

A COMPARATIVE STUDY OF TRADITIONAL AND INDUCTIVE METHODS
OF TEACHING SOCIAL STUDIES

by

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CHAPTER I

INTRODUCTION

The teaching of American history has received considerable criticism in recent years. The criticism of educators and historians includes the presence of undifferentiated repetition, lack of knowledge on the part of students, and lack of articulation of content in American history courses. Much needs to be done to improve the teaching of American history. It seems that practice is lagging behind accepted theory.

Statement of the Problem

It was the purpose of the study to (1) review available literature on traditional and inductive methods of teaching social studies; and (2) determine if teaching social studies by the inductive method would result in significantly greater achievement of social studies in eighth grade students than teaching by traditional methods. More specifically the primary consideration of this study was to test the following hypothesis:

- H₁: There is no significant difference in achievement test scores in social studies by eighth grade students in social studies when taught by the inductive and traditional methods.
- H₂: There is no significant difference in critical thinking by eighth grade students in social studies when taught by the inductive and traditional methods.

Importance of the Study

In a recent survey conducted in the Kansas schools the following findings were reported by Mary Jean Swenson. American history in grade eight is largely textbook orientated. Almost one half of the responding teachers indicated that they used the textbook as the only method of content organization. Over half the teachers with 0-5 years experience used the textbook taught in chronological order as a basis for their content organization and only twenty-six percent used resource units.¹ It was evident through the evaluation by Mary Jean Swenson that a revision of methods now used in teaching American history needed to be implemented.

Limitations

The study was limited to two classes of eighth grade students at St. Xavier's School in Junction City, Kansas. There were twenty-one students in group A and twenty-two students in group B.

The experiment was limited to one semester of the school year 1967-1968 from September to January. Another limitation was in the length of class periods. The class period for the experimental group was from 12:00-12:45. The experimental group had a ten minute longer

¹Mary Jean Swenson, "A Study of Eighth Grade American History Courses in the Three-Year Junior High Schools of Kansas," The University of Kansas Bulletin of Education, vol. 21, No. 2. Lawrence Kansas: University of Kansas Press, 1967.

class because of the band practice held at that time which was scheduled according to the high school schedule. The class period for the control group was from 1:20-1:55.

A further limitation was that the materials developed by Roy Price were not available this year, so it was necessary to adapt inductive methods developed for freshmen written by Dr. Edwin Fenton. It was not possible to obtain a 16mm. film projector in the locality, so audio-visual aids were limited to filmstrips, overhead projector, transparencies, charts, maps, globes and pictures.

Definition of Terms

1. Traditional method. Teaching for grading purposes through verbal methods (lectures, discussions, recitation, and reading text).

2. Inductive method. A set of teaching and learning techniques which emphasize the importance of critical thinking and sequential and cumulative learning.

CHAPTER II

REVIEW OF LITERATURE

Literature on the National Social Studies Program

The Social Studies Program began in 1962 by the United States Office of Education to improve instruction, research, and teacher education in the social sciences. To implement these goals, the office, through the Cooperative Research Program, invited colleges, universities, and state departments of education to submit proposals for funds to conduct basic research and establish curriculum development centers.

The centers, located in universities, were headed by professors. They involved the collaboration of the university scholar with public school teachers. They usually employed a set of teaching and learning techniques referred to as the inductive method or inquiry approach.

Since the program was national in scope, it was possible for major revision programs to achieve wide and perhaps lasting impacts on schools of the century. Most of the scholars were aware of the fact that this program was only a prototype, but they hoped that by continued experimentation and tests, techniques that developed the student's critical thinking would become an integral part of teaching social science.

The objectives of the program were (1) to redefine the scope and goals of the social studies curriculum; (2) to develop techniques and materials to achieve those goals; (3) to submit newly created materials to a sequence of experimentation, evaluation, and revision; and (4) to disseminate the materials and relevant information.

Literature on the Traditional Method

Traditional teaching often seemed to assume that knowledge for its own sake was the ultimate goal. The student was expected to leave the classroom with an arbitrarily determined number of facts, names, dates, and events. This knowledge was important but other goals were given equal importance. The student was asked to think.

The Committee of Seven in 1899 stated the objective of American History as follows:

To lead pupils to a knowledge of the fundamentals of the state and society of which he is a part. Appreciation of his duties as a citizen. Intelligent tolerant patriotism.¹

It was apparent that there had been little change of content of American History since 1900. The content of many courses in American History was determined by writers of textbooks who were relied upon as a basis for study rather than upon multiple sources.

The social studies program, including American History, in twentieth century schools, had been shaped largely by the recommendations of national committees such as Committee of Ten of National Education Association, Committee of Seven of the American Historical Association, and the National Education Association Committee on Social Studies of 1916.

A national study conducted by the United States Office of Education in 1946-1947 revealed that although no nationally accepted sequence

¹Committee of Seven of the American Historical Association, The Study of History in Schools (New York: Macmillan Co., 1899), p. 4.

in social studies existed, the most widely accepted sequence was grade seven, geography; grade eight, United States history;²

Although no sequence of American History courses was nationally accepted, American History was usually taught in grade eight and again in grade eleven. Both levels offered a survey course including the entire scope of American History.

Current projects financed by the Cooperative Research Branch of the Department of Health, Education, and Welfare suggested a heavy emphasis of behavioral sciences and reduction of American History as such in junior high school. These projects produced curricular guides and materials designed to improve the teaching of American History.

Richard Gross compiled a list of objectives or aims in teaching American History in 1950 which included: (1) an appreciation of and devotion to the American way of life; (2) knowledge of essential facts of United States history; (3) understanding of current problems via the past; (4) displaying of initiative and responsibility of good citizens; (5) a realization of the role of the United States in world affairs; (6) the rise of critical thinking; (7) competence in social studies; (8) development of worthy social attitudes and personal qualities; (9) knowledge and interest in government functions; (10) grasp of interrelationships of the various special studies.³

²Howard R. Anderson, "Teaching of United States History in Public High Schools, An Inquiry Into Offerings and Registrations, 1946-1947," United States Office of Education, Bulletin 1949, No. 7, p. 11.

³Morris Lewenstein, Teaching Social Studies in Junior and Senior High Schools (Chicago: Rand-McNally & Co., 1963), pp. 10-13.

The traditional method of teaching social studies included teaching for grading purposes through verbal methods such as lectures, discussions, recitation, and reading of text.

Traditional methodology in teaching social studies was devised to give students an understanding of human behavior and human institutions of the culture in which they lived. Educators thought students could best achieve knowledge for themselves after they had developed generalizations and frames of reference as well as methods of investigations and effective thinking in well-organized and well-taught traditional subject courses.⁴

Recitation was used as one learning activity in the continuum of fact-gathering and thinking activities upon which the unit approach was based. It had a very positive contribution to make to teaching and learning processes. If reading assignments in textbooks or other reading materials were used, only a short recitation period was needed to hold the student responsible for what the reading material said. The purpose of the recitation was the student's command of certain facts or definitions of concepts before proceeding to other types of activities in which they had to interpret meaning or to think about information. Some teachers gave a short written quiz on which all students knew they would be graded. Presumably, in order to pass them, students put forth effort to complete the reading assignment.

⁴Ibid., pp. 37-39.

The greatest advantage of the recitation period for the teacher was that it served as a means of discovery and diagnosis of difficulties that the students encountered in learning the assigned content material the teacher liked them to learn. If the students could not remember information or ideas from their reading or previous class activities, it was doubtful how much they gained if the teacher plunged ahead with other activities planned on the assumption that they recalled certain facts.

A teacher began lecturing by making short talks which afforded the students an opportunity to learn how to listen. As the students grew older, as they increased their ability to learn from listening and to take notes on what they heard, the "talks" were lengthened.

If the lecture method was used in junior high school, it was seldom relied upon as the sole procedure for an entire class period. It was combined with recitation and discussion as a means of avoiding monotony, recapturing attention, and making sure that students were understanding and thinking about the subject they were being taught.

The technique of discussion called for students to think about the relationship among facts. They weighed significant facts, selected the relevant ones and discarded irrelevant ones, and argued with them. They related new facts learned in preparation for a specific assignment to what they had learned previously both in and out of school. As a result, these facts became endowed with new meaning for the thinking students.

Discussion involved at least an argument among several people regarding the best surmise of the truth. Discussion depended upon controversy both for its initial impetus and for its continuation. It was initiated by students who disagreed with what the teacher or another student had said. It was provoked by a teacher who asked a question to which there was no correct answer. In the early stages of developing a discussion, the teacher's goal was to stimulate a controversy. Once this had been achieved, he tried to help the group define areas of disagreement. Then, he tried to help them eliminate as many as possible. He insisted that students recognize facts when they were presented in the course of discussion, that they follow rules of evidence and logic in defending their opinions, and he guided the proceedings toward greater understanding of what the issues were, but he was not the sole judge of who was on the side of truth.

There were three types of discussion questions. These were: (1) questions which involved interpretations of the data; (2) questions which called for speculation; and (3) questions which were of value preference.⁵

A good discussion leader stimulated and directed the class and coordinated these strands of development. He sought to follow and to understand the development of each component of the discussion and at the same time worked to develop a unity and harmony among them.

⁵Ibid., 359-366.

Modern methodology in teaching social studies emphasized the use of resource units, multiple source materials, group and individual assignments, and problems approach to dealing with content.

Those who regarded education primarily as a matter of mastering the specific information which made up the content of each school subject, thought of conducting recitations as a major activity of every teacher. Recitation was a method by which the teacher could test orally whether students had learned what they were supposed to learn from reading or listening. It was a means by which students could identify what they were expected to learn. The process consisted of the teacher asking questions of his students who in turn recited or related the correct answers which they had committed to memory. The teacher judged whether the answer given was correct. If it were not, then he supplied the correct response himself or proceeded to ask the same question of another student. When the correct reply to the first question had been heard, the teacher proceeded to ask another question for which he believed there was also a correct answer which he reasonably expected his students to know. The entire sequence of activity reinforced the learning of what had already been committed to memory. It was to help prepare the students for further memorizing activity.

This type of recitation as a teaching and learning method had been under heavy attack for many years. The criticism was that teachers used the method as a primary teaching technique that education consisted solely of committing a body of content to memory. If this were used, the student would not likely develop understanding. The questions put

forth by the teacher were likely to ask the students to recall a series of separate or discrete facts. If the teacher did not stimulate the student to think about these facts, to develop a big picture, or to derive generalizations from them, the facts were unlikely to develop any meaning. If teachers required answers in the language of the textbook, students had little opportunity to relate their answers to what else they knew.⁶

Literature on the Inductive Method

The inductive approach was a method in which students asked questions of history to learn a mode of inquiry which was carried outside the classroom and which would be serviceable for a lifetime. It was to learn to doubt and to see the relationship between hypothesis, evidence, and proof. It was to learn what a fact was, how one came by it, and most important of all, how one used it. It was to learn the limits of generalizations.

This approach did not put us in the position of pretending that history was an intellectual discipline. Historians were constantly asking questions of the past as their own experience changed. The questions we asked were governed by what we wanted to know. They grew out of our own lives and our own nature.

In the nineteenth and twentieth centuries, historians were interested in the building of nation-states. To be of value the

⁶John Jarolimek, Social Studies in Elementary Education (New York: The Macmillan Co., 1965), pp. 33-34.

historical "fact" helped the person find out something about himself or his society.

So to see history as inquiry was to see it as something alive and useful. It was also to pose a challenge to what we did in the classroom. The future tenability of history as an independent discipline in the school curriculum rested on the way we met that challenge. On the way we met the challenge rested on our ability as a society to develop precisely those qualities of mind and temper which a proper study of history gave.⁷

The result had been that history courses had been devoid of all meaning or value to students and dreary exercises in the memorization of dead and useless "facts" or alleged facts. The result had been that as a society we lacked the qualities of perspective, judgment, and a reasoned temper with a knowledge and love of history should provide.⁸

The theoretical principles of the method were based on Jerome Bruner's Process of Education.⁹ The inductive method of teaching social science for the secondary schools was explained by Edwin Fenton in his book, Teaching the New Social Studies in Secondary Schools: An Inductive Approach.¹⁰

⁷Alan Kownslar and Donald Frizzle, Discovering American History, Unit II, The American Revolution 1775-1783 (Chicago: Holt, Rinehart and Winston, Inc., 1966), pp. vii-viii.

⁸Ibid., pp. vii-viii.

⁹Jerome Bruner, The Process of Education (Massachusetts: Harvard University Press, 1960).

¹⁰Edwin Fenton, Teaching the New Social Studies in Secondary Schools: An Inductive Approach (Chicago: Holt, Rinehart and Winston, Inc., 1966).

The new methods and materials were being designed to foster the inductive, "work through the problem yourself" approach. Most of the scholars were interested in improving not only what was taught, but how it was taught. One of the things these people wanted to communicate to children was the pleasure, sweat, and rewards of intellectual inquiry. This was not just for the student labeled "bright" or "academically talented", but for all students. Unless a student was able to begin a problem, to be curious about its how and why, to work through the arduous but absorbing process and exploring data, worrying about it, making intuitive hunches and leaps, and arriving at what was perhaps only an approximate solution, then the new courses had failed.

The educational materials, the textbooks, or the films were not used to give the impression that the answers were neat, firm and forever. The content was presented by both the materials and the teacher with all the doubts and incompletions that scholars experienced and learned to handle.

The theory behind the inductive method was that if the students were treated with respect and allowed to work through the same data that scholars and scientists worked through, they experienced in some way the excitement of intellectual mastery. They absorbed and remembered much because they had actually worked through the materials themselves and made them their own.

Builders of the new program were experimenting with ways of dispensing with textbooks altogether. In the study of history, the student was given original documents. Out of these raw materials, he fashioned his own version of the problem. He built his own case and defended it.

Since this process engaged the use of materials outside the textbook, the student remembered a great deal more history as well.

One of the basic problems of this program was that the training of teachers to carry out this curriculum required teachers of much higher quality than the profession now attracts.¹¹

Advocates of the new social studies frequently referred to cognitive and affective objectives. Knowledges and intellectual skills and abilities were described as cognitive. Attitudes, appreciation, and usually values, were considered affective.¹²

Studying original documents provided the experiences needed by the child to reason out for himself the conditions of life. It did not leave him dependent on a textbook writer's choice of facts in support of a general opinion. The child engaged in the same activities as a behavioral scientist who sought data for the development of concepts.

A teacher did not rely solely on journal articles and official documents. Many trade books included what was called authenticated data and reprint original source materials.

The closer the child was brought to the real people and conditions that he was studying, the more facts he learned, the better informed he became, and the more thoroughly he absorbed the organizing concepts of the social scientists.

¹¹Ibid., pp. 504-514.

¹²Helen McCracken Carpenter, "Change-Why Must It Occur?" The Instructor (March 1967), pp. 78.

A realization of differences in learning ability involved understanding that individual responses to any single teaching strategy differed widely among children. Everyone was grateful this was so. This type of instruction helped children to sharpen the critical tools in their own way and to the best of their abilities.

Cooperative planning of instruction allowed different children to play different roles according to their abilities and needs. A child unable to summarize information was given practice in analyzing details and collecting main ideas. A child unskilled in the use of the encyclopedias or other reference works was assigned to work with a child who was proficient and offered help.

Occasionally children were temporarily separated into small groups to pursue individual inquiries. This grouping was determined by academic ability, the three or more groups were charged with tasks of different levels of difficulty. Sometimes children of different intellectual or scholastic abilities were brought together if they all shared a common and specific problem, such as inability to take notes well or to comprehend spatial relationships on maps or globes.¹³

Another learning device was the essay test. Improving the content of an essay test was essential to the learning situation. A few suggestions given were: (1) Before starting to write the essay question, the teacher must know explicitly what mental process of the student he wanted

¹³Bruce Joyce, Strategies for Elementary Social Science Education (Chicago Science Research Association, Inc., 1965), pp. 192-222.

to bring out by the question. If the essay question was to determine the extent to which a student used his information, then the question was phrased in such a way that the student did such things as solve a problem that had not been directly taught, or he pointed out relationships that had not been explicitly pointed out before. (2) In general, essay questions started with such phrases as "Compare," "Contrast," "Give the reason for," and "Explain how or why." (3) The essay question was written in such a way that the task was clearly and unambiguously defined for each examinee. (4) The words "What do you think," "In your opinion," or "Write all you know about . . ." seldom belonged in an essay question to measure academic achievement. (5) The teacher had to be sure that the students did not have too many or too lengthy questions to answer in time available. An essay test was not a test of speed of writing. Good essay questions demanded that the student consider the question, think about his answer, then write it. (6) Teachers did not use both essay and objective questions in the same test when the time for testing was limited. (7) Each examinee answered the same questions. A choice of questions to be answered was not offered. Giving a choice of questions reduced the common base upon which different individuals were compared. It added one further source of variability to the subjectivity and inaccuracy that already existed.

In scoring essay examinations: (1) It was decided in advance what factors were to be measured. If more than one distinct quality was to be appraised, a separate evaluations of each was made. (2) A model answer was prepared in advance, showing what points should be covered and how

many credits were to be allowed for each. (3) All answers to one question were read before going on to the next. (4) The papers were graded as nearly anonymously as possible. (5) Greater reliability was obtained by averaging independent ratings.¹⁴

One important skill for students to learn was how to write essay examinations. At the beginning of the year each student was presented with a sheet of pointers on "How to Write a Good Examination."

In the process of writing and explaining it, we were making absolutely sure that we were articulating about what we were asking our students to do.

They realized an answer had to be tightly organized, sustained, and well-substantiated. They needed to learn to identify the issue in the question, and to formulate answers. It helped if a student made an outline so that he covered all evidence relevant to his argument and organized the development of his essay.

Students had need of many opportunities to write essay exams and critical guidance from the instructor. Each exam had to be graded carefully. In this way the student gained insight into his individual problem of essay writing. Students realized that the style of writing and the proper use of English was an important aspect of good essay writing. If spelling, grammar, and accuracy in the use of English were ignored, and they concentrated on ideas only, they fell short of excellence.

¹⁴Fenton, *op. cit.*, pp. 279-282.

Students were not likely to do very well on essay tests unless they were given the opportunity in daily class to use the analytical and interpretive powers we demanded of them on an exam.

Students who wished to spend more than the usual amount of time in a laboratory and whose teachers and counselors believed this would be advantageous found it possible to do so. Administrators made whatever schedule changes were necessary, saw what facilities were available, and took other steps toward the success of these individual experiences.¹⁵

The review of expert opinion revealed agreement that textbooks made a definite and positive contribution to the social studies program. The teacher was the master and the textbook was the tool. No textbook in social studies reached the status of being divinely inspired. It was looked upon as one of many teaching materials. The more generous the use of various forms of learning--reading, writing, discussion, debates, dramatizations, field trips, visual aids--the more effective learning was.

The textbook was used during the introduction of the unit when the scope and order of the topic had to be worked out. Textbooks were effective in group study lessons.

Another use of the textbook was to introduce it near the end of the study on a unit topic to summarize and pull together what had been taught. The children had a background of information and were familiar with the vocabulary and concepts they encountered in the text. They

¹⁵Ibid., p. 149.

discussed what had been studied and were given a purpose for this reading that led to an organization of what had been learned on the topic. Pupils with low attention and reading ability used a study guide. It had been recommended for elementary social studies classwork.¹⁶

The guides were to be prepared on at least two levels--one consisting of short answer questions for each paragraph of the lesson and the other of more general questions. The detailed question study guide carried the organization for maintaining attention and assuring comprehension. It required each pupil to "recite" every essential fact of the lesson and provided much more practice than the one-at-a-time recitation following class reading of a lesson.

A number of schools adopted a practice of providing three or four different textbooks in lots of eight to ten books each rather than the same text for all children. The explanation for this practice was that these textbooks served as the role of reference materials. These books were selected on different readability levels, and poorer readers were given materials appropriate to their reading level.

The problem of this type of procedure was that the unifying values of the single textbook was lost. A "reference library" was a must for a good social studies program regardless of how good the textbook was. Textbooks were not written to be basic reference and materials.¹⁷

¹⁶Lenwood W. Chase, "Individual Differences in Classroom Learning," Social Studies in the Elementary School, Chapter 7, Fifty-Sixth Yearbook University of Chicago Press, 1957), pp. 16-17.

¹⁷"Improving Reading in the Elementary Social Studies," The National Council for Social Studies Bulletin 33 (New York: Harcourt, Brace and World, 1962), pp. 16-17.

Depth in the social studies learning was obtained chiefly through wide reading. The subject became more interesting as the student delved deeper for details, ideas, human elements, and mental images. Classroom teachers liked an additional stimulation as students and teachers shared their reading experiences.

The program was not to embarrass or discourage the slow learner, but rather to provide him with important questions and challenge his thinking. The academic child also needed encouragement as he delved into original documents and sought truth until he found it.

Depth study provided a challenge for the teacher who familiarized himself with the great quantity of available trade books, texts, pictures, maps, and other documents. He took into consideration the levels of intellectual and scholastic ability in selecting materials and organizing children into groups.¹⁸

The development of effective depth studies required that a wealth of interesting materials was available. This was material that was handled conveniently by children. The lack of published materials especially designed for children containing the quantity of data necessary for depth studies presented a serious problem. Most available reading materials that contained sufficient data were too sophisticated for elementary children. Other materials that were readable lacked an objective presentation of facts.

¹⁸Joyce, op. cit., 223.

Even carefully constructed textbooks for social studies often suffered from major limitations, when measured for use in depth studies. Few of them treated racial and other minority groups effectively, and then tended to picture the rosy side of things.

As newer curriculum projects begin to make their materials available, the picture may change somewhat; but at present, effective inquiry by children will depend on a school faculty's ingenuity in inventing effective learning devices.¹⁹

In the article, "Guidelines for Innovating," written by Jonathon C. McLendon in The Instructor,²⁰ twelve elements that typify the aims, tone, and content of many current innovations were identified.

(1) Innovations involved basic concepts from the social sciences. This involved firsthand participation by real, living, social scientists. Literature, interpreted key concepts--real ideas in political, economical, cultural, and environmental relationships. (2) Innovations concentrated on more selective content. Teachers tried case studies and other modes of inquiry into "more about less." (3) Innovations attempted to provide for teaching the structure of the social sciences. Structure was necessary if the learner was to fit his study of selected aspects of society into an understanding of society as a whole. (4) Innovations exploded the "limited environments." The stress on other people helped to overcome

¹⁹Ibid., p. 179.

²⁰Jonathon C. McLendon, "Guidelines for Innovating," The Instructor (March 1967), 91-92.

prejudice, provincialism, blind patriotism, social insensitivity, and cultural deprivation. (5) Innovations increasingly reflected social relativity. Textbooks revealed multi-cultural diversity of our society. There was a new frankness in the recognition of value of differences and similarities among pupils' participation in learning. Emphasis was on the learner's ardent involvement . . . (8) Innovations sought to achieve sequential learning. The result was a down-grading of social studies subjects and topics. (9) Innovations broadened sources of social learning. While basal texts continued as most commonly used instructional resource, recent innovations stressed the use of text-complementary resources. There were more audio-visuals, and people served more frequently as appropriate sources of information for children's learning about society. (10) Innovations recognized the central role of the teacher. Teachers were the key role. They developed new approaches and materials, experimented with innovations, and analyzed results. (11) Innovations consisted of more than mere changes in terminology. If "inquiry" and "discovery" were no more than traditional methods of learning, little was to be gained and the resultant confusion caused losses. Even before recent innovations, "research" was identified with looking up encyclopedia articles. If "independent study" meant out-of-class work, then little was to be gained. (12) Innovations consisted of diversified approaches, programs, practices, and curricula. Current projects promised more diversity than uniformity. This stimulated teachers, schools, and school systems to become original contributors to innovations.²¹

²¹Ibid., pp. 91-92.

If one or more teachers wanted to try a new approach, the administration had to be ready to make schedule changes, to obtain necessary educational facilities, to seek consultant help if needed, and to take other necessary steps. These steps were to be taken in a manner that would not antagonize those teachers who wished to continue conventional methods.²²

Numerous surveys indicated that the status of social studies in secondary schools had reached a new low. Improvements were made and this lay with the classroom teacher. Inductive methods were to help young people to discover themselves, the nature of the society in which they lived and the significance of their heritage.²³

²²Fenton, op. cit., 149.

²³Ibid., p. 287.

CHAPTER III

DESIGN AND PROCEDURE

The method of carrying out the investigation of the effects of teaching the traditional method and the inductive method included library research in the Kansas State University Library and an experimental study comparing inductive teaching methods in social studies with traditional methods.

Sample

At the time of the study the total population of St. Xavier's Grade School in Junction City, Kansas was four hundred forty pupils. There were fourteen teachers in the school and there were fourteen classrooms in the building. The four seventh and eighth grade classrooms were located in a new addition connected to the original building.

The population for the study included fifty-four eighth grade pupils of St. Xavier's Grade School. The population of the school was affected by mobile families living at Fort Riley. Therefore, it was necessary to exclude six pupils from the experimental group and six pupils from the control group because of the lack of general data from the school file. There were twenty-one pupils in group "A", which was the control group, and twenty-two pupils in group "B", which was the experimental group.

The two groups were preassigned by the principal of the school. In order to facilitate scheduling for band practice, all the band

members were assigned to one homeroom. Therefore, it was not possible to select individuals by random sampling. However, in selecting the class as a whole for the experiment, the classes were picked at random by drawing "A" and "B" from a box. It had been decided before the drawing that the control class would be group "A", and the experimental class would be group "B". The drawing resulted in the selection of the class which contained the band members as the control group and the class without the band members as the experimental group.

The following information was also studied and reported: (1) I.Q. distribution; (2) occupation of parents; (3) age; and (4) sex. The control and experimental groups gave no evidence of significant difference in I.Q. scores, and age. The means of the I.Q. scores were 112 and 110, respectively. The occupations of the parents of both groups were almost evenly distributed as professional, military and day laborers. In regard to sex, the experimental group contained one more boy than the control group and both groups contained the same number of girls. These facts are recorded on the general data chart for the control group and the experimental group (Table I).

Procedure

The experimental study was conducted the first semester of the school year 1967-1968 from September to January. During this time, group A was taught by a traditional method using lecture, discussion, recitation, and reading of the basic textbook, New Frontiers of

TABLE I
 GENERAL DATA FOR CONTROL GROUP AND EXPERIMENTAL GROUP
 (Control Students 1-21; Experimental Students 22-43)

Students	I.Q. scores	Father's occupation	Age	Sex
1	103	Farmer	12	M
2	107	Merchant	12	M
3	122	U. S. Army	12	F
4	113	Teacher	11	F
5	114	M/Sgt. U. S. Army	12	M
6	106	Psnl. Classification Spec.	12	M
7	131	Dry Cleaner	12	M
8	122	U. S. Army	12	M
9	116	U. S. Army	11	F
10	118	Teacher	12	M
11	115	Truck Driver	12	F
12	101	Radio Technician	12	M
13	112	Merchant	12	M
14	113	Civil Ser. Comm.	12	F
15	111	Mechanic	12	F
16	116	U. S. Army Physician	12	F
17	102	Printer	12	F
18	126	Gas Serviceman	11	F
19	109	Ins. Adju.	12	M
20	100	Co. D. 69th Armored	12	F
21	106	Manager, Montgomery Ward	12	M
Sum	2363		249	M-11
Mean	112		12	F-10
S D	8.1		.37	

TABLE I (continued)

Students	I.Q. scores	Father's occupation	Age	Sex
22	111	Farmer	12	F
23	103	Farmer	12	M
24	120	Auto Parts Store Owner	12	M
25	109	U. S. Army	11	F
26	110	Service Manager	12	F
27	131	U. S. Army	11	F
28	111	Restaurant Owner	12	M
29	108	Oiler in Construction	11	M
30	113	Welder	12	M
31	98	U. S. Army	13	M
32	86	U. S. Army	13	M
33	122	Farmer	12	F
34	104	U. S. Army	12	F
35	101	Self Employed, Fort Riley	13	F
36	125	U. S. Army	12	M
37	100	Housewife, Mother	11	F
38	109	Dentist	12	F
39	112	Groceryman	12	M
40	111	Floor Contractor	12	F
41	113	Civil Engineer	11	M
42	125	Realtor	13	M
43	104	U. S. Army	13	M
Sum	2426		264	M-12
Mean	110		12	F-10
S D	9.9		.67	

Freedom.¹ Group B was taught by the inductive method using small group discussions, library research, individual study on a problem, showing of audio-visual materials followed by discussion, reports, and materials developed by Dr. Edwin Fenton published by Holt, Rinehart and Winston, Inc. The Stanford Social Study Achievement Tests, the Meares-Sanders Junior High School Social Studies Tests, and the Critical Thinking in Social Studies Tests were given to determine the general social studies achievement and critical thinking skills of the two groups in the study. Out of the seventeen sections listed, nine sections were chosen and administered to both the control and experimental groups. The tests chosen were those which tested the critical thinking skills rather than the study skills. The tests administered were the following: (1) Section II, Distinguishing between Statements of Fact and Statements of Opinion; (2) Section III, Distinguishing between Sources and Secondary Accounts; (3) Section IV, Discriminating between Statements of Fact and Statements of Motive; (4) Section V, Exercises on Acquiring Information; (5) Section VI, Exercise on Open-Mindedness; (6) Section VII, Determining Difficulty of Proof; (7) Section XIV, Drawing Inferences; (8) Section XVI, Recognizing Statements Which Support Generalizations; and (9) Section XVII, Insight Into the Relative Significance of Questions.

The teaching of the two methods of social studies was carried out in the following manner. The control group was taught in a

¹Marshall Smelser and Charles W. McCollester, New Frontiers of Freedom (Morristown, New Jersey: Silver Burdett Company, 1964).

traditional teaching method. The group was assigned one chapter a week from a basic text, New Frontiers of Freedom.² Vocabulary words for the chapter were assigned and studied in class. The reading of the chapter was assigned and discussed the next day during class period. The questions at the end of each chapter were then assigned and answered by each student. These questions included comprehensive questions pertaining to material studied in the chapter.

After studying four chapters, a test was administered to determine comprehension of material studied by the students. These tests included objective questions and terms. Sometimes an essay question was required.

Lectures, discussions and reading of the basic text were held during class. No audio-visual materials or references were used or assigned. Two weekly newspapers, The Junior Review and The Young Catholic Messenger were read and discussed each week.

One Critical Thinking Test was administered to the group each week for nine weeks. During the first two months of class, the pre-test of the Stanford Social Studies Achievement Test and the Meares-Sanders Junior High School Social Studies Test were administered. The post-test of these two tests was administered the last two weeks of the semester.

The experimental group was taught by an inductive method. During the first week of school, they were given outlines that explained the

²Ibid.

method and how it would be developed during the semester. Hypothesis, how to study a unit, attitudes and objectives were explained to the class.

One chapter of the basic text, New Frontiers of Freedom was studied each week. The class was given a choice to take notes over the material read, answer questions at the end of the chapter, or write reports from reference books, resources or supplementary texts concerning material presented in the chapter. All the students were expected to define vocabulary words for each chapter. An objective test was given at the end of each unit to determine comprehension.

Two research papers were assigned to this group. The students chose any topic of historical importance between the period of the Reconstruction to the Atomic Age. One paper was due at the end of the first nine weeks and the second paper was due at the end of the second nine weeks.

Skills in writing research papers were taught during English class. A list of possible topics was distributed the first week of school. A bibliography of history books available at the St. Xavier's Grade School Library and the Junction City Library was also given to the students in the experimental group. The research papers were to help students interpret new materials and become familiar with other materials and viewpoints besides those given in their textbooks.

Daily class methods varied from class discussions, group discussions, audio-visual materials, reports, extra readings, guest speakers or studies of periodic poems and original letters.

Each Friday was set aside for in-school preparation of research papers and reading of supplementary materials. This period was used for collection of data and correction of work.

Each week the class was divided into small discussion groups. One person in each group was assigned leader by the group. The discussion topic centered around critical thinking questions listed in the teacher's manual of the basic text. These were duplicated and given to the group. The discussion lasted ten minutes. Then a report was given to the entire class by each discussion leader.

Audio-visual materials were used during some class periods. These included filmstrips, overhead transparencies, map studies, and pictures. Watching CBS Specials, newscasts, historical films, and analysis of Western films proved opportunities for students to become more critical in their TV viewing habits.

Independent study was provided by use of a cyclo-teacher, supplementary reading materials, reference books, documents, newspapers, and magazines such as Newsweek and US News and World Report. Two weekly newspapers, The Junior Review and The Young Catholic Messenger were read and discussed each week.

Short readings were presented to the class in connection with the historical period being studied. Sometimes these were read to the class; at other times the material was mimeographed and distributed during the regular class period. The silent reading of this material was followed by questions so that the students became aware of key issues in the readings. Materials used were taken from suggestions in

The National Council for the Social Studies Yearbook³ and experimental units developed by Edwin Fenton's Social Studies Curriculum Series.⁴

Duplicated copies of the poems Buffalo Dust and Nightmare Number Three were distributed and studied by the entire class. Other documents such as the Constitution of the United States and the Constitution of the USSR were read and discussed in a comparative study of our nation's freedoms.

Background materials for lectures were taken from teacher's manuals of textbooks other than the basic text, and the teacher's basic text manual. Historical insights were gleaned from Interpreting and Teaching American History found in the Thirty-First Yearbooks of the National Council for the Social Studies.⁵

Description of Instruments Used

Three types of tests were given to the students at the beginning and end of the study. One test was the Stanford Achievement Test, one the Meares-Sanders Junior High School History Test, and the third the Test of Critical Thinking in Social Studies.

The Social Studies Test was a subtest of the Stanford Achievement Test. The test for the group was the advanced battery for grades 7-9.

³National Council for the Social Studies Yearbook, op. cit.

⁴Fenton, op. cit.

⁵William H. Cartwright and Richard L. Watson, Jr., Interpreting and Teaching American History Thirty-First Yearbook of the National Council for the Social Studies. (Washington, D. C.: National Council for Social Studies, 1961).

Form W was used for the pre-test and post-test. The Social Studies Test makes an important contribution to measurement of significant social studies objectives. Each of these tests included a content section and a study skills section. Most of the content questions were based on the history, geography, and civics taught in the junior high school social studies. The study skills sections contained sets of questions dealing with such varied materials as tables, graphs, maps, political posters, bibliographies, book indexes, and library index cards.

In the content section most students had to be able to understand important social studies generalizations or relationships rather than recall discrete facts.

The study skills section provided a good indication of pupil progress in graph and map reading. The most serious reservation about the study skills section concerned the lack of questions requiring inference from the data which are given. It might be expected that junior high school students should be evaluated on their ability to extrapolate and reach conclusions from data presented to them in tabular and graphic form. This tested only study skills.⁶

The Meares-Sanders Junior High School History Test was a general survey test covering the most important subject matter commonly presented by a number of elementary textbooks and courses of study. The items included knowledge of facts, as well as the application of information and reasoning. The tests were the result of a number of years

⁶Oscar Krisen Buros, The Sixth Mental Measurement Yearbook (Highland Park, New Jersey: The Gryphon Press, 1965).

of experimenting in the construction of practical achievement test in connection with the Nationwide Every Pupil Scholarship Test. Test I, Forms A and B were designed for use in Grades VII and VIII after one semester of work. Test II, Forms A and B were designed for the end of the year or two semesters of work. Each test had 90-100 objective items.

The basis for selecting the items was the content of a number of leading textbooks and courses of study. The aim was to include a fair sampling of valid items somewhat in proportion as they are stressed in these sources. The items individually and the completed tests as a whole were also subjected to item analysis and revised by test building experts. The forms were used in the 1962 and 1963 Every Pupil Scholarship Tests of January and April.

The reliability of each form was determined by the split half method.

Since the tests were given at the beginning of the year, the seventh grade norms for the end of the year were used as test directions indicated.⁷

Tests of Critical Thinking in the Social Studies for the elementary school level contained three general divisions; obtaining facts; drawing conclusions; and applying general facts. Attention was to testing of skills which were an essential part of instruction in social

⁷Shirley Meares and M. W. Sanders, Ph.D. Director Bureau of Educational Measurements, Meares-Sanders Junior High School History Test (Emporia, Kansas: Bureau of Educational Measurements, Kansas State Teachers College, 1964).

studies but which had previously received relatively little notice in standardized tests.

Out of the seventeen sections listed, nine sections were chosen and administered to both the control and experimental groups. The tests chosen were those which tested the critical thinking skills rather than the study skills. The tests administered were the following: (1) Section II, Distinguishing between Statements of Fact and Statements of Opinion; (2) Section III, Distinguishing between Sources and Secondary Accounts; (3) Section IV, Discriminating between Statements of Fact and Statements of Motive; (4) Section V, Exercises on Acquiring Information; (5) Section VI, Exercise on Open-Mindedness; (6) Section VII, Determining Difficulty of Proof; (7) Section XIV, Drawing Inferences; (8) Section XVI, Recognizing Statements Which Support Generalizations; and (9) Section XVII, Insight Into the Relative Significance of Questions.

A closer look at the individual tests may help the reader to better understand the test.

Test 1 involved evaluating the source of information. This test was designed to help students question whether the information contained in a particular document or record could be used with complete assurance as to its reliability. The test consisted of a number of possible subjects. Under each, one was given three references which might give information about the subject. If the materials were available, which would be considered most reliable for giving a true picture of events as they actually happened? The answers were to be rated according to preference within each group of three. Each group was considered separately.

Example: A. The religious beliefs of the ancient Egyptians

- (3)
1. A moving picture dramatizing the love affair of Anthony and Cleopatra.
 2. A newspaper account in the "Sunday Magazine Section" of an old Egyptian temple.
 3. A translation of an inscription on the wall of an old Egyptian tomb.

Test 2 consisted in distinguishing between statements of fact and statements of opinion. This test was constructed to help students make choices between facts and opinions or between facts and the author's interpretations of the facts.

Example: Answer F-fact, O-opinion

- (Q)
1. The Democratic party has done more for this country than the Republican party has.

Test 3 tested the distinguishing between sources and secondary accounts. The test was composed to help students consider written accounts from which was derived accurate knowledge of the facts and events in history and to distinguish between sources and secondary accounts.

Example: Write the letter S beside those items which you think should be classed as sources. Write the symbol Sec. beside those items which you think should be classed as secondary accounts. In identifying these accounts, consider them in the light of sources or secondary accounts for the events which they describe.

- (S)
(Sec)
1. The Treaty of Versailles.
 2. Gone with the Wind by Margaret Mitchell, a novel depicting conditions in the South at the time of the Civil War.

Test 4 was a test in discriminating between statements of fact and statements of motive. The test developed skills of determining which of a series of statements may be verified as factual and which

may not be so verified. This ability is a beginning of higher forms of critical skills and may therefore receive emphasis in the instructional program.

Example: Place the number of the correct answer in the space provided.

- (1) 1. Which one of the following is a statement of motive?
 (1) Japan invaded China in 1932 to gain more territory. (2) China proved very difficult for Japan to penetrate after the invasion. (3) The United States Supreme Court has not always consisted of nine justices. (4) After the Washington disarmament conference of 1922, the United States Navy was not built up to full treaty strength. (5) Marco Polo traveled through China to the court of Kublai Khan.

Test 7 gave practice in recognizing statements which supported generalizations. The purpose of this exercise was to look at general statements in reverse. Given a body of data, what general statements can be made? Given a general statement and a body of data, what are the data which support the general statements and body of data, and what are the data which support the general statement?

Example: After each of the main headings or generalizations lettered A, B, C, and D, there are numbered statements. Consider each generalization and its statements as a unit. Study each unit carefully and if in your judgment any statement below each generalization could be used as a base to support generalization, indicate the same by placing the letter Y (for "yes") opposite the number of the statement. If the statement does not uphold the general statement, indicate the same by placing the letter N (for "no") opposite the number of the statement.

- (Y) A. Chicago is a main meat-packing center of the Middle West.
 1. Chicago is a railroad center.

Test 9 determined difficulty of proof. This test was to point out to pupils that social studies texts and other materials of social studies often contain statements of questionable accuracy and others of a debatable nature. Conscientious writers usually indicate which section of their writings are based on conjecture and make no claim for the authenticity of such sections. Other writers do not, and pupils may lose interest and confidence in history when they discover some elements of error in what they had believed to be true.

Example: In each of the following questions there is one of the five items which would be more difficult to prove than the other four. Place the number of that option in the space provided.

1. Which of the following would be most difficult to prove true or false? (1) Many medieval manuscripts were written in Latin, (2) the area of Alaska is greater than that of Texas, (3) Cleveland held two terms in office as President of the United States, (4) the "elastic clause" of the Federal Constitution has provoked much controversy, (5) the Russian economic system is doomed to failure.

Test 5 was an exercise on open-mindedness. This was the only section of the tests where any sort of items were used which might have been called "trick question." These were of that nature only because the same type of item may be used only one time with the same pupils, since the method of scoring, once revealed, gave a clue which would enable the pupils to avoid making improper responses thereafter.

The assumption underlying this type of item was that only those pupils who had what may be termed a closed mind would subscribe to completely unqualified generalizations regarding social relationships. In

scoring items no attention was paid to the underscoring of any of the three middle words. The underscoring of either of the extremes, All or No, was counted as an error. This technique was used in an extensive study by Watson to measure fair-mindedness.

Example: Underscore one of the first five words in each of the following statements which you think makes it the truest statement.

(Any middle answer) 1. All, Most, Many, Some, No, Americans are better people than those of other countries.

Test 6 tested recognizing biased statements. This test attempted to gather a series of statements on the same general topic, some of which revealed a strong emotional bias on the part of the writer, and others of which indicated that the writer was attempting to be reasonably fair and objective in making his observation. Practice in distinguishing between the biased and the more thoughtful statements provided opportunity to stimulate interest and growth in critical skills.

Example: The following statements have been clipped from the section of representative newspapers entitled "Letters to the Editor." Go through the list and if in your judgment the statement is based on emotion or prejudice indicate the same by placing the letter E (for "emotion") opposite the number of the statement. On the other hand, if the statement seems to you to be based on fact and if it appears that its author was not emotionally biased, indicate the same by placing the letter T (for "thought") opposite the number of the statement.

(E) 1. Aliens are dangerous because they bring over radical ideas from Europe.

Test 8 was over insights into the relative significance of questions. It was set up to test a mental ability of a high order. It was

difficult to define or describe that skill exactly, but it might be called the ability to grasp the essentials of a situation, or to "size up" its pertinent aspects. It involved more than understanding alone, and might in part be considered as a critical skill.

Example: The following general statements, lettered A, B, C, D, etc., are largely meaningless without qualifications. The questions following each lettered statement include those which, if answered, would make the lettered statement meaningful and those which, if answered, would not make the general statement especially meaningful.

- (Y) A. The production of wealth always involves human cost.
 (N) 1. In what occupations are human costs high?
 (Y) 2. Does labor have the right to strike?
 3. What organizations have played an outstanding part in reducing occupational hazards?
- (Y) 4. What have the states done to eliminate accident hazards in industry?
 (N) 5. Why is the public the "victim" of industrial warfare?
 (Y) 6. In what occupations are human costs relatively low?
 (N) 7. What effect does a restrictive immigration policy have on the reduction of human costs?

CHAPTER IV

ANALYSIS OF DATA

To compare the size of a between variance, the t-test, which is a single analysis technique, was employed. It was assumed that the sample means and the distribution of variables compared normally. The t-test was used to determine the significant difference between the means of the control and experimental groups in the Stanford Social Studies Test, Meares-Sanders Junior High School History Test and the nine Critical Thinking Tests. To determine the acceptance or rejection of the null hypotheses at the .05 level of confidence, the probability values in Fisher's special table of t were consulted.¹ The hypotheses stated in Chapter I were that:

- H₁: There is no significant difference in achievement test scores in social studies by eighth grade students when taught by the inductive and traditional methods.
- H₂: There is no significant difference in critical thinking by eighth grade students in social studies when taught by the inductive and traditional methods.

Table II presents the test results for the control group and experimental group on the Stanford Social Studies Tests and the Meares-Sanders Junior High School Social Studies Test.

Table III presents the test data for the Critical Thinking Tests for the control and experimental groups.

¹G. Melton Smith, Ph.D., A Simplified Guide to Statistics (New York: Rinehart and Company, Inc., 1946), p. 69.

TABLE II

TEST RESULTS FOR CONTROL GROUP AND EXPERIMENTAL GROUP
(Control Students 1-21; Experimental Students 22-43)

Students	Achievement Test Scores		Meares-Sanders Junior High School	
	Social Studies-Form W		Social Studies Test Scores	
	Pre-Test	Post-Test	Pre-Test	Post-Test
1	39	39	28	58
2	49	51	29	55
3	63	66	29	50
4	33	52	20	48
5	47	57	26	44
6	50	54	24	47
7	72	74	46	82
8	70	71	29	69
9	65	65	39	61
10	56	66	33	63
11	49	60	17	47
12	59	53	37	60
13	46	52	28	60
14	42	50	36	48
15	38	48	22	65
16	65	67	38	60
17	52	59	30	53
18	48	57	32	46
19	52	69	40	57
20	27	31	14	35
21	41	51	17	51
Sum	1063	1192	614	1159
Mean	50.61	56.8	29.3	55.1
SD	11.5	10.3	8.2	9.9

TABLE II (continued)

Students	Achievement Test Scores		Meares-Sanders Junior High School	
	Social Studies-Form W		Social Studies Test Scores	
	Pre-Test	Post-Test	Pre-Test	Post-Test
22	67	60	29	65
23	64	45	18	80
24	49	54	26	59
25	54	54	29	52
26	47	55	23	54
27	62	60	32	57
28	58	58	29	66
29	35	48	25	45
30	59	53	24	51
31	47	27	24	57
32	34	29	24	64
33	64	67	27	46
34	40	30	32	54
35	53	54	18	64
36	54	62	27	38
37	43	36	31	59
38	54	52	38	81
39	58	59	30	57
40	63	65	21	55
41	41	46	29	39
42	35	30	35	49
43	64	66	20	65
Sum	1145	1057	571	1257
Mean	52.1	48.04	26.9	57.13
SD	10.3	12.5	5.1	10.6
t-Test	.294	2.5*	1.304	.6125

* Significant difference.

TABLE III

CRITICAL THINKING TEST DATA FOR CONTROL GROUP
AND EXPERIMENTAL GROUP
(Control Students 1-21; Experimental Students 22-43)

Students	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9
1	38	17	5	18	47	5	10	9	37
2	42	18	2	24	39	6	15	17	41
3	39	16	10	18	39	8	13	16	49
4	36	17	9	19	39	4	14	17	43
5	37	12	6	15	49	4	15	16	51
6	46	19	2	23	50	6	6	10	41
7	39	19	11	37	47	12	22	18	50
8	44	11	11	26	40	11	17	18	35
9	38	19	1	25	53	10	18	20	40
10	44	15	4	21	34	7	17	14	42
11	41	18	7	22	40	3	12	13	31
12	40	18	2	23	41	8	20	18	40
13	38	14	4	23	42	7	14	14	39
14	36	15	5	22	40	11	11	14	24
15	36	17	0	17	40	6	15	12	40
16	39	16	5	29	44	13	15	17	36
17	40	13	10	26	37	10	16	13	44
18	37	14	8	19	46	3	16	9	30
19	37	16	1	21	38	8	7	17	37
20	30	17	6	14	48	5	13	10	54
21	39	15	1	9	34	5	16	14	37
Sum	816	320	110	451	887	152	302	306	841
Mean	39	15	5	21	42	7.2	14	15	40
SD	3.32	2.45	3.86	4.69	5	3	3.72	3.13	7

TABLE III (continued)

Students	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9
22	39	15	7	27	54	11	17	18	40
23	47	20	8	39	53	14	20	21	53
24	41	17	2	16	41	10	12	14	34
25	40	19	2	21	44	10	14	18	39
26	35	10	3	26	48	6	15	17	37
27	31	17	1	27	59	8	14	21	42
28	43	17	5	27	41	10	16	12	33
29	41	18	5	19	41	6	12	13	37
30	40	19	6	44	49	5	15	13	38
31	43	15	9	14	54	12	19	12	34
32	44	20	8	22	53	11	9	15	35
33	37	13	4	19	57	8	19	19	36
34	38	18	1	17	58	2	17	13	32
35	32	16	1	19	41	8	15	15	40
36	44	15	4	21	46	6	15	16	37
37	38	17	1	13	50	8	19	18	37
38	40	19	7	17	39	5	16	17	29
39	38	17	5	22	48	9	18	13	33
40	42	14	5	21	47	10	20	20	52
41	44	15	2	13	53	11	18	15	30
42	48	18	5	26	52	11	18	15	32
43	42	11	9	36	41	15	9	11	37
Sum	887	360	107	506	1069	193	342	344	817
Mean	40.3	11	5	23	49	9	16	16	37
SD	4.12	6	2.6	7.7	6	3	3.13	3	5.8
t-Test	1.428	.333	.909	.250	3.765*	2.222*	1.818	3.030*	.566

* Significant difference.

In Table II the Stanford Social Studies pre-test Form W showed that the control group scored a lower mean, 50.6, than the experimental group's mean, 52.1. However, in the Stanford Social Studies post-test Form W, the control group scored a higher mean, 56.8, than the experimental group's mean, 48.04. In comparing individual scores on the pre-test and post-test in the control group, eighteen pupils scored higher on the post-test, two scored the same, and one scored lower than on the pre-test. In the experimental group, the individual scores on the pre-test and post-test resulted that ten pupils scored higher on the post-test, two scored the same score, and ten scored lower than the pre-test.

The data of the Meares-Sanders Junior High School History pre-test (Table II) indicate clearly that the control group scored higher than the experimental group. The mean for the control group was 29.3 and the mean for the experimental group was 26.9. On the Meares-Sanders Junior High School History post-test, the control group scored a lower mean, 55.1, than the experimental group mean, 57.1. The comparison of scores on the pre-test and post-test evidenced that all the pupils in the control group scored higher on the post-test and all the pupils in the experimental group scored higher on the post-test. Of the twenty-one pupils in the control group, eight doubled their pre-test score, and of the twenty-two pupils in the experimental group, eleven doubled their pre-test score. The standard deviation increased from 8.2 to 9.9 in the control group and from 5.1 to 10.6 in the experimental group.

In Table III the results of the two groups on the Critical Thinking Tests are recorded. The results of the two groups on the Critical Thinking Tests indicate a varied range of performance. On Test 1, the control group's mean, 39, was lower than the experimental group's mean, 40.3. In the control group seven pupils scored above the mean, four pupils scored the same as the mean, and ten pupils scored lower than the mean. In the experimental group twelve pupils scored above the mean, three pupils scored the same as the mean, and seven pupils scored lower than the mean. On Test 2, the control group scored a higher mean, 15, than the experimental group's mean of 11. In the control group thirteen pupils scored above the mean, three pupils scored the same as the mean, and five pupils scored lower than the mean. In the experimental group twenty pupils scored higher than the mean and two pupils scored the same as the mean. On Test 3, the control group's mean, 5, was the same score as the experimental group's mean, 5. The control group had nine pupils score above the mean, three pupils score the same as the mean, and nine pupils score below the mean. The experimental group had eight pupils score above the mean, five pupils score the same as the mean, and nine pupils score below the mean. On Test 4, the control group scored a lower mean, 21, than the experimental group's mean of 23. The control group had eleven pupils who scored above the mean, two pupils who scored the same as the mean, and eight pupils who scored lower than the mean. The experimental group had eight pupils who scored higher than the mean, and fourteen pupils who scored lower than the mean. On Test 5, the control group scored a lower mean, 42, than

the experimental group's mean, 49. The control group had eight pupils score higher than the mean, one who scored the same as the mean, and twelve who scored lower than the mean. The experimental group had ten pupils who scored higher than the mean, one who scored the same as the mean, and eleven who scored lower than the mean. On Test 6, the control group's mean, 7.2, was lower than the experimental group's mean, 9. In the control group nine pupils scored higher than the mean, two pupils scored the same as the mean, and ten pupils scored lower than the mean. In the experimental group eleven pupils scored higher than the mean, one pupil scored the same as the mean, and ten pupils scored lower than the mean. On Test 7, the control group's mean, 14, was lower than the experimental group's mean, 16. In the control group twelve pupils scored higher than the mean, two pupils scored the same as the mean, and seven pupils scored lower than the mean. On Test 8, the control group's mean, 15, was lower than the experimental group's mean, 16. In the control group ten pupils scored higher than the mean, and eleven pupils scored lower than the mean. In the experimental group nine pupils scored higher than the mean, one pupil scored the same as the mean, and twelve pupils scored lower than the mean. On Test 9, the control group's mean, 40, was higher than the experimental group's mean, 37. In the control group nine pupils scored higher than the mean, three pupils scored the same as the mean, and nine pupils scored lower than the mean. In the experimental group seven pupils scored higher than the mean, five pupils scored the same as the mean, and ten pupils scored lower than the mean.

The control group scored lower than the experimental group on six of the Critical Thinking Tests and the control group scored higher than the experimental group on two of the Critical Thinking Tests. On one test the control group and the experimental group achieved the same score.

CHAPTER V

SUMMARY AND CONCLUSION

Summary

The purpose of the study was to determine if teaching social studies by the inductive method would result in significantly greater achievement of social studies in the eighth grade than learning by the traditional method. More specifically the primary consideration of this study was to test the hypotheses:

- H₁: There is no significant difference in achievement test scores in social studies by eighth grade students when taught by the inductive and traditional methods.
- H₂: There is no significant difference in critical thinking by eighth grade students in social studies when taught by the inductive and traditional methods.

The study was conducted the first semester of the school year 1967-1968 from September to January. During this time, group A was taught by a traditional method using lecture, discussion, and reading of the basic textbook, New Frontiers of Freedom.¹ Group B was taught by an inductive method using small group discussions, library research, individual study on a problem, the showing of audio-visual materials followed by discussion, reports, and materials developed by Dr. Edwin Fenton published by Holt, Rinehart and Winston, Inc.

The data evaluated consisted of scores obtained in Stanford Social Studies Tests, Meares-Sanders Junior High History Tests, and

¹Smelser and McCollester, op. cit.

nine Critical Thinking Tests. A null hypothesis was tested concerning the difference among the means using Fisher's Table of t.

The summary of the findings is presented in tabular form. The means of each criterion measured are shown in Table IV.

The difference for means for the control and experimental groups was significant for four tests. The significance favored the control group in the post-test of the Stanford Social Studies Test. The difference favored the experimental group in tests 5, 6, and 8 of the Critical Thinking Tests.

The difference between the means for the control and the experimental groups was not significant for the pre-test of the Stanford Social Studies Tests, the pre-test and the post-test of the Meares-Sanders Junior High History Test, and the Critical Thinking Tests 1, 2, 3, 4, 7, and 9.

On the Stanford Social Studies Test, there was no significant difference on the pre-test. There was significant difference at the .05 level of significance on the post-test in favor of the control group.

On the Meares-Sanders Junior High School History Test, there was no significant difference in either the pre-test or post-test.

On the Critical Thinking Tests, there was no significant difference for Test 1, Test 2, Test 3, Test 4, Test 7, and Test 9. There was significant difference at the .05 level of significance on Test 5, Test 6, and Test 8 in favor of the experimental group.

In one of the four achievement tests (the post-test of the Stanford Social Studies Test) the hypothesis of no significant difference

TABLE IV

SUMMARY OF TEST RESULTS FOR CONTROL GROUP AND EXPERIMENTAL GROUP

Post-test of Stanford Social Studies Test		Critical Thinking Test		Test 6		Test 8	
Group	Means	Group	Test 5	Test 6	Test 7	Test 8	Test 9
<u>Group means for tests showing significant difference</u>							
Control	56.8	Control means	42	7.2		15	
Experimental	48.04	Experimental means	49	9		16	
t-test	2.5*	t-test	3.765*	2.222*		3.030*	
(* Significant difference)							
Pre-test of Stanford Social Studies Test		Meares-Sanders Junior High Social Studies Test		Critical Thinking Test		Test 6	
Group	Means	Group	Means	Test 1	Test 2	Test 3	Test 4
<u>Group means for tests showing no significant difference</u>							
Control	50.6	Control pre-test	29.3	39	15	5	21
Experimental	52.1	Experimental pre-test	26.9	40	11	5	23
t-test			1.304				
		Control post-test	55.1				
		Experimental post-test	57.1				
t-test	.294		.6125	1.428	.333	.909	.250
							1.818
							.566

in achievement under the inductive and traditional methods was rejected. The hypothesis was retained for the other three tests.

In three of the nine Critical Thinking Tests the hypothesis of no significant difference in learning under the inductive and traditional methods was rejected. The hypothesis was retained for the other six tests.

Conclusion

This study was designed to determine the difference, if any, in achievement between a control group taught by traditional methods of teaching social studies and an experimental group taught by inductive methods of teaching social studies. Achievement was measured by the Stanford Achievement Social Studies Test, Meares-Sanders Junior High History Test, and the Critical Thinking Tests. Within the limitations of this study, using selected instruments and using eighth grade students the following conclusions seem justified:

1. The significantly higher gain in achievement as measured by the Stanford Achievement Social Studies Test, by the control group, indicated that the traditional method was superior to the inductive method.
2. The superiority in achievement of the experimental group on the Meares-Sanders Junior High History Test was not significant and may have been a chance difference.
3. The significantly higher gains made by the experimental group on three of the Critical Thinking Tests (Open-Mindedness, Recognizing Biased Statements, and Insights into Relative Significance of Questions) and superior gains, although not significant, on another three tests, indicated the superiority of the inductive method as far as critical thinking was concerned.

Implications

Rejection of the null hypothesis (H_1 : There is no significant difference in achievement test scores in social studies by eighth grade students when taught by the inductive or traditional methods for one of the achievement tests) and the acceptance of the null hypothesis (H_2 : There is no significant difference in critical thinking test scores for six of the critical thinking tests) reveals that there is apparently a tenable relationship between achievement and critical thinking, and the method of instruction used. The knowledge of this relationship adds to our understanding for greater efficiency in learning.

Some areas suggested for further research and study include:

1. Would the inductive method of thinking over a longer period of time mean proportionately greater gains in achievement and critical thinking?
2. What role, if any, would the extensive use of educational media play in facilitating the use of the inductive method?
3. Further analysis should be made of the use of in-service development programs for teachers in the areas of curriculum reform and teaching approaches.
4. Further studies should be developed using students from various grade levels ranging from junior high through senior high school.

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A COMPARATIVE STUDY OF TRADITIONAL AND INDUCTIVE METHODS
OF TEACHING SOCIAL STUDIES

by

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It was the purpose of the study to (1) review available literature on traditional and inductive methods of teaching social studies; and (2) determine if teaching social studies by the inductive method would result in significantly greater achievement of social studies in eighth grade students than teaching by traditional methods. More specifically, the primary consideration of this study was to test the following hypotheses:

- H₁: There is no significant difference in achievement test scores in social studies by eighth grade students when taught by the inductive and traditional methods.
- H₂: There is no significant difference in critical thinking by eighth grade students in social studies when taught by the inductive and traditional methods.

The study was conducted the first semester of the school year 1967-1968 from September to January at St. Xavier's Grade School in Junction City, Kansas. During this time, group A was taught by a traditional method using lecture, discussion, recitation, and reading of the basic textbook, New Frontiers of Freedom. Group B was taught by an inductive method using small group discussions, library research, followed by discussion, reports, and materials developed by Dr. Edwin Fenton published by Holt, Rinehart and Winston, Inc.

The traditional approach was lecture and discussion. The inductive approach was a method in which students asked questions of history to learn a mode of inquiry which can be carried on outside the classroom and which will be serviceable for a lifetime. It was a "work through the problem yourself" approach.

The data evaluated consisted of scores obtained in Stanford Achievement Social Studies Tests, Meares-Sanders Junior High History

Tests, and nine Critical Thinking Tests. A null hypothesis was tested concerning the difference among the means using Fisher's Table of t and a .05 level of confidence.

The study was designed to determine the difference, if any, in the achievement between a control group taught by traditional methods and an experimental group taught by inductive methods. Achievement was measured by the Stanford Achievement Social Studies Test and Meares-Sanders Junior High History Test, and critical thinking was measured by the Critical Thinking Tests.

The following conclusions were made:

1. The significantly higher gains in achievement, measured by the Stanford Achievement Test, by the control group indicated that the traditional method was superior to the inductive method.
2. The superiority in achievement of the experimental group on the Meares-Sanders History Test was not significant.
3. The significantly higher gains on three tests and superior gains on another three tests, measuring critical thinking, indicated the superiority of the inductive method of teaching social studies.