoral study completed in 1966 at Boston University, Duffy (27) found that an extra curricular reading clinic consisting of little but paced reading may actually be detrimental to college students with weaknesses in basic skills.

Following an investigation of the relevant literature, Tinker (87) suggests that training with the tachistoscope is of questionable value in increasing reading rate, although he observes that such training may produce other desirable effects, such as improved visual discrimination, greater attention, and heightened motivation. He also questioned the value of controlled pacing devices, noting that they are "no more

effective in increasing rate of reading than are less complicated but sound classroom procedures." He points out that these machines are often expensive, "their use becomes a ritual and tends to overemphasize the mechanical aspects of reading to the sacrifice of proper attention to the more important processes of comprehension and thinking," and there is usually little transfer to natural reading situations. Taylor (83), President of Educational Development Laboratories, has pointed out that these machines are intended as "aids to the teacher ... and not a complete approach."

A seventh controversial issue, adding to the confusion, involves the level of research on reading rate. ~~Most~~ Much of what is called research is merely a description rather than an experiment. Even in experimental research involving machines, most studies report the use of a combined methods approach; consequently, the problem of ascertaining how much each method contributed to the results is, of course, a weakness in these studies. The author's (13) selected review of studies on the effectiveness of various methods of increasing reading efficiency, which covers a forty-year period, reveals weaknesses sufficient to make one cautious in interpreting the results of many of these studies. The major weaknesses include lack of adequate control groups. Other weaknesses include those cited by Davis (26) and Bliesmer. (15)

Although there are a number of fine studies, one that in particular merits attention for the quality and thought-provoking implications is the Holmes-Singer study (40) based upon the substrata-factor theory of reading entitled Speed and Power in Reading. They write:

Reading is much more complex than is usually supposed. In the first place, it is a combination of speed and comprehension, and the subabilities needed vary according to which component is being stressed. In the second place, two individuals may read the same material with equal speed and comprehension by mobilizing quite different sets of neurophysiological, psycholinguistic, and audiovisual perceptual skills into a "working-system" marshaled to cope efficiently with the intellectual demands of the reading task. Finally, the composition of the working-system must change or shift as the child becomes an adolescent and later an adult.

It is now evident that minimum amounts of certain basic skills such as command of vocabulary, range of information, and the ability to listen with comprehension, are absolutely necessary for any degree of success in reading, regardless of the method by the child which is taught. But beyond these basic abilities a student may draw upon such unlikely factors as mechanical aptitude or elements of musical ability in order to compete successfully with his peers in reading.

In addition, some interesting facts emerge from the comparative analyses of various groups. Even when there are no differences in the reading achievement or intelligence of the two groups, boys draw upon a different set of abilities than girls.

Contributing to much of the present level of research is the ambiguity of terminology and the ~~inability~~ difficulty of educators and non-educators to communicate. This failure to communicate clouds the fact that existing differences may be

more apparent than real or, to be more precise, differences of degree rather than kind. Computing rate by counting syllables or words or pages or chapters reflect a difference in degree, not kind, and a close examination may reveal that there are more common than uncommon elements between various methods, such as the tachistoscopic and the paperback scanning. As Shores (71) observed, it would behoove researchers to capitalize on these commonalities.

Future investigations in this area have a great number of questions for which answers are needed. A list of these questions, with selected references, will be found in an article appearing in the Proceedings of the National Reading Conference. (8) An important question to add to the list involves individual performance within certain environments, Do certain individuals, for instance, because of their own needs and personalities make significant mean increases within one environmental setting in contrast to another setting? Further investigation between personality interaction and educational environment is needed.

In the 1968 Yearbook of the National Society for the Study of Education, Huus (37) writes:

> It is difficult to make evaluations of speed reading because of the variation in the level of difficulty of the materials, the format in which the material is presented, the motivation and purposes for reading, the quality of the comprehension questions used, the standards of comprehension accepted, and the background of the subjects. There is a place for rapid reading and also for skimming, but the two are not synonymous. The research to date does not discriminate sufficiently between them. Furthermore, follow-up studies to determine permanency

of gains have not been reported; therefore, until more information is available, claims of fantastic gains must be viewed cautiously.

Rosen (68) also cites weaknesses in his review of studies ~~on the value~~ involving the use ~~of~~ of mechanical devices.

Investigators will find additional information relevant to many of these questions through the annotated bibliography on speed reading (10) published by the International Reading Association and through the article, (9) "Ten Important Sources of Information on Speed Reading."

CONCERNING THE DESIRABILITY OF THE PRESENT EMPHASIS

Whether or not the present emphasis on speed reading is desirable is a personal matter. Emerging from this survey, however, are certain desirable practices which should be encouraged. One is the use of the eye exam; nearly half of those who responded to the questionnaire said some form of eye check was included in the early stages of their program, with the most popular screening devices being the Keystone Telebinocular (46) and the Ortho-Rater. (61) Another practice is the use of more formal testing procedures before and after instruction. A third practice that should be encouraged relates to the cooperation extended by commercial firms, corporations, college and university reading centers in providing information about their programs. Cooperation of this nature will lead to increased communication, and through communication -- real communication, with listeners as well as speakers -- there will come a clearer understanding of the problems clouding this facet of reading. And the clearer the understanding of the problems, the closer the realization of their solutions.

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