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## An Experimental Evaluation of the Counter-Chronological Method of Teaching History

Harold S. Grande

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AN EXPERIMENTAL EVALUATION OF  
THE COUNTER-CHRONOLOGICAL  
METHOD OF TEACHING  
HISTORY

A Thesis  
Submitted to the Graduate Faculty  
of the  
University of North Dakota

by  
Harold S. <sup>hellman</sup> Grande

In Partial Fulfillment of the Requirements  
for the  
Degree of  
Master of Science in Education

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UNIVERSITY OF NORTH DAKOTA

University, North Dakota  
June, 1938

This thesis, presented by Harold S. Grande in partial fulfillment of the requirements for the degree of Master of Science in Education, is hereby approved by the Committee on Instruction in charge of his work.

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CHAPTER I  
INTRODUCTION

History has been conventionally taught and presented as a series of periods, and the chronology has generally been kept intact from early times to the present day. Consisting of a rather slow-moving, complete chronological account, the story of each period has brought together all aspects of life at that time. In many "progressive" history texts and courses, the social and economic aspects have been included, and are closely related to the political material. The merit of the conventional method of teaching history seems to lie in the fact that by careful choosing of material, and by careful planning, the life of the people is presented as an integrated whole.

There are certain psychological disadvantages to the conventional plan, the chief one being that it tends to separate current modes of living and problems from their historical antecedents. If history is to be taught so that it explains the "present," then it would seem that past events and moments must be closely tied up to the present.

Some years ago Breitwieser<sup>1</sup> suggested that since current events and their effects are prominent in the

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<sup>1</sup>J. V. Breitwieser, Psychological Education, F. S. Crofts & Co., New York, 1926, 65 and 133



life of our people, these events should be presented with the principles underlying them, and then we should go back to the origin of these principles in history. This would probably make historical events and moments stand out more clearly.

A number of objections to the idea of teaching history backward, or counter-chronologically, have been forwarded in the past few years. A short summary of these objections follows:

Rugg<sup>2</sup> has stated that

"--For one to feel "sequence" he must study the movement of civilization in sequence. Thus, to "teach history backward" or in any way out of sequence is absurd. It merely serves to handicap learning. Chronological presentation is psychological."

The Binnings'<sup>3</sup> listed a number of objections to the idea of teaching history counter-chronologically, namely:

1. The pupil starts out with an event about which he knows little or nothing.
2. He is turned back to prior events which have a causal relationship to the event studied. Since there may be many of these, their relationships to each other may not be plain to the pupil.

<sup>2</sup>Harold Rugg, *Teacher's Guide for an Introduction to Problems of American Culture*, Ginn & Company, New York, 1932, 48

<sup>3</sup>A. C. & D. H. Binning, *Teaching the Social Studies in Secondary Schools*, McGraw-Hill Book Co., New York, 1935, 278-279

3. The pupil is soon lost in a maze of factual material, unless he is exceptionally bright, because he is proceeding from the complex to the simple.
4. Since history is primarily one of cause and effect relationships, the effects cannot be evaluated by picking out certain phases of the causes.
5. It is based on the false premise that the present is always real to the pupil and that the past is always unreal.

In short, the study of history should be a background for the study of current events.

However, if we are to realize the obligation of education in the social studies, then we must educate the student to recognize change, to welcome desirable changes, and to help make those changes desirable by the conscious realization that intelligence can improve society. In this study we recognize that the student can arrive at no understanding or solution of any modern problem without getting aid from portions of past history, or its allies, governments, economics, sociology, geography, etc. But in accordance with recent psychological principles there is perhaps a sounder organization possible of history subject matter, based on pupils' daily life interests and needs.

Several experiments have been conducted to determine the relative effectiveness of the two methods of teaching history, on which this thesis is based, perhaps the most complete study being that done by

Crawford and Walker<sup>4</sup> in 1931. The results favored the method of teaching history "backward," but the period of experimentation was limited to a period of twelve weeks, the group-rotation technique being used. Each group used the new method for six weeks before being reversed. New type and objective questions furnished the basis for conclusions regarding the relative effectiveness of the new method.

Another interesting study was that made by Dresden<sup>5</sup> in 1935, but this study lacks sufficient statistical data to warrant a clear case for the new method of teaching history. No control group was mentioned, the experiment taking place during the second semester of a year's course in Modern History. A single class of thirty pupils was used with no control group used as a check. However, the discussion of method used in teaching history "backwards" was very interesting, as were the values ascribed to the new method, such as

"Teach history backwards and the current situation will always be taught in connection with the rest of the course, thus resulting in ideas of continuity and progress."<sup>6</sup>

<sup>4</sup>C. C. Crawford and W. S. Walker, An Experiment in Teaching History Backward, Historical Outlook, McKinley Publishing Co., Philadelphia, Pennsylvania, Vol. XXII, No. 18, Dec., 1931, 395-397

<sup>5</sup>Katherine W. Dresden, Teaching History Backwards, The Social Studies, McKinley Publishing Co., Philadelphia, Penna., Vol. XXVII, No. 1, January 1, 1936, 37-43

<sup>6</sup>Dresden, op. cit., 39

The problem of history in education presents too many ramifications to consider here, but while Dawson<sup>7</sup> presented a succession of "strong" arguments for the teaching of history chronologically, so as to attain a sense of continuity in the process of change, he also presented an interesting commentary on problems which began over a century and a half ago:<sup>8</sup>

"---Basedow and d'Alembert agreed that history should start with the present and move backward. The French decree of 1793 proposed to reduce history in the schools to the study of the current history of France, with a sprinkling of such current things outside of France as promised to be useful to French art and industry. Throughout the century current events had been advocated and were frequently required by school regulations."

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<sup>7</sup>Edgar Dawson, *Teaching the Social Studies*, The Mac-Millan Company, New York, 1928, 231-234

<sup>8</sup>*Ibid.*, 227

CHAPTER II  
STATEMENT OF PROBLEM AND  
DESCRIPTION OF METHOD

During the regular school year of 1937-1938 an experiment was carried on by the writer to determine the effectiveness of teaching history "backwards." The problem involved the comparison of two methods in teaching history: the regular chronological treatment, and the experimental method of teaching history backward, or counter-chronologically.

For experimental purposes four sections in Modern History in the high school at Litchfield, Minnesota, a three-year senior high school, with an enrollment of approximately 450 pupils, were used. These four sections were taught by the same teacher, the writer, who, previous to this experiment, had had three years' experience in teaching Modern History.

The essential variable factor in this experiment was the relative effectiveness of learning history chronologically or counter-chronologically, a careful attempt being made to control all non-experimental variables as much as possible.

The experimental procedure was applied during the first and second semesters. None of the pupils

transferred at any time from an experimental to a control section or vice versa. One hundred and forty-two members of the sophomore class were enrolled in the course in Modern History for the entire year, and of this number, one hundred and thirty-two were subjects of this experiment, the remaining ten members being dropped because of prolonged absence from school, or because they were absent at the time three or more tests were given. No courses are offered in either Ancient or Medieval History; so none of the pupils had an advantage in background material at the start of the experiment.

The parallel-group technique was used, the control group consisting of the first and sixth-hour classes, while the experimental group was composed of the second and fifth-hour classes. The class sizes are given in Table 1. The pupils were assigned to their classes by the principal, on an alphabetical basis, each class containing pupils with surnames from A to Z. All class assignments were made without thought of the experiment, but an attempt was made by the principal to equalize the size of the classes.

Table 1  
The Number of Pupils in Each Class  
Used in the Experiment

Periods	Hours	Class Size	Number of Pupils
1	9-10	33	32
2	10-11	37	35
5	2-3	35	31
6	3-4	38*	34
Total:		143	132

\* Includes one junior who took the course during the entire year, not included in experiment.

A total of 28 boys and 38 girls was used in the control group, and 32 boys and 34 girls in the counter-chronological group.

Each pupil in all sections was provided with the basic text used in the course, namely, Hayes and Moon, Modern History.<sup>9</sup> The chief supplementary text available to all students during the study period in the classroom was Carl Becker's Modern History.<sup>10</sup> Available also in the classroom was a fairly standard collection of about seventy-five reference books adapted to a better understanding of the subject. The same classroom was used by all sections, together with maps, bulletin boards, blackboard space, and reference books.

<sup>9</sup>G. J. H. Hayes and P. T. Moon, Modern History, MacMillan Company, New York, 1936, 1-932

<sup>10</sup>Carl L. Becker, Modern History, Silver, Burdett and Company, New York, 1935, 1-826

Beginning with the first assignment on the opening day of school on September 7, 1937, the classes in Modern History were started on two different paths of studying history. Textbook assignments were used in both cases, regular assignments being given in all classes, plus additional outside reading in standard texts. No workbooks were used; instead, a brief digest of the material to be covered was written on the blackboard and copied by the students, except when essential sheets were given them.

The group studying in the regular chronological order started in with Chapter One, which gave the background-material to the course. Those in the group studying by the counter-chronological method started in with Chapter Thirty in the same text, this chapter being the last one in the book and contained a resume' of the world economic crisis up to the publication date, 1936. Assignments then proceeded in a regular succession of chapters for the groups studying in the regular order, while the experimental groups proceeded in a reverse order through the text by studying the preceding chapter after completion of the first assignment.

Thus the control group studied the text in the order of Chapters 1, 2, 3, 4, etc., while the experi-



mental group studied in the order of Chapters 30, 29, 28, 27, etc.

The school uses the supervised study plan, and this was generally followed in all sections of the course in Modern History. Using the chapters as short units, from three to six days of study and recitation were devoted to each. Preceding each assignment a preview of materials to be covered and an introduction to the assignment were given by the instructor. The study of the unit was concluded by written tests, oral discussions and reports, or both. Instructions in how to study and the methods of supervised study were practically identical in all sections. The order of study used in all sections was the same, roughly being: presentation, assimilation, organization, and recitation.

Several hectographed essentials--sheets, outlines, study questions, and suggestions for extra-credit work, were passed out to all students during the course of the year. These sheets were hectographed on both sides, the material for the control group being printed on one side and the material for the experimental group appearing on the other. Each student kept a notebook in which this material was filed--so that reference

could be made to the Unit Chapter when the groups had progressed to the same period of study chronologically or counter-chronologically.

One day in each week (Monday) was used by all sections for the study of Contemporary Affairs, The American Observer<sup>11</sup> furnishing a fairly comprehensive resume' of world news. All sections studied and commented upon their reading with no variance from the method used in any class, pupil-interest determining the nature of the discussion. Since the school received only forty copies of the American Observer, the first half of the period was spent in reading the chief topic of interest, Around the World News, and several suggested articles. If the student finished his reading before the allotted time was up, he continued in reading other articles of interest before discussion began.

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<sup>11</sup>Civic Education Service, Washington, D. C.

### CHAPTER III

#### DESCRIPTION AND TREATMENT OF DATA

In conducting the experiment, achievement in both groups was measured by means of objective tests, both standardized and new-type tests being utilized. The tests and the time at which they were given are shown in Table 2. All the standardized tests could be administered and completed within one hour. The Comprehensive Final Examination, having a limit of two hours, contained one hundred and eighty items selected from the Minnesota State Board examinations for 1935 and 1936. Earlier, two revised versions of the tests of 1935 and 1936 containing approximately one hundred questions each, had been constructed by the writer.

In Table 3 the results of the tests given at different intervals during the year are compared. The significance of the difference of the means was determined by using the Probable Error of Mean Difference Formula. With the exception of Form Q of the Cooperative Modern European History Test, given on January 20, 1938, The Iowa Every Pupil Test in World History, given on May 10, 1938, and the Comprehensive

Final, given on May 31, 1938, the gain is statistically significant in each of the tests, since the difference between the means amounts to three or more times the probable error of the mean difference.

On the basis of intelligence quotients and chronological age, the two groups were quite fairly-matched. In the case of the intelligence quotient the difference between the means amounted to .41 in favor of the experimental group; and a difference between the means in chronological age shows 1.54 months to the advantage of the same group. These differences, for all practical purposes, were statistically insignificant.

Since a discussion of each table, beginning with Table 4, precedes the presentation of statistical data concerning the various tests, the reader can, perhaps, better follow the problems involved by reading these comments. The experimental coefficient, designed by McCall,<sup>12</sup> has been used to state probability in terms of chances that the true difference is above or below zero.

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<sup>12</sup>W. A. McCall, *How to Experiment in Education*, The MacMillan Company, New York, 1923, 155

**Table 2**  
**The Type of Tests Used and Time**  
**of Administering Them\***

Tests	Date Given
Co-operative Modern History Test Form <u>N</u>	Jan. 20, 1938
Co-operative Modern History Test Form <u>Q</u>	May 25, 1938
Iowa Every Pupil Test in World History	May 10, 1938
Revised Version of the Minnesota State Board Examination for 1936	April 20, 1938
Revised Version of the Minnesota State Board Examination for 1935	May 2, 1938
Comprehensive Final Examination based on State Board Examinations for 1935 and 1936	May 31, 1938
American Observer Test, First Semester	Jan. 21, 1938
American Observer Test, Second Semester	May 19, 1938
Iowa Every Pupil Test in Contemporary Affairs	May 9, 1938

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\*Names of publishers on page 43.

**Table 3**  
**Statistical Summary of the Scores of the**  
**Students Used in the Experiment**

History Tests Used	Experi- mental Group	Control Group	Difference Between Means	Probable Error of Mean Difference
1. Form <u>N</u>	41.85	42.58	-.73	.55
2. Form <u>O</u>	54.17	51.43	2.74	.64
3. World History	33.59	33.21	.38	.85
4. State Board, 1936	35.95	30.81	5.14	1.5
5. State Board, 1935	39.77	32.82	6.95	1.47
6. Comprehensive	102.52	92.67	9.85	4.82
<b>Contemporary Affairs</b>				
7. Iowa Every Pupil	41.5	38.22	3.28	.99
8. Observer, First	36.23	33.01	3.22	1.06
9. Observer, Second	39.33	35.66	3.67	1.18

COMPARISON OF GROUPS ON BASIS OF INTELLIGENCE TESTS  
AND CHRONOLOGICAL AGE

In order that the experiment prove as valid as possible, it was necessary that the experimental and control groups be as equal as possible on at least two multiple bases, those of intelligence and chronological age. The scores on intelligence tests were readily available from the principal of the Litchfield Schools.

The initial difficulty lay in the fact that all pupils used in the experiment had not been tested with the same intelligence tests. Two tests had been administered by the school, namely, The Kuhlmann-Anderson Tests and the Terman Group Test of Mental Ability, Form A. All the results on the Terman test were used, forty scores being available for the control group and thirty-eight for the experimental group. There were twenty-six scores on the Kuhlmann-Anderson test used for the control group and twenty-eight for the experimental.

Since almost the same number of each of the two test scores is used in Table 5, the scores have not been equated. For statistical reasons, however, the means, together with the difference between the means,

on the two tests used, are shown in Table 4 following these comments. There is practically no statistical significance when the two means are averaged. Table 5 shows a difference between the means of only .41, statistically insignificant.

Table 4

Summary of Means, Differences Between Means, and the Number of Scores Used in Order to Equate the Two Groups Properly

Name of Test	Number Used	Experimental Group	Number Used	Control Group	Difference Between Means
Terman Group	38	100.01	40	100.67	.66
Kuhlmann-Anderson	28	106.46	26	104.	2.46
Summary, Table 5*	66	103.09	66	102.68	.41

\*Page 18

Table 6 needs little comment, since the two groups were quite fairly equated on the basis of chronological age, a slight difference of 1.54 months favoring the experimental group. The chronological age is given to October 1, 1938.



Table 5  
 Comparison of the Intelligence Quotients  
 in the Experimental and Control Groups\*

Scores	Control Group	Experimental Group
125-127		2
122-124	3	1
119-121	1	5
116-118	6	5
113-115	4	4
110-112	4	4
107-109	9	7
104-106	7	4
101-103	3	3
98-100	7	9
95-97	6	1
92-94	7	8
89-91	1	6
86-88	3	3
83-85	2	2
80-82		2
77-79	<u>3</u>	<u>—</u>
Total	66	66
Median	104.43	103
Mean	102.68	103.09
S. D. dis.	10.16	11.59
S. D. mean	1.25	1.42
P. E.	.84	.95

\*Based on Terman Group Tests and Kuhlmann-Anderson Tests of Intelligence.

Table 6  
 Comparison of Chronological Age  
 in the Experimental and  
 Control Groups

Scores	Control Group	Experimental Group
212-214		1
209-211		
206-208	3	1
203-205		1
200-202	2	1
197-199	3	3
194-196	3	5
191-193	3	5
188-190	6	11
185-187	14	10
182-184	7	9
179-181	12	11
176-178	4	4
173-175	6	2
170-172	1	2
167-169	2	
<b>Total</b>	<b>66</b>	<b>66</b>
<b>Median</b>	<b>185.21</b>	<b>186</b>
<b>Mean</b>	<b>185.09</b>	<b>186.63</b>
<b>S. D. dis.</b>	<b>8.82</b>	<b>9.27</b>
<b>S. D. mean</b>	<b>1.08</b>	<b>1.14</b>
<b>P. E.</b>	<b>.73</b>	<b>.77</b>

DISCUSSION OF THE RESULTS OBTAINED ON FORMS  
N AND Q OF THE COOPERATIVE MODERN  
HISTORY TESTS

Since both Form N and Q of the Cooperative Modern European History Tests are designed to cover a full-year course in Modern History, the Administering of Form N, January 20, 1938, was done for the purpose of measuring the achievement of the two groups during the first semester, on a single standard. At this time the control group had covered the initial chapters in the textbook and was beginning the study of the Napoleonic period. The experimental group had covered material back through the World War, in similar textbook assignments.

The results of the test on Form N are shown in Table 7, and favor the control group, the difference between means amounting to .73, the probable error of the mean difference .55, which was 1.33 times the probable error of the mean difference, statistically insignificant. The experimental coefficient favored the control group .5, which is about eleven chances to one, according to McCall's<sup>13</sup> data.

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<sup>13</sup>McCall, op. cit. , 155

Form Q of the Cooperative test was given on May 25, 1938, at which time the control group had finished all but the discussion on the last chapter in the text. The experimental group had covered all but the first two chapters in the text. Both groups had spent some time in review, on an individual basis.

The results of the test on Form Q are shown in Table 8, and favor the experimental group, the difference between the means amounting to 2.74, .64 the probable error of the mean difference, which was 4.28 times the probable error of the mean difference, therefore, statistically significant in favor of the experimental group. The experimental coefficient favored the experimental group .99, which is about 348 chances to one.

Table 7

Comparison of the Results on Form N of Modern  
History Test Given January 30, 1938

Scores	Control Group	Experimental Group
54-55	1	1
52-53	2	1
50-51	2	1
48-49	6	10
46-47	8	4
44-45	8	9
42-43	11	10
40-41	14	11
38-39	2	6
36-37	4	3
34-35	3	1
32-33	3	2
30-31	1	6
Total	65	65
Median	43.5	43.05
Mean	42.58	41.85
S. D. dis.	3.67	5.56
S. D. mean	.45	.69
P. E.	.31	.46
Ex. Coeff.	.50	

Table 8

Comparison of the Results on Form Q of the  
Modern History Test Given May 25, 1938

Scores	Control Group	Experimental Group
66-67	2	1
64-65	1	
62-63	2	4
60-61	1	3
58-59	3	8
56-57	5	8
54-55	11	14
52-53	8	13
50-51	3	5
48-49	10	3
46-47	6	3
44-45	6	3
42-43	7	
40-41	—	<u>1</u>
Total	65	66
Median	52.12	54.71
Mean	51.43	54.17
S. D.	5.9	4.97
S. D. m	.73	.61
P. E.	.49	.41
Ex. Coeff.	.99	

DISCUSSION OF THE RESULTS OBTAINED ON  
THE WORLD HISTORY TEST

The Litchfield Schools have used the Iowa Every Pupil Tests in a number of subject fields for the past three years. Since no Modern History test is available from the University of Iowa, sponsors of this testing program, the Iowa Every Pupil Test in World History has been given to the class in Modern History. This World History test covers the ancient and medieval periods with greater fullness than is expected in a Modern History course, yet, for the purposes of this experiment the results are interesting. This test was given on May 2, 1938, and the results are shown in Table 9.

The difference between the means amounts to .38, favoring the experimental group; the probable error of the mean differences is .85, which was .45 times the probable error of the mean difference, statistically insignificant. The experimental coefficient favored the experimental group by .11, which is about 1.69 to one.

Table 9  
 Comparison of the Results on the World History  
 Test Given May 10, 1938

Scores	Control Group	Experimental Group
53-54		1
51-52	1	2
49-50		
47-48	2	2
45-46	3	
43-44	3	2
41-42	2	1
39-40	5	7
37-38	3	5
35-36	5	5
33-34	5	8
31-32	12	12
29-30	9	5
27-28	3	6
25-26	4	5
23-24	2	4
21-22	5	1
19-20	<u>2</u>	<u>—</u>
Total	66	66
Median	32.33	33
Mean	33.21	33.59
S. D.	7.45	7.03
S. D. m	.92	.87
P. E.	.62	.58
Ex. Coeff.	.11	



DISCUSSION OF THE REVISED VERSIONS OF THE  
MINNESOTA STATE BOARD EXAMINATIONS  
FOR 1935 AND 1936

Three tests were derived from the Minnesota State Board Examinations in Modern History for 1935 and 1936. These tests were discontinued after 1936. Permission was secured from the Minnesota Department of Education, St. Paul, to mimeograph and use any materials from State Board examinations, selected for the purpose of this study.

A revised version of the State Board test for 1936 was first constructed, one hundred items being selected so that the entire year-course would be fairly and adequately covered. This test was given on April 20, 1938. At this time the control group had covered material to the World War period, while the experimental group was finishing a discussion on the French Revolution.

Table 10 shows the results on this test. While the range is notably large in both groups, the test quite definitely favors the experimental group. The difference between the means amounts to 5.14; the probable error of the mean difference is 1.5, which is 3.42 times the probable error of the mean difference. The experimental coefficient favored the experimental group by .83, which is about 100.5 chances to one.

The Revised Version of the 1935 State Board Examinations in Modern History was constructed on the same principles as the first examination of this type, given twelve days earlier. Both groups had progressed in their different directions of study, so that the control group had finished a discussion on the World War, and the experimental group was studying sixteenth century England.

Table 11 shows the results on the 1935 test. While the range is also notably large in both groups, the test again definitely favors the experimental group. The difference between the means amounts to 6.95; the probable error of the mean difference is 1.47, which is 4.73 times the probable error of the mean difference, statistically significant. The experimental coefficient favored the experimental group by 1.13, which is about 1356 chances to one.

The final test was a comprehensive review using the same questions taken from the 1935 and 1936 State Board Examinations. One hundred and eighty items were selected that had already appeared on the April 20 and May 2 revised versions of these two tests. At the time this test was given, May 31, 1936, the control group had

finished the text, the last chapter being rather hurriedly covered in order to allow some time for review. The experimental group did not finish Chapter One in the text, except as individuals did on their own initiative. Group discussion on Chapter Two was likewise eliminated in order to allow a little time for review on the essentials. At this point all groups reviewed the year's materials in similar fashion.

Table 12 shows the results on this test. The range is very large in both groups. The difference between the means amounts to 9.85; the probable error of the mean difference is 4.62, which is 2.13 times the probable error of the mean difference, lacking statistical significance of importance. The experimental coefficient favored the experimental group by .51, which is about 11.9 chances to one.

Table 10  
 Comparison of the Results on the Modern History  
 Test\*Given April 20, 1938

Scores	Control Group	Experimental Group
72-74		2
69-71		1
66-68	1	
63-65	2	1
60-62		2
57-59	1	2
54-56		1
51-53	3	3
48-50	1	2
45-47	3	5
42-44		2
39-41	3	3
36-38	4	5
33-35	1	4
30-32	11	4
27-29	4	8
24-26	11	4
21-23	5	6
18-20	8	4
15-17	2	1
12-14	4	1
9-11		1
6-8	—	2
Total	64	66
Median	28.5	34.5
Mean	30.81	35.95
S. D. dis.	10.64	14.448
S. D. mean	1.33	1.78
P. E.	.9	1.2

Ex. Coeff. .83

\*Revised from the Minnesota State Board test of 1936.

Table 11  
 Comparison of the Results on the Modern  
 History Test\* Given May 2, 1936

Scores	Control Group	Experimental Group
68-70	2	2
65-67	1	2
62-64	1	2
59-61		
56-58	1	4
53-55	4	3
50-52	3	2
47-49	3	5
44-46	1	4
41-43	3	6
38-40	4	5
35-37	4	1
32-34	3	8
29-31	5	5
26-28	3	3
23-25	10	2
20-22	3	4
17-19	4	
14-16	4	1
11-13	3	2
8-10	2	1
5-7	<u>1</u>	<u>—</u>
Total	65	62
Median	30.5	40.4
Mean	32.82	39.77
S. D.	15.64	9.84
S. D. m	1.94	1.02
P. E.	1.3	.69

Ex. Coeff. 1.13

\*Revised from the Minnesota State Board test of 1935.

Table 12

Comparison of the Results on the Final  
Examination\* Given May 31, 1938

Scores	Control Group	Experimental Group
167-176	1	2
157-166	2	3
147-156	6	5
137-146	4	5
127-136	7	6
117-126	2	5
107-116	4	4
97-106	7	8
87-96	2	5
77-86	4	5
67-76	7	4
57-66	3	4
47-56	6	6
37-46	5	3
27-36	6	
17-26	—	<u>1</u>
Total	66	66
Median	96.99	103.25
Mean	92.67	102.53
S. D. dis.	41.14	37.64
S. D. mean	5.06	4.63
P. E.	3.41	3.13
Ex. Coeff.	.51	

\*This test was a combination of the revised Minnesota State Board tests of 1935 and 1936.

DISCUSSION OF THE THREE TESTS USED TO MEASURE  
ACHIEVEMENT IN CONTEMPORARY AFFAIRS

Three comprehensive tests were given to measure achievement in the pupils' knowledge of current events. Since both the control and experimental groups studied current events on the same day, with the same method of presentation being used, namely, The American Observer, the chief variable factor, in view of other factors being almost wholly controlled, would be the pupils' interest and knowledge of current affairs as affected by the method in which they were studying history. The first semester test on the American Observer was given on January 21, 1938, the same test being administered to all senior high pupils at the same time.

Table 13 shows the results on this test. The range is relatively large in both groups, the results, however, favoring the experimental group. The difference between the means amounts to 3.22; the probable error of the mean difference is 1.06, which is 3.03 times the probable error of the mean difference, statistically significant. The experimental coefficient favored the experimental group by .73, which is about 49.1 chances to one.

The second-semester test on the American Observer was given on May 19, 1938, the results again favoring the experimental group by almost the same ratio. This test was designed to cover, primarily, material that had been presented in the American Observer during the last half of the school year.

Table 14 shows the results on the second-semester test. The range is again noticeably large in both groups; the test results favor the experimental group, the difference between the means amounts to 3.67, the probable error of the difference is 1.18, which is 3.11 times the probable error of the mean difference, again being statistically significant. The experimental coefficient favored the experimental group by .73, which is about 49.1 chances to one.

In connection with the Iowa Every Pupil testing program in the Litchfield Schools, a test on contemporary affairs was given to all students in the high-school department on May 9, 1938. The junior class ranked highest in this test, with the sophomore, senior and freshman classes ranking in the order named. This test was constructed with the purpose of testing the pupils' knowledge of world affairs.



Table 15 shows the results on the Iowa Contemporary Affairs test. The range is quite large, definitely so for the experimental group, which the test results favor. The difference between the means amounts to 3.28, the probable error of the mean difference is .99, which is 3.31 times the probable error of the mean difference, statistically significant. The experimental coefficient favored the experimental group by .78, which is about 67.6 chances to one.

Table 13  
 Comparison of the Results on the American Observer\*  
 Test Given January 21, 1938

Scores	Control Group	Experimental Group
57-59		1
54-56		3
51-53	1	2
48-50	2	1
45-47	7	7
42-44	2	9
39-41	3	4
36-38	6	6
33-35	9	7
30-32	14	7
27-29	6	6
24-26	6	6
21-23	3	
18-20	4	3
15-17	<u>1</u>	<u>1</u>
Total	64	63
Median	32.57	36.75
Mean	33.01	36.23
S. D. dis.	6.16	10.87
S. D. mean	.77	1.37
P. E.	.52	.93
Ex. Coeff.	.73	

\*Prepared by the publishers of the American Observer, The Civic Education Service, Washington, D. C. This was their First Semester Test.

Table 14

Comparison of the Results on the American Observer  
Test\* Given May 19, 1938

Scores	Control Group	Experimental Group
60-62		2
57-59	2	2
54-56	1	
51-53	1	4
48-50	5	4
45-47	4	11
42-44	4	5
39-41	6	7
36-38	8	7
33-35	7	6
30-32	11	3
27-29	3	4
24-26	8	2
21-23	2	2
18-20	1	3
15-17	<u>2</u>	<u>1</u>
Total	65	63
Median	35.36	40.5
Mean	35.66	39.33
S. D.	9.29	10.49
S. D. m	1.14	1.32
P. E.	.77	.89

Ex. Coeff. .73

\*Prepared by the publishers of the American Observer,  
Civic Education Service, Washington, D. C. Second  
Semester Test.

Table 15  
 Comparison of the Results on the Contemporary  
 Affairs Test\* Given May 9, 1938

Scores	Control Group	Experimental Group
64-65		1
62-63		
60-61		
58-59		3
56-57	4	2
54-55		5
52-53	3	1
50-51	1	2
48-49	2	3
46-47		6
44-45	3	7
42-43	4	3
40-41	12	3
38-39	4	4
36-37	9	4
34-35	1	5
32-33	7	7
30-31	6	2
28-29	3	4
26-27	2	1
24-25	<u>4</u>	<u>3</u>
Total	65	66
Median	38.25	42
Mean	38.22	41.5
S. D. dis.	8.36	9.77
S. D. m	1.04	1.2
P. E.	.7	.7

Ex. Coeff. .78

\*Iowa Every Pupil Test on Contemporary Affairs for 1938.

### GENERAL CONCLUSIONS AND INFERENCES

The measurement and control of such an experiment as this is not without certain limitations and error due to various factors for which no reliable measurements have been devised, such as:

1. Some teachers might be more successful with one method than another.
2. Study habits, retention of learned materials, and other factors may vary to an unmeasurable degree.
3. Pupils in a school such as Litchfield Junior-Senior High School do not represent a true cross-section of the average high school, since sixty per cent of the pupils are from rural communities, being transported to the school by bus.

But the experimental factor as it was applied by the writer to this particular group of sophomores taking their first course in Modern History proved with fair statistical significance that the counter-chronological method of teaching history brought better results on both Modern History tests and contemporary affairs tests, this group scoring consistently higher on the final tests in Modern History and on all three

tests on contemporary affairs. Of no statistical importance, but interesting, nevertheless, was the unanimous vote of the experimental group that this was a very interesting way to learn history. The pupils' conclusions came at the end of the course. The writer might also add that this is also a very interesting method of teaching history.

As the result of this experiment there are certain inferences<sup>14</sup> that can be drawn, as well as suggestions.

1. Both methods require about the same amount of time to cover the same period of time when the text-book method is used, as in this experiment. However, as mentioned previously in this report, there is a decided rush to complete the text, whichever method is used.

2. Since this is the third report, within the writer's knowledge, to show evidence supporting the counter-chronological method of teaching history, additional experiments should be made using different techniques than the ones described.

3. Experiments in teaching American History and World History by the counter-chronological method would prove valuable in determining the relative effectiveness of the "new" method.

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<sup>14</sup>G. V. Good, A. S. Barr, D. E. Scates, The Methodology of Educational Research, D. Appleton-Century Company, Incorporated, New York City, 1936, 522

4. The teaching and learning of contemporary affairs have become increasingly important in the past decade, and since the presentation of current affairs falls upon the social science teachers, a technique must be developed that "ties" the subject material together with the current situation effectively, and, therefore, preserves the idea of "continuity."

5. The writing of a "Modern History" textbook for use on the high-school level and incorporating the idea of a counter-chronological treatment of history would facilitate further experiments in this field of study. This text might present representative and outstanding periods and ages, tracing "backward" to causal relationships. It should be written with the idea of enlarging the knowledge of past history, as well as understanding the present. The writer is fully aware that many of the newer textbooks in Modern History treat the subject in topical, unit, and different arrangements of materials other than the strict chronological treatment accorded in the past.

6. Since history should give value and meaning to an understanding of today's problems, the approach to history should be vital and dynamic, and since the counter-chronological method appeals to the imagination

from its constant search for causal relationships, it may be that a better study technique will result from this approach to the study of the past.

In concluding this report it can be stated that:

In view of the fact that the newer method seems to bring results more successful in comparison with the old method, in spite of the fact that the work was carried on with textbooks and other materials usually associated with the older method, it would be interesting to see whether the new method, when used in connection with textbooks and other materials especially adapted to it, would prove even more successful.



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## APPENDIX

## Names of Publishers' Tests Used

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