

## INFLUENCE OF TRAINING ON ABILITY TO SUMMARIZE

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The importance of summarizing has been emphasized again and again in practically all textbooks on methods of study. Whipple, in *How to Study Effectively*, says:

"Form the habit of mentally reviewing every paragraph as soon as you have read it. A properly constructed paragraph centers about one thought which may usually be epitomized in a single sentence or even a single phrase. Make sure that you can 'tease out' this thought. This habit of mentally summarizing by paragraphs might well be developed by teachers in the grade schools."

Germane and Germane, in *Silent Reading*, repeatedly stress the worth of summarizing and declare:

"One of the fundamental aims of teachers in charge of seventh and eighth grades, and even of high-school classes, should be to train pupils in making outlines and in writing concise summaries of lessons and lectures."

C. C. Crawford, in *Methods of Study*, presents a most clear and scientific discussion of the value of summarizing. He says:

"Boiling down ideas to a few words is a practical test of your understanding of the material."

"Students frequently have difficulty in applying themselves efficiently to the study of the text book lesson after it has been fairly well learned. Repetition of the same methods ceases to add very much in the way of additional mastery. Several things, however, can be done to make the continual application of time fruitful. You may focus your attention on those parts of which you know least; you may devote specific study to the parts previously underlined; you may make an outline if none was previously made, or if an outline was made you may check over and revise it."

"It would be well, however, for you consciously to apply the principle, that studying a textbook chapter by one method is subject to the law of diminishing returns, and that in order to get the most return for your time it is necessary to change the method of procedure after a reasonable amount of time has been devoted to the task."

Many similar statements were found in an examination of a large number of standard texts on *How to Study*. The student is led to expect by inference or direct statement that he has only to be willing to summarize in order to secure superior results. Summarizing is painted as the primrose path to education.

Recently, however, a number of psychologists have begun to question the value of this emphasis on summarizing. Charles E. Germane has tried many experiments in his effort to put this problem on a scientific basis. In one of his tests a group of children was divided into two groups of nearly equal comprehension ability. Each group spent thirty minutes in studying a seven-page article, and at the end of that period both groups were subjected to the same rigid test. Group A, the summarizing group, was told to read the article once and then on a form supplied them to write the main ideas of each paragraph. The B, or non-summarizing group, was told to read and reread the article as many times as they wished in the time allotted. In the test given at the end of the 30-minute period two types of questions were asked, "reason" questions and "memory" questions. The results of this test showed that re-reading was more economical than the written paragraph summary when each group was given an equal period of study. This conclusion was substantiated by a recall test given eight weeks later.<sup>1</sup>

Three groups of Germane's experiments deal with the *Value of the Controlled Summary as a Method of Study*.<sup>2</sup> In the first group of these experiments the summarizers were asked to read the article once and then study the selection farther by finding and writing out answers to a list of questions given them at the end of this first reading. The non-summarizers were told to re-read the article as often as possible in the given time. At the end of the 25 minutes both groups were tested on the questions that the summarizers had used during the study period. Results of this test showed that the summarizers excelled from 5% to 26%.

In the second group of experiments, conducted in the sixth and ninth grades, the summarizing group was given summary questions at the beginning of the hour. They studied these questions as they read the article once, and then wrote out the answers. At the end of the study period both groups were tested as before, and the results showed a superiority for the summarizers ranging from 0% to 17%.

In the third group of this series of experiments Germane made tests on the value of the controlled mental summary. For this experiment the summarizers were told to read the article once. They were then allowed to spend the remainder of the period in finding answers to given questions and were instructed to retain them mentally, not to write them. Non-summarizers were to proceed just as they had done in the other experiments. The results showed that the summarizers excelled by 30.5%. Evidently omitting the writing of the answers was an improvement.

<sup>1</sup> Germane, Charles E. "Value of the Written Paragraph Summary," *Jour. Ed. Research*, 3:116-23, 1921.

<sup>2</sup> Ph. D. Thesis, Chap III (not published).

It will be noticed that in all of these tests both groups were given the same amount of time for study. It also seems to be important, for purposes of interpretation, that in the controlled summary tests the questions used for examining both groups were the same as those that the summarizers used during the study period, and hence one would expect the summarizers to excel. Conclusions of Germane's tests have seemed to show that re-reading is a more economical method of study than the written paragraph summary when both groups are given equal study time. They also show that placing in the hands of students a set of questions, the answers to which constitute a summary, increases the relative efficiency as compared with re-reading.

Observations of these tests also brought out some facts that seem to me pertinent to the problem. Above all else, Germane observed that the pupils did not know how to summarize. They wasted time on words and showed an inability to differentiate between the essential and the non-essential.

Professor H. A. Peterson, of the Illinois State Normal University, in experiments in elementary psychology classes, also found that the non-summarizers excelled the summarizers. In his experiments he allowed each member of each group to take all the time needed, but in figuring results the scores were reduced to a 20-minute basis. Results for the fall term of 1927 were: for the non-summarizers, 189 points average score per 20 minutes; and for the summarizers, 159 points. An examination of the results of these experiments leads one to ask whether, in spite of all the textbook urgings, students have been taught to summarize even by the time they reach the freshman year in college.

The purpose of this experiment was to measure the effect of training on the ability of high school juniors to summarize. The parallel group method was used. To form these groups a test was given to a junior literature class in the University high school of the Illinois State Normal University on a six-page article on "The Rise of the Monastic Orders in Western Europe," taken with modifications from Emerton's "Introduction to the Middle Ages." It was intended to be a test of the pupils' ability to comprehend and summarize what they read. Twelve minutes were allowed for study of the article and eighteen minutes for a written essay summary. Results of this test are shown in Table I. By pairing these pupils two groups of nine members each were obtained.

One of these groups was taught by a competent student teacher and continued with its literature work in the ordinary manner. When the tests were given, this group constituted the control or non-summarizing group. The other group was taught by the author and covered the same literature work. However, the teacher of this group emphasized sum-

marizing. During the 26 days that the experiment was carried on, this group had an average of 11 minutes' training each day in formal summarizing. This training was given in many different ways. At first there was no emphasis placed on the time element. Sometimes, as part of the outside assignment, students were asked to write in one paragraph the thought of a chapter of the assignment. In all of this summarizing, stress was placed on the economy of using the right word. Often in class various pupils were asked to summarize a paragraph. Their summaries were written on the board and compared, being judged on the basis of comprehension and condensation. At other times the summarizing was oral. Pupils were also shown the value of checking or underlining important words or phrases during first readings.

Table II shows the results of the first test, which was given to the two groups on November 4, 1929, after the summarizing group had had only 8 days of training. The material used for this test was a six-page article on "Peanut Growing For Profit," taken from Peterson's "Experiments in Educational Psychology." Grades were based on the answers to the questions accompanying this text. The scores in the table are the averages of two scorers. For this test the non-summarizing group was instructed to refrain from summarizing during study of the article. They were told to take all the time needed but to remember to use study time economically since all scores were to be reduced to a 20-minute basis. The study time of each pupil was recorded in minutes and seconds by an electric stop-clock. The summarizing group was told

TABLE I  
FORMATION OF EQUIVALENT GROUPS<sup>1</sup>  
Based on "Monasticism"

Pupil	Score	Pupil	Score
B. F.....	12.33	J. N.....	11.21
J. P.....	11.	E. R.....	11.4
E. M. B.....	10.4	M. S.....	9.6
E. S.....	10.	C. B.....	10.45
M. C.....	9.45	M. C.....	9.69
J. B.....	8.54	H. R.....	8.54
M. E. R.....	7.25	L. M.....	6.33
P. C.....	4.12	H. P.....	6.8
M. C.....	1.66	H. C.....	1.66
Average.....	8.31	Average.....	8.41

<sup>1</sup>The scores in the table above are the averages of two scorers. Essay reproductions of the material studied were required. Papers were scored for excellence of condensation and for number of points reproduced. Then the two were averaged. The test was given October 4, 1929.

TABLE II  
 COMPARISON OF SUMMARIZING AND NON-SUMMARIZING GROUPS  
 After 8 days of training

Pupil	Summarizing group			Non-summarizing group			
	Total study time	Summarizing time Min.      %	Total score	Score per 20 min.	Total study time	Total score	Score per 20 min.
E. S.	12.25	3.25	89.5	146	12.75	87.5	136.
B. F.	14.66	4.17	75.	82.2	12.08	84.25	138.
J. B.	12.33	2.5	73.5	119.4	11.75	81.5	138.
E. M. B.	8.5	3.4	72.5	170.4	7.	80.	228.
M. E. R.	15.66	4.	62.	78.	10.75	62.5	116.
P. C.	12.33	3.33	61.25	108.	9.	61.	134.
M. C.	15.	5.	58.	64.	9.5	54.5	114.
J. P.	12.5	6.	51.	81.6	8.4	47.5	113.
M. C.	9.83	4.	44.5	84.4			
Average.....	12.56	3.96	65.25	103.8	10.15	69.84	139.6

TABLE III  
COMPARISON OF SUMMARIZING AND NON-SUMMARIZING GROUPS  
After 24 days of training

Summarizing group				Non-summarizing group					
Pupil	Total study time	Summarizing time		Total score	Score per 20 min.	Pupil	Total study time	Total score	Score per 20 min.
		Min.	%						
B. F.	12.	2.	25	87.7	146.	M. C.	8.	78.2	195.4
J. B.	12.5	2.	16	75.5	120.	C. B.	9.	71.8	159.4
M. E. R.	13.25	3.	22	73.	110.	J. N.	14.08	83.	117.8
E. M. B.	7.	1.	14	66.	188.	H. P.	13.08	63.	96.
M. C.	12.25	3.	24	66.	106.	M. S.	15.	68.5	91.2
P. C.	10.	2.	20	64.7	129.4	H. C.	13.08	73.	111.6
E. S.	12.	2.	16	66.5	110.	E. R.	12.	57.5	95.8
M. C.	13.	3.25	24	61.5	94.	H. R.	10.08	37.	73.4
J. P.	11.75	3.	25	51.	86.				
Average.....	11.53	2.4	19	67.9	121.	Average.....	11.79	66.5	115.

to read the article once and then to summarize the material with the text before them. Both the reading time and the summarizing time of each pupil were recorded. Scores of each group were reduced to a 20-minute basis.

In this first test the non-summarizers excelled the summarizers, the latter making a score of 103.8 and the former a score of 109.6 per 20-minute period. Also the non-summarizers spent only about  $\frac{5}{6}$  as much time as the summarizers. The summarizers spent about a third of their time in summarizing the article.

A second test was given December 6, 1929, after 24 days of training. The material for this test was taken from Bowman's "South America." The article used was entitled "The Incas." It was about the same length as the other articles used. Grades were based on answers to questions. These questions were made out by Professor Peterson and the author. They were intended to test the student's ability to comprehend and summarize. Results are shown in Table III.

Here the summarizing group excelled the non-summarizing group by a score of about 121 to 115 per 20-minute period. This indicates a decided gain in ability to summarize as a result of training. A comparison of the two tables also shows that the summarizers had learned to be far more economical in their use of time. In the first test the summarizers spent more time in the study of the article than the non-summarizers did, while in the last test the average total study time for the two groups was practically the same. Also in the first test the summarizers spent 31% of their time in summarizing, but in the last test they spent only 19% of the total study time in summarizing.

These groups were too small and the number of tests was too few to make this experiment thoroughly scientific. The results need confirmation by further experimentation. Nevertheless, they seem to suggest that with training summarizing can be made to pay. From the experiments of Germane and Peterson and the author's first test, one is almost forced to believe that students have not learned to summarize even by the time they have reached the university, and also it seems conclusive that untrained summarizing is not profitable. However, after 24 days of training these high-school students were able to excel the non-summarizing group by an average 20-minute score of 121 to 115 and to bring their average study time down to equal that of the non-summarizers. This shows that they had learned time economy. These experiments seem also to suggest that the statements in the text-books on "How to Study," while on the whole correct, need revision. Such texts should recognize the law of diminishing returns and should point out to the student the need of specific training in summarizing.