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The effect of daily quizzes on achievement

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THE EFFECT OF
DAILY QUIZZES
ON ACHIEVEMENT

by

Lester Henry Levine

Thesis submitted for the degree of
Master of Science

MASSACHUSETTS STATE COLLEGE

Amherst, Massachusetts

June 1937

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INTRODUCTION

Within the past thirty years there has been a gradual but constant improvement in a new type of "tool" for teachers and school officers. As yet no one name has been accepted as a standard for this tool but the name most frequently used is that of "objective test". The objective test is a general name for a type of test characterized by objective marking and a rather large sampling. Objective tests are of two general types; standardized and unstandardized. Among the names given to the first type are objective, new-type, "short-answer", and scientific; the unstandardized include those already attributed to the standardized plus teachers' objective, and informal. In order to avoid confusion, the two types are hereinafter referred to as (1) standardized and (2) informal. When objective testing first began, the procedure was applied to such elementary school subjects as handwriting and spelling. The results of these tests led to their standardization and to the extension of the procedure to all the elementary school subjects and practically all the high school subjects. Recently, however, with the spread of the movement, teacher-made tests have appeared and more and more are being considered an essential device in classroom procedure.

Objective testing has not been confined within narrow limits, with the result that the following distinct types of tests and scales have been developed; the list is not all-inclusive but it does contain the main types.¹

1. Intelligence tests.
2. Prognostic school tests.
3. School achievement tests.
4. Physical ability tests.
5. School building rating scales.
6. Medical examination tests.
7. Teacher Rating Scales.

All of these may be found in considerable quantities in standardized form. This study is particularly interested in the school achievement tests. For a description of other types the reader should consult Hunt,² Thorndike,³ Husband,⁴ to mention a few.

¹ Douglass, Harl R., "Modern Methods in High School Teaching" (Boston: Houghton Mifflin Co., 1926), P.393-4.

² Hunt, Thelma, "Measurement in Psychology" (New York: Prentice Hall., 1936).

³ Thorndike, E. L., et al. "The Measurement of Intelligence" (New York: Bureau of Publications, Teachers College, Columbia University, 1927).

⁴ Husband, Richard W., "Applied Psychology" (New York: Harper and Brothers, 1934).

Achievement tests are devised to measure the proficiency and progress of pupils in school subjects. These tests are generally accepted in most school systems and form a valuable part of the testing program. In view of the firm place held by the so-called traditional or essay type examinations in the testing program, the achievement tests had to have some outstanding characteristics in order to effect this acceptance. Two of these may be noted: (1) the objectivity of the scoring and (2) the reliability of the tests. With regard to the first characteristic, it makes very little difference who does the scoring when the achievement test is used. Marks assigned by different persons on a particular paper will not vary with any degree of significance, because of the care that has been taken to devise a system of scoring that prevents the highly variable human element from having an effect on the scoring of the papers. In fact, many tests do not require the services of a teacher in order to be marked; the tests may be scored by ordinary clerks or by the pupils themselves. In the second place, it is claimed that there is a high reliability for the new type of examination over the traditional type. Ruch⁵ in one place

⁵ Ruch, G. M., et al., "Objective Examination Methods in the Social Studies" (Chicago: Scott, Foresman and Company, 1926).

found that the average coefficient of reliability for the new types was .65, while the traditional type yielded an average of .42. Gates⁶ obtained an average coefficient of reliability of .54 for true-false tests as compared with .35 for essay examinations. Reasons for this higher reliability might be found in the fact that students are relieved from the necessity of attention to penmanship and composition. Considerable effort and time are expended in writing so-called "filler" words (the, an, and, for, etc.). Then, too, wandering and verbosity are eliminated, with the natural result that there is increased definiteness.

Douglass in speaking of the reliability of the achievement tests makes the statement that "if for no other reason, the increased number of items, operating to reduce the relative influence of chance mistakes, would contribute quite heavily to increased reliability."⁷ In short, there is increased sampling as a result of the large quantity of questions.

"To sum up the situation, there seems to be little reasonable doubt that if new-type tests and discussion examinations are constructed with the same degree of care and expertness, and if the pupils spend the same amount of time

⁶ Gates, A. I., "The True-False Test as a Measure of Achievement in College Courses" Journal of Educational Psychology, 12: 276-287, May 1921.

⁷ Op. cit., P. 437

working on each, the results on the former will be decidedly more reliable than those on the latter."⁸

The foregoing characteristics of the achievement tests have come to be recognized by educators. The natural result has been a ready acceptance of the value of achievement tests. Although the tests were originally designed for purposes of measurement, many other types of uses have been devised. Douglass⁹ lists what he believes to be the most important as follows:

1. In surveys of schools and for other purposes.
2. In the supervision of instruction and the rating of teachers.
3. In diagnosing weaknesses in learning.
4. In motivating instruction.
5. As a basis for school marks.
6. As instruments of measurement for experimental purposes.

Douglass' list is self-explanatory, but as the present study concerns the use of the achievement tests for

⁸ Odell, C. W., "Traditional Examinations and New-Type Tests" (New York: The Century Company, 1928), P.193.

⁹ Op. cit., P.398-9.

motivating instruction and as instruments of measure for experimental purposes, these two uses will bear some elaboration.

Students, it is felt, prefer to have a succession of easy-to-reach goals rather than one rather distant goal. The same amount of material has been covered in both cases but the procedure in the first instance has been more conducive to study. The reason seems to be that a goal once attained tends to act as a stimulus or motivating force toward the next goal. When there is but one end or goal used in the learning process, the interest of the students has more opportunity to wane. Consequently, student interest in classwork is more likely to exist in the system that utilizes the several-goal motivating process. Schools would not then settle down to a drab, routine testing program--the result of an unmotivated learning process. It is true that a traditional test administered at intervals might produce the same results as would be expected under similar conditions from the achievement tests. However, the presence of so much subjectivity in the traditional examinations seems to exclude such a possibility. Then, too, standardized achievement tests enable the students to compare their results not only with the members of their own class and school, but with students in other schools, in other

states. Thus, a more complete analysis of the students' progress is available; motivation would more likely be present with such enhanced opportunities for comparison.

The other use to be discussed is the opportunity that achievement tests offer for experimental investigation. In view of this characteristic the possibility exists, it is believed, of substituting accurate, scientific measurements for guesswork in measuring school achievement. This unique quality of achievement tests presents the opportunity to evaluate on an objective basis many current educational principles and methods. Consequently, it is no longer necessary that educational theories be evaluated solely on the basis of opinion, although in many instances that is the only method that is possible.

The characteristics of the achievement tests, however, are not confined solely to advantages; these tests have definite and logical limitations. Where these limitations definitely affect the present study, attempts will be made in later chapters to show wherein these limitations or dangers apply and what steps were taken to reduce them to a minimum. Among the more important limitations of the achievement tests there exist the following:

1. The important outcomes of teaching are not always measured.
2. The tests are of such a nature that guessing can and does play a large part.
3. The tests measure memory only.
4. Language training is neglected.
5. Students object to these tests.
6. Time and money are required for the preparation of the tests.

In the course of this introductory discussion attention has been focused on the standardized achievement tests at the expense of the informal tests. Such a procedure would naturally be misleading for "there can be no doubt that these types of measurement [the informal] are increasing in favor even more rapidly than are standard tests..... They show signs of their inroads into the practices of even the most conservative examination bodies."¹⁰ The informal type is really a hybrid, for "it represents the objectivity of the standard test without the requirements of experimental study and standardization."¹¹

Although many of the limitations set forth against the standardized achievement tests apply to the informal tests,

¹⁰ Ruch, G. M., "The Objective or New-Type Examination," (Chicago: Scott, Foresman and Company, 1929).

¹¹ Loc. cit.

this very lack of careful standardization renders some of the limitations non-applicable. For example, the informal test may be produced almost as inexpensively as the traditional type examination. A simple hectograph machine makes several copies very readily and with slight expense. Then, too, these informal tests have a high degree of adaptability to local conditions--that advantage has always been claimed for the traditional examination. The informal tests fit another requirement of good examinations: they make an excellent sampling test of activities which go on daily in the classroom.

The rapid increase in the use of these informal tests could mean but one thing: educators considered that this type of test had some value. It is felt that the time is ripe for a study on the secondary level to determine just what is the extent of this value in terms of school achievement. Granted that the informal tests secure marks on an objective basis, is their value confined to that contribution? Marks should probably not be the sole objective of examinations, so that objectivity of marks without any other valuable contribution might hardly justify the informal examinations. One of these contributions might very well be motivation--can informal tests serve as motivating forces in educational endeavors? The present

study attempts to answer that question with the use of a five-minute-daily-quiz testing program. In the light of that situation the questions to be answered are: Does a five-minute daily quiz have a motivating effect on pupils? Does it have an effect that will demonstrably improve their achievement?

Chapter II

Related Literature

The present study covers a wide range of material to which experimentation and discussion have been devoted. In order to keep this review of related literature within reasonable bounds, it was found necessary to select that material which had the most bearing on this study. This selected literature has been classified into three distinct groups; namely, (1) that which concerns the mechanics of the study, (2) views relative to the motivation and retention value of tests, (3) experiments of a nature similar to the study. The related literature will be reviewed in accordance with the grouping arrangement.

On the basis of replies to a questionnaire sent to superintendents of schools and directors of research in public schools, Worcester¹² came to some definite conclusions regarding the acceptance of standardized testing. Among other tendencies the replies indicated a belief that there are real values to be found in achievement tests. In addition, a very important phase of a

¹² Worcester, D. A., "Has Standardized Testing Been Over-Emphasized?" School Executives Magazine, 51:467-9+, July 1932.

school's program should be the same and proper use of these tests. The same writer on another occasion¹³ discussed the validity of objective testing. He felt that the objective type test is valid in that it constitutes a type of exercise with which a pupil is familiar both in the classroom and in "real life" itself. These views are merely opinion but they are the views of a man who has devoted considerable effort to the study of objective testing.

In an investigation of high school seniors studying American History Bloomfield¹⁴ found that class size made no appreciable difference in the attainment of pupils. According to the results of that experiment, so far as pupil accomplishment is concerned, a class of thirty pupils is as effective as a class of fifty-five. Another important consideration is the subject of essay as opposed to objective tests in United States History. Weaver and Traxler¹⁵ as the result of an intensive study report that objective

¹³ Worcester, D. A., "On the Validity of Testing," The School Review, 42:527-31, September 1934.

¹⁴ Bloomfield, L. S., "Class Size in Senior American History" Historical Outlook. 22:107-8, March 1931.

¹⁵ Weaver, Robert E., and Traxler, Arthur E., "Essay Examinations and Objective Tests in United States History in the Junior High School" The School Review, 32:689-95, November 1931.

tests and essay examinations "have about equal merit in measuring the understanding of pupils in United States History." Therefore, "since their (objective tests) use conserves the time of the instructor and the class, the evidence indicates that objective tests have a legitimate place in the testing program in United States History....." Everett¹⁶ strikes a similar note when he states that objective tests are the best discoverer of pupil attitudes. He shows how to construct objective tests that will measure a pupil's true feelings on a particular situation in American History. The work was done in answer to the criticism that American History is taught not as history, but is "merely a vehicle for the emphasizing of certain so-called civic virtues." Wilson¹⁷ states that "continuity knowledge" is a valuable part of history training, and he gives directions for making and scoring tests that will test the pupils' ability to place events in their chronological order.

¹⁶ Everett, Samuel, "Objective Tests the Best Discoverer of Pupil Attitudes," Historical Outlook, 20:335-7, November 1929.

¹⁷ Wilson, Howard E., "The Continuity Test in History-Teaching," The School Review, 34:679-84, November 1926.

The second group concerns views relative to the motivation and retention value of tests. For example, Brown¹⁸ found as the result of a well-controlled experiment that "it is reasonable to expect some increase in score if the results of previous work are known." From an experiment conducted by Middleton¹⁹ the learning process was found to be greatly facilitated when the subjects were aware of the fact that they would be called upon to reproduce that which they had been assigned to do. In a study of a similar nature Schutte²⁰ found that for normal-school students merely the expectation of a final examination caused a significant difference between the scores on the final examination of the group expecting the examination and of the group not expecting the examination. It is significant to note that both groups were equally proficient in intelligence tests

¹⁸ Brown, Francis J., "Knowledge of Results as an Incentive in School Room Practice" Journal of Educational Psychology, 23:532-52, October 1932.

¹⁹ Middleton, Warren C., "Re-emphasizing the Place of Interest and Motivation in the Learning Process," Education, 52:491-6, April 1932.

²⁰ Schutte, T. H., "Is There Value in Final Examinations?" Journal of Educational Research, 12:204-213.

and short quizzes. From a study by Pechstein²¹ it might be assumed that the learning process is enhanced when fairly frequent quizzes are given in conjunction with periodic tests of a longer and more inclusive nature. He found that both massed and distributed effort should be utilized in combination rather than either one or the other of the two used independently. The foregoing assumption might be acceptable on the theory that frequent tests would result in distributed effort on the part of the student, while the more inclusive periodic test would require massed effort. However, Mills²² and others in a study of the study habits of high school students found that students followed no definite plan. As the result of a questionnaire the following conclusions were among those reached:

- "1. The study-habits questionnaire used shows a high degree of reliability and some evidence of validity.

²¹ Pechstein, L. A., "Massed vs. Distributed Effort in Learning," Journal of Educational Psychology, 12:92-7, February 1921.

²² Mills, Henry C., Eckert, Ruth E., and Williams, Muriel W., "Study Habits of High-School Pupils," The School Review, 42:755-61, December 1934.

2. As measured by this instrument, scholastically superior pupils in high school possess different, and presumably better, study habits than pupils of low achievement, notably with respect to those techniques involving a higher type of study morale, such as effort, curiosity, and perseverance."

An experiment conducted by Bassett²³ has several interesting conclusions in regard to the retention of historical material, even though the experiment dealt with seventh-grade pupils as subjects.

- "1. In the light of the evidence of the present study, some VII B pupils remember history knowledge at one time interval, forget it at another, and yet recall it later.
2. History knowledge which is concrete and personal tends to be well remembered.
3. Heroes and historic episodes which have received considerable emphasis in teaching are retained after long time intervals.....
4. History knowledge is forgotten by seventh-grade

²³ Bassett, Sarah Jane, "Remembering and Forgetting of Various Kinds of Historical Knowledge by VII B Pupils," Historical Outlook, 21:169-72, April 1930.

pupils if it leads to a confusion of persons and places, as well as to an inability to grasp and retain abstractions and technicalities of legal documents and governmental procedure.

5. Political and economic phases of history are forgotten more easily than social and military history....."

The third and last group in this review of literature is that of experiments that are similar in nature to this study. Kulp²⁴ at Teachers College, Columbia University, used his class of graduate students enrolled in Educational Sociology for the purpose of discovering the value of weekly tests. After a split experiment, first seven weeks, then eight weeks in length, he found that even in the case of mature graduate students the weekly tests tended to increase the amount of learning. However, there are several points to be considered in evaluating his conclusion. He had too few subjects, and the intelligence of the subjects was not considered, in that the control group was composed of "high-grade" students, while the opposite was true of the experimental group. Then, too, he had several variables, and these were not considered in the conclusion

²⁴ Kulp, Daniel H., "Weekly Test for Graduate Students?" School and Society, 38:157-9, July 29, 1933.

except that he labels it as "suggestive". The control group because of the very nature of the second half of the experiment lacked any incentive to study, in that this group had been excused from the quizzes as a reward for their good work in the first half of the experiment. The experimental group had more incentive than just the weekly quizzes: it naturally would attempt to redeem itself for the poor showing in the first half of the experiment, inasmuch as the tests were used for grading purposes. That premise is all the more plausible, since both the experimental and control groups took the course together. If true, this idea is further proof of the motivating power of tests.

Keys²⁵ using a class in Educational Psychology at the University of California reached among other conclusions the following in regard to the influence on learning and retention of weekly as opposed to monthly tests:

- "1. The same tests administered in the form of weekly rather than monthly examinations result in a mean performance which is higher by twelve per cent; and this difference has a high statistical significance.

²⁵ Keys, Noel, "The Influence on Learning and Retention of Weekly as Opposed to Monthly Tests," Journal of Educational Psychology, 25:427-36, September 1934.

2. Retention by the weekly-tested group is some seven per cent superior, as measured by a comprehensive examination given without warning, from five to thirteen weeks after the corresponding periodic tests.

3. On the regular final examination, however, taken after the usual intensive preparation or 'cramming', no such differences appear."

His experiment, although seeking to discover the influence of tests, was greatly affected by types of assignments. He varied the time covered by the assignment, and, in fact, during the last third of the experiment the only variable was the type of assignment. Thus, his experiment was really three rather than one, and in that case each was too short because the entire investigation covered but twelve weeks. Another defect is to be found in his method of pairing, since it was done merely on the basis of sex and the results of a pre-test. There is no attempt to pair on the basis of ability, a procedure which seems necessary even in such a highly selected group as college students. Furthermore, the experiment dealt with two hundred and eighty-six subjects, and in such a large number there would probably be some marked variation in student

ability. Questionnaires administered at the end of the entire investigation showed "that there occurred in the course of the semester a highly significant growth in conviction that the weekly tests were more advantageous than the monthly examinations. An important point to be noted as a result of this experiment is the conclusion that although the learning process was apparently enhanced by the weekly tests "no such differences appear" on the regular final examination.

Hertzberg and others²⁶ in an experiment to determine the value of objective tests as teaching devices reached about the same conclusions as did Keys in the foregoing investigation. Hertzberg used sophomores in the Educational Psychology Department of Colorado State Teachers College at Greeley. As a result of the experiment it was observed that those taking the objective tests were superior in achievement to those who did not use them. However, on the final examination the following statistical results were obtained:

²⁶ Hertzberg, O. E., Heilman, J. D., Leuenberger, H. W., "The Value of Objective Tests as Teaching Devices in Educational Psychology Classes," Journal of Educational Psychology, 23:371-80, May 1932.

Table I

"Comparison of Scores Made by Control and Experimental Groups on the Instructor's Final Examination in an Experiment to Determine the Value of Objective Tests as Teaching Devices in Educational Psychology at Colorado State Teachers College"

	Control	Experimental
Number	86	86
Average	109.48	107.38
Signa of average	1.58	1.30
Standard Deviation	14.69	12.08
Coefficient of variability	13.42	11.25
<hr/>		
Difference (obtained averages)		2.09
Signa (difference obtained averages)		2.05
Experimental coefficient		.37

On the basis of the results in Table I the experimenters concluded that "this study would indicate that objective tests used as aids to general study throughout a course have little value for permanency of retention..... Objective tests do not aid the students in achievement that requires delayed recall."

Turney²⁷ conducted an experiment in an Educational Psychology course in order to learn whether "students do better when they have frequent opportunity to determine their relative grades or standings in a class." The tests were given to the experimental group each week, and each student received his own score on a slip of paper. The complete statistical results may be seen readily in Table II.

²⁷ Turney, Austin H., "The Effect of Frequent Short Objective Tests Upon the Achievement of College Students in Educational Psychology," School and Society, 33:760-2, June 6, 1931.

Table II

"Showing Mean Scores on Pre-test, Final End Test and Mean Gains, the Differences between these Means and the Reliability of the Differences"

	Experimental	Control	Difference	Standard deviation of the Difference	Difference Standard Deviation	Chances in 100 that difference is a true difference
Pre-test	85.2	108.1	22.9	6.32	3.62	100
Final end test	212.5	212.4	.1	7.24		0.0
Gains	127.3	104.7	22.6	8.04	2.81	99.75
Number	40	28				

The investigator reached the following conclusions:
"Certain limitations are evident in the experiment. The small number of cases is probably the most important one, but the results can hardly be considered unreliable on that account.....It is evident that the experimental section overcame its handicap, but no more. Just how important is a difference in gain of twenty-three points on a test with an obtained average of two hundred and twelve is of course not known. It can only be said that the experimental group gained the twenty-three points more than did the control, and that this gain was apparently due to the motivating effect of the short quizzes. Perhaps the most important outcome is the fact that the control group received so little testing for a whole semester and lost no more than it did....." However, it seems odd that Turney did not question the value of an experiment in which the pre-test showed a large difference between the mean of the control group and the mean of the experimental group. The value of such an experiment is all the more uncertain in that both groups attained exactly equal means on the final end test. It might be argued that the initial difference between the two groups was caused by possible overlapping from previous courses; the members of the control group (the group with the higher mean) might have studied similar

material in the course of other subjects. On the other hand, the pre-test might have been devised to compensate for this rather obvious difficulty.

A general conclusion from the foregoing review of related literature seems to be that objective testing does have a significant place in teaching American History. Apparently, achievement tests do measure pupil attitudes. From evidence presented it appears that informal tests can be prepared so that they will be effective tools in measuring objectives of American History. Investigators find that these short objective tests do enhance the learning process during the time the tests are given. However, permanency of retention is to be questioned in that the control and experimental groups show about equal accomplishment on the basis of a final examination--in one case the control group exceeded the experimental. The experiments on motivation were conducted in college courses, so that the results obtained from high school classes might differ. In fact, one indication seems to be that scholastically superior pupils in high school will study better than pupils of low achievement regardless of attempts at motivation.

Chapter III

Statement of the Problem and Procedure

Statement of the Problem: Does a daily five-minute quiz affect scores made on achievement tests in United States History in grade twelve in the West Springfield High School?

The Town: The West Springfield High School is located in the town of West Springfield in the state of Massachusetts. The town is just across the Connecticut River from Springfield and is a popular residential section for that city. However, the town has many industrial plants as well as considerable effort devoted to market gardening. It is apparent that the population (about 17,000) is not confined to one particular interest, and, consequently, the pupils will come from all types of homes. The high school consisting of about five hundred pupils may then be said to be a typical one.

The subjects and groups: The subjects, thirty girls and thirty boys were the members of four senior classes taking United States History. In all, five senior classes were taking the course, but it was deemed advisable not to interfere with the work of the fifth one, inasmuch as it was the college group. Although the ideal situation would have

been a single class for the control group and another for the experimental, the pupils' schedules prevented any such arrangement. By arbitrary selection sections B and E were designated as the control group, and the other pair, sections C and D, as the experimental. Not all the pupils, however, in these classes were participants in the experiment; the paired pupils of each group were the actual participants. There was no differentiation made between the participants and the non-participants, so that not even the teacher herself was aware of the identity of the pupils in the experiment. This arrangement precluded the possibility of any intentional or unintentional teacher influence of any nature on the experiment. In all, thirty-three pairs were involved; one member of each pair being in the experimental sections and the other in the control sections.

Pairing of the subjects: Pairing of the pupils was done on the basis of

- (a) Sex.
- (b) Date of birth (range of six months).
- (c) Intelligence quotient (within five points as shown by the "Terman Group Test of Mental Ability").
- (d) General average of all school marks in grades ten and eleven (within two points).

- (e) History ability (within three points as determined by "The Columbia Research Bureau American History Test").

Materials:

(a) "The Columbia Research Bureau American History Test" was used as the pre-test and as the final test. This test "is designed to provide colleges and high schools with more reliable, valid, and comparable measures of achievement in American History than are afforded by the usual history examinations."²⁸ In addition to a knowledge of memorized facts, the pupils must demonstrate an "ability to make sound judgments and penetrating inferences from concrete facts." The test covers the entire period of American History except for the last few years. There are two equivalent forms of the test, Form A and Form B; Form A was used as the pre-test and Form B as the end test. The coefficient of reliability of the preliminary form of the test as estimated by the Spearman-Brown formula was .91. The authors of the test feel that the reliability of the final edition (the one used in this study) is higher. There is high validity for the correlation of the test with final high school grades in American

²⁸ Manual of Directions, "Columbia Research Bureau American History Test." Published by World Book Company, Yonkers-on-Hudson, New York.

History: .822. A contributing factor in the selection of the test was the fact that Professor David S. Muzzey, author of the text used in the classes, aided in the preparation of the test.

(b) "A Test of Factual Relations in American History" prepared by Eugene Shedden Farley was of minor importance in the study and was used as a check for the results obtained on the first achievement test. Groups three and four of Form A were used; these groups covered the period in American History from 1783 to 1865. The test is of such a nature that it was possible to use the same form on both occasions on which the test was given. The reliability of the entire Form A averaged .92.

(c) An informal test was prepared by the investigator for the purpose of measuring the quantity of subject matter retained from the period over which the experiment extended. This test was composed of a series of eight continuity tests designed to be completed within a regular class period. An objective marking system devised for this type of test was used. A copy of the test is included in Appendix IV.

(d) The daily, informal quizzes were prepared, mimeographed, and scored by the investigator. The pupils were

allowed five minutes at the beginning of each class period for the quiz. The quizzes followed no plan as to type of exercise, except that there was considerable variation. These types of exercises included true-false, completion, fill-in, matching, and continuity tests, and statements to be corrected. The quizzes covered the material of the assignment due that day. Thought questions as well as those requiring mere recall or recognition of what had been stated in the text were used. Those questions that did not require thought were included for the purpose of demonstrating to the pupils the need of close and careful attention to the text each day. Such a procedure would be necessary if the quizzes were to serve as motivating devices. In addition to text material, current history was very often used in the thought questions. Samples of the informal, daily quizzes are found in Appendix II.

(e) "A Supplementary Study Guide" was provided by the investigator in order to solve a serious problem which arose as a consequence of the nature of the work books or manuals being used by the students. These manuals paralleled the text page for page with the result that they were merely condensed texts. The questions in the manuals were of an objective nature and were based solely on the text. The use of the manuals by the students in the experiment exerted an

influence of undetermined importance, but which was suspected of being very great. Naturally, the manuals had to be eliminated. With the consent of the teacher the investigator prepared and substituted an outline of the units to be covered during the experiment. This outline presented major points of each day's assignment so that the pupils would have an idea of the items to be stressed in each assignment. The teacher felt that without some help the pupils would be in hopeless confusion. The outline was mimeographed and a copy given to all the students in both sets of classes. It was entitled "A Supplementary Study Guide", and a copy is to be found in Appendix I.

Procedure:

(a) The pre-test having been administered and the other data to be used in the pairing having been collected, the pupils were paired according to the arrangement stated in the section of this chapter entitled "Pairing of the subjects."

(b) The experiment was begun on November 2, 1936. This date was selected inasmuch as it marked the beginning of both a new unit, "The Completion of Our Independence," and a new marking period.

(c) The outlines of the course were distributed to the pupils; the material was designed and dated for each

day's assignment.

(d) The experimental group (both sections C and D) received a five-minute informal quiz every day, except on those occasions when the achievement tests were given. The control group (both sections B and E) did not receive the daily quiz. Everything else so far as possible was kept similar in both groups: the same teacher, the same subject matter, the same assignments, the same methods, and the same text book. Thus, the only major variable was the administration of a five-minute daily quiz to the experimental group. The "administration of a five-minute quiz" refers to actual school-room practices in testing procedures; i.e., the quizzes were returned to the pupils as soon as possible, and each set was discussed in class the day after that set had been given. Every attempt was made to maintain actual classroom situations throughout the investigation. To promote this aim the pupils had no knowledge of the experiment or its purpose.

(e) The experiment extended over a period of thirteen weeks and dealt with the history of the United States from the inauguration of Washington to the close of the Roosevelt era. There were eleven distinct units included in chronological sequence and in accordance with the text: Muzzey's "History of the American People".

1. The Completion of Our Independence.
2. The Nation and the Sections.
3. The Jacksonian Era.
4. Expansion to the Pacific.
5. The House Divided Against Itself.
6. The Civil War.
7. Aftermath of the War.
8. From Hayes to Harrison.
9. The Rising of the West.
10. America Among the World Powers.
11. The Roosevelt Era.

Each unit was covered in about one week with one day for review. The quiz on the day of the review was designed to cover the entire unit. At the conclusion of each third unit there were two days devoted to a review of those units. The quizzes on those days dealt with the material of the three units. At the conclusion of the sixth unit there was a unit-a-day review, and as before, the quizzes were designed to meet this arrangement. The customary teaching schedule was maintained throughout the experiment, and the investigator arranged the details of the experiment to coincide with the teacher's usual lesson plans.

(f) On November thirteenth the "Test of Factual Relations in American History" was given to both groups.

The test was repeated on December fifteenth, after an interim of four weeks.

(g) Form B of the "Columbia Research Bureau American History Test" was administered at the conclusion of the eleventh unit on February 5, 1937, after thirteen school weeks of investigation.

(h) Questionnaires were then given to each group; the type of questionnaire was dependent upon the role each group had played in the experiment. One was also filled in by the teacher. Chapter Five has been devoted to a consideration of the replies, and copies of the questionnaire will be found in Appendix III.

(i) On April 21st the retention test was given without warning to the pupils of both groups. This procedure was an attempt to learn how the groups compared in the retention of the material which had been studied from two and one half to five and one half months earlier. This test marked the end of the investigation.

Chapter IV

Collection of Data

PAIRING

As has been stated in the procedure, there were five criteria used in the process of pairing; namely, sex, date of birth, intelligence quotient, general average of all school marks in grades ten and eleven, and history ability. These results are tabulated in Table III. From this table it is immediately apparent that two very homogeneous groups of thirty-three pupils each have been secured; there were fifteen pairs of girls and eighteen pairs of boys. It is to be noted from this table that in no case did any difference exceed 1.26 points. Although five criteria were used to secure the pairs, the Table III presents the results of but four. The other criterion, sex, requires no tabulation other than that already referred to in this paragraph.

"TEST OF FACTUAL RELATIONS IN AMERICAN HISTORY"

Table IV presents the results of both groups on this test, which was given as a secondary basis for drawing conclusions and as a check of the results obtained on the "Columbia Research Bureau American History Test". The same forms of the test were given on both occasions on which the test was administered. As explained in the procedure, it was felt that the test was of a nature that made such

Table III

"Means of the Thirty-three Pupils Secured in Each Group on the Basis of the Criteria Used in Pairing"

Criterion	Control Group	Experimental Group	Difference
Date of Birth	1919-4.89 (months)	1919-4.98 (months)	.09 (months)
Intelligence Quotient	106.41	105.96	.45
Average of all school marks made in grades ten and eleven	76.5	75.37	1.13
History ability as shown by scores made on Pre-test	49.76	51.02	1.26

an arrangement possible. Table IV shows the results obtained on both occasions. In the pre-test there was but a one-point difference between the two means, and this difference was in favor of the experimental group. In the final test there was but a two-point difference and as before was in

Table IV

"Comparison of Scores Made by the Two Groups on the
'Test of Factual Relations in American History' Used
both as a Pre-Test and as a Final Test"

	Control Group	Experimental Group
Number:	31	31
Pre-test: Mean ₁	26.36	27.4
Standard Deviation ₁	9.24	6.8
Final test: Mean ₂	38.44	40.68
Standard Deviation ₂	11.24	11.48
Standard error of Mean ₂	2.02	2.06
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Standard error of the difference ₂		2.88
✓ Difference between Means ₂		2.24
✓ Critical Ratio		.77

favor of the experimental group. It is to be noted that the means of the control and the experimental group increased but twelve and thirteen points respectively. There is slight variation between the standard deviations which fact tends to stress the homogeneity of the groups. The Critical Ratio between the two final means is but .77. Thus, according to these figures daily informal quizzes have no scholastic effect on scores made on an achievement test. The slight advantage attained by the experimental group is statistically unreliable since to be statistically reliable the Critical Ratio should be at least three.²⁹

"COLUMBIA RESEARCH BUREAU AMERICAN HISTORY TEST"

Practically the same results were obtained from Form A and Form B of the "Columbia Research Bureau American History Test" as from the "Factual Relations" test. As shown in Table V the pre-test means of both groups differed by about one point, and this difference was also in favor of the experimental group. In the final test the difference was slightly over two points and still in favor of the experimental group. Once again the homogeneity of the groups is made evident by the slight variation in the standard deviations.

²⁹ Garrett, Henry E., "Statistics in Psychology and Education" (New York: Longmans, Green and Co., 1935) p. 133.

Table V

"Comparison of Scores Made by the Two Groups on
Form A (Pre-Test) and Form B (Final Test) of the
'Columbia Research Bureau American History Test' "

	Control Group	Experimental Group
Number:	33	33
Pre-test: Mean ₁	49.76	51.02
Standard Devi- ation ₁	16.8	15.78
Final test: Mean ₂	71.08	73.72
Standard Deviation ₂	23.04	20.00
Standard error of Mean ₂	4.01	3.48
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Standard error of the difference ₂		5.30
X Difference between Means ₂		2.64
X Critical Ratio		.49

This test was used as the primary criterion for the evaluation of the scholastic effect of five-minute daily quizzes on scores made on achievement tests. The Critical Ratio secured on the basis of the scores made on this test was .49. Consequently, the difference between the final means could not be considered reliable. Therefore, according to these results, five-minute informal quizzes administered daily seem to have no scholastic effect on scores made on achievement tests. This conclusion is given added validity by the fact that the scores made on the test used as the secondary criterion present results that are almost exactly similar to those obtained on this test of primary importance. (See Tables IV and V.)

The fact should be noted here that after thirteen weeks of school the final means increased but twenty points. A similar comment is applicable to the factual relations test, but the interim in that case was but four weeks.

RETENTION TEST

This test was designed to measure the pupils' retention of the material that had been studied from two and one half to five and one half months earlier. It showed results that were comparable to those obtained on the two achievement tests administered by the investigator. As

is evident in Table VI, there is but a one-point difference between the means of the control and of the experimental group. As was the case in the two standardized achievement tests, the difference though slight was in favor of the experimental group. The standard deviations were almost identical, a fact which once again showed the homogeneity of the two groups. The one-point advantage that was enjoyed by the experimental group was, of course, unreliable; the Critical Ratio was but .24. Consequently, it may be concluded that the administration of the daily quizzes did not enable the pupils of the experimental group to retain significantly more of the material than was retained by those of the control group.

It is significant to note that in each of the tests that were given by the investigator to both groups there was but a slight difference in the means, surprising similarity in the standard deviations, and, consequently, a very low -- almost zero -- Critical Ratio. In other words, in each test given to both groups there was no significant difference between the results obtained by those who had had the quizzes and those who had not. Presumably, then, the quizzes had no apparent scholastic influence on the scores made on the achievement tests administered by the investigator.

Table VI

"Comparison of the Scores Made by Both Groups on the Test Designed by the Investigator to Measure the Pupils' Retention of Material Studied from Two and One Half to Five and One Half Months Earlier"

	Control Group	Experimental Group
Number:	33	33
Mean:	84.6	85.72
Standard Deviation:	18.69	18.48
Standard error of the Means:	3.25	3.22

Standard error of the difference	4.57
Difference in the Means	1.12
Critical Ratio	.24

Except for the scores made on the daily informal quizzes, the foregoing material constitutes the sum total of all statistical data. In general, the pupils did fairly well on the daily quizzes. It was felt that the pupils took the work seriously and on the whole were well prepared for each quiz. The following chapter is devoted to a consideration of the data collected on the basis of the questionnaires distributed to the pupils as well as to the teacher.

Chapter V

Pupil and Teacher Reaction

As has been stated in the procedure, questionnaires were given to the pupils and to the teacher at the conclusion of the experiment. The reader will recall that two classes each were used in forming both the control and experimental group. Thus, although all the pupils who composed the control and experimental classes were not participants in the investigation, the replies of all the pupils in both sets of classes were used in the consideration of pupil reaction. It was felt that except for the use of the scores of the participants there was no distinction made between the participants and non-participants in the experiment.

Two different types of questionnaires (found in Appendix III) were given to the students. The experimental group received a set of questions that were designed to secure reactions that were based on actual experience in taking five-minute quizzes daily. The control group, on the other hand, received a set that attempted to secure reactions that were based on opinion alone. Every attempt was made to obtain honest belief. The introductory paragraph of the questionnaires was almost identical in each set; allowance was made for the role that each group had taken in the experiment. The introductory paragraph explained that an experiment had been conducted and briefly described its

nature and the part the pupils had taken. An attempt was made through the wording of the paragraph to convince the pupils that their opinions formed a valuable part of the experiment. Furthermore, the fact was emphasized both by the statements in the opening paragraph of the questionnaires and by oral comments made by the teacher at the time the questionnaires were given to the pupils, that the results would in no way influence their mark in the course. It was further pointed out that the teacher would not see the results of the questionnaires. In brief, every attempt was made to secure honest opinion. A final plea for the complete cooperation of the pupils was made in the concluding sentence of the paragraph, and the pupils were told that they would receive the results of their tests (the achievement tests) in a short time.

The two questions that required a written reply were included to fill an obvious gap; a questionnaire could hardly present every possible thought that the pupils might have. Thus, it was felt advisable to allow the pupils opportunity to express ideas that had not been suggested on the questionnaire. In order to encourage fullest expression of thought, the pupils were urged to write anything and everything they could think of that pertained to the experiment. (Educational methods

although statistically advantageous might prove impractical in view of student opposition.) The questionnaire itself was kept as short as possible so that the students would not tire of it and merely check any response just to complete the task. The results in terms of answers to specific questions are found in the following pages.

1. "DO YOU LIKE AMERICAN HISTORY?"

This question was the first one on both sets of questionnaires. The replies to the other questions were tabulated according to the pupil's like or dislike of American History. That is, the replies of those pupils who checked the response to the foregoing question in the affirmative were tabulated separately from the replies of the pupils who checked the response in the negative. From the tabulation of these replies in Table VII it is apparent that a very large majority of the pupils in both the control and experimental classes liked American History.

THE ANSWERS OF THE CONTROL GROUP

2. "DO YOU STUDY HISTORY EVERY NIGHT?"

This was the second question on the questionnaire given to the control classes. From the replies to this question the classes seemed to be evenly divided. Thirty

Table VII

"Replies of the Control and Experimental Classes to the Question 'Do you like American History?' (Question 1, on both sets)"

Classes	Yes	No	Total
Control	45	12	57
Experimental	37	14	51

pupils stated "Yes and twenty-seven "No". The pupils who liked History were divided about equally as to daily study. Oddly enough two-thirds of those pupils who did not like history studied every night. The complete tabulation is recorded in Table VIII.

3. "DO YOU BELIEVE THAT FIVE-MINUTE DAILY QUIZZES ON YOUR HOME LESSON WOULD MAKE YOU STUDY MORE?"

The replies indicated that the tests would make for more study. Forty said "Yes", sixteen said "No", and one was doubtful. Of those who liked history the number who felt that five-minute daily quizzes would make them study more than usual was almost three times as great as of those who felt that the daily tests would not motivate them.

The ratio in the "did not like history" set of replies was just two-to-one in favor of the quizzes. Table VIII contains the complete tabulations.

7. "WOULD YOU WANT TO HAVE THOSE DAILY QUIZZES?"

Although seventh in order, this question actually belongs with the preceding two, inasmuch as the trilogy forms the basis on which the study habits of the control classes may be considered. It is interesting to note that although most of the pupils felt that the daily quizzes would make them study, a smaller proportion actually wanted the quizzes. In answer to the question whether the pupils would want the quizzes, both control classes as a whole were just about equally divided. The tabulation of the replies for this question as well as for the complete trilogy is found in Table VIII.

8. "WHY?" (Reasons for response checked in the preceding question.)

The pupils were allowed unlimited time and space to state their reasons. The following few replies are representative of the many offered in favor of daily quizzes:

"Because if we had daily quizzes you'd probably study harder because you would have to know the text from day to day instead of leaving it slide along from day to day, until a few days before a test."

Table VIII

"Replies of the Two Control Classes as to Study Habits (Questions 2, 3, and 7)"

Question	Liked History			Did Not Like History		
	Yes	No	Doubtful	Yes	No	Doubtful
(2) Do you study History every night?	21	24		9	3	
(3) Do you believe that five-minute daily quizzes on your home lesson would make you study more?	32	12	1	8	4	
(7) Would you want to have those daily quizzes?	26	19		5	7	

"Because I think by possibly getting questions wrong an explanation of them would stay in my mind longer than if I did not have the question clearly in my mind....."

".....Some people do not like to talk long, but instead they give a brief answer. Before they may have known the answer but did not want to talk so long on it."

"Putting the work on paper helps one to learn or memorize quicker."

In general, those of the control group who favored daily quizzes based their reasons on motivation, aids to learning, and basis for marks. The replies made very interesting reading, but it was deemed necessary to restrict them to the few already quoted. In like manner, the reasons of those who opposed daily quizzes were restricted to the following:

"Because I think if you know you are going to have a quiz and are going to be marked on it you are more apt to worry about it and then the information you get from reading doesn't sink in."

"For one thing tests usually get one all keyed up and in many cases the individual memorizes the exercise for one day, forgetting it in a while."

"I think a test once a week is sufficient enough. By taking the time that would have been spent taking the test to explain the lesson we could probably learn more."

"Because I feel that if you were having daily quizzes the tendency would be to study the names and dates of certain happenings with no thought as to their bearing on history. One strives to retain unimportant facts because they feel it might be a question on the test. When quizzes are given orally each student benefits by the knowledge that his fellow students have absorbed and work toward a better understanding of related facts."

In general, the last quotation very well summarized the reasons advanced by those of the control group who did

not favor daily quizzes. It might be said that the thought of taking a test tended to influence many of that group against daily quizzes. In addition, the pupils expressed a preference for their manuals.

5. "ARE YOU GETTING THAT?" (The objective of an American History course.)

In reply to this question as to whether the pupils were securing the objective that they should in a course in American History, practically all the pupils in the control classes answered in the affirmative. The actual results were as follows: Of those who liked History forty-two answered in the affirmative and three were doubtful; of those who did not like History nine answered in the affirmative and three in the negative.

6. "DO YOU THINK DAILY TESTS WOULD (a) HELP YOU TO GET THAT (the objective), (b) PREVENT YOU FROM GETTING IT, (c) MAKE NO DIFFERENCE - YOU WOULD SECURE IT ANYWAY?"

As shown in Table IX the majority felt that the tests would help in the realization of the objective. With one exception the remainder felt that the daily tests would make no difference. It is interesting to note the reasoning used by the only one in the control group who thought daily tests would prevent the realization of the objectives:

"I don't approve of daily tests as much as talking over the daily work. History is much more interesting if it is discussed freely as a current topic. It should be free from dates, to a great extent. Tests given daily tend to discourage and disinterest the person in History."

Table IX

"Replies of the Two Control Classes as to Their Opinion of the Effect of Daily Quizzes on the Realization of the Objectives of American History (Question 6)"

Effect	Liked History	Did Not Like History
(a) Help	27	9
(b) Prevent	1	
(c) Make no difference	17	3

The preceding question concludes the consideration of the replies of the two control classes. These classes did not receive the daily quizzes so that their reaction is pure conjecture. The replies of the two experimental classes will be considered at this point. It will be recalled that these classes did have the daily quizzes, and, consequently, their reaction is to an actual situation.

THE ANSWERS OF THE EXPERIMENTAL GROUP

2. "DID YOU STUDY HISTORY EVERY NIGHT BEFORE THE DAILY QUIZZES STARTED?"

This is the second question of the questionnaire given to the experimental classes. In a consideration of the replies from the questionnaire, it is to be noted that the daily tests brought a change in study habits. As may be seen from Table X the experimental classes were evenly divided on the question of daily study before the advent of the daily tests.

3. "DID YOU STUDY HISTORY EVERY NIGHT DURING THE TIME THE QUIZZES WERE BEING GIVEN?"

The study habits during the time the quizzes were being given apparently changed and decidedly so: over two-thirds of the two experimental classes studied each night during the investigation. In Table X there is a tabulation of the study-habit situations before and during the investigation.

From Table X it is not apparent what changes took place. Table XI shows the actual changes, that is, how many studied every night before the experiment and continued to do so during the experiment, how many studied before, but stopped during the experiment, etc. The largest number studied before and during the experiment,

Table X

"Replies of the Two Experimental Classes on the Question of Study Habits Before and During the Experiment (Questions 2 and 3)"

Question	Liked History		Did Not Like History	
	Yes	No	Yes	No
(2) Did you study History every night before the daily quizzes started?	19	18	7	7
(3) Did you study History every night during the time the quizzes were being given?	27	10	9	5

while the next largest changed from not studying before to studying during the experiment. Ten pupils failed to study during the experiment, and of this number three changed from studying before to not studying during the

experiment, a situation hard to explain except on the basis of deliberate intent to mislead.

Table XI

"Record of the Changes in Study Habits of Both Experimental Classes Before and During the Experiment"

Change	Liked History	Did Not Like History
(1) Studied before, stopped during the experiment.	3	1
(2) Did not study before, did study during the experiment.	11	3
(3) Did not study before nor during the experiment.	7	4
(4) Studied before and continued to study during the experiment.	16	6

4. "WERE THE DAILY TESTS A BURDEN FOR YOU?"

Table XII shows a tabulation of student opinion of the daily tests as expressed by both experimental classes on questions four through eight. It is significant to note the very large majority who felt that the tests were not a burden, even among the group which did not care for history. Thirty-nine felt that the tests were not a burden, six thought they were, and six could not make up their minds.

5. "WOULD YOU WANT THEM TO BE CONTINUED?"

Although the tests were not considered by the vast majority to be a burden, no such difference appeared in the replies to this question. The pupils of the Like-History group were evenly divided on the question, with three in doubt. The Dislike-History group was definitely opposed. The complete analysis of the replies is found in Table XII.

6. "DID THE TESTS HELP IN STUDYING HISTORY?"

The greatest amount of agreement among the pupils of the experimental classes was to be found in this question. Forty-five pupils answered in the affirmative, five in the negative, and one was in doubt. The distribution of these replies is found in Table XII.

7. "DID THE TESTS HELP IN YOUR ORAL RECITATIONS?"

As was the case in the preceding question, a large

Table XII

"The Opinions of the Daily Informal Tests as Expressed by Both Experimental Classes (Questions 4, 5, 6, 7, and 8)"

Question	Liked History			Did Not Like History		
	Yes	No	Doubtful	Yes	No	Doubtful
(4) Were the daily tests a burden for you?	4	29	4	2	10	2
(5) Would you want them continued?	17	17	3	3	10	1
(6) Did the tests help in studying History?	33	3	1	12	2	
(7) Did the tests help in your oral recitations?	30	6	1	8	6	
(8) Did you like the type of question on those quizzes?	20	9	8	8	4	2

majority felt that the tests had been some aid in oral recitations. Thirty-eight pupils felt that they did receive some help, fourteen felt that they did not, and one was doubtful. The complete analysis is in Table XII.

8. "DID YOU LIKE THE TYPE OF QUESTION ON THE QUIZZES?"

The majority of the pupils liked the type of question (the objective) on the quizzes, while the remainder were divided as to being opposed or in doubt. Table XII gives a complete analysis of this question as well as the preceding four.

10. "DO YOU THINK THE DAILY TESTS (a) HELP YOU TO GET THAT (the objective of a course in American History), (b) PREVENT YOU FROM GETTING THAT? (c) MAKE NO DIFFERENCE?"

Table XIII shows the opinions of both experimental classes as to the effect of the daily quizzes on the realization of the objective the pupils believed should be secured from a course in American History. The great majority of the pupils felt that the tests helped in the realization of the objective. (The same situation existed in the control classes.) Only one pupil thought that the tests were a hindrance.

11. "DO YOU KNOW OF ANY OTHER SUBJECTS IN WHICH THE DAILY TESTS WOULD HELP?"

The following is a list of the suggested subjects and the frequency with which they were mentioned. There was on the whole, however, a general lack of suggestions.

Economics	12	French	3
Social Problems	10	Geometry	2
Commercial Law	6	Biology	1
Algebra	4	Chemistry	1
Geography	1		

Table XIII

"Replies of the Two Experimental Classes as to Their Opinion of the Effect of the Daily Quizzes on the Realization of the Objectives of American History (Question 10)"

Effect	Liked History	Did Not Like History
(a) Help	30	10
(b) Prevent	1	
(c) Make no difference	5	3
(d) Doubtful	1	1

12. "IN THE REMAINING SPACE (OTHER SIDE, IF NECESSARY) WOULD YOU TELL ME TRUTHFULLY JUST WHAT YOU THOUGHT OF THOSE DAILY FIVE-MINUTE QUIZZES OR TESTS? EVERY-THING YOU CAN THINK OF!"

There was wholehearted cooperation in this attempt to secure additional student opinion of the tests. However, it was necessary to limit the quoted remarks to the bare necessity. The following are characteristic of the entire set:

"I thought it was a good idea, first because if the pupil didn't like to recite it would show the teacher he or she was at least studying if he had a good mark. Thus the pupil knew he would have a test everyday and be ready for it."

"I thought that they were very good for before a person could copy from another's manual and not have to study. With the tests you had to study and learn your lesson..."

"It is much easier to have a quiz each day, so when you have a final test it isn't so hard to answer the questions."

"The daily tests necessitated accurate study, and the answers had to be precise and exact. As the daily tests nearly covered the whole assignment, it was very burdensome, too exacting."

A general conclusion from these replies seems to be that the tests were liked (although the majority of the experimental classes did not care to have them continued). Many felt that the thought questions were vague. There is one very important point to be noted in the case of the experimental group as well as in the control group: the dependence of the pupils on their manuals. It will be recalled that outlines prepared by the investigator had been distributed to all the students in both groups;

these outlines had been substituted for the manuals. The students freely admitted their dependence on these manuals inasmuch as before the experiment had begun, they had been able to copy the work from other students' manuals. Such a procedure presented the opportunity for the students to dispense with the textbook, since the manuals, after the blanks had been filled in, represented condensed texts. The fact that the matter of the manuals had not been mentioned in the questionnaires and yet had been referred to by so many of the pupils shows the importance of these guides to the students. Apparently, even for those who used them correctly, the manuals facilitated the work of studying the assignments by the presentation of a condensed text.

The replies of the teacher made on the questionnaire (see Appendix III) given her present some extremely valuable and worthwhile comments on the matter of a five-minute daily quiz. Some of the questions required merely a yes-no response and were as follows:

1. "Was the administration of the quizzes burdensome for you?" Answer: "No".
2. "Would you still feel the same way if you had to prepare and score the quizzes?" Answer: "No".

3. "Do you feel that the tests emphasized facts to the exclusion of interest and attitude?" Answer: "No".
4. "Do you think that the quizzes stimulated oral recitation?" Answer: "No".
5. "Do you feel that the pupils resented the idea of a daily quiz?" Answer: "No. Most wanted them."
6. "In comparison with similar classes do you feel that the pupils lost or gained as a result of the quizzes? (i.e., in the matter of pupil attitude, retention of material, aims of History teaching, etc.)"
Answer: "No great change noted."

The remaining questions were answered by the teacher in the following "Report on Experiment of Daily Quiz" that she submitted:

"If daily quizzes are mainly a check on pupils' study habits, I would answer that they were very valuable. The weakness lies in the fact that the pupils memorize facts and feel that the grade on the test is sufficient for day's grade.

"The interested pupil takes an active part in discussion period with or without daily quiz. The disinterested pupil seems not to be affected to such an extent that his participation in class activities is stimulated.

"The standardized tests were better than many prepared for this subject. For the most part the questions on the daily quiz were good, though some were not thought provoking.

"I enjoyed participating in the experiment because of the conscientiousness of the investigator whose procedure was commendable.

"In conclusion I would say that my chief criticism of this experiment in History is that many pupils become mark conscious rather than interested in subject matter."

From the replies submitted by the teacher it is apparent that the results of the experiment seem to substantiate in a large measure her ideas as to the value of a five-minute daily quiz. These results have been considered in the preceding chapter, and their educational implications will be considered in the next and concluding chapter.

Chapter VI

Summary and Educational Implications

With the introduction of objective testing into the realm of educational research, educational theories no longer had to be evaluated solely on the basis of opinion. The concept of informal tests, for example, has become very popular in secondary education. However, the nature of objective testing is such that its value may be tested on a scientific basis. The phase of the concept that was to be investigated in this paper was in the effect of a five-minute daily quiz. The questions that arose were "Does a five-minute daily quiz have a motivating effect on pupils?" And "Does it have an effect that will demonstrably improve their achievement?" The problem that evolved from these questions was "Does a daily five-minute quiz affect scores made on achievement tests in United States History in grade twelve in the West Springfield High School?"

Four classes of high school seniors were involved in this study. From two classes were chosen those who should take the daily quizzes -- the experimental classes; from the other two those who should not take the quizzes -- the control classes. The actual experimental individuals were very carefully paired, and the result was thirty-three pairs of pupils matched as closely as possible. These pupils composed the participants in the experiment, while

the remaining pupils in the four classes of which the paired pupils were members were the non-participants. One member from each pair was in one of the two classes designated as control classes, and the other member was from one of the other two classes which were designated as experimental.

The two classes containing the experimental group were given an informal quiz each day, while the two classes containing the control group were allowed to proceed with the usual classroom methods. In fact, every attempt was made to keep the administration of the five-minute daily quiz to the experimental group the only variable in the two sets of classes.

"A Test of Factual Relations in American History" was used as a criterion of secondary importance in the evaluation of the scholastic effects of a five-minute daily quiz on scores made on achievement tests. This test was administered to both groups at the start and then again at the mid-period of the investigation. The results seemed to indicate that it was unlikely that daily quizzes would affect the scores made on achievement tests.

After thirteen school weeks of investigation, Form B of "The Columbia Research Bureau American History Test"

(Form A had been given as part of the pairing process) was given to both groups. This test was used as the chief criterion in the evaluation of the effect of the daily quizzes. The results obtained on this test seem to indicate that daily, five-minute quizzes have no effect on scores made in achievement tests. This conclusion seems all the more valid inasmuch as the results obtained by the secondary criterion were comparable to those secured on the criterion of chief importance. The results of this study seem therefore to indicate that five-minute daily quizzes do not have a motivating effect.

The pupils' answers to questionnaires at the conclusion of the experiment indicate that, although the pupils liked the study of American History, they did not care for daily quizzes. In addition, the pupils indicated a definite dependence on their manuals, which are the aids usually used in the course and from which the outlines distributed to all the pupils at the beginning of the experiment had been devised. In reply to a list of questions designed to secure her reaction to the experiment, the teacher noted that daily tests caused the pupils to become "mark conscious" rather than interested in the subject matter. The results of the experiment seem to confirm the validity of that comment.

Eleven weeks after the conclusion of the investigation a test was given which was designed to measure the pupils' retention of material studied from two and one half to five and one half months earlier. This test was unannounced. The results seem to lend added validity to the conclusions reached as a result of the scores made in the two standardized achievement tests. The results of this retention test seem to show that the use of daily, five-minute quizzes did not affect the scores made on tests designed to measure the retention of material which had been studied from two and one half to five and one half months earlier.

On all three occasions when the same tests were given to both groups, fairly similar results were obtained: the experimental group had approximately a one-point advantage over the control group, and this difference was not statistically significant. Some increase might have been expected because of the attributed "practice effect" of repeated objective tests -- that no such effect is here evident is a rather interesting fact in connection with the many experiments which have been made in this field. The standard deviations of both groups on each test tended to be fairly equal. Consequently, in view of the foregoing results, the administration of a five-minute daily quiz

did not affect the scores made on achievement tests in American History of grade twelve in the West Springfield High School. Furthermore, this conclusion is supported by the fact that all three tests (exclusive of the daily quizzes) yielded similar results.

The educational implications that seem to evolve from the foregoing conclusion cannot be presented as facts; they must of necessity be of a theoretical nature. With this in mind, there are certain implications that may be offered on the basis of the results secured in the course of this study.

It seems that daily five-minute quizzes in American History in grade twelve have slight educational value, if any. This conclusion is in no way intended to detract from the value of objective tests as a valid and reliable measure of pupil progress. The objective test may be a very valuable instrument for this purpose and still have little educational value so far as presenting and motivating the subject is concerned. (The teacher associated with this study used the scores for the purpose of securing progress reports.) Consequently, from this study it is suspected that teachers of American History who use daily five-minute quizzes in their classes might dispense with them without any apparent loss in educational value. However, it seems that the scores might be used as an objective

basis of term reports.

It is worthwhile to note that the procedure of the investigation required the control group to take but two examinations during thirteen school weeks. In spite of this apparent lack of need for study, the achievement of this group almost equalled that of the experimental group, the group that had been required to take a five-minute test on each day's assignment for thirteen weeks. From this fact it seems that the following question might well be used as the basis of experimentation: Of what educational value are tests? Naturally, a complete answer to the question is beyond the scope of this study, but it is raised in view of the circumstances surrounding the investigation.

Since the experiment concerned American History of grade twelve, there is no basis for extending the conclusions to other subjects and other grades. However, inasmuch as the evidence seems fairly strong in the present study, it is probable that the conclusions might be applicable to other grades. Further experimentation must be pursued along similar lines before these conclusions may be definitely transferred to other subjects and grades.

Finally, there is need for investigation into the scholastic effects of longer informal quizzes as well as quizzes that are given once, twice, and three times a week.

APPENDICES

- I A Supplementary Study Guide.
- II Sample Daily Informal Quizzes.
- III Questionnaires.
- IV Test Designed to Measure Retention.

APPENDIX I

A SUPPLEMENTARY STUDY GUIDE

I. The Completion of Our Independence.

November 2.

Hamilton vs. Jefferson as to political ideas.
Formation of political parties.
Foreign problems--Pinckney, Jay, Genet.

November 3.

Foreign relations with France.
Downfall of the Federalists.
John Adams, Jefferson.

November 4.

English treatment of neutral ships --
Continental System.
America's retaliation.
Henry Clay, Madison.

November 5.

The War of 1812.
Commercial opposition.
Treaty of Ghent -- status quo.
Monroe, Jackson.

II. The Nation and the Sections.

November 9.

Sectional interests.
Admission of new states.
American Literature.
John Marshall, Clay, Calhoun, Madison, Monroe.

November 10.

The status of slavery.
The Missouri Question.
European ambitions for American territory.
Monroe Doctrine.
Clay, Monroe, John Quincy Adams.

III. The Jacksonian Era.

November 16.

Rule of the people
"Kitchen Cabinet" -- Importance.

Western influence on the East.
The Tariff difficulties
Webster, Hayne, Jackson, Calhoun.

November 17.
Jackson and the National Bank.
Panic of 1837.
Slavery question becoming more irritating,
William Lloyd Garrison.

November 18.
The Whig Party.
Inventions.
Railroad and economic Development
Van Buren, Harrison, Clay, Tyler.

IV. Expansion to the Pacific Coast.

November 23.
Claims to and settling of Oregon
Acquisition of Texas
Election of 1844.
Webster, Ashburton, Santa Anna,
Clay, Calhoun, Tyler.

November 24.
Acquisition of territory via the
Mexican War
Scott, Taylor, Santa Anna, Polk.

December 1.
Slavery question reaches new heights --
Compromise of 1850.
Sectionalism displayed in Omnibus Bill
Clay, Webster, Calhoun.

V. The House Divided Against Itself.

December 3.
Growth of Industry and Railroads.
"King Cotton".
Cuba and the Ostend Manifesto.

December 4.
Slavery question reopened by Kansas-
Nebraska Bill.
Formation of Republican Party.
Stephen A. Douglas.

December 7.

Slavery question extremely serious --
Dred Scott Case.
Election of 1860 and secession of
South Carolina
Establishment of Confederacy -- Constitution.
Lincoln, Douglas, Seward, Davis.

VI. Civil War

December 9.

Fall of Fort Sumter.
Comparison of the two sections.
Anderson, Buchanan, Lincoln, Davis, Lee.

December 10.

Union attempts to open the Mississippi River
Union discouragement checked by Battle
of Gettysburg.
"Copperheads".
Lee, Grant, McClellan, Farragut, Pope.

December 11.

Mississippi River opened.
Surrender at Appomattax.
Collapse of Confederacy.
Lincoln, Lee, Grant, Sherman, Booth.

December 12.

Opposition to both governments
Strained relations with England
War Finance
Emancipation Proclamation and Lincoln's
efforts to free the slaves.
Thirteenth Amendment
Napoleon III, Adams, Bullock, Seward

VII. Aftermath of the War

January 4

Conflict between Johnson and Congress
Congress' attempt at reconstruction
Johnson, Sumner, Grant

January 5

Commercial Advancements
Social and political conditions
Election of 1876
Grant, Field, Greeley

January 6

Economic Revolution
The New Agriculture
Granger Laws

January 7

Big Business
Labor Organizes
Social Changes

VIII. From Hayes to Harrison

January 11

Silver vs. gold
Civil Service Reform
Democratic victory 1884
Cleveland, Blaine, Garfield, Hayes, Arthur

January 12

Cleveland's policies
Labor unrest
Interstate Commerce Act
Tariff controversy
Cleveland, Mills, Harrison

January 13

Foreign affairs
Republican rule
Sherman, Blaine, McKinley, Harrison, Reed

IX. The Rising of The West

January 18

Populist Party
New immigration
End of the Frontier
Plight of the Farmer

January 19

Silver vs. gold
Tariff question
"Luckless years"
Foreign policies
Cleveland, Morgan, Debs

January 20

Free silver movement
Election of 1896 - East vs. West
Hanna, McKinley, Bryan

X. America Among the World Powers

January 25

Cuban situation
Spanish-American War
Dewey, Cervera, McKinley

January 26

Development of a colonial policy
The flag outruns the Constitution
Wood, Taft, Roosevelt.

January 27

Big Business triumphant.
Hague Conference
"Open Door" Policy
Imperialism an issue.
McKinley, Bryan, Hay, Roosevelt

XI. The Roosevelt Era

January 28

Roosevelt as President
"Trust Busting"
Reform measures

February 1

The Panama Canal and its Problems
An "international police power"
under Roosevelt
Roosevelt's encouragement of peace

February 2

Conservation policies
Foreign affairs
Roosevelt, the man.
Taft, Bryan.

APPENDIX II

SAMPLE DAILY INFORMAL QUIZZES

NAME _____ SECTION _____ DATE: December 8, 1936

1. Name three ties that bound the North and South.
 - a. _____
 - b. _____
 - c. _____
2. The fall of Fort Sumter was important because it
 - _____ a. opened the Civil War
 - _____ b. caused the war to be fought on Southern soil
 - _____ c. caused Jefferson Davis to be elected President of the Confederacy.
3. T F All slave states joined the Confederacy
4. T F Congress had the right to accept West Virginia into the Union.
5. T F The North gained an important factor, manpower, by the postponement of the war from 1850 to 1861.
6. T F The South was at the mercy of the North right from the start of the conflict.
7. T F England's open encouragement of secession helped to unite the North against the South.

Extra Credit:

8. State facts that support your opinion as expressed in question 4

Score _____ on basis of _____

NAME _____ SECTION _____ DATE: December 21, 1936

Put the figure 1 after the event that occurred first, the figure 2 after the one that occurred second, and continue in that manner throughout the entire list.

1. Underground railroad ()
2. The Mexican War ()
3. Webster-Ashburton Treaty ()
4. Guadalupe-Hidalgo Treaty ()
5. Webster's Seventh-of-March Speech ()
6. Independence of Texas ()
7. Trip of Captain Gray ()
8. Clay's Omnibus Bill ()
9. Annexation of Texas ()
10. Discovery of gold in California ()

Define "squatter sovereignty"

Score _____ on basis of _____

NAME _____ SECTION _____ DATE: December 22, 1936

1. Below are four results of a cause:

- a. "Know-Nothings"
- b. Development of the West
- c. Political Bosses
- d. Machine Politics

State this cause: _____

2. State three results of "King Cotton".

- a. _____
- b. _____
- c. _____

3. Of the five events below

Which one came second _____
Which one came last _____

- a. Clayton-Bulwer Treaty
- b. Kansas-Nebraska Act
- c. Ordinance of Secession
- d. Lincoln's first election
- e. Dred Scott Decision

4. T F The Ostend Manifesto was another form of the Monroe Doctrine.

5. The Platform of the first Republican Convention declared:

- a. Congress had the right to legislate for the territories.
- b. It condemned the policy of the administration in Kansas
- c. Slavery should be abolished in the Southern States
- d. It denounced the Ostend Manifesto
- e. Kansas should be admitted as a free state at once

Which contention is wrong _____

Score _____ on basis of _____

NAME _____ SECTION _____ DATE: December 23, 1936

1. Name what you believe to be the three most important events from 1789 to 1865.

a. _____ Why? _____

b. _____ Why? _____

c. _____ Why? _____

2. The South of the Civil War period would be in sympathy with the present Spanish rebels in their Civil War.

The following statement proves this idea
disproves

3. "The North was justified in its attitude toward the South."

Cite three statements that prove this statement.

a. _____

b. _____

c. _____

And three statements that defend the South.

a. _____

b. _____

c. _____

Score:

Good _____
Fair _____
Poor _____

NAME _____ SECTION _____ DATE: January 5, 1937

1. Nullification and secession are now specifically forbidden by

_____ The Constitution
_____ Act of Congress
_____ Supreme Court decision
_____ The statement is false

2. T F The "Black Codes" were so called because they were enacted by negro governments in the South.
3. T F By the Reconstruction Acts of 1867 full civil governments displaced the military governments of Johnson in the South.
4. T F Tennessee was not placed under the Military Construction Acts because she was not required to ratify the Fourteenth Amendment.
5. T F The Fourteenth Amendment gave the negro the right to vote.
6. T F One of the chief aims of the Ku Klux Klan was to recover the political control for the white people of the South.
7. T F Lincoln, had he lived, would not have had to face the same problems as Johnson.
8. T F The "crime of reconstruction" was a term used by northerners to describe excesses committed by the South at the close of the war.
9. T F President Johnson was impeached.
10. When Johnson dismissed _____ from office, he did so in violation of _____ Act.

Score _____ on basis of _____.

NAME _____ SECTION _____ DATE: January 6, 1937

1. The Civil War settled the following problems:

- _____ a. Slavery
- _____ b. Tariff
- _____ c. Civil Service
- _____ d. Supremacy of national government
- _____ e. Compulsory education

2. The Homestead Act of 1862 granted

3. T F The Credit Mobilier financed the Atlantic Cable.

4. T F Claims resulting from damage caused by the "Alabama" were settled by arbitration, an important achievement in the middle of the nineteenth century.

5. T F Grant's administrations were marked by "high-scale" dishonesty in industry as well as in government.

6. Match:

- | | | |
|-------------------|-----|--------------------------|
| 1. Atlantic Cable | () | 1. Horace Greeley |
| 2. Panic of 1873 | () | 2. William M. Tweed |
| 3. Tammany Hall | () | 3. Charles Francis Adams |
| 4. Alabama claims | () | 4. Jay Cooke |
| | | 5. Jim Fiske |
| | | 6. Cyrus W. Field |
| | | 7. Jay Gould |

7. The Hayes-Tilden election dispute showed that

- _____ a. we needed popular election of electors.
- _____ b. the nation had the habit of orderly self-government.
- _____ c. the North should become united as the South had -- the "solid South".

Score _____ on basis of _____

NAME _____ SECTION _____ DATE: January 8, 1937

1. What truth prevents even in 1936 a complete flowering of an American culture?

2. Prove by two illustrations that there is at present a new South.

1. _____

2. _____

3. Of the five phrases below, one is a cause, and one other a result of this cause; put a C after the cause and an R after the result.

1. The conflict between capital and labor ()
2. The Dawes Act ()
3. Knights of Labor ()
4. "A Century of Dishonor" ()
5. The New South ()

4. Why did the first labor organizations fail?
(Two reasons)

5. Name a very important social result of the "economic revolution".

Is that social situation still important?

Yes _____

No _____

6. Susan B. Anthony

- _____ a. championed women's rights.
- _____ b. founded Mt. Holyoke College
- _____ c. wrote a book criticising
Standard Oil Company

Score _____ on basis of _____

NAME _____ SECTION _____ DATE: January 11, 1937

1. T F We cannot properly understand present American life without understanding the economic revolution.
2. T F One characteristic of the New South was the replacement of large plantations by small farms.
3. Name two influences that have been of major importance in promoting the development of manufacturing in the United States.
 1. _____
 2. _____
4. Name a federal law or a provision of the national Constitution in the passing of which women have had an important influence.

5. Check the policies of the Liberal-Republican Movement:
 - (1) Civil-service reform ()
 - (2) railroad subsidies ()
 - (3) tariff reform ()
 - (4) cessation of federal military intervention in the South ()
 - (5) Repeal of the Dawes Act ()
 - (6) stock watering ()

Score _____ on basis of _____

NAME _____ SECTION _____ DATE: January 12, 1937

1. What clause in the Constitution gave Congress the right to control "Big Business"? _____

2. Correct, if necessary, the following:
 - a. Party politics until about 1890 absorbed the attention of Congress.

 - b. The discovery of large deposits of silver in the West caused the clamor for "free silver".

 - c. The "crime of 1873" was the assassination of Garfield.

3. The farmers of the West wanted "free silver"; why?

4. What was the spoils system? _____

5. What event roused the nation to the need of Civil Service Reform? _____
6. What was the first Civil Service Act that was of considerable consequence? _____
7. Define "stalwart" as applied to the Republican Party.

8. Define "half breed" as applied to the Republican Party.

Score _____ on the basis of _____

NAME _____ SECTION _____ DATE: January 15, 1937

Match the items in the right-hand column with those in the left-hand column. The () go with the left-hand column.

- | | | |
|--|-----|---|
| 1. President Hayes | () | 1. Mulligan letters |
| 2. Surplus in Treasury | () | 2. Spoils system |
| 3. Interstate Commerce Act | () | 3. Granger Laws |
| 4. Foreign Affairs | () | 4. Bland-Allison Act |
| 5. "Crime of 1873" | () | 5. Reform in the House rules. |
| 6. McKinley Tariff | () | 6. Assassination of Garfield |
| 7. "Magna Carta of Civil Service Reform" | () | 7. Navy |
| 8. President Cleveland | () | 8. Civil War Pensions |
| 9. Nonpartisan legislation | () | 9. Solid South |
| 10. "Czar" Reed | () | 10. "Half-breed" Republican |
| | | 11. Extreme protection |
| | | 12. Pendleton Act |
| | | 13. Demonetization of silver |
| | | 14. "A public office is a public trust" |
| | | 15. "Stalwarts" |
| | | 16. Presidential Succession Act |

Score _____ on the basis of _____

NAME _____ SECTION _____ DATE: January 19, 1937

1. T F Cleveland succeeded in securing drastic tariff reductions.
2. Silver drove gold out of circulation because:
 - _____ a. Silver dollars were not worth 100 cents: cheap money.
 - _____ b. The Sherman Silver Act of 1890 legalized only silver for use as money.
 - _____ c. There was less than \$100,000,000 reserve in the Treasury
3. Coxe's army was:
 - _____ a. The detachment set to quell the Pullman strike
 - _____ b. The band of unemployed who went to the Capitol
 - _____ c. The regiment landed from the "Boston" at Hawaii
4. Through the Morgan Bond transaction
 - _____ a. our merchant marine was built up
 - _____ b. the Panic of 1893 was ended
 - _____ c. the treasury reserve was raised to \$100,000,000
5. Through Cleveland's attitude toward Hawaii
 - _____ a. we gained a permanent protectorate over it
 - _____ b. we secured control of the pineapple industry
 - _____ c. he gained added abuse.
6. The Venezuelan Boundary Dispute
 - _____ a. caused England to sever relations with us
 - _____ b. gave the Monroe Doctrine new life
 - _____ c. was settled by the purchase of 23,000 square miles of territory by England

Score _____ on the basis of _____

APPENDIX III

QUESTIONNAIRE FOR CONTROL GROUP

NAME _____ SECTION: ^B E _____ DATE: February 8, 1937

For the past three months you have been a valuable subject in an experiment conducted in order to find the effect of a five-minute daily quiz on your ability to learn American History. The tests you took last Thursday and Friday marked the end of the experiment, but there is still some important information that you can give. Even though you did not have the daily quizzes, I should like to obtain your reaction to the experiment. Your teacher, Miss Burke, will not see the answers that you give to the following questions, nor will these answers influence your mark for the year in any way. The purpose of this questionnaire is to secure additional information about the experiment; information that must be frank and truthful. So please cooperate with me and give your honest opinions, not the opinions you think are wanted or that you think would raise your marks. (In a few weeks I shall be prepared to give you the results of the tests you have taken.)

Thank you,

Lester Henry LeVine
Student at the Graduate School
Massachusetts State College.

Remember, your HONEST opinion!

1. Do you like American History? YES _____ NO _____
2. Do you study History every night? YES _____ NO _____
3. Do you believe that five-minute daily quizzes on your home lesson would make you study more? YES _____ NO _____
4. What do you think you should get out of a course in American History, besides a mark in the course? _____

5. Are you getting that? YES _____ NO _____
(stated in question 4)

6. Do you think daily tests would
_____ help you to get that
_____ prevent you from getting it
_____ make no difference; you
_____ would secure it anyway

(check one)

7. Would you want to have those daily quizzes? YES _____ NO _____

8. Why? _____

(use other side, if necessary)

QUESTIONNAIRE FOR EXPERIMENTAL GROUP

NAME _____ SECTION: D ^C _____ DATE: February 8, 1937

For the past three months you have been a valuable subject in an experiment conducted in order to find the effect of a five-minute daily quiz on your ability to learn American History. The tests you took last Thursday and Friday marked the end of the experiment, but there is still some important information that you can give. Inasmuch as you have been taking the quizzes each day, I should like to obtain your reaction to the experiment. Your teacher, Miss Burke, will not see the answers that you give to the following questions, nor will these answers influence your mark for the year in any way. The purpose of this questionnaire is to secure additional information about the experiment; information that must be frank and truthful. So please cooperate with me and give your honest opinions, not the opinions you think are wanted or that you think would raise your marks. (In a few weeks I shall be prepared to give you the results of the long tests you have taken.)

Thank you for your cooperation in this experiment.

Lester Henry Levine
Student at the Graduate School
Massachusetts State College.

Remember, your HONEST opinion!

- | | |
|--|--------------------|
| 1. Do you like American History? | YES _____ NO _____ |
| 2. Did you study History every night before the daily quizzes started? | YES _____ NO _____ |
| 3. Did you study History every night during the time the quizzes were being given? | YES _____ NO _____ |
| 4. Were the daily tests a burden for you? | YES _____ NO _____ |
| 5. Would you want them to be continued? | YES _____ NO _____ |

6. Did the tests help in studying History? YES _____ NO _____
7. Did the tests help in your oral recitations? YES _____ NO _____
8. Did you like the type of question on the quizzes? YES _____ NO _____
9. What do you think you should get out of a course in American History besides a mark in the course? _____
10. Do you think the daily tests or quizzes _____ help you to get that? (Stated in #9)
(check one) _____ prevent you from getting that?
_____ make no difference?
11. Do you know of any other subjects in which the daily tests would help?
a. _____ b. _____ c. _____ d. _____
12. In the remaining space (other side, if necessary) would you tell me truthfully just what you thought of those daily five-minute quizzes or tests? Everything you can think of!

Suggested Ideas for Teacher's Opinion
of Value of Five-Minute Daily Quiz.

1. Was the administration of the quizzes burdensome for you?
2. Would you still feel the same way if you had had to prepare and score the quizzes?
3. Do you feel that the tests emphasized facts to the exclusion of interest and attitude?
4. Do you think that the quizzes stimulated oral recitation and/or interest in current events?
5. Do you feel that the pupils resented the idea of a daily quiz?
6. In comparison with similar classes do you feel that the pupils lost or gained as a result of the quizzes? (i.e., in the matter of pupil attitude, retention of material, aims of history teaching, etc.)
7. Outside the matter of marks, do you think there was any benefit to the pupils taking the daily quiz?
8. What is your opinion of the standardized tests that were used in the experiment?
9. What is your opinion of the questions that were used in the daily quizzes?
10. What effect has the experiment had on the ideas you had of a daily quiz previous to the experiment?
11. What is your opinion of the procedure used in the experiment by the investigator?
12. In view of the experiment, do you feel that a five-minute daily quiz is beneficial, even if the statistical marks do not warrant such a conclusion? (See question six)
13. As a result of your association with the experiment, what conclusions have you reached? (Criticisms, suggestions, observations, etc.)

APPENDIX IV

TEST DESIGNED TO MEASURE RETENTION

NAME:

In the following sets of items put the figure 1 after the event that came first, the figure 2 after the one that came second, and in that way go through the nine items of each set. Do each set in the order that it is numbered; I, II, III, etc. Complete each set before starting the next one.

I

- | | |
|----------------------------|-----|
| 1. Acquisition of Texas | () |
| 2. Arrival of Genet | () |
| 3. Louisiana Purchase | () |
| 4. "War Hawks" | () |
| 5. Jacksonian Era | () |
| 6. Seventh-of-March Speech | () |
| 7. Kansas-Nebraska Act | () |
| 8. End of the Frontier | () |
| 9. Insular Cases | () |

II

- | | |
|--------------------------------------|-----|
| 1. Populist Party | () |
| 2. Erie Canal | () |
| 3. Turn of the Twentieth Century | () |
| 4. Labor begins to organize | () |
| 5. Gold rush in California | () |
| 6. Appearance of the "Liberator" | () |
| 7. Treaty of Ghent | () |
| 8. Formation of the Republican Party | () |
| 9. "Kitchen Cabinet" | () |

III

- | | |
|---------------------------|-----|
| 1. Embargo Act | () |
| 2. War between the States | () |
| 3. Acquisition of Florida | () |
| 4. "Uncle Tom's Cabin" | () |
| 5. Holy Alliance | () |
| 6. Jay Treaty | () |
| 7. Alabama Claims | () |
| 8. New Immigration | () |
| 9. Tariff of Abominations | () |

IV

1. Pendleton Act ()
2. "Open Door" Policy ()
3. Impeachment of Johnson ()
4. Homestead Act ()
5. "54 40 or fight" ()
6. Hartford Convention ()
7. Specie Circular ()
8. British Orders in Council ()
9. Dred Scott Decision ()

V

1. Continental System ()
2. Omnibus Bill ()
3. Appomattox ()
4. Webster-Hayne Debate ()
5. Era of Good Feeling ()
6. Squatter Sovereignty ()
7. Imperialism an election issue ()
8. Cleveland's first term ()
9. Oregon boundary settled ()

VI

1. "Trust busting" ()
2. Formation of the Whig Party ()
3. Fugitive Slave Law ()
4. Last Federalist President ()
5. Ostend Manifesto ()
6. Lincoln-Douglas Debates ()
7. Missouri Compromise ()
8. Mexican War ()
9. Panic of 1873 ()

VII

1. Underground Railway ()
2. Monroe Doctrine ()
3. Secession of South Carolina ()
4. Berlin and Milan Decrees ()
5. Emancipation Proclamation ()
6. Hayes-Tilden Dispute ()
7. Election of Lincoln ()
8. Thirteenth Amendment ()
9. Boxer Rebellion ()

VIII

1. Decade of advantage
to North ()
2. "Crime of 1873" ()
3. Sinking of the "Maine" ()
4. Treaty of Portsmouth ()
5. Fall of Fort Sumter ()
6. Spanish-American War ()
7. Panama Canal finished ()
8. Battle of Gettysburg ()
9. Purchase of Alaska ()

BE SURE TO FINISH EACH SET

BEFORE STARTING THE NEXT ONE !

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