A COMPARISON STUDY TO DETERMINE THE EFFECTIVENESS OF THE INQUIRY/CONCEPTUAL APPROACH TO INSTRUCTION AS UTILIZED IN INSTRUCTIONAL MATERIALS WHEN USED IN SELECTED SENIOR HIGH SCHOOL BUSINESS ECONOMICS COURSES

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TABLE OF CONTENTS

Chapter Page

LIST OF TABLES

CHAPTER I

THE PROBLEM

Introduction

The economic education movement has received increased recognition during the last twenty-five years for three reasons: (1) the complexity associated with the American economy, (2) the charges impugned against the private enterprise system collectively and personal freedoms individually, and (3) the economic illiteracy demonstrated by many Americans. The increased recognition and accompanying activity has enabled the economic education movement to "outgrow the traits associated with infancy and attain those subtle qualities usually accorded mature institutions: self-direction, flexibility, confidence, and humility."[1]

Edward C. Prehm in TEACHING HIGH SCHOOL ECONOMICS provides the conceptual framework of defining economic literacy:

> The possession of basic understandings and skills needed by all individuals for intelligent management of their own business and financial affairs and for responsible participation as citizens in the determination of public policy and the maintenance of the general welfare.[2]

The economic education movement, like all successful movements, must develop sound, idealistic, attainable goals and recruit competent, innovative, dedicated leaders. The National Task Force Report sets the philosophical basis of self-direction for economic education when it says:

> In the final analysis, the effectiveness of government depends on the capacity and understanding of the people. For it is the people who, through their votes and other influences, determine within broad limits the scope and nature of government policies. If they are to exercise their great political power responsibly and effectively, more of our people must know about our economy and learn to think about economic issues objectively and rationally.[3]

Economic educators are committed to the proposition of economic literacy for the collective American society. The vehicle deemed most appropriate to accomplish the basic understandings of economics essential to learning is in the nation's elementary and secondary schools. The National Task Force Report on Economic Education in 1961 stated: "If our citizens of tomorrow are to achieve the desired minimum economic understanding, most of them must get it in the schools."[4] G. L. Bach reflects a similar view when he states: "A moderate level of economic understanding, essential for intelligent citizen participation in America's complex economic system, must be imparted to each student."[5] A sound philosophical framework for the economic education movement and a strong commitment by educators to achieve economic literacy are but two giant steps in the right direction.

What then are the weaknesses of the economic education program as offered in the high schools? Among various findings, the National Task Force on Economic Education in a 1961 benchmark report conveyed a disturbing picture of the absence of the teaching of economics, depicted the lack of formal teacher preparation in economics, and identified the inadequacy of available teaching materials.[6] It is this last finding that leads us to the purpose of and the need for this study.

Need for the Study

The economic education movement exhibits an inner stability based

upon measured success with an accompanying capacity to accept and then rebound from program failures when they occur. The confidence radiated by the proponents of economic education is softened by the knowledge that there is always more to be learned about the learning process itself.

A systematic approach applied to a viable economic education movement demands continuous monitoring and periodic evaluation. Being ever sensitive to and cognizant of the changes in demand indicative of a dynamic citizenry, the proponents of the economic education movement have and continue to demonstrate flexibility in modifying their program in response to those demands.

If economic literacy for the collective American society is to become a reality, experimentation and implementation of innovative approaches in instructional materials necessitating in-service instruction on how the economic concepts are to be disseminated become paramount.

Statement of the Problem

The purpose of this study is to compare the effectiveness of the inquiry/conceptual approach as utilized in the ECONOMICS IN SOCIETY[7] material with the more conventional approach in other materials for student learning in the high school elective economics courses.

The ECONOMICS IN SOCIETY (EIS) program is a teaching/learning system comprising six volumes: namely, Concepts and Institutions, Industry Performance, National Economic Policy, Economic Goals and Priorities, Communist Economies, and Third World Economies. Each volume may be taught independently from the remaining five volumes, or units

from each of the volumes may be selected to develop a curriculum designed to build upon the economic concepts that are already known by the students. The central thrust of the teaching role rotates around organization of learning continuity, diagnosing student learning problems, acting as an information resource, and evaluating learning. Concurrently, the student becomes an active, integral element of the learning process. In each of these volumes, the students in the experimental group apply the "course organizers" to an analysis of contemporary problems. An "organizer" as described by Richard Suchman encompasses:

> A condition of the mind (data, ideas, theories, methods of thinking) that permits the individual to react to encounters in selected ways--reflectively, conventionally, creatively. Organizers are the knowledge a person has already acquired. They organize a person's thinking. They are patterns which guide the selecting, grouping, and ordering of encounters. The individual has knowledge stored for use which organizes or controls learning from the new encounter.[8]

This process of application is designed to help students achieve a set of learning objectives.

The study will present findings of student achievement relative to their Index of Status Characteristics.[9] The Index of Status Characteristics (I.S.C.) measures the socioeconomic levels of the community.[10]

Specifically, the following null hypotheses are tested by this study:

1. There is no significant difference between the achievement means of the inquiry/conceptual approach to instruction utilizing the ECONOMICS IN SOCIETY material and the more conventional approach of instruction in other materials following the experimental 15-week instruction period (after equating on two control measures).

2. There is no significant difference between the achievement means of pre-senior and senior students following the experimental

15-week instruction period in the high school elective business economics course (after equating on two control measures).

3. There is no significant difference between the achievement means of female and male students following the experimental 15-week instruction period in the high school elective business economics course (after equating on two control measures).

4. There is no significant difference in the interaction between the control/experimental group and the pre-senior/senior classification.

5. There is no significant difference in the interaction between the control/experimental group and the male/female category.

6. There is no significant difference in the interaction between the pre-senior/senior classification and the male/female category.

7. There is no significant difference in the interaction among the control/experimental group, pre-senior/senior classification, and the male/female category.

Definition of Terms

Control group: Three sections of high school students enrolled in an elective Business Economics course in the Oklahoma City Public School System using two basic economic textbooks and the conventional approach to instruction.

Experimental group: Three sections of high school students enrolled in an elective Business Economics course in the Oklahoma City Public School System using the ECONOMICS IN SOCIETY program and its inquiry/conceptual approach to the teaching/learning process.

Economics course: A separate, elective business education discipline emphasizing applied economics. It is designed primarily as a

course for seniors, but pre-seniors are allowed to enroll.

Conventional Approach to Instruction: A teaching/learning process in which the student learns economic concepts by listening to a lecture given by the teacher accentuating the material found in basic economic textbooks. Although, discussion and question-and-answer periods are extensively utilized.

Inquiry/Conceptual Approach to Instruction: A teaching/learning process used to build breadth and depth of understanding sufficient for making rational decisions based on sound, objective, and analytical reasoning.

Inquiry: A learning process by which a student, more or less independently, comes to perceive relationships among elements in his environment or between ideas that previously had no meaningful connection.

Concept: A meaning that man associates with a symbol, a meaning that goes beyond mere sensory impression.

Test of Economic Understanding (TEU):[11] An evaluation instrument published by Science Research Assocates in 1964. This instrument was used to measure individual achievement acquired by the student during the second semester elective business economics course through a pre-and-post examination.

Otis-Lennon Mental Ability Test:[12] An evaluation instrument designed to predict how well high school students will do in school.

Index of Status Characteristics:[13] An evaluation instrument designed to determine the students' socioeconomic status.

Delimitations

This experimental study will be limited to a sample consisting of students enrolled in six sections of a high school elective business economics course offered in the business education department during the second semester of the 1974-75 school year. It is also limited to a sample consisting of three schools -- Northwest Classen, Star-Spencer, and U. S. Grant -- within the Oklahoma City Public School System.

Study participants were required to complete the Otis-Lennon Mental Ability Test, as well as the pre- and post-Test of Economic Understanding. These two measurements constitute the limitations of the control variables.

The teaching staff of the experimental group received only four hours of in-service training on the inquiry/conceptual approach to instruction prior to the initial contact with the experimental group.

The quality of instruction in the control and experimental sections was subjectively assessed as similar by the researcher.

The students in the experimental group used only the first volume, Concepts and Institutions, of the ECONOMICS IN SOCIETY program as a core and a minimum of economic understanding attainable of graduating high school students. However, Industry Performance and National Economics Policy volumes were available to the students as optional material. The three remaining volumes -- Social and Economic Priorities, Communist Economics, and the Third World Economies had not been published prior to the time of this study.

The students in the control group had access to the material in Economics and the American System,[14] Consumer Economic Problems,[15] and in supplementary articles located in periodicals and newspapers.

Limitations

The control and experimental sections were selected on the basis of convenience rather than randomization. Writing about experimental research in a classroom setting, West commented about the problem of random assignment of students to treatments:

> In classroom research, one is nearly always faced with intact groups, classes already formed. Provided school programming processes are not ones that lead to different sorts of students in various class sections, random assignment of treatments to classes will result in random assignment of students to treatment.[16]

An additional comment by West concerning the structural design of an experiment to the variant behavior of teachers:

> Experiments on instructional processes require designs that provide a measure of the contribution of varying teacher behaviors to results, a measure of what is called teacher-method interaction.[17]

To the extent of periodic accessability in the classroom, the researcher is limited in determining the variations in teacher-method interaction.

FOOTNOTES

[1]S. Stowell Symmes, "Economic Education Comes of Age," Indiana Social Studies Quarterly, XXV (Winter, 1972-73), p. 37.

[2]Edward C. Prehm, Teaching High School Economics (New York, 1968), p. 5.

[3]National Task Force Report on Economic Education, Economic Education in the Schools (New York, 1961), pp. 7-8.

[4]Ibid., p. 8.

[5]G. L. Bach, "Economic Illiteracy: What We Don't Know Will Hurt Us," Challenge, XIV (March-April, 1966), p. 33.

[6]National Task Force Report On Economic Education, Economic Education in the Schools (New York, 1961), p. 9.

[7]Suzanne Wiggins Helburn et al., Economics in Society (Menlo Park, California, 1974).

[8]J. Richard Suchman, "A Model for the Language of Education," Instructor, LXXVI (August-September, 1966), p. 92.

[9]Lloyd W. Warner, Marcia Meeker, and Kenneth Eells, Social Class in America (Chicago, 1949), p. 131.

[10]Ibid., p. 35.

[11]Science Research Associates, Inc., Test of Economic Understanding (Chicago, 1964).

[12]Arthur S. Otis and Roger T. Lennon, Otis-Lennon Mental Ability Test: Advanced Level-Form J (New York, 1967).

[13]Lloyd W. Warner, Marcia Meeker, and Kenneth Eells, Social Class in America (Chicago, 1949), pp. 140-141.

[14]J. Kenneth Davies and Glen F. Ovard, Economics and The American System (New York, 1970).

[15]Roman F. Warmke et al., Consumer Economic Problems (8th ed., Cincinnati: South-Western Publishing Company, 1971).

[16]Leonard J. West, "Experimental and Quasi-Experimental Research," National Business Education Yearbook IX (1971), p. 268.

[17]Ibid., p. 269.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

It is the purpose of this chapter to review the basis of economic education which guides this study, the status of economic education in the high school relative to curriculum and enrollment patterns, and the ever-expanding quantity and quality of instructional materials incorporating specific teaching techniques.

Foundational Basis for Economic Education in Secondary Education

Education for democratic citizenship and civic competence has been a major objective of public education in our country. G. Derwood Baker aptly defined civic education as encompassing:

> A knowledge of the history of our country and its political institutions, of the structure and function of local, state and national government and some training in the privileges, duties and responsibilities of political citizenship.[1]

Baker went on to say that in this area, it is generally conceded that the schools have done a good, though by no means a perfect, job.[2]

Political competence alone, however admirable, has limitations in today's world. The vast majority of current political issues revolve on questions of finance and economic policy; and in his role as consumer, laborer, voter, businessman, or professional, each individual is called

upon to make decisions which influence and shape the character of our political, social, and economic institutions. John Maynard Keynes (1883-1946), clearly one of the most influential economists of this century, responding to a question of whether economics was a discipline of consequence, said:

> The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.[3]

Notwithstanding, Melby asserted:

> It has been frequently observed that we are a nation of economic illiterates, that many of us believe we can get something for nothing, and that there is a widespread lack of knowledge of the basic facts concerning our economy, its problems, strengths and weaknesses.[4]

Ayers synthesized the philosophical objective and the institutional responsibility of promoting economic competence in stating:

> Economic citizenship and political citizenship have become inseparable. Many people believe that the survival of human freedom rests upon the ability of Americans to develop the economic attitude and understanding to promote sound economic policies. The school which accepts citizenship education as a major responsibility must make provisions for promoting economic competence.[5]

The problem of preparing youth for economic citizenship is a relatively new problem and one with which our public education program must address itself. In an address presented at a meeting of the American Economic Association in 1956, Ben Lewis of Oberlin College said:

> The case for economics in the schools is made of the same stuff as the case for democracy itself. The logic is inexorable, and its import in today's situation is alarming. Democracy--and this we have on the very highest authority--means government by the people. But the affairs of government, in large and increasing measure, are economic affairs. To be sure, they have political and other overtones, but no one who casts his glance even casually over the range of matters with which modern governments have to deal will

doubt that these matters are economic in substance or in effect.[6]

The incorporation of the Joint Council on Economic Education[7] in 1949 as an independent, nonprofit, nonpartisan, educational organization provided encouragement, improvement, coordination, and service to the economic education movement. The Joint Council's primary objective is to reduce economic illiteracy. Its program is based on local responsibility and action.

The Joint Council's first major effort to accomplish its objectives began in 1955 when curriculum development projects in economic education were initiated in seven school systems throughout the nation. Though the duration of the experimental project was limited to three years, the following guidelines were established as a direct consequence of the experiment for the Joint Council's future program plans:

1. A continuing economic education program is feasible, but it must be an integral part of the curriculum and not just another course.

2. Changes in curriculum must flow from in-service courses and workshops for teachers, most of whom lacked background in economics, and therefore were not prepared to teach it.

3. Competent coordinators with released time and adequate resources are needed for a successful program.

4. Curriculum change needs strong local support. Area Councils working closely with the schools could offer resources which are vital to the program's success.

5. Economist consultants on a regular scheduled basis are necessary to avoid superficial programs based on economic misconceptions. Integrative teamwork ties methods of instruction and the 'what' in economic concepts.

6. Programs need a framework outlining the dimension of an adequate understanding of economics to enable schools to develop acceptable objectives.

7. Schools lack the financing, personnel and time to develop good teaching material.

8. Programs need resources which Area Councils and Centers can provide but which a central office distant from the schools cannot service.

9. Central offices can act as a communications center to transmit information between schools engaged in the project. This is a most important service in successful programming.

10. Funding is necessary even though it take the form of small seed grants.[8]

Several of the early Joint Council projects that had significant impact upon the direction of economic education include:

1. A 1961 publication entitled ECONOMIC EDUCATION IN THE SCHOOLS which recommends the minimum economic knowledge every high school graduate needed.

2. A 1961-63 study publication entitled STUDY MATERIALS FOR ECONOMIC EDUCATION IN THE SCHOOLS which evaluated supplementary materials to assist teachers in finding suitable teaching aids for classroom use.

3. A television series production in 1963 entitled, "The American Economy" designed to overcome the lack of economic understanding among teachers.

4. In 1964, the publications of DEEP I, ECONOMIC IDEAS AND CONCEPTS and DEEP II, SUGGESTIONS FOR GRADE PLACEMENT AND DEVELOPMENT OF ECONOMIC IDEAS AND CONCEPTS.[9]

The stage was then set in 1964 for the Joint Council to launch a five-year experimental program called the Developmental Economic Education Program (DEEP). Basing its selection on the decentralizing character of education in the United States and the varied patterns of system organization, curriculum design and size, thirty school systems were selected in various parts of the country to participate in the experiment. The purpose was to develop prototype kindergarten through twelfth grade economic education programs. Its objectives were to:

1. Build economics into existing school curricula at all grade levels.

2. Improve teacher preparation in economics.

3. Develop and evaluate new teaching materials at all grade levels.

4. Identify diverse models of curriculum revision in economic education.

5. Disseminate results.[10]

As a result of DEEP, thousands of teachers and their students have become acquainted with economic analysis. Currently, 150 school systems have been officially designated DEEP Cooperating Schools.

The 1970 decade has witnessed a renewed interest of a separate economics course in the high school curriculum. Currently, six states have enacted legislation authorizing a separate economics course in the high school. The emphasis toward a separate economics course in the high school has numerous opponents. Therefore, the fate or future of this trend remains uncertain.

The principal medium for expanding and improving the economic education program in the schools rests largely upon the network of Affiliated Councils functioning at the state level and Centers of Economic Education on college and university campuses. The staff of these Centers coordinate and provide the leadership in a diversity of economic education workshops, act as a resource for high school coordinators, assist in developing innovative instructional materials, and promote a broad base of financial support throughout their geographical region.

What then are the contributing factors of economic illiteracy exhibited by Americans? In 1961, a benchmark report by the National Task Force on Economic Education conveyed a disturbing picture of the absence of the teaching of economics in high schools, identified the

inadequacy of available teaching materials and instruction methodology in economic courses, and described the minimum understanding of economics essential for good citizenship and attainable by high school students.[11] In addition, the committee provided constructive recommendations to combat economic illiteracy effectively for most of the citizens of tomorrow.[12] The vehicle deemed most appropriate to accomplish the basic understandings of economics essential to good citizenship was learning in the elementary and secondary schools.

Status of Economic Education in the High Schools Relative to Curriculum and Enrollment Patterns

Economic education has become a serious issue in the United States. In this country, the economic education movement is based on the premise that in a democracy the passage of legislation that will promote the country's welfare is dependent upon the public understanding of each issue and that good economic policy is better assured through an economically-wise electorate. Economic concerns are the province of every member of human society -- not just a few specialists.

Educators, then, are faced with a truly awesome responsibility. Pioneering curriculum development projects as conducted by such noted educators as Robert Darcy, Suzanne Wiggins Helburn, Meno Lovenstein, and Lawrence Senesh attests the educators' willingness to assume their role of responsibility in the economic education program.

Although a general consensus exists among educators for inculcating economic education in the high school, a division of alternatives are expressed concerning placement implementation. Economic education in

the secondary schools can be categorized into three types: (1) formal courses devoted entirely to economics; (2) other courses incorporating mini-units of economics or through integration of economic concepts closely associated with the specific discipline; and (3) the integration of economic concepts in other courses followed by a capstone applied economics course for seniors.

A study conducted in 1965 under the auspices of the National Association of Secondary-School Principals revealed:

> The principal issue among the high schools, both public and private, is whether economic understanding on the part of students is achieved best through scheduling separate economics courses or by incorporating economics instruction in other courses -- usually courses taken by most pupils.[13]

Of 500 schools responding to a questionnaire sent to 2,000 public secondary schools, McKee and Moulton calculated that 60 percent of these schools offered courses devoted exclusively to economics.[14] In addition, these economic courses are commonly offered as an elective and only in the senior year.[15] In the final analysis when factors like election of subjects, competition of student interest, and student dropout prior to graduation are considered, McKee and Moulton concluded that "less than five percent of all high school students take the equivalent of a semester course in economics."[16] A comprehensive survey completed by the Federal Security Agency substantiated the McKee and Moulton conclusion when it revealed that only 3.7 percent of all students in public secondary schools enrolled in economics courses.[17] A four-page questionnaire developed by the National Association of Secondary-School Principals in 1964-65 was mailed to all public high schools enrolling 300 or more pupils and to all private or independent high schools. Of the responding 6,480 public and private high schools,

representing a 50.9 percent return, approximately 7 out of every 10 public high schools offer a separate economics course.[18] The availability of a separate economics course by 69.8 percent of the public high schools through the predominantly elective method has not, however, influenced high school students to enroll in this course in equal percentages.[19] The U.S. Office of Education in a 1965 report found: "Courses in economics, . . . continued to maintain fairly stable positions, showing only slight changes in percentages of pupils enrolled since 1949."[20] Statistical findings released from a 1970-71 Pretest Survey showed student enrollment to be 782,923; this number respectively representing a percentage rate of 4.3 in all high school economics courses.[21] From the as yet unpublished 1972-73 Preliminary Studies of National Patterns of Course Offerings and Enrollments in Public Secondary Schools, Dr. Vance Grant provided the enrollment and percentage rate of students enrolled in economics, consumer economics, consumer education, and consumer problems/history as being: 448,499 and 2.5; 99,269 and 0.5; 72,782 and 0.4; and 24,299 and 0.1; respectively.[22] However, the readers should recognize that all the enrollment statistics cited were a one-year analysis. The statistics would be substantially increased over the extended high school time period.

A 1965 study reported that slightly more than four-fifths (81.0%) of the schools include some economic instruction in other courses.[23] These courses go by a variety of titles, but the representative titles are: World History, United States History, Problems of American Democracy, Civics, Senior Social Studies, Home and Family Living, and Business Law.

Size of school makes no appreciable difference in deciding

whether or not a high school provides some economics in other courses as is apparent from Table I.

TABLE I

SENIOR HIGH SCHOOLS (10-12)--ECONOMICS INCORPORATED INTO OTHER COURSES BY SIZE OF SCHOOL [24]

Size of School	Number of Schools Responding		Percentage
	Yes	No	Yes
1-299	19	5	79.2
300-499	108	34	76.1
500-749	170	47	78.3
750-999	133	35	79.2
1,000 & over	610	115	84.0
All schools	1,040	236	81.5

The fact that 84 percent of schools of 1,000 and over make such provision, however, is an encouraging one to all interested in fostering economic understanding among all citizens.

In a 1968 study conducted by Paul J. Thompson, information was obtained from social studies and business teachers in twenty-three high schools in Minnesota revealing that economic topics were being taught in separate economics courses, senior social studies, consumer economics, and United States history.[25] Furthermore, the primary source of

planned instruction for the majority of students was the senior social studies course.

After reviewing numerous studies in courses incorporating economics on the secondary level, George G. Dawson concluded that "it is quite clear that a substantial amount of economics can be taught in the secondary schools, both in separate economics courses and by integrating economics in other courses."[26]

The case for incorporating economic instruction in other courses -- usually courses taken by most pupils -- has received legislative enactment in the State of Oklahoma through the Economic Education Act of 1974. Section Six of the Act states:

> The State Board of Education shall adopt regulations to insure the teaching of economic education to all pupils. The Board of Education of every school district of this state shall schedule the integration of economic education in social studies, business education, home economics, and the other vocational courses as part of the curriculum of every elementary and junior and senior high school.[27]

Such an added dimension of vertical integration of economics will substantially enhance the exposure of economic concepts to the students in Oklahoma's elementary and secondary schools.

The issue of a formal, separate course devoted exclusively to applied economics -- historically reporting limited enrollment -- versus the integrating of economic concepts into other courses -- usually those required of all students -- has been resolved by a sizable number of high schools by combining both approaches.

Schools using this approach reason that economic institutions, concepts, and analyses must be dealt with as they arise within the societal, personal, vocational, and political environment. It is imperative, therefore, to plan and implement curricula and to prepare

teachers so that students understand the economic problem and the proper utilization of tools conducive to rational economic reasoning. Furthermore, these educators believe that a systematic well organized capstone economics course, taught by a teacher well-grounded in economics, makes use of prior learnings and promotes an in-depth competency in reasoning about economic concepts and problems so important to life-long learning.

Status of Economic Education in the High Schools Relative to Instructional Materials and Teaching Techniques

Economic educators throughout the 1950 decade generally were preoccupied in determining the extent of economic illiteracy of the American society, laying a foundational basis for a viable economic education program, and theoretically developing the structural fibers that would include the primary thrust, direction, and substance to energize both methods and instructional materials.

The embedded seed of the '50's produced fruition in the '60's through substantial research in the areas of instructional materials, curriculum development, teacher preparation, methodology, and effective conditions of student learning. Although tremendous growth has occurred, the task of implementation and further refinement is the province and responsibility of the economic educators in the '70's and thereafter.

The American Economic Associations Textbook Study Committee pinpointed the inadequacy of instructional materials used in courses incorporating economic concepts when it wrote:

> Perhaps the most alarming characteristic of textbooks in all three courses (economics, social studies, and U.S. history) is the dominance of description over analysis in the treatment of those economic topics selected for discussion.[28]

One aspect of the 1964 National Opinion Research Center study investigated the priority of various teaching techniques. Table II reveals the findings of the techniques used by teachers when limited to three concrete topics, namely; labor unions, the farm problem, and booms and depressions.

TABLE II

TEACHING APPROACHES*

Approach	Economics and Problems of Democracy Teachers	All Other Teachers
Descriptive-instructional	6.3	6.3
Concept-analytical	5.8	5.4
Historical	4.8	5.2

*Based on NORC study. Each index is based on responses of that group on the teaching approach to each of the three problems presented, where 10 would represent use of that approach by all teachers on all three issues.[29]

Perhaps, not surprisingly, the descriptive-institutional approach to teaching is the leading response by teachers in courses incorporating some economics. However, Bach and Saunders in noting the relative high emphasis given to the concept-analytical approach caution the reader that the use of this approach in most cases implies only development of the most simplest of economic concepts and their use in only the most elementary way.[30]

A corollary problem of significant magnitude as the high school economic education program moved into the '70's was as Warmke noted that

"we have not rigourously identified what high school economics ought to be, consequently, it is difficult to measure teaching and learning effectiveness."[31]

Having identified three deficient areas in the high school economic education program, what are the recorded success studies that enable S. Stowell Symmes to write:

> Confidence based upon measured success has given the economic education movement inner stability with capacity to accept and then rebound from program failures when they occur?[32]

Subsequent to the American Economic Association's Textbook Report, an economics text subcommittee was commissioned to evaluate the texts:

> ...as economists seeking to determine the scope and nature of the economic content of the books and to consider their adequacy in terms of that minimal economic understanding necessary to good citizenship.[33]

The standard of minimal economic understanding employed in evaluating the texts was "...consistent with that later set forth in the National Task Force Report, ECONOMIC EDUCATION IN THE SCHOOLS...."[34] The criteria for evaluation adopted by the overall committee and used by the economics text subcommittee were:

1. The principal objective of high school education in economics should be good citizenship, not the preparation of students for a college major in economics.

2. Economics is a social science and emphasis should be placed on the interdependence of decision-makers and the operation of economic systems, not on the solution of problems of the individual.

3. The economic understanding sought should concern vital matters, not trivia; and the coverage of these should be balanced, including (as examples) macro- and micro- economies, the generation of change in a system as well as its static operation, and international as well as domestic problems.

4. The approach to economic matters should be essentially analytical, though larded heavily with factual and descriptive material on economic institutions and their development.

5. The nature of value judgments should be explained; whenever relevant they should be identified; and the role they play in shaping economic systems, policies, and controversies should be clearly stated. Controversial issues should not be avoided, but used to stimulate interest and to distinguish between facts, value judgments, and impartial analysis as these apply to vital matters.

6. Factual and analytical errors should be kept to a minimum.[35]

The subcommittee finding of eight economic texts, of which four were "leading" textbooks on the basis of publisher's rankings in terms of sales volume and all carrying a vintage copyright date of pre-1964 was that: "None of the books examined measured up to these criteria...."[36] A similar review of twelve economic textbooks, of which five were published in 1968 and 1969; four were published in 1966 and 1967; and the remaining three in 1964 and 1965; also, eight of the twelve texts were new entrants with no previous editions received a rating of "substantial improvement;" six of the twelve adequately fulfilled the AEA Report criteria.[37]

If economic literacy for the collective American society is to become reality, experimentation and implementation of innovative instructional materials combining in-service instruction on "what kind" of economics should be presented to the students and "how" the economic concepts are to be disseminated become paramount.

Calderwood set the stage for further embellishment by teachers and curriculum designers when he identified the four major themes that are central to modern economics in the United States as being:

1. The central economic problem confronting all individuals and all societies.

2. The need for and the nature of economic systems.

3. The determinants of economic growth

4. The determinants of the level of income, prices and employment.[38]

The confidence radiated by the proponents of economic education is softened by the knowledge that there is always more to be learned about the teaching/learning process.

Gentry noted that educators in economic education, as in other disciplines, are moving away from the teacher-centered educational activity to the student-centered activity.[39] Furthermore, the teacher-directed lecture-discussion format is no longer considered the most effective or desirable strategy for developing economic understanding. Active participation and experimentation on the part of the student is considered essential to the learning process. This thrust entails a change in the role of the teacher from a disseminator of information to a director of activities that lead the students to inquire, analyze, and discover the desired concepts and principles. Within this frame of reference, facts are only incidental; it is more important to know how to use facts and the various forms of analysis to perceive relationships, to proceed from this to an understanding of concepts, and eventually to make decisions about economic issues. Of course, no analysis can be made, understanding developed, or decisions formed without a knowledge base founded upon relevant, useful, and accurate facts.

The changing philosophical environment has resulted in corresponding changes in the substance and nature of the objectives for teaching economics. The strength of well-defined objectives is reemphasized, whereas the content, activities, and evaluation of performance are seen as directly relating to and growing out of the objectives.

The new approach to the teaching/learning process in economics according to Gentry, generally include four major course objectives:

(1) acquisition of inquiry skills, (2) acquisition of knowledge, (3) recognition of values, and (4) development of desirable attitudes.[40] Including acquisition of inquiry skills as a desirable result of an educational experience is indicative of a realization that such an experience should help students develop a method of using rational thought in looking at problems and issues rather than using unsupported opinion or pure emotion. Students making applicable use of the inquiry approach are exposed to a procedure whereby they can make decisions about economic issues that are justifiable and consistent with generalizations that can be made about our economic system.

Numerous studies have been publicized concerning the range of methods employed with specific "mini-units" of economics. In the last decade, the range of methods would include programmed instruction, wider use of visual aids, the multimedia or individualized-instruction approach, and other student-centered activities. The vast majority of these studies reveal marked changes in interest, attitude, and achievement by high school students.

However significant each of these studies in isolated situation might attest, James W. Crews asserted:

> Discussion of methodology or the 'how' of teaching is quite possible but hardly profitable without considering the actual materials used in instruction. In fact, an interplay between the two factors is essential so that each can influence the other.[41]

Donald N. Bigelow expressed a similar view of the inseparability and interplay of specifically designed instructional materials and methodology as a belief in the "twin-goals of teaching and learning" and that "content and method are indeed indivisible."[42]

A specifically designed project incorporating the twin goals of

teaching/learning and content/methods was developed by Suzanne Helburn and John G. Sperling in a semester course of economics (ECON 12) for high school seniors of all levels of achievement and scholastic ability.[43] ECON 12 can best be described as a teaching system designed to achieve a set of specified educational objectives. The primary responsibility for achieving the course objectives rests upon the designers of the ECON 12 system rather than upon the teachers and students.

Because textbooks are not sufficiently flexible as learning devices, much of the burden of organization and content presentation has been shifted to other media. The principal learning devices include work sheets, programmed instruction booklets, small-scale research problems, audio visuals, and a reading-fact book.

The entire course is organized around the spiral development of a set of concepts basic to an understanding of economics--economic systems, scarcity, efficiency, supply and demand, stocks, flows, equilibrium, and growth. The central themes of the course are:

1. That economics is a social science with a distinct set of analytic tools;

2. That economics is not a vehicle to promote the special interests of any group operating within an economy but rather that it is a study of the efficiency of any economic system;

3. That the test of efficiency is the degree to which decisions on the allocation of scarce resources satisfy the wants of the society and achieves the general social goals which that society holds; and

4. That the primary object of the course is to apply the tools of economic analysis to the American economy.[44]

Noteworthy features of the ECON 12 project which illustrate the advantages gained by the application of systems concepts within the constraints of the usual high school learning situation include:

1. The course is divided into units which are flexible enough to allow the teacher to pace the activities to particular classroom conditions and student abilities.

2. Multiple learning media provide the teacher with materials suitable for teaching students with varied experience, ability, and academic interest.

3. Classroom activities and homework assignments allow continual evaluation of student progress. This information feedback can be used to design lesson plans and teaching strategy.

4. The behavioral objectives are limited to an amount of content and skill acquisition which can be learned and 'internalized' by the average student.

5. Choice of subject matter is made to elucidate the basic structure of the economics discipline. Within this limitation, class and homework are chosen which are of interest to students.

6. All learning experiences are designed to provide students with adequate time to assimilate and accommodate to new information, to practice the use of new skills required for economic reasoning, and to 'discover' the basic economic principles which are to be learned inductively.[45]

All evaluation procedures for the course have been formative.[46] The authors did extensive classroom testing between 1964 and 1967 in the process of successive revisions and have published results indicating success as measured by student achievement on Science Research Associates' High School Test of Economic Understanding.

As a direct consequence of detailed analysis and systematic evaluation of the ECON 12 Project, the authors have revised the instructional material into a six-volume program called ECONOMICS IN SOCIETY. Initially, the materials were developed for use in the 12th grade. However, they have been used successfully with 9th grade and junior college students.[47] No previous student knowledge of economics is necessary, nor are there any other prerequisites for using the material.

Summary

The review of the literature provides ample evidence that economic concerns are the province of every member of human society. In spite of the obvious importance of our economic arrangements to all, few of us possess adequate understanding and still fewer think about the various economic problems unemotionally, objectively, or analytically. Certainly, the philosophical framework of education in America calls for citizens to be intelligent and responsible participants in society. Since most youths depend on high school for the development of economic understandings, an effective and well-organized high school economic education program is of utmost importance.

Chapter II highlights the alternative types of economic dissemination within the various departments in today's high school. In fact, the lack of concise cohesiveness of economic responsibility between departments impedes the attainment of the philosophical goals of economic education.

In the transition from infancy to maturity, the proponents of the economic education movement have made significant contributions in the quality and quantity of textbooks, experimentation in the use of multimedia techniques, and curriculum development. The paucity of studies relating to the twin goals of "teaching and learning" and that of "content and method" in economic education poignantly expresses the need for continued monitoring and evaluation.

Chapter III will present the experimental design and methodology.

FOOTNOTES

[1]G. Derwood Baker, "The Joint Council on Economic Education," Journal of Educational Sociology, XXIII (1950), p. 390.

[2]Ibid.

[3]Campbell, R. McConnell, Economics (5th ed., New York, 1972), p. 3.

[4]Ernest O. Melby, "Economic Education is a Must," Journal of Educational Sociology, XXIII (1950), pp. 380-381.

[5]Albert L. Ayars, "A Frontal Attack on Economic Illiteracy," School Executive, LXXII (February, 1953), p. 73.

[6]Edward J. Allen, "Program of the Joint Council on Economic Education," Journal of Higher Education, XXX (1959), p. 94.

[7]Joint Council on Economic Education, 1212 Avenue of the Americas, New York, New York 10036.

[8]DEEP 1969 (New York, 1969), pp. 10-11.

[9]Ibid., pp. 11-12.

[10]Ibid., p. 12.

[11]National Task Force Report on Economic Education, Economic Education in the Schools (New York, 1961), pp. 4-63.

[12]Ibid., pp. 64-78.

[13]Galen Jones, "The Current Status of Economic Teaching in the High Schools in the United States," National Association of Secondary-School Principals, IL (November, 1965), p. 19.

[14]C. W. McKee and H. G. Moulton, A Survey of Economic Education (Washington, D.C., Brookings Institution, 1951), p. 1.

[15]Ibid., p. 2.

[16]Ibid.

[17]Mabel C. Rice, National Summary of Offerings and Enrollments in High-School Subjects, 1948-49, Office of Education Circular No. 294 (Washington, D.C., May, 1951), pp. 1-4.

[18]Galen Jones, "The Current Status of Economics Teaching in the High Schools in the United States," National Association of Secondary-School Principals, IL (November, 1965), pp. 6-7.

[19]Ibid., p. 7.

[20]Subject Offerings and Enrollments in Public Secondary Schools (Office of Education, Washington, D.C., 1965), p. 7.

[21]Patterns of Course Offerings and Enrollments in Public Secondary Schools, 1971-72 (U.S. Office of Education, Washington, D.C., 1972), p. 12.

[22]Telephone conversation with Dr. Vance Grant, Head of Publishing Materials of the National Center of Educational Statistics, to Harold Friesen, April 24, 1975.

[23]Galen Jones, p. 12

[24]Ibid., p. 13.

[25]George G. Dawson, "Research in the Teaching of Economics," Economic Education Experiences of Enterprising Teachers, VI (New York, Joint Council on Economic Education, 1969), p. 75.

[26]George G. Dawson, "Recent Research in Economic Education," Economic Education Experiences of Enterprising Teachers, VII (New York, Joint Council on Economic Education, 1970), p. 97.

[27]Oklahoma Statutes, 1974 Supplement 70 § 1210.253, p. 688.

[28]"Economics in the Schools," American Economic Review Supplement, XXIII (March, 1963), p. 10.

[29]G. L. Bach and Phillip Saunders, "Economic Education: Aspirations and Achievements," American Economic Review, LV (June, 1965), p. 341.

[30]Ibid.

[31]Roman F. Warmke, "High School Economics: Problems and Prospects," The Journal of Economic Education, II (Fall, 1970), p. 89.

[32]S. Stowell Symmes, "Economic Education Comes of Age," Indiana Social Studies Quarterly, XXV (Winter, 1972-73), p. 37.

[33]"Economics in the Schools. A Report by a Special Textbook Study Committee of the Committee on Economic Education of the American Economic Association," American Economic Review Supplement, LIII (March, 1963), p. viii.

[34]Ibid.

[35]Ibid.

[36]Ibid., p. 1.

[37]Norman Townshend-Zellner, "A New Look at the High School Economics Texts," A Paper presented at the Joint Council on Economic Education Session at the annual meeting of the American Economic Association, New York City, December 28, 1969, p. 10.

[38]James D. Galderwood, "Economic Ideas and Concepts," Economics in History and the Social Sciences, I (New York, Joint Council on Economic Education, 1974), p. 5.

[39]Eileen Gentry, "Economics," National Business Education Yearbook, X (Washington, D.C., 1972), p. 55.

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[43]Suzanne Helburn and John C. Sperling, "Econ 12 Project," National Association of Secondary School Principals Bulletin, IL (November, 1965), p. 97.

[44]Ibid., p. 98.

[45]Ibid., pp. 101-102.

[46]"San Jose State College Economics in Society," Social Education, (November, 1972), p. 765.

[47]Ibid., p. 764.

CHAPTER III

DESIGN AND METHODOLOGY

Environmental Factors

This research study was conducted in the Oklahoma City Public School System, which registers the second largest pupil population in the State of Oklahoma. The system consists of 107 separate school sites, of which 9 are classified as senior high schools.

A Court case involving discrimination of transfer practices[1] in 1963 triggered subsequent Court proceedings and set the stage for the Court to approve on January 16, 1970 a "Comprehensive Plan for complete desegregation of senior and junior high schools of the Oklahoma City Public School System after the 1969-70 school year."[2] Whatever other positive or negative ramifications concerning the adoption and implementation of the Comprehensive Plan, two notable environmental factors should receive attention. First was the concurrent outmigration of pupil enrollment in each subsequent year after the Court Order was issued to implement the Comprehensive Plan in the Oklahoma City Public School System. In the 1969-70 academic year, the Oklahoma City Public School System reached a peak enrollment of 78,482 pupils.[3] Four years later, the enrollment was 58,169 pupils.[4] The second factor encompassed the by-products of instability associated with continuity and sequencing norms generally attributable to a constructive teaching/learning process.

The educational transition of a dualistic practice to a unitary concept that followed the Court Order has resulted in a student body realistically representative of a heterogeneous population.

Description of the Population

The students who participated in this study were those who elected to enroll the second semester of the academic year 1974-75 in the Business Economics course within the Oklahoma City Public School System. Since scheduling of subject offerings vary among the nine high schools, only six sections materialized in three schools. The schools included Northwest Classen, Star-Spencer, and U. S. Grant; with an offering of business economics course sections being two, one, and three, respectively. Administratively, there was no opportunity for random assignment of students to control or experimental groups. As a result, students were accepted into the course or section according to pre-enrollment patterns, including counseling, indicative of high school registration procedures.

Four teachers had been administratively assigned to the six sections of Business Economics in the three schools. It should be noted that the teaching staff was racially integrated. Two participating teachers held the Bachelor Degree and were certified in the area of Social Studies. The remaining two teachers held the Bachelor Degree and were certified in the area of Business Education. Table III presents the structural composition of the study participants.

Each teacher had received a minimum of six credit hours of formal instruction in Economics. Their experience in teaching Business Economics ranged from none to two years. Table IV presents the formal

TABLE III

SELECTED STRUCTURAL COMPOSITION OF CONTROL AND EXPERIMENTAL GROUPS

School	Teacher(s)	Section(s)	Time Offered
Northwest Classen	1	1	8:55- 9:50
		2	9:55-10:50
Star-Spencer	1	1	9:55-10:50
U. S. Grant	2	1	9:55-10:50
		2	10:55-11:50
		3	12:40- 1:35

TABLE IV

SELECTED CHARACTERISTICS OF PARTICIPATING TEACHERS

Teacher	Formal Instruction in Economics (Semester Credit Hours)	Economic Teaching Experience (In Years)
1	9	1
2	9	2
3	16	0
4	6	0

instruction received in Economics and the economic teaching experience of the participating teachers.

By recognizing administrative restrictions, number of teacher preparations, the scheduled time of course offerings, and by equating the areas of formal preparation in economics and economic teaching experience, the researcher selected two sections from School A and a third section from School B as the control group; while two sections from School C and a third section from School A comprise the experimental group. To further explain the design composition, Table V summarizes the control and experimental groups with their respective sections to be used hereafter in this study.

TABLE V

DESIGN COMPOSITION OF CONTROL AND EXPERIMENTAL GROUPING

Group	Section Designation
Control	1
	2
	3
Experimental	4
	5
	6

The total number enrolled in the control group was 50: section one, 17; section 2, 20; and section three, 13. The total number enrolled in the experimental group was 50: section four, 16; section five, 24; and section six, 10. Table VI presents selected demographic characteristics of the groups used in this study.

TABLE VI

SELECTED DEMOGRAPHIC CHARACTERISTICS OF CONTROL AND EXPERIMENTAL GROUPS

	Section					
Characteristics	1	2	3	4	5	6
Number of Freshmen	1	0	0	0	0	1
Number of Sophomores	3	0	0	0	0	1
Number of Juniors	4	11	4	5	8	6
Number of Seniors	9	9	9	11	16	2
Male	10	11	5	9	19	4
Female	7	9	8	7	5	6

Experimental Design

The statistical tool applied was analysis of covariance. According to Wert, analysis of covariance was developed to provide a means of attaining a measure of control of individual differences. In general, Wert asserts:

> It will provide tests of significance for the comparison groups whose members may have been stratified and whose members have been measured with regard to one or more variable characteristics other than the criterion.[5]

Garret pointed out that the appropriate statistic to be used in an experiment in which a comparison of initially unlike groups is desired is analysis of covariance:

> Covariance analysis is especially useful to experimental psychologists when for various reasons it is impossible or quite difficult to equate control and experimental groups at the start: a situation which often obtains in actual experiments. Through covariance analysis one is able to effect adjustments in final or terminal scores which will allow for differences in some initial variable.[6]

Popham extends the statistical usefulness of analysis of covariance through a multiple-classification scheme, where the relationship between the criterion variable and more than one independent variable (as represented by subgroups) is studied. In this case, Popham states:

> One is able to test for group differences on the independent or main-effect variables, as well as for significant interactions between the independent variables. All these tests can be conducted in a multiple-classification analysis of covariance operation, while adjusting for differences between the independent variable groups with respect to one or more control variables which are considered relevant to the criterion.[7]

The researcher desires to compare the effectiveness of two types of instructional materials utilized in the teaching/learning process of high school students electing the second semester Business Economics course in terms of academic achievement. As a criterion variable, the Post-Test of Economic Understanding-Form B scores were selected. To control individual difference in aptitude and ability, the Pre-Test of Economic Understanding-Form A scores and the Otis-Lennon Mental Ability test scores were determined as relevant controls or covariables.

The multiple-classification analysis of covariance allows the

researcher an extension of the original investigation. The current reemphasis of offering a separate economics course in the high school necessitates research findings relative to the maturation component of student achievement in economics. Therefore, the independent variable subgroups comprising class[8] and sex were chosen. The resultant experimental design produced three main-effects and four interaction effects.

Statistically, the criterion variable is adjusted through a regression prediction technique enabling a compensation factor for whatever control variable disparity exists between the independent variable groups. The resultant concluding calculation is the production of an F value. The F value, which, if large enough, indicates that a significant, or real, difference probably exists between the groups being tested. To be statistically significant at the 5 percent level of confidence, an F value of 3.95 was necessary for those variables having one degree of freedom. To be statistically significant at the 1 percent level of confidence, an F value of 6.93 was necessary for those variables having one degree of freedom.

The level of confidence indicates the degree to which the differences between the groups can be attributed to chance or accidental factors. The 5 percent level of confidence indicates that one can be 95 percent confident that the difference between the groups is a real difference. The 1 percent level suggests that one can be 99 percent confident that the difference is real.

Experimental Procedures

Description of Testing Procedure

The intent of this research was to compare the effectiveness of two

types of instructional materials being used in a high school business economics course. An effective design used to measure the gains in scores by student participants is the pre- and post-test instrument. An in-depth analysis of the treatment demands the use of covariance.

Selection of Instruments. An instrument used to measure understanding of economic concepts became accessible to educators and researchers through Science Research Associates published Test of Economic Understanding (TEU).[9] The TEU incorporates the economic concepts which the National Task Force on Economic Education felt the students graduating from high school ought to know. The TEU was designed primarily for high school students.

To obtain the students' initial understanding of economic concepts, the TEU-Form A was given ten days subsequent to the formation of the Business Economics classes. An interval of ten days was necessary to take care of administrational details, probable fluctuations in class enrollment, and to provide the students an overview of course objectives. The pre-TEU-Form A was used as a covariable.

The TEU instrument was designed to be administered in a group setting such as a classroom. In addition, the 40 minutes required to administer the test fits well within the time limits of the typical period.

The pre-TEU exams were computer graded. The raw scores obtained were then converted into scaled scores to adjust for differences that exist between Form A and Form B in item content and difficulty. The discrimination and difficulty index resulting from an item analysis of the 50 questions contained in the Test of Economic Understanding are presented in Appendix A, page 92.

To obtain the students' terminal achievement, all students in the experiment were given the post-TEU-Form B during the next to the last week concluding the second semester. The number of interrupting activities associated with a concluding school year was a prime factor in determing the administration of the post-test.

The directions for administering the post-test, length of examination, and grading procedure were similar to the pre-test. The discrimination and difficulty index resulting from an item analysis of the 50 questions contained in the Test of Economic Understanding-Form B are presented in Appendix B, page 95.

To equate intellectual ability differences that might exist between students in the control and experimental groups, the students were given the Otis-Lennon Mental Ability Test: Advanced Level-Form J^{10} during the fifth week of the experiment. The test was administered in each section by the assigned teacher who read and followed the directions as prepared by the researcher.

The advanced level of the Otis-Lennon Mental Ability test was designed for high school students and is to be administered in a group setting such as a classroom. Also, the 40 minutes required to take the test is appropriate for the limits of a typical class period.

After computing the students' deviation intelligence quotient, a percentage comparison was made of the participants in this study and of national norm results. Table VII presents a percentage summary of the comparative intellectual ability results. The comparison analysis would reflect a high correlation between the national norm results and the students in this study of intellectual ability.

TABLE VII

COMPARATIVE PERCENTAGE OF INTELLECTUAL ABILITY OF STUDY PARTICIPANTS AND NATIONAL NORM (OTIS-LENNON MENTAL ABILITY: ADVANCED LEVEL)

DIQ	National Norm Guidelines	Oklahoma City Study Participants
Above 132	2	1
Between 116-132	14	14
Between 84-116	68	76
Between 68-84	14	9
Below 68	2	0

Reliability of Tests. In defining reliability of tests, Garrett stated:

> A test score is called reliable when we have reasons for believing the score to be stable and trustworthy. Stability and trustworthiness depend upon the degree to which the score is an index of 'true ability'--is free of chance error.[11]

The Kuder-Richardson Formula 20 and the Standard Error of Measurement techniques were used to determine the reliability of the Test of Economic Understanding. The reliability and standard error of measurement results encompassing split-half analysis and repeated measurements of test performances are tabulated in Table VIII.

The required size of the reliability coefficient varies with the purpose of the test. Garrett stated:

> How large a reliability coefficient we should require depends upon the nature of the test, the size and variability of the group, and the purpose for which the test was given. In order to differentiate between the means of two school grades of

relatively narrow range, a reliability coefficent need be no higher than .50 or .60. If the test is to be used to make individual diagnoses (i.e., to separate pupil from pupil), its reliability coefficient for a single grade should be .90 or higher.[12]

TABLE VIII

RELIABILITY AND STANDARD ERROR OF MEASUREMENT[13]

	Form	N	K-R#20	Standard Error of Measurement
With Economics	A	324	.83	2.04
	B	315	.82	2.00
Without Economics	A	388	.82	1.64
	B	327	.81	1.92

Equivalent Form Correlation (Form A vs. Form B) r = .83
N - 217

Reliability coefficients for the Otis-Lennon Mental Ability Test have been determined on the basis of corrected split-half correlation, Kuder-Richardson, and alternate-forms procedure. The data for split-half correlation and Kuder-Richardson reliability are reported in Table IX by grades most typical for a given level of the Otis-Lennon test: Advanced Level-Form J.

Validity of Tests. In defining the validity of a test, Garrett stated: "The validity of a test,..., depends upon the fidelity with which it measures what it purports to measure."[15]

TABLE IX

SPLIT-HALF AND KUDER-RICHARDSON RELIABILITY BY GRADE (FORM J)[14] (DATE OF TESTING, OCTOBER, 1966)

Level	Grade	N	Number of Items	Raw Score		Correlations	
				Mean	S.D.	Split-Half*	K-R #20
Advanced	10	14,380	80	40.01	15.98	.95	.94
Advanced	11	12,895	80	43.55	16.38	.95	.95
Advanced	12	11,866	80	47.43	16.54	.96	.95

*Corrected by Spearman-Brown Prophecy Formula

The opinion of many educators as to what a child of a given age or grade should know about a given subject is the requisite of content validity of educational achievement tests. The items included in the Test of Economic Understanding were designed to cover those aspects of economics considered by a distinguished group of economics educators to be essential to good citizenship. Content validity, however, is a matter of judgment; and the researcher must judge for himself the content of the test, evaluating the relevance of each item in the light of the study objectives.

In determining content validity of intelligence tests, examination of the extent to which the various items appear to measure the verbal, numerical, and symbolic reasoning abilities associated with the assessment of general mental ability constitutes one form of measurement. This method and other types of validity data have been collected for the Otis-Lennon series and are available in the Technical Handbook.

Selection of Ability Groups

To analyze the effectiveness of the inquiry approach used in the ECONOMICS IN SOCIETY program, the researcher assigned the parameters designating a low, medium, and high mental ability groups. The selected boundaries equated approximate range size of each group and sufficient number of scores in each group for the researcher to conduct meaningful analyses of the deviation intelligence quotient groups. Table X summarized the results of the students' intelligence quotient scores.

TABLE X

RESULTS OF OTIS-LENNON MENTAL ABILITY TEST:
ADVANCED LEVEL--FORM J

		Control Sections			Experimental Sections		
DIQ Groups		1	2	3	4	5	6
Low	(92-)	4*	6	7	0	2	2*
Medium	(93-108)	9	11	2	5	12	4
High	(109+)	4	3	4	11	10**	4

* Four scores fell below 80
** One score exceeded 126

The ability grouping was used only for statistical comparison, no students were aware of the formation of ability groups. Several students,

however, did inquire of the teacher the results of their performance on the Otis-Lennon test. Each teacher had the option to communicate the students' performance result after consultation with the researcher as to the interpretation of score, percentages, stanine, and ranking. Those teachers requesting the results were further advised to discuss with their respective school counselor the appropriate dissemination procedure of DIQ results to the student.

In addition to the comparison of ability groups within the experimental group, the Otis-Lennon Mental Ability test results were used as a covariable in an Anaysis of Covariance Test.

Selection of Socioeconomic Status Groups

Being cognizant of the controversial nature encompassing the extraction of personal information necessary in determining the students' socioeconomic status, the socioeconomic form (SES)[16] was distributed to only those students willing to complete the questionnaire. Eight-four percent of the students responded favorably to the questionnaire; thus enabling an analysis of the students' socioeconomic status.

The socioeconomic status form consists of four major categories: namely, occupation, source of income, house type, and dwelling area. Each major category contained seven subdivisions. Definitions or identifying characteristics helped explain each subdivision as an aid to the study participants in accurately completing the form. The instrument used in determining the students' socioeconomic status is attached in its entirety in Appendix C, page 98.

The socioeconomic status form was administered in each section by the assigned teacher who read and followed the directions as prepared

by the researcher. The teachers were allowed to help the students complete the form.

The form was scheduled for completion on Thursday during the eighth week of the experimental study. However, conflicts in extracurricular activities in the normal routine of a typical high school day, as well as some absenteeism resulted in follow-up distribution and collection of the form for five consecutive school days.

There are three separate steps in obtaining an Index of Status Characteristics for any individual or family:[17]

1. Making the primary ratings on the status characteristics which are to comprise the Index.
2. Securing a weighted total of these ratings.
3. Conversion of this weighted total into a form indicating social-class equivalence.[18]

After tabulating the primary rating of both parents as ascribed by the student, the researcher selected the head of family as that parent receiving the highest rating (reflected numerically as the lowest score).

Table XI presents the affixed weights used in securing a weighted total of the primary ratings essential to step two in obtaining the Index of Status Characteristics of an individual.

The researcher tabulated the weighted total product of the I.S.C. by using the numerical prefix ascribed to the primary rating as the multiplicand and the numerical weights of the I.S.C. as a multiplier. Therefore, the I.S.C. weighted total may be any number from 12 to 84 inclusive. Warner asserts:

> If the investigator wishes only an index of socioeconomic status, he may use the Index in this numerical form, with small numerical values indicating high socioeconomic status and large numerical values indicating low socioeconomic status.[20]

TABLE XI

WEIGHTS FOR COMPUTATION OF INDEX OF STATUS CHARACTERISTICS[19]

Status Characteristics	Weights To Be Used If All Ratings Available	Weights To Be Used If Ratings On One Characteristic Missing			
		Occupation Missing	Source of Income Missing	House Type Missing	Dwelling Area Missing
Occupation	4	-	5	5	5
Source of Income	3	5	-	4	4
House Type	3	4	4	-	3
Dwelling Area	2	3	3	3	-

The researcher assigned the parameters designating high, medium, and low socioeconomic groups to facilitate an analysis of the breadth of effectiveness of the inquiry approach as utilized in the ECONOMICS IN SOCIETY program. The parameters were selected because the range was approximately equal in size and because these boundaries encompassed a sufficient number of scores in the experimental group for the researcher to conduct meaningful analyses of the socioeconomic groups. Table XII summarizes the results of the socioeconomic status test.

Description of Instructional Material

The teaching/learning process involves intricate and varied interactions. The complexity of the teaching/learning process is conceptually visualized in examining the interplay of methodology or the

"how" of teaching and the consideration of the actual instructional materials being used. However, a systematic component analysis dictates the isolation of the component to evaluate the contributing effectiveness to the educational process. Therefore, a description of textbook content, instructor methodology, and strategies employed in the teaching/learning process as utilized in the control and experimental groups provide additional insights in the systematic component analysis.

TABLE XII

RESULTS OF REVISED SCALE FOR MEASURING STATUS CHARACTERISTICS

SES		Control Sections			Experimental Sections		
		1	2	3	4	5	6
High	(34-)	4	5	0	7	5	1
Medium	(35-48)	5	7	10	6	12	6
Low	(49+)	2	1	1	3	5	2

Instructional Material - Control Group. The instructional materials for the control sections were designed to give the students an exposure to societal and personal economics. The textbook format provided the primary resource of societal and personal economic information. Supplementary economic materials were gleaned from periodicals and newspaper articles.

The societal economic textbook accessible to the students was Economics and the American System.[21] This text was designed to bring together all the basic economic concepts through a full year course in high school economics. By contraction and omission of several chapters considered by the teacher to have limited value in understanding economic concepts, a semester course may be readily constructed.

For this study, the author of Economics and the American System suggested outline for a semester course in societal economics was further abbreviated due to the designation of approximately 25-33 percent of the course to personal economics and the 15-week time span for conducting the experimental study.

The second economic textbook issued to the students of the control sections was Consumer Economic Problems.[22] The authors state the primary purpose of this book is to relate personal economic decision-making to the total economy. The broad objective is accomplished through the following specific objectives:

1. To understand (a) how our economic system operates; (b) the relationship between business enterprise and individual economic decision-making; and (c) the role of money in our economy.

2. To understand the economic principles that are essential for (a) participation as a citizen and voter in resolving economic issues of local, state, and national importance; (b) wise management of one's economic affairs; and (c) performance as an efficient producer in one's occupation and profession.

3. To understand the application of the principles and procedures of business to (a) personal and family problem relating to earning an income; (b) wise management of money and savings; (c) protection from loss through insurance; (d) procurement of a home; and (e) to personal expenditures.[23]

With the limitation of devoting approximately 25-33 percent of the economics course to personal economics, the teachers in the control

group were allowed the flexibility of economic concepts taught and the emphasis placed on each concept.

Instructional Material - Experimental Group. The instructional material for the experimental sections was designed to acquaint the students with essential concepts, principles, and methods of economic analysis and their application to current controversial issues.

The ECONOMICS IN SOCIETY program contains a set of six separate volumes; namely, Concepts & Institutions, Industry Performance, National Economic Policies, Social & Economic Priorities, Communist Economies, and Third World Economies. The developers of ECONOMICS IN SOCIETY aimed at creating materials which would strengthen such values as faith in the basic dignity of man, in democratic political institutions, and in market economic institutions. The program is based on the assumption that it is more effective to focus on the cognitive processes (i.e. rational discourse and scientific method) which are inherent in our tradition than it is to advocate substantive values of democracy, free enterprise, and patriotism. This approach, according to the authors, would enable the student to become a competent and independent thinker who places value on their own and others' intellectual freedom.

This program received funding by the U. S. Office of Education, Bureau of Research from 1964 to 1967. In addition, the project received funds from the Developmental Economic Education Project of the Joint Council on Economic Education. The first three volumes had been published at the outset of this study and were made available to the students.

The experimental sections used the Concepts & Institutions volume as the core of economic content. An outline of the units is presented

in Appendix D, page 102. After completing the core, time permitting, the teacher could elect to introduce any unit from Industry Performance and National Economic Policies volumes.

Description of Teaching and Testing Procedures

G. L. Bach and Phillip Saunders in investigating the methods or approaches used in the teaching/learning process found:

1. In a "Problems of Democracy" course incorporating at least one large separate unit on 'economics,' the teaching procedure seldom goes beyond description of institutions and information on government legislation to deal with the problems faced.

2. Nearly all states have a mandated course in 'civics;' many of these courses have units in 'economics,' mainly of a descriptive-institutional nature.

3. The required course of 'economics' in the 'business education' program is heavily weighted with elementary personal finance, bookkeeping, and office practice.

4. Even in courses called 'economics,' the coverage is generally descriptive and nonanalytical. Much space is given to economic institutions, descriptions of natural resources, laws, governmental regulations, and the like.[24]

"To educate," according to Darrell Lewis, "is to choose among alternatives--alternatives which involve goals and contents, as well as techniques and materials."[25] The teaching/learning process needs continuing experimentation to improve in methods, strategies, and techniques. Fortunately, a multitude of methods, strategies, and techniques have been implemented in the economic education program during the last decade.

Gentry asserts:

> The impetus for new methods, strategies, and techniques in economic education comes from an awareness of prevailing conditions and attitudes in the high school as well as the need for economic education. Educators must realize how

> necessary it is to overcome student apathy and develop in the students a real desire to learn so that motivation is internal rather than external.[26]

Two in-service sessions were conducted for the experimental group teachers by the researcher to acquaint these teachers with the inquiry-conceptual approach to instruction. Each session was two hours in length. The first in-service session was held in late November, 1974. The second in-service session was conducted in early January, 1975.

The content of the in-service program embodied: (1) analyzing what is meant by an inquiry-conceptual approach to instruction, (2) formulating basic techniques for guiding students through the inquiry process, (3) role-playing how to do brainstorming, and (4) introducing the ECONOMICS IN SOCIETY material. However, the in-service sessions failed to generate a group sufficient in number to effectively demonstrate the brainstorming technique.

The testing procedure was identical for the control and experimental groups. It included: (1) a pre-test conducted ten days subsequent to the start of the second semester, (2) a mental ability test during the fifth week, (3) a socioeconomic status form during the eighth week, and (4) a post-test conducted 15 weeks after the pre-test was administered.

Prior to the start of the study, a calendar indicating the precise day for administering the tests and the periodic visits by the researcher was given to all four teachers. The researcher spent a total of five class periods throughout the semester in each of the six sections making observations relative to the teaching/learning process. Additional information was obtained on several occasions through informal discussions with the teachers involved in the study.

The separate instructional material to be utilized in the control and experimental groups was the primary difference to be studied. Though the methodology, techniques, and strategies were optional for the control group, the inquiry approach to instruction was the methodology format to be used in the experimental group.

The following description is the researcher's assessment of the primary methodology, techniques, and stragegies incorporated in the teaching/learning procedure of the control and experimental groups. This description is based upon first-hand observations and through informal discussions held with the teachers.

Control Group. The students were frequently assigned substantial amounts of reading from the textbooks being used. Generally, these assignments were to be completed during the class hour. Upon conclusion of the reading assignment, the teaching/learning process reverted to a lecture-discussion-question-and-answer format. The complexity of the material being studied to a large measure determined the specific method of instruction. The lectures, though relatively short, were of a descriptive nature. Heavy reliance was placed on the questions at the end of each chapter. On occasion, these questions generated a class discussion. However, it was observed, more often than not, that the teacher was viewed as the final authority on the discussion topic. Articles in periodicals and newspapers were the principal sources giving rise to controversial issues and discussions. During these periods, the majority of the students eagerly engaged in voicing opinions, biases, and positions relative to the controversial topics under examination.

Experimental Group. The inquiry-conceptual approach to instruction as utilized by the experimental group was an attempt to divert the teaching/learning process from the teacher-centered educational activity to the student-centered activity.

The experimental group was exposed primarily to the Concepts & Institutions volume of the ECONOMICS IN SOCIETY program. This volume comprises seven Parts (Chapters). The major subdivisions of each Part consist of (1) a core essay, (2) learning activities, and (3) study aids.

Each Part begins with a photographic collage depicting the central theme associated with the subject of the Part. Brainstorming with the photographic collage as an introductory activity tends to arouse student curiosity about what is to be learned. Also, the teacher through this technique determines what the student already knows and what the student interests might be. Having aroused the students curiosity, the ensuing developmental activity emphasizes the dominant technique of questioning. Debates set the stage for students to acquire information behond the instructional material being used. Discussion abounded in small-group work and in large-group sharing sessions. On occasion, the teacher gave a mini-lecture. The culminating activities included self-testing, role-playing presentations, and a visit to a stock brokerage firm.

FOOTNOTES

[1]The practice of allowing students to take advantage of courses offered in other schools within the system when that course was unavailable in the home school.

[2]338 Federal Supplement 1256 (D.C.W.D.Ok., 1972).

[3]U.S. Office of Education, Education Directory: 1969-70 Public School System, (Washington, D. C., 1970), p. 243.

[4]U. S. Office of Education, Education Directory: 1973-74 Public School System, (Washington, D.C., 1974), p. 187.

[5]James E. Wert, Charles O. Neidt, and Stanley Ahman, Statistical Methods in Education and Psychological Research(New York, 1954), p. 343.

[6]Henry E. Garrett, Statistics in Psychology and Education (6th ed., New York, 1966), p. 295.

[7]W. James Popham, Educational Statistics (New York, 1967), p. 243.

[8]The term class refers to two student categories: seniors and pre-seniors.

[9]Test of Economic Understanding (Chicago, 1964).

[10]Arthur S. Otis and Roger T. Lennon, Otis-Lennon Mental Ability Test: Advanced Level-Form J (New York, 1967).

[11]Garrett, p. 337.

[12]Ibid., p. 351.

[13]Test of Economic Understanding: Interpretive Manual and Discussion Guide (Chicago, 1964).

[14]Arthur S. Otis and Roger T. Lennon, Otis-Lennon Mental Ability Test: Manual for Administration (New York, 1967), p. 20.

[15]Garrett, p. 354.

[16]Lloyd William Warner, Marcia Meeker, and Kenneth Eells, Social Class in America (Chicago, 1949), p. 149.

[17]The I.S.C. is determined for no one but the head of the family. All other members of the family who are unmarried and living in the same house are assigned the same social status. This recommendation is based on experience with this procedure in the Jonesville study, where it was found to be reasonably valid. See also W. Lloyd Warner and Paul S. Lunt, The Status System of a Modern Community, Vol. II, "Yankee City Series" (New Haven, 1942).

[18]Warner, Meeker, and Eells, p. 121.

[19]Ibid., p. 124.

[20]Ibid., pp. 124-125.

[21]J. Kenneth Davies and Glen F. Ovard, Economics and the American System (New York, 1970).

[22]Roman F. Warmke, et al., Consumer Economic Problems (8th ed., Cincinnati, 1971).

[23]Ibid., p. iii.

[24]G. L. Bach and Phillip Saunders, "Economic Education: Aspirations and Achievement," The American Economic Review, LV (June, 1965), pp. 338-339.

[25]Darrell R. Lewis, "Current Status and Trends in Economic Education Research," Review of Social Economy, XXIX (March, 1971), p. 89.

CHAPTER IV

FINDINGS

Introduction

The findings described in this report were derived from an experimental study conducted in the Oklahoma City Public School System during the second semester of the 1974-75 school year.

The purpose of the study was to compare the effectiveness of the inquiry-conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY program with the more conventional approach to instruction in other textual materials for student learning in the high school elective business economics course. The post-Test of Economic Understanding means of the students classified as pre-seniors or seniors were adjusted after equating for initial differences in the groups economic aptitude and intellectual ability; then compared to determine achievement differences in a high school elective business economics course. Furthermore, the study was to determine whether the students' sex factor contributed significantly to achievement differences in the high school elective business economics course. The three main-effect hypotheses tested by this study were:

1. There is no significant difference between the achievement means of the inquiry-conceptual approach to instruction utilizing the ECONOMICS IN SOCIETY material and the more conventional approach of instruction in other materials following the experimental 15-week

instruction period (after equating on two control measures).

2. There is no significant difference between the achievement means of pre-seniors and senior students following the experimental 15-week instruction period in the high school elective business economics course (after equating on two control measures).

3. There is no significant difference between the achievement means of female and male students following the experimental 15-week instruction period in the high school elective business economics course (after equating on two control measures).

The multiple-classification analysis of covariance design used in this study extended the analysis to include the secondary interaction-effects. The four interaction hypotheses tested were:

1. There is no significant difference in the interaction between the control/experimental group and the pre-senior/senior class.

2. There is no significant difference in the interaction between the control/experimental group and the male/female category.

3. There is no significant difference in the interaction between the pre-senior/senior class and the male/female category.

4. There is no significant difference in the interaction among the control/experimental group, pre-senior/senior class, and the male/female category.

The students' intelligence quotients were also considered in the study as a covariable in an effort to equate any intellectual difference that existed between the control and experimental groups. In addition, the students' intelligence quotients of the experimental group were analyzed in an effort to determine whether students of different intellectual abilities achieved differently in the inquiry-conceptual

approach to instruction utilizing the Concepts & Institutions volume of in ECONOMICS IN SOCIETY program as the principal instructional material. Also, the students' index of socioeconomic characteristics of the experimental group were tabulated in an effort to determine whether students of different socioeconomic status achieved differently in the inquiry-conceptual approach to instruction utilizing the Concepts & Institutions volume of the ECONOMICS IN SOCIETY program as the principal instructional material.

Six sections of business economics students were divided into three control and three experimental sections. The students in the three control sections were exposed to conventional instruction. The method of instruction for the students in the experimental sections was the inquiry-conceptual approach.

Throughout the experiment, the control group was allowed maximum flexibility in determining the appropriate teaching/learning combination to accomplish the basic understandings of economics essential to good citizenship. An applied economics text and a consumer economics text provided the principal basis of instructional material in the control group. The students in the experimental group utilized an inquiry-conceptual approach to instruction to accomplish the basic understanding of economics essential to good citizenship. The Concepts & Institutions volume of the ECONOMICS IN SOCIETY program was utilized as the core textual material.

During the 15-week experimental study, the students were asked to complete the pre-Test of Economic Understanding, the Otis-Lennon Mental Ability Test, the Index of Socioeconomic Characteristics questionnaire, and the post-Test of Economic Understanding. The three tests and one

questionnaire were administered to the control and experimental groups on identical days. Distribution of the questionnaire was to those students willing to complete the Index of Socioeconomic Characteristics form.

In the analysis of covariance procedure, the post-test scores were adjusted after equating scores from the pre-Test of Economic Understanding and the Otis-Lennon Mental Ability Test as covariates. The data to be used in the final analysis were arranged into two tables as shown in Appendix E, page 106.

Analysis of Test Results

Pre-Test

Science Research Associates Test of Economic Understanding-Form A was administered as a pre-test. The pre-test revealed the students' initial knowledge of economic concepts. Table XIII presents a comparison summary of the students' initial knowledge of economic concepts in the control and experimental groups.

The pre-test mean score of the students in the control group was 18 points out of a possible 50 points. The students in the experimental group recorded a pre-test mean score of 22.5 points. Therefore, the students in the experimental group exceeded the students in the control group in initial knowledge of economic concepts by a group mean score of 4.5 points.

Intelligence Test

The Otis-Lennon Mental Ability Test: Advanced Level-Form J is

designed to predict how well students will perform in high school. Table XIV presents a comparative summary of the students' intelligence quotients in the control and experimental groups .

TABLE XIII

CONTROL AND EXPERIMENTAL GROUPS
FREQUENCY DISTRIBUTION
OF PRE-TEST SCORES

	Control Group		Experimental Group	
Scores	Tally Marks	f	Tally Marks	f
0-5	I	1		0
6-10	I	1		0
11-15	~~IIII~~ ~~IIII~~ ~~IIII~~	15	~~IIII~~	5
16-20	~~IIII~~ ~~IIII~~ ~~IIII~~ III	18	~~IIII~~ ~~IIII~~ ~~IIII~~ II	17
21-25	~~IIII~~ ~~IIII~~ II	12	~~IIII~~ ~~IIII~~ IIII	14
26-30	III	3	~~IIII~~ III	8
31-35		0	III	3
36-40		0	III	3
41-45		0		0
46-50		0		0
	$N_c = 50$		$N_e = 50$	

TABLE XIV

CONTROL AND EXPERIMENTAL GROUPS FREQUENCY DISTRIBUTION OF INTELLIGENCE QUOTIENT SCORES

DIQ Scores	Control Group		Experimental Group	
	Tally Marks	f	Tally Marks	f
71-80	II	2	II	2
81-90	~~IIII~~ ~~IIII~~ II	12	I	1
91-100	~~IIII~~ ~~IIII~~ ~~IIII~~ II	17	~~IIII~~ ~~IIII~~ I	11
101-110	~~IIII~~ ~~IIII~~ I	11	~~IIII~~ ~~IIII~~ ~~IIII~~	15
111-120	~~IIII~~ I	6	~~IIII~~ ~~IIII~~ ~~IIII~~	15
121-130	II	2	~~IIII~~	5
131-140		0		0
141-150		0	I	1
		50		50

The Deviation Intelligence Quotient mean of the students in the control group was 98.22. The students in the experimental group recorded a Deviation Intelligence Quotient mean of 107.48. The experimental group students' intelligence quotient mean was 9.26 points superior to the students' mean in the control group.

Post-Test

Science Research Associates Test of Economic Understanding- Form B was administered as a post-test. The post-test revealed the students' terminal achievement of understanding economic concepts. Table XV

presents a tabulation of frequency count of the students' scores for comparative analysis.

TABLE XV

CONTROL AND EXPERIMENTAL GROUPS
FREQUENCY DISTRIBUTION
OF POST-TEST SCORES

TEU-Form B Raw Scores	Control Group		Experimental Group	
	Tally Marks	f	Tally Marks	f
0-5		0		0
6-10	IIII	4	I	1
11-15	~~𝍸~~ III	8	II	2
16-20	~~𝍸~~ ~~𝍸~~ ~~𝍸~~ IIII	19	~~𝍸~~	5
21-25	~~𝍸~~ ~~𝍸~~ II	12	~~𝍸~~ ~~𝍸~~ ~~𝍸~~ III	18
26-30	~~𝍸~~	5	~~𝍸~~ ~~𝍸~~ II	12
31-35	II	2	~~𝍸~~ III	8
36-40		0	III	3
41-45		0	I	1
46-50		0		0
		50		50

Total N = 100

The post-test mean score of the students of the control group was 19.42 points. The students in the experimental group realized a post-test mean score of 26.20 points. Therefore, the students in the experimental group surpassed the students in the control group in the comprehension of economic concepts by 6.78 points at the conclusion of a 15-week experimental study in a high school elective business economics course.

Statistical Treatment of the Data

A multiple analysis of covariance program was used to determine the main-effect significance of the difference in the group mean post-test scores for the control and experimental groups, the pre-senior and senior grade classification, and the male and female formation in a high school elective business economics course.

The Statistical Analysis System (SAS) program is available at the Oklahoma State University Computer Center. The statistical model is presented below:

$$Y(IJKL) = U + R(I) + S(J) + T(K) + RS(IJ) + RT(IK) + ST(JK) + RST(IJK) + B_1V(IJKL) + B_2W(IJKL) + E(IJKL).$$

Y(IJKL) = The adjusted score (Dependent Variable)

U = Overall Mean

V = Deviation Intelligence Quotient (Covariable)

W = Pre-test (Covariable)

R(I) = Class (Pre-seniors vs. Seniors)

S(J) = Sex (Male vs. Female)

T(K) = Group (Control vs. Experimental)

RS(IJ) = Interaction (Class X Sex)

RT(IK) = Interaction (Class X Group)

ST(JK) = Interaction (Sex X Group)

RST(IJK) = Interaction (Class X Sex X Group)

B_1 = Beta one

B_2 = Beta two

$B_1V(IJKL)$ = Adjusting covariable factor (Deviation Intelligence Quotient)

$B_2W(IJKL)$ = Adjusting covariable factor (Pre-test)

E(IJKL) = Error (Subject to Subject Variability)

Basically, the multiple-classification analysis of covariance is a combination of multiple-classification analysis of variance and regression analysis. This method forms the sums of squares and cross products matrix, inverts the matrix, calculates the regression and error sum of squares, obtains the mean square of regression and error factor, lists the source of variations and their degrees of freedom, makes the adjustments in the means of all independent variable groups, and computes the F values. The F test is valid for main effects and interactions. According to Popham, this powerful technique allows the researcher to "statistically equate the independent variable groups with respect to one or more variables which are relevant to the dependent variable."[1] The adjustments made in the independent variable groups relevant to the dependent variable does not confound the analysis of the independent-dependent relationship under investigation. Tables XVI, XVII, and XVIII provide an analysis of the criterion and control variable means for the three main-effect independent variables: (1) control and experimental groups, (2) pre-senior and senior grade classification, and (3) male and female groups.

TABLE XVI

BUSINESS ECONOMICS STUDENTS' CRITERION AND CONTROL VARIABLE MEANS WITH REFERENCE TO CONTROL AND EXPERIMENTAL GROUPS

		Criterion		Control	
	n	Post-Achievement Adjusted	Post-Achievement Unadjusted	Pre-Test Achievement	DIQ
Control group . . .	50	21.2916	19.4200	18.0000	98.2200
Experimental group . . .	50	24.3284	26.2000	22.5000	107.4800

TABLE XVII

BUSINESS ECONOMICS STUDENTS' CRITERION AND CONTROL VARIABLE MEANS WITH REFERENCE TO PRE-SENIOR AND SENIOR CLASS

		Criterion		Control	
	n	Post-Achievement Adjusted	Post-Achievement Unadjusted	Pre-Test Achievement	DIQ
Senior class . . .	56	23.7535	24.4464	21.6428	102.8214
Pre-senior class . . .	44	21.6092	20.6590	18.4772	102.8863

TABLE XVIII

BUSINESS ECONOMICS STUDENTS' CRITERION AND CONTROL VARIABLE MEANS WITH REFERENCE TO MALE AND FEMALE GROUPS

		Criterion		Control	
		Post-Achievement		Pre-Test	
	n	Adjusted	Unadjusted	Achievement	DIQ
Male	58	22.9552	23.6551	21.0172	104.8448
Female . . .	42	22.6095	21.6428	19.1904	100.0952

The students in the experimental group were superior in initial economic aptitude and intellectual ability. Since an equal number of students comprise the control and experimental groups, the compensating adjustment in the criterion variable was a positive 1.8716 points for the control group and a negative 1.8716 points for the experimental group.

An offsetting effect was experienced in the independent variable of pre-senior and senior grade classification. The seniors recorded a superior score in initial economic aptitude but an inferior score on initial intellectual ability. Taking into account the offsetting effects of the control variables, the adjustment made in the criterion variable was a negative 0.6929 points for the senior classification and a positive 0.9502 points for the pre-senior classification.

When subdividing the study participants into their respective sex designation, the males recorded a slight comparative advantage over the

females in initial economic aptitude and intellectual ability. Therefore, the criterion variable was adjusted a negative 0.6999 points for the males and a positive 0.9667 points for the females.

The adjusted data was subjected to a multiple-classification analysis of covariance to test the three main-effect hypotheses and the four interaction hypotheses. Detailed results of the statistical analysis of covariance of post-test business economics students' achievement performance are shown in Table XIX.

TABLE XIX

ANALYSIS OF COVARIANCE OF POST-TEST BUSINESS ECONOMICS STUDENTS' ACHIEVEMENT PERFORMANCE

Source of Variation	Sequential	Residual*			
	SS	df	SS	MS	F
Between Categories	291.0111	7			
Group		1	168.9512	168.9512	8.2218***
Class		1	99.9724	99.9724	4.8656**
Sex		1	0.0006	0.0006	0.0000
Group X Class		1	5.4712	5.4712	0.2663
Group X Sex		1	4.7745	4.7745	0.2323
Class X Sex		1	0.8092	0.8092	0.0394
Group X Class X Sex		1	23.7133	23.7133	1.1540
Within Categories	1849.4181	90		20.5491	
TOTAL	2140.4292	97			

* After equating the effects with respect to initial knowledge of economic concepts (pre-TEU) and in intellectual aptitude (Otis-Lennon Mental Ability Test).
** Significant at the .05 level of confidence.
*** Significant at the .01 level of confidence.

The level of confidence indicates the degree to which the differences between the groups can be attributed to chance or accidental factors. The 5 percent level of confidence indicates that one can be 95 percent confident that the difference between the groups is due to the treatment. The 1 percent level of confidence suggests that one can be 99 percent confident that the difference is the result of the treatment.

To be statistically significant at the 5 percent level of confidence, an F-value of 3.95 is necessary for those variables with 1 and 90 degrees of freedom. At the 1 percent level of confidence, an F-value of 6.93 is necessary for those variables with 1 and 90 degrees of freedom.

Testing of Hypotheses

Hypothesis I

There is no significant difference between the achievement means of the inquiry-conceptual approach to instruction utilizing the ECONOMICS IN SOCIETY material and the more conventional approach of instruction in other material following the experimental 15-week instruction period (after equating on two control measures). From Table XIX, the obtained F-value for group is found to be 8.2218. The required value for significance at the 1 percent level of confidence was 6.93. Results of this F-test led to the conclusion that a highly significant difference existed between the control and experimental groups. Therefore, the null hypothesis was rejected.

Hypothesis II

There is no significant difference between the achievement means of pre-seniors and senior students following the experimental 15-week instruction period in the high school elective business economics course (after equating on two control measures). From Table XIX, the obtained F-value for class was 4.8656. The required value for significance at the 5 percent level of confidence was 3.95. Results of this F-test led to the conclusion that a moderately significant difference existed between pre-senior and senior students. Therefore, the null hypothesis was rejected.

Hypothesis III

There is no significant difference between the achievement mean of female and male students following the experimental 15-week instruction period in the high school elective business economics course (after equating on two control measures). An F-value of 0.0000 was secured from Table XIX for sex. The required value for significance at the .05 level of confidence was 3.95. Results of the F-test led to the conclusion that no disparity existed between male and female students in a high school elective business economics course. Therefore, the null hypothesis was not rejected.

Hypothesis IV

There is no significant difference in the interaction between the control/experimental group and the pre-senior/senior class. An F-value of 0.2663 was obtained from Table XIX for the group and class interaction. The required value of significance for the .05 level of

confidence was 3.95. Results of this F-test led to the conclusion that insignificant difference existed between the group and class interaction. Therefore, the null hypothesis was not rejected.

Hypothesis V

There is no significant difference in the interaction between the control/experimental group and the male/female category. From Table XIX, the obtained F-value for the group and sex interaction was found to be 0.2323. The required value for significance at the .05 level of confidence was 3.95. Results of this F-test led to the conclusion that insignificant difference existed between the group and sex interaction. Therefore, the null hypothesis was not rejected.

Hypothesis VI

There is no significant difference in the interaction between the pre-senior/senior class and the male/female category. From Table XIX, the obtained F-value for the class and sex interaction was 0.0394. The required value for significance at the .05 level of confidence was 3.95. Results of this F-test revealed an infinitesimal difference existing between the class and sex interaction. Therefore, the null hypothesis was not rejected.

Hypothesis VII

There is no significant difference in the interaction among the control/experimental group, pre-senior/senior class, and the male/female category. From Table XIX, the obtained F-value for the class, group, and sex interaction was found to be 1.1540. The required value for

significance at the .05 level of confidence was 3.95. Results of this F-test led to the conclusion that insignificant difference existed among the group, class, and sex interaction. Therefore, the null hypothesis was not rejected.

Achievement Performance: Intellectual Ability Grouping

Essentially, this section of the study is neither experimental nor quasi-experimental but can be more properly considered as descriptive and ex post facto. Kerlinger defines this type of research as:

> That research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. He then studies the independent variables in retrospect for their possible relations to, and effects on, the dependent variable or variables.[2]

The basic plan was to compare the two groups in an effort to determine levels of academic performance resulting from two different curriculum treatments. Analyses were conducted on the high, medium, and low classifications of the students' deviation intelligence quotient and socioeconomic status numerical scores.

Using the national norm percentage of the Otis-Lennon intellectual ability test as a guideline, the researcher constructed three intellectual ability groups; high, medium, and low. In the final analysis, however, a decision based on an approximate equating of the range of each ability group and encompassing sufficient numbers within each group to conduct meaningful analysis was used to designate the parameters of the high, medium, and low mental ability groups. Table XX presents a statistical analysis of the students' mean achievement performance in ability groups throughout the intellectual ability continuum.

TABLE XX

BUSINESS ECONOMICS STUDENTS' MEAN ACHIEVEMENT PERFORMANCE WITH REFERENCE TO INTELLECTUAL ABILITY GROUPS

	Control Group				Experimental Group			
DIQ	N	Post Mean	Pre Mean	Gain or (Loss)	N	Post Mean	Pre Mean	Gain or (Loss)
Low (93-)	17	17.41	15.18	2.23	4	18.00	14.74	3.25
Medium (93-108)	22	18.32	19.09	(0.77)	21	23.71	19.71	4.00
High (109+)	11	24.73	20.18	4.55	25	29.60	26.08	3.52
TOTALS	50	19.42	18.00	1.42	50	26.20	22.50	3.70

As shown in Table XX, the high ability group in the control group performed better than the five remaining ability groups. However, a negative achievement performance was registered by the medium ability group within the control sections. The students comprising the low intellectual ability group in the control sections recorded a nominal gain of 2.23 points.

Though numerical mean differences are noted among the ability groups of the experimental group, the consistency of ability groups mean gain performance of a heterogeneous student population connotates special attention. The nondirective approach to instruction resulted in moderate achievement gain in all ability groups. However, the disparity of initial economic understanding between the ability groups in the experimental group was still apparent at the conclusion of the 15-week

experimental study.

Since the pre-test mean of the intellectual ability groups exhibited an extreme disparity of 10.9 points, a relative achievement performance based on the percentage of gain possible out of 50 questions provides an additional insight. Table XXI presents a relative perspective to achievement performance with reference to intellectual ability groups.

TABLE XXI

BUSINESS ECONOMICS STUDENTS' RELATIVE ACHIEVEMENT PERFORMANCE WITH REFERENCE TO INTELLECTUAL ABILITY GROUPS

DIQ		Control Group		Experimental Group	
		N	Gain or (Loss)	N	Gain or (Loss)
Low	(93-)	17	6.40	4	9.22
Medium	(93-108)	22	(2.49)	21	13.21
High	(109+)	11	15.26	25	14.72

The control group was exposed to the conventional approach to instruction. The extreme relative variations of achievement performance within the control group may reveal a disenchantment by the medium ability group students in the directive approach to instruction.

The relative perspective of achievement performance within the

experimental intellectual ability groups reveals a progressive increase from the low to the high ability group. Ninety-two percent of the experimental group population recorded a relative gain of 13.21 or better. The remaining eight percent of the experimental group population registered a moderate relative gain of 9.22. Again, consistency is the key word in achievememnt performance recorded of the students in the experimental group with reference to intellectual ability grouping.

Achievement Performance: Socioeconomic Status (SES)

The students' SES was calculated from the responses recorded on the Index of Socioeconomic Characteristics questionnaire. The I.S.C. questionnaire can be found in Appendix C, page 98.

The maximum numerical range of the I.S.C. weighted total is 12 to 84. In an effort to conduct an analysis throughout the socioeconomic status continuum, the researcher constructed three socioeconomic status groups. The parameters of each group incorporated equivalent range size and sufficient number of students in each group to conduct a meaningful investigation. Table XXII gives a detailed analysis of the business economics students' mean achievement performance with reference to socioeconomic status grouping.

The students exposed to the inquiry approach to instruction as utilized in the experimental group exhibited a substantial superiority in achievement performance than that recorded by the students in the control group in all three socioeconomic status categories.

TABLE XXII

BUSINESS ECONOMICS STUDENTS' MEAN ACHIEVEMENT PERFORMANCE WITH REFERENCE TO SOCIOECONOMIC STATUS GROUPING

SES	Control Group				Experimental Group			
	N	Post Mean	Pre Mean	Gain or (Loss)	N	Post Mean	Pre Mean	Gain or (Loss)
Low (49+)	4	16.25	16.75	(0.50)	10	26.70	23.70	3.00
Medium (35-48)	24	19.96	18.67	1.29	24	26.00	21.88	4.12
High (34-)	9	20.56	20.00	0.56	13	27.61	23.38	4.23
TOTALS	37				47			

FOOTNOTES

[1]W. James Popham, Educational Statistics (New York, 1967), p. 223.

[2]Fred N. Kerlinger, Foundations of Behavioral Research (New York, 1964), p. 360.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The primary purpose of this study was to see whether the inquiry-conceptual approach to instruction utilizing the Concepts & Institutions volume of the ECONOMICS IN SOCIETY program would be more effective than the more conventional approach to instruction with other textual materials in a high school elective business economics course. The study was also designed to determine if students classified as pre-seniors would perform as well as seniors in economic achievement following exposure to the inquiry/conceptual and the conventional approaches to instruction and utilization of differing textual materials. In addition, the study was to compare the achievement performance of males and females utilizing differing methodology and textual materials.

Two components of a secondary nature were also dealt with in this study. The first tried to test the comparative value of the two methods of instruction and differing textual materials used in the study in producing the better results with selected senior high school students of low, medium, and high intellectual ability. The second compared the two methods of instruction and differing textual materials used in the study to determine the one that would produce the better results with selected senior high school students of low, medium, and high socioeconomic status.

This experimental study was conducted during the second semester of the 1974-75 school year in the Oklahoma City Public School System. The elective business economics course encompassed six sections. These six sections of business economics students were divided into three control and three experimental groups. Three sections were taught in the conventional manner, and three were taught according to the experimental procedure designed for this study.

Both student groups were required to take three examinations: (1) Science Research Associates Test of Economic Understanding-Form A, (2) Otis-Lennon Mental Ability Test-Form J, and (3) Science Research Associates Test of Economic Understanding-Form B. The results from the TEU-Form A reflected the students' initial knowledge of special economic concepts. Along with the TEU-Form A results, the intelligence test results were used as the covariants to the analysis of covariance statistical procedure. Following the instructional period of the experiment, the TEU-Form B was administered. The scores resulting from this evaluation were then statistically analyzed to compare whether there were any significant differences in outcomes between the textual materials and instructional approaches utilized in the control and experimental groups. This statistical analysis also provided information about the economic achievement performance relative to sex differences and student maturation levels.

The students' economic achievement scores were also analyzed relative to high, medium, and low intelligence grouping and to high, medium, and low socioeconomic status groups to determine the effective breadth of the textual materials and methodology being tested in this study.

During the experiment, the control sections were assigned substantial amounts of reading from two basic economic textbooks. Generally,

a reading assignment was completed within the class period. Upon conclusion of a reading assignment, the teaching/learning process reverted to a lecture-discussion-question-and-answer format. Heavy emphasis was placed on the questions at the end of the chapter. Discussions featured the unchallenged authority of the author or teacher. The experimental sections, on the other hand, were exposed to a minimum of individual reading assignments. Extensive use of small-group work and large-group sharing sessions highlighted diverse and varied ideas on a host of complex economic issues. Each idea was explored in detail by a logical defense of the idea. The teachers guided the discussions and activities within the broad range of available economic alternatives.

The first null hypothesis was not supported by the findings. The students in the experimental group performed significantly better through utilization of the inquiry/conceptual approach to instruction in the Concepts & Institutions volume of the ECONOMICS IN SOCIETY program (after equating for initial differences in economic knowledge and intelligence).

The second null hypothesis was not supported by the findings. Seniors in the elective business economics course performed moderately better than pre-seniors (after equating for initial differences in economic knowledge and intelligence).

The findings of the study supported the third hypothesis. A minimum of variation was recorded between the achievement means of female and male students following the 15-week instructional period in the high school elective business economics course after adjusting for initial differences in economic knowledge and intelligence.

Hypotheses four through seven tested the significance of

achievement mean difference resulting from the interactions of the three main-effect hypotheses. The findings of the study supported all interaction-effect hypotheses. No significant cumulative influence existed among the interaction-effect hypotheses.

Additional findings of this report showed that students in the high IQ classification of the control group performed better on mean achievement performance than did the students in the lower IQ classifications in both the control and experimental groups, as well as, the comparable high IQ classification of students in the experimental group. Also, the medium intellectual ability classification comprising 44 percent of the control group recorded a negative mean achievement performance. On the other hand, all three IQ classification of students in the experimental group recorded high and consistent achievement performance throughout the intelligence classification spectrum.

The Index of Socioeconomic Characteristics questionnaire completed during the experimental study indicated that the inquiry/conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY program produced superior results over the entire socioeconomic spectrum to those recorded by students with a similar socioeconomic range exposed to the conventional approach to instruction in other textual materials.

Conclusions

The following conclusions are based on the findings reported in Chapter IV of this report.

1. Since the findings of this study showed a highly significant difference in the inquiry/conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY program over the conventional approach to

instruction in other textual materials, the first null hypothesis cannot be accepted. Therefore, it can be concluded that the inquiry/conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY material is superior to the conventional approach to instruction in other textual materials given similar conditions to those which existed in this study.

2. The findings of this study suggest that seniors perform significantly better than pre-seniors in a high school elective business economics course. Therefore, the second null hypothesis cannot be accepted. It can be concluded that the maturation level of the student is an important component in the teaching/learning process.

3. The findings of this study showed minimal variation between the mean achievement performance of female and male students in a high school elective business economics course. Therefore, the third null hypothesis cannot be rejected. It can be concluded that female and male students achieve equally well under the differing instructional methods and textual materials as utilized in this experimental study.

4. Since no significant differences were noted in the interaction-effect hypotheses, the fourth through seventh null hypotheses cannot be rejected. The elimination of several plausible interaction variables affecting differing achievement means of students lend additional credence to the primary treatment effects as used in this study.

5. The findings of the ex post facto component of this study reveals that students in the control and experimental groups with comparable intellectual abilities differ substantially in absolute and relative mean achievement performance. It can be concluded that the nondirective approach to the teaching/learning process as used in the experimental

sections motivates a much broader segment of the students' intellectual ability spectrum, as well as a high consistency of mean achievement performance as recorded in this study.

6. The findings of the ex post facto component of this study also revealed that students in the control and experimental groups with comparable socioeconomic status differ substantially in absolute mean achievement performance. It can be concluded that the inquiry/conceptual approach to instruction as utilized in the Concepts & Institutions volume of the ECONOMICS IN SOCIETY program stimulates the inquisitive aspect of high school students throughout the entire socioeconomic spectrum.

Recommendations

As a result of the conclusions that have been drawn from this study, the following recommendations are made:

1. Since the inquiry/conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY program yielded highly superior results in terms of mean achievement performance, teachers in economics courses should (a) acquire in-service instruction on "how" economic concepts are to be disseminated, (b) make greater use of the inquiry or nondirective approach to instruction, and (c) utilize textual materials encompassing a variety of techniques, strategies, and activities designed for optimal student participation.

2. Since the inquiry/conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY program yielded results equal to the national norm mean achievement performance, as well as consistency throughout the intellectual ability spectrum, teachers of high school economic courses

should not be hesitant to use the ECONOMICS IN SOCIETY material and the inquiry approach to instruction.

3. Since the inquiry/conceptual approach to instruction as utilized in the ECONOMICS IN SOCIETY program yielded superior results in terms of mean achievement performance throughout the socioeconomic status spectrum, school systems should not be hesitant in purchasing the ECONOMICS IN SOCIETY material for a heterogeneous socioeconomic student population in high school economic courses.

4. Similar studies should be conducted to determine whether the combination of the nondirective approach to instruction and the ECONOMICS IN SOCIETY material used in this study can produce even greater achievement results than were obtained in this experiment.

5. Since the quality of instruction may have a positive relationship to achievement outcomes, similar studies should incorporate an evaluative instrument designed to equate the quality of instruction.

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APPENDIX A

ITEM ANALYSIS OF TEU - FORM A:

DIFFICULTY AND DISCRIMINATION

Question Number	Difficulty Index	Discrimination Index
1	64.9	.58
2	49.5	.69
3	48.5	.58
4	58.5	.62
5	12.4	.04
6	59.8	.58
7	23.7	-.04
8	62.9	.50
9	62.9	.31
10	58.8	.42
11	71.1	.38
12	63.9	.65
13	11.3	.08
14	28.9	.23
15	44.3	.50
16	13.4	.04
17	40.2	.50
18	26.8	.23
19	48.5	.58
20	38.1	.08
21	46.4	.15
22	21.6	-.04
23	21.6	.12
24	22.7	.38
25	54.6	.23
26	28.9	-.08
27	47.4	.54
28	69.1	.54
29	10.3	.00
30	41.2	.08
31	43.3	.54
32	48.5	.38
33	30.9	-.12

Question Number	Difficulty Index	Discrimination Index
34	37.1	.00
35	24.7	.04
36	32.0	.04
37	35.1	.27
38	32.0	.42
39	45.4	.19
40	50.5	.35
41	30.9	.08
42	46.4	.27
43	23.7	.08
44	19.6	.19
45	48.5	.65
46	24.7	.04
47	29.9	.19
48	40.2	.04
49	34.0	.23
50	30.9	.15

Note: Study Participants: Experimental Study Business Economics Course - Oklahoma City Public Schools

APPENDIX B

ITEM ANALYSIS OF TEU - FORM B:

DIFFICULTY AND DISCRIMINATION

INDEX

Question Number	Difficulty Index	Discrimination Index
1	51.0	.44
2	40.6	.60
3	80.2	.36
4	59.4	.40
5	42.7	.24
6	70.8	.64
7	84.4	.52
8	46.9	.52
9	77.1	.52
10	63.5	.64
11	80.2	.20
12	45.8	.44
13	30.2	.32
14	65.6	.40
15	53.1	.52
16	66.7	.80
17	51.0	.44
18	39.6	.48
19	22.9	.40
20	66.7	.56
21	53.1	.44
22	36.5	.36
23	32.3	.40
24	49.0	.40
25	69.8	.40
26	42.7	.20
27	12.5	.16
28	68.8	.40
29	27.1	.16
30	28.1	.08
31	31.3	.04
32	41.7	.32
33	58.3	.36

Question Number	Difficulty Index	Discrimination Index
34	28.1	.08
35	6.3	-.12
36	36.5	.20
37	41.7	.40
38	42.7	.44
39	34.4	.40
40	34.4	.44
41.	44.8	.32
42	43.8	.28
43	13.5	-.16
44	37.5	.40
45	46.9	-.04
46	28.1	.20
47	60.4	.24
48	40.6	.20
49	38.5	.48
50	16.7	.12

APPENDIX C

INDEX OF SOCIOECONOMIC CHARACTERISTICS

OCCUPATIONAL CATEGORIES:

1A. Professionals:
Lawyers, judges, doctors, dentists, engineers, high school superintendent, veterinarians, college professors, ministers (graduated from divinity school), chemists, architects, etc.

2A. Professionals:
High school teachers, registered nurses, chiropodists, chiropractors, ministers (some training), newspaper editors, graduate librarians, etc.

3A. Professionals:
Elementary teachers, licensed practical nurses, social workers, optometrists, librarians (not graduate), ministers (no training), etc.

1B. Proprietors and Managers:
Businesses valued at $150,000 and over

2B. Proprietors and Managers:
Businesses valued at $40,000 to $150,000

3B. Proprietors and Managers:
Businesses valued at $10,000 to $40,000

4B. Proprietors and Managers:
Businesses valued at $4,000 to $10,000

5B. Proprietors and Managers:
Businesses valued at less than $4,000

1C. Businessmen:
Regional and divisional managers of large financial and industrial enterprises

2C. Businessmen:
Assistant managers and office and department managers of large businesses, assistants to executives, etc.

3C. Businessmen:
All minor officials of businesses

1D. Clerks and Kindred Workers, Etc.:
Certified Public Accountants

2D. Clerks and Kindred Workers, Etc.:
Accountants, salesmen of real estate, of insurance, postmasters

3D. Clerks and Kindred Workers, Etc.:
Auto salesmen, bank clerks and cashiers, postal clerks, secretaries to executives, supervisors of railroad, telephone, etc., justice of the peace

4D. Clerks and Kindred Workers, Etc.:
Stenographers, bookkeepers, rural mail clerks, railroad ticket agents, sales people in dry goods store, etc.

5D. Clerks and Kindred Workers, Etc.:
Dime store clerks, hardware salesmen, beauty operators, telephone operators

1E. Manual Workers:
Contractors

2E. Manual Workers:
Factory foremen, electricians, plumbers and carpenters who own their business, watchmakers

3E. Manual Workers:
Carpenters, plumbers, electricians (apprentice), timekeepers, linemen, telephone or telegraph, radio repairmen, medium-skill workers

4E. Manual Workers:
Moulders, semi-skilled workers, assistants to carpenter, etc.

5E. Manual Workers:
Heavy labor, migrant work, odd-job men, miners

1F. Protective and Service Workers:
Dry cleaners, butchers, sheriffs, railroad engineers and conductors

2F. Protective and Service Workers:
Barbers, firemen, butcher's apprentices, nurses aides, policemen, seamstresses, cooks in restaurant, bartenders, etc.

3F. Protective and Service Workers:
Baggage men, night policemen and watchmen, taxi and truck drivers, gas station attendants, waitresses in restaurant

4F. Protective and Service Workers:
Janitors, scrub-women, newsboys

1G. Farmers:
Gentleman farmers

2G. Farmers:
Large farm owners

3G. Farmers:
Tenant farmers

4G. Farmers:
Small tenant farmers

5G. Farmers:
Migrant farm laborers

SOURCE OF INCOME:

1. Inherited wealth: Families who lived on money made by a previous generation. This includes money derived from savings and investments or business enterprises inherited from an earlier generation.
2. Earned wealth: Savings or investments earned by the present generation. This category implies considerable wealth, for the individual lives on interest from capital and has amassed sufficient money so that he does not need to work.
3. Profits and fees: This includes money which is paid to professional men for services and advice. It also includes money made by owners of businesses for sale of goods and royalties paid to writers, musicians, etc.
4. Salary: This is a regular income paid for services on a monthly, or yearly, basis. This category also includes the commission type of salary paid to salesmen.
5. Wages: This is distinguished from salary since the amount is determined by an hourly rate. It is usually paid on a daily or weekly basis.
6. Private relief: This includes money paid by friends or relatives for the sake of friendship or because of family ties. People receiving this form of income usually have no money themselves.

7. Public relief and nonrespectable income: This includes money received from a government agency. A nonrespectable income includes money made from illegal occupations.

HOUSE TYPE:

1. Excellent: This includes only houses which are very large single-family dwellings in good repair and surrounded by large lawns and yards which are landscaped and well cared for. These houses have an element of show with respect to size, architectural style, and general condition of yards and lawns.
2. Very good: Roughly, this includes all houses which do not quite measure up to the first category. The primary difference is one of size. Also, penthouse apartments.
3. Good: In many cases they are only slightly larger than utility demands. They are more conventional and less showy than the two categories above.
4. Average: One-and-a-half to two-story wood-frame and brick single-family dwellings. Conventional style, with lawns well cared for but not landscaped. Deluxe apartments.
5. Fair: In general, this includes houses whose condition is not quite as good as those houses given in category 4. It also included smaller houses in excellent condition.
6. Poor: Houses in this category are badly run-down but have not deteriorated sufficiently that they cannot be repaired. They suffer from lack of care but do not have the profusion of debris.
7. Very poor: All houses which have deteriorated so far that they cannot be repaired. The halls and yards are littered with junk.

DWELLING AREA:

1. Very high: Residents, aware that this area has a high status reputation. The best houses in town are located in such an area.
2. High: Dwelling areas felt to be superior and well above average, but a little below the top. However, the chief difference is one of reputation.
3. Above average: A little above average in social reputation. The streets are kept clean and the houses are well cared for. It is known as a "nice place to live" but "society doesn't live here."
4. Average: These are areas of workingmen's homes which are comfortable and neat in appearance.
5. Below average: All the areas in this group are undesirable because they are close to factories, or because they include the business section of town or are close to the railroad.
6. Low: These areas are run-down and semi-slums. The streets and yards are often filled with debris.
7. Very low: Slum districts, the areas with the poorest reputation in town.

APPENDIX D

CONCEPTS AND INSTITUTIONS

(TABLE OF CONTENTS)

APPENDIX E

FINAL ANALYSIS DATA

CONTROL GROUP

STUDENT	PRE-TEST	DIQ	SES	POST-TEST	SEX	GRADE
1	15	117	38	19	G	Frosh
2	25	100	43	22	B	Sen
3	17	90	58	17	B	Sen
4	21	104	32	10	B	Sen
5	20	83	47	16	G	Sen
6	22	124	32	23	B	Jun
7	22	103	46	19	G	Jun
8	29	120	43	30	G	Sen
9	20	112	--	17	B	Soph
10	16	96	55	15	B	Soph
11	25	104	21	22	B	Sen
12	18	92	--	25	G	Sen
13	15	94	--	20	G	Jun
14	22	96	32	28	G	Jun
15	14	94	--	10	B	Soph
16	5	72	--	16	B	Sen
17	17	94	--	23	B	Sen
18	10	87	33	13	B	Jun
19	20	99	48	17	G	Jun
20	15	96	--	16	G	Jun
21	29	109	40	33	B	Sen
22	17	110	--	23	B	Sen
23	17	83	--	20	B	Jun
24	19	91	--	17	B	Jun
25	17	102	31	19	B	Jun
26	13	98	39	20	B	Jun
27	20	100	28	18	G	Sen
28	12	81	38	27	G	Sen
29	15	116	--	24	B	Sen
30	22	106	28	23	B	Sen
31	13	77	43	13	G	Jun
32	11	85	--	13	B	Jun
33	22	107	--	18	G	Sen

STUDENT	PRE-TEST	DIQ	SES	POST-TEST	SEX	GRADE
34	21	105	32	29	G	Sen
35	20	96	47	14	G	Sen
36	18	97	43	10	G	Jun
37	15	108	52	10	B	Jun
38	21	94	40	18	G	Sen
39	26	118	44	31	B	Sen
40	13	81	40	14	B	Sen
41	23	85	40	20	B	Sen
42	13	110	37	24	B	Jun
43	19	92	50	23	G	Jun
44	13	88	39	16	B	Sen
45	18	88	46	21	G	Sen
46	19	94	41	22	G	Sen
47	22	123	47	28	G	Jun
48	14	112	47	20	G	Jun
49	16	88	37	11	G	Sen
50	14	90	40	14	G	Sen

EXPERIMENTAL GROUP

STUDENT	PRE-TEST	DIQ	SES	POST-TEST	SEX	GRADE
1	20	94	56	29	B	Sen
2	15	111	39	26	G	Sen
3	22	109	45	25	B	Jun
4	25	111	38	29	B	Sen
5	24	94	43	28	G	Sen
6	31	116	51	29	B	Sen
7	19	108	43	32	G	Sen
8	28	121	59	24	G	Sen
9	16	114	28	25	B	Sen
10	18	106	38	25	B	Jun
11	23	126	31	30	G	Sen
12	19	103	27	22	G	Jun
13	23	112	29	22	B	Jun
14	26	118	31	28	B	Sen
15	25	114	25	30	B	Jun
16	37	115	28	35	G	Sen
17	27	150	36	35	B	Sen
18	20	104	44	30	B	Sen
19	28	122	25	35	B	Jun
20	16	100	43	18	B	Sen
21	24	108	34	25	G	Jun
22	31	110	52	25	B	Sen
23	12	92	40	15	B	Jun
24	24	97	37	22	B	Sen
25	29	112	48	26	B	Sen
26	34	110	31	39	B	Sen
27	17	108	25	23	B	Sen
28	36	114	44	39	B	Sen
29	24	112	47	36	B	Sen
30	16	84	58	22	G	Sen
31	29	115	51	31	G	Jun
32	24	119	66	33	B	Jun

STUDENT	PRE-TEST	DIQ	SES	POST-TEST	SEX	GRADE
33	16	105	32	26	G	Sen
34	25	102	39	19	B	Sen
35	14	93	55	17	G	Sen
36	37	125	48	42	B	Sen
37	12	93	--	9	B	Jun
38	25	106	--	30	B	Jun
39	21	99	38	22	B	Jun
40	30	108	46	33	B	Sen
41	17	99	47	21	G	Jun
42	20	100	40	23	B	Jun
43	17	114	38	21	G	Frosh
44	16	97	26	19	G	Jun
45	16	113	40	19	G	Soph
46	22	109	--	21	B	Jun
47	17	105	39	25	B	Sen
48	27	123	51	35	B	Jun
49	14	78	41	13	G	Jun
50	17	76	66	22	G	Sen

VITA

Harold K. Friesen

Candidate for the Degree of

Doctor of Education

Thesis: A COMPARISON STUDY TO DETERMINE THE EFFECTIVENESS OF THE INQUIRY/CONCEPTUAL APPROACH TO INSTRUCTION AS UTILIZED IN INSTRUCTIONAL MATERIALS WHEN USED IN SELECTED SENIOR HIGH SCHOOL BUSINESS ECONOMICS COURSES

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