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A STUDY OF THE IMPROVEMENT OF READING RATE AND COMPREHENSION

LOUISE BROWN, A. R. LAUER AND EDITH UHL

PROBLEM

According to de la Mare (1) "reading may be one of life's inexhaustible pleasures . . . but may also become a mere habit, an escape from thinking, or a drug." A large part of education consists in interpretation of the printed page, especially after the learner passes the period of formal education. Gates (2) has estimated "that if every literate American over fifteen years of age who spends two hours or more a day in reading could be given training in reading for a month; the saving in time required for the nation's workaday reading at fifty cents an hour would amount to more than five billion dollars annually."

Most studies of reading have dealt with one or the other of two factors involved: (a) speed and (b) comprehension. The psychological act of obtaining meaning from the printed page is very involved, as in any process of symbolic interpretation. It is here contended that either of the two factors cited is in itself inadequate and that they must be combined to give a meaningful index of accomplishment. Such a concept is herein described as the *reading efficiency index* and is obtained by multiplying the rate in words per minute by the comprehension calculated in per cent. It compares favorably with commercial practices of assaying samples of ore, grain, foodstuffs or other materials to determine the net value of a lot or consignment. In reading one whose speed is 450 words a minute may have 95 per cent comprehension or he may have 10 per cent comprehension. While comprehension and speed are somewhat positively correlated, it is by no means a perfect relationship.

Studies carried on at Iowa State College lead us to suggest that each individual has an optional rate of reading, within any given period of time, at which he will obtain the most for his time and effort. The concept proposed is found useful in helping determine the approximate limits and scope of the optimum.

The immediate antecedents, or so-called causes, of poor reading need not be discussed here. Whether they are peripheral or central in origin is not germane to the present problem since it may be assumed that learning would take place in either case.

METHOD AND PROCEDURE

The results herein described were obtained from the regular reading classes at Iowa State College which are carried on for students needing or desiring the work during two one-hour periods a week for half a quarter. This usually allows about ten practice periods besides

the initial and closing test periods. The classes range in numbers from 10 to 35 although it is desirable to keep the number down to 15 or 20 whenever possible.

At the first period the enrollment is completed and a short form of the Iowa Silent Reading Test is used together with the Pressey Reading Speed and Comprehension Test. The Iowa Silent Reading is used only for check purposes. At the close of this period one of the Harvard Reading Films is shown and the purposes and uses made of it in the course are explained.

Each successive period during the training is divided into three parts; (a) a 15-minute discussion of specific suggestions for improving reading is made by the instructor, (b) one of the Harvard Reading Films is shown and an objective test on it is given immediately afterward, and (c) a mimeographed exercise of similar nature is used followed by a similar objective test on the content. The tests are all scored in class but are rechecked and recorded in the office.

The films are run at speeds suitable to the group, usually starting at 175 words a minute and gradually being increased to 350 words a minute. The rate is usually too slow for some at the beginning and too fast for others at the end. However, it is thought that pacing the speed of the readers will be more likely to improve reading than to let them dawdle along. For this reason the use of printed or mimeographed exercises is considered to be almost indispensable for use with classes in reading improvement.

Throughout the training period the practice aspect is emphasized with only a minimum of time given to the discussion of reading improvement. Each student keeps a log of his progress, starts a vocabulary list in the subject he finds most troublesome to read in his college work, and also reports the applications made at home to his regular reading-study program. These accounts are turned in to the instructor for grading. It should be further stated that speed alone is not emphasized but the reading efficiency index is given considerable attention. The student is asked to determine the rate at which he can read most efficiently, then gradually push his speed up in order to get the best possible results from his reading time. A goal of 200 words a minute is attained by most of those who take the work seriously.

RESULTS

Although studies of reading have been carried on at Iowa State College for several years as reported by Lauer (4) and Henry and Lauer (5), the present report describes the techniques used since the Harvard Reading Films have been used together with printed material in regular classes for reading improvement. Two typical experiments with these classes will be described under the respective headings.

EXPERIMENT I

Sixty-four students taking the course in remedial reading during the Spring Quarter 1943 were studied. Two criteria of evaluation

were used; (a) comparison of results from the first half and the last half on printed exercises and (b) comparison of the results obtained on the Pressey Reading Speed and Comprehension Tests, Forms A and B given at the beginning and at the end of the training period, respectively.

By using the method of evaluating group differences described by Snedecor (3) the following results were obtained:

Table I

Printed Exercises—First and Last Half of Training Period

Variable	Beginning	Ending	Gain	t-value
Speed alone	208.15	211.50	3.35	.40
Comprehension %	49.87	65.43	15.56	7.85
Reading efficiency	100.43	134.29	32.65	5.86

Table II

Pressey Tests—Forms A and B

Variable	Beginning	Ending	Gain	t-value
Speed alone	190.03	246.25	56.22	4.75
Comprehension	24.96	25.59	.63	1.13

In general the results show improvement in exercise material of comprehension to be statistically highly significant, whereas improvement on the Pressey Test shows that speed of reading is more likely to be improved. An inherent weakness in the Pressey measure of comprehension seems evident, however. As a 3-answer multiple-choice type of test, it probably is too easy since the lowest decile on the norms shows 22 out of 30 items. The highest decile shows 29 out of 30 items and thus, with a distribution skewed to the upper end, one might expect greater chance variations of scores. To equate these two problems, a second experiment was conducted to evaluate the data shown in tables I and II.

EXPERIMENT II

In the fall of 1943 a class of 29 was selected for evaluation on the basis of the efficiency index using the Pressey Speed and Comprehension Test. The comprehension score was converted into a percentage comprehension rather than the number right. Otherwise the experiment was set up in the same fashion as described for Experiment I.

Since there was a correlation of +.55 between the first and last efficiency scores, it was thought advisable to use the formula for group differences ordinarily applied to similar data. This formula is well known being written:

$$S. D. \text{ diff.} = \sqrt{S. D._{m_1}^2 + S. D._{m_2}^2 + 2 \times r \times S. D._{m_1} \times S. D._{m_2}}$$

The results are shown in table III.

Table III

Improvement in Efficiency as Measured by the Pressey Test

Variable	Before	After	Gain	Critical ratio
Efficiency Index	157	202	45	5.00

SUMMARY AND CONCLUSIONS

A study of two experimental groups of students in reading improvement classes of 64 and 29 respectively shows evidence of improvement in all cases. It seems that improvement is obtained in the area emphasized, either speed or comprehension. Some measuring instruments commonly used are held to be inadequate for showing actual results obtained. The following tentative conclusions may be drawn, subject to the limitations of the data and the number of subjects used.

1. It is necessary to equate speed and comprehension when making evaluations of reading improvement to obtain consistent results.

2. The efficiency index (speed x per cent comprehension) is a usable concept and should be employed in any evaluation of reading improvement. It tends to smooth out inconsistencies which may be introduced by systematic errors of one type or another, when either speed or comprehension are used separately.

3. A highly reliable difference was obtained in every group given remedial treatment where this index of improvement was used.

4. Improvements of from 30 to 35 per cent may be expected in five weeks of class work in remedial reading as described in this study. In general the better readers improve more than the poorer readers when absolute increases are considered. Individual cases of improvement may run as high as 250 per cent.

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