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OF HIGH SCHOOL SENIORS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Carlton Dewey Wall, B.S., M.A.

* * * * *

The Ohio State University
1971

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CHAPTER I

THE PROBLEM

There has been, since 1951, a slowly developing trend to improve the level of economic literacy among Americans. This date marks the publication of *A Survey of Economic Education* \(^1\) by the Brookings Institution. This report pointed out that fewer than five per cent of all high school students took the equivalent of one semester of economics.\(^2\) Not only were educators in the economic, social science, and business disciplines concerned, but they were joined by business, labor, civic, and professional groups in their effort to promote economic education in secondary schools. During the past few years, increasing discussion in the literature manifests general dissatisfaction with youth's ability to cope with present and potential economic problems.

---

Statement of the Problem

The purposes of this study were (1) to provide quantitative evidence useful in describing the extent of economic understanding possessed by high school seniors, and (2) to determine whether or not differences in economic understanding exist among senior students who differ in course selection and selected personal factors.

In order to fulfill the purposes of the study, answers were sought to the following questions:

1. What is the extent of economic understanding of senior students as measured by a test of economic understanding?

2. What is the relationship of the following factors to economic understanding:
   a) Completion of an economics course.
   b) Completion of a general business course.
   c) Grade average.
   d) Work experience.
   e) Future educational plans.
   f) High school major.
   g) Sex.
   h) Socio-economic background.

Ultimate Objective

The ultimate objective of this study was to offer recommendations for changes leading to the improvement of economic understanding of high school students. More specifically, it was anticipated that the study would provide information for use by school administrators in evaluating their individual curricula to determine whether
the economic understanding needs of their students are being met.

Limitations of the Study

The primary limitations of this study were as follows:

1. An examination of economic understanding as measured by a standardized test of economic understanding.

2. High school seniors in five selected Ohio public schools.

The conclusions reached in this study, therefore, may or may not be applicable to seniors in other schools.

Need for the Study

Secondary schools are increasingly implementing the objective of making economic education available to their students. A report from the National Education Association stated that, by 1963, twenty-seven states had developed units of instruction on economics for their secondary schools. In a more recent study, it was found that 20 percent of twelfth-grade students were taking economics as a separate course. This percentage was substantially higher.


when economic instruction in other subjects was included.

While economic education has improved at all levels, considerable criticism has continued about the widespread economic illiteracy of students. The charge has been made, repeatedly, by the National Task Force on Economic Education and other organizations that most high schools are not developing in their students the understanding of the American economy they must have to meet effectively their responsibility as citizens.

The "lack of understanding" accusations have been general and vague. Little research has been conducted to identify present levels of student knowledge in economics. More specifically, no research evidence has been found to indicate whether the current emphasis in teaching economics has resulted in increasing student understanding of the subject. It was, therefore, deemed appropriate and important that research be conducted toward appraisal of present levels of economic knowledge of secondary school students.

Definition of Terms

The following definitions are presented to explain the meanings of certain terms as they are used in reporting this study:

Economics.—The investigation of conditions and laws within society affecting the production, distribution, and
consumption of wealth, or the material means of satisfying human wants and needs.

**Economic literacy or economic understanding.**—The knowledge possessed by an individual about personal and societal economics; the skills and abilities to enable the individual to use the knowledge intelligently; and the appreciation and attitudes that motivate the individual to effective economic action. The terms "economic literacy" and "economic understanding" are used interchangeably in this study.

**Economic education.**—All organized efforts of individuals, groups, and institutions toward the development of an understanding of economics and the American economic system and of those skills and abilities necessary to function effectively in the American economic system.

**Economics course.**—A separate, one-semester course entitled "Economics" as contrasted with instruction in economics integrated with subjects of other titles, such as Consumer Economics or Home Economics.

**General business course.**—A separate course which deals with the American enterprise system and which identifies and explains the role of business as an American institution.
Grade average.--The academic grade-point average for each student computed as of the end of the Fall term of their senior year according to the following four-point basis: A--4, B--3, C--2, D--1, and F--0.

Work experience.--Present or previous employment of the students participating in the study for which financial compensation was received.

High school major.--The primary area of student concentration in the form of formal courses completed during the tenth, eleventh, and twelfth grades for which credit is applied toward a high school diploma.

Socio-economic background.--Determined in this study by the occupations of the parents of the students participating in the study. These occupations were grouped, using the seven classes of the Minnesota Scale for Paternal Occupations, into four occupational categories:

Group I  Occupations classified as I and II.
Group II  Occupations classified as III.
Group III  Occupations classified as IV and V.
Group IV  Occupations classified as VI and VII.

Basic Assumptions

The following assumptions were made for this study:
1. There is general and widespread recognition of the need for economic understanding.
2. Efforts to expand instruction for economic understanding have been increasing during the past two decades.

3. There is general concurrence that economic education should be provided at the secondary school level.

4. Emphasis has been placed on exploration of means to increase high school economic instruction. Indicators point to continued and growing emphasis.

Procedure of the Study

A brief overview of the procedures is presented in this section. A detailed explanation of the procedures and the statistical design of the study is given in Chapter III.

The literature, as it related to student economic understanding and the public school program, was examined. The following areas of the literature were reviewed to determine factors for consideration in the development of a program that would provide students with sufficient economic understanding to meet the challenges of society:

1. The need for economic understanding.
2. Increased economic emphasis since World War II.
3. Economic education integrated with other courses.
4. Economic education as a part of secondary education.

The two types of instruments used in the study were (1) a test to measure student levels of economic understanding, and (2) a questionnaire to obtain selected student personal data.
The Test of Economic Understanding, Form B, published by Science Research Associates, and the questionnaire, constructed by the researcher, were administered to seniors in five Ohio public schools during the month of December, 1970. The instruments were administered to students in their senior social studies classes by the regular classroom teachers. It was assumed that test administration was conducted in a satisfactory and proper manner and that students' responses to the questionnaire were accurate and honest.

Statistical analysis was applied to the data to determine whether statistically significant differences existed among the group mean scores. The t-test and F-test were applied to the various subgroups to determine whether significant differences existed. The statistical treatment of the data is further discussed in Chapter III.

Organization of the Study

The report of this study is organized in the following manner:

Chapter I includes the background of the study, the statement of the problem, the ultimate objective, limitations, the need for the study, definition of terms, basic assumptions, and the procedure of the study.

Chapter II contains a review of the related research.
Chapter III is devoted to a detailed explanation of the research design and the procedure of the study. This chapter includes a description of the instruments, the pilot study, the way the data were collected and the methods used in analyzing the data.

Chapter IV contains the analysis and interpretation of the results of the study. This chapter includes the test results by schools and groups formed on the basis of enrollment in both economic and general business courses, grade average, work experience, future educational plans, high school major interest, sex, and socio-economic background.

Chapter V, the last chapter, includes the summary, conclusions, and recommendations. The findings of the study are reviewed.
CHAPTER II

REVIEW OF RELATED RESEARCH

In the past decade, the writings about economic literacy have proliferated to such an extent that today even the popular publications and news media present discussions on the topic ranging from philosophical commentary to units on money management. Moreover, the topic has been broadly treated in the professional literature; and a recent study analyzed and synthesized the research findings and thought pertaining to the teaching of economics.

It is, therefore, not the purpose to present in this section a review of the whole gamut of literature on economic education. The bibliography contains the major references that were reviewed to provide background information for this study. This chapter is limited to a description of 13 research studies, presented in chronological order.

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order, conducted since 1940 relating specifically to economic understanding.

The Maucker Study

In order to measure high school students' understanding of important social, political, and economic aspects of modern society, Maucker conducted a study in 1940. This study involved administering a test to the entire student body of 17 Iowa schools, grades nine through twelve. The test, constructed by the investigator, consisted of 50 multiple-choice items chosen from basic social concepts which the investigator thought were pertinent to understanding the social, political, and economic aspects of modern society.

Maucker's investigation led him to conclude that students did not have the necessary background to interpret intelligently the world in which they lived. A large proportion of the seniors showed little understanding of such matters as tariffs, the relationship between public and private enterprise and other elements of our economic system. Their knowledge of economic principles appeared to be less well developed than their understanding of political and social affairs.

The study made by Maucker is relevant to the present study for three reasons:

1. Both the Maucker study and the present study had the purpose of determining the extent of high school students' understanding of economic concepts. Because of differences in the instruments and methodologies used, the two studies cannot be compared statistically.

2. The instrument used by Maucker to gather data for his study is similar to one of the instruments used in the present study—a multiple-choice test. Maucker's test covered political, economic, and social areas, whereas the test used in the present study was concerned only with the economic area.

3. In both studies, high school students were tested. The present study involved testing high school seniors. Maucker tested students in grades nine through twelve.

The Moorman Study

In 1948, John Moorman conducted a study to determine the basic economic understanding of graduating seniors in high schools and of college students planning to teach economics in high school.¹ A test, developed by Moorman, was administered to 1,169 graduating seniors in 13 high

schools and to 581 students in 19 teacher-training institutions consisting mostly of graduate students who had completed at least one year of teaching experience in the business education field.

The data revealed that a large per cent of the high school pupils lacked the degree of understanding of the selected concepts which were considered essential by Moorman. On only 4 per cent of the items did 50 per cent or more of the students respond correctly. Although the per cent of correct responses was greater for the college students, the average differences in favor of the college student was only 15 per cent.

Moorman concluded from the data obtained that both high school students and prospective teachers lacked the degree of understanding of economic concepts considered essential.

The Moorman study is directly related to the present study in two ways:

1. Both studies dealt with testing students to determine their level of comprehension of economic concepts. The testing instrument used by Moorman was similar to the one used in the present study. The scope of the present study did not involve, as did the Moorman study, a national sample.

\[1\text{Ibid.}, \text{pp. 138-139}.\]
2. Moorman was concerned with relating mean scores of subgroups of students tested to certain factors relative to the group. Although different factors were used, this feature was incorporated in the present study.

**The Purdue Study**

The Purdue Opinion Panel surveyed 4,000 high school students in the United States in May, 1955. The purpose of this survey was to provide information useful in a general appraisal of the state of economic knowledge and attitudes among high school students. The students responded to a questionnaire prepared by a committee consisting of members of the Joint Council on Economic Education, economics professors of Purdue University, and members of the Purdue Opinion Panel. The content of the survey instrument consisted of economic principles, economic vocabulary, factual knowledge of the U.S. economy, attitudes related to economic issues, and personal data. A sample of 2,000 students was drawn from the total of 4,000 respondents in order that analysis of results could be made on a group as nearly representative of the nation's high school pupils as the data would permit.

Data collected from the survey were analyzed in

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terms of several categories and relationships. The relationships of knowledge and attitude scores to other variables such as grade, sex, rural, urban, political party preference, religion, education of parents, and family income level, were analyzed with the following results:

1. On the knowledge of economic principles, economic vocabulary, and factual knowledge, boys as a group did better than girls; Republicans as a group did better than Democrats; higher socio-economic groups did better than lower socio-economic groups; students from the East as a group did better than those from other sections of the country; higher grade levels as a group did better than lower grade levels.

2. On the measure of attitudes toward government control of the economy, boys were more conservative than girls; higher grade levels tended to be more conservative than lower grade levels; Republicans as a group were more conservative than Democrats; upper socio-economic groups tended to be more conservative than lower socio-economic groups.

3. There were no significant differences between rural and urban students. Their mean scores in all areas tested were, for all statistical and practical purposes, identical.

The Purdue study is directly related to the present study. Both studies dealt, in part, with determining the
relationship of economic knowledge to certain variables such as sex and the socio-economic level of students surveyed. The Purdue study was, however, primarily an attitude study, where the present study was concerned with determining the extent of economic understanding of students and showing the relationship of this understanding to certain selected personal factors.

The findings of the Purdue study confirmed those made earlier by Moorman and Maucker. In all three studies, it was found that the general state of economic knowledge possessed by students was inadequate.

The Seibert Study

In 1956, Seibert made an investigation to determine the economic knowledge and attitudes of high school students.¹ His purpose was to determine the relationship of economic knowledge to 13 attitude and personal data variables. The study involved the use of a 64-item questionnaire that was completed by 3,500 students in the tenth, eleventh, and twelfth grades in 50 secondary schools located in 27 states.

In stating the purpose of the study, Seibert said:

It appears that an investigation into the economic

¹Warren Frederick Seibert, "Economics and the Next Generation: An Investigation of the Knowledge and Attitudes of High School Youth," Ph.D. dissertation, Purdue University, 1956.
knowledge and attitudes and their correlates among high school youth will provide useful data for those whose job is to provide economic education. The purpose of this study is to provide such data.\(^1\)

Seibert presented evidence in support of twenty major conclusions. The following were relevant to the present study:

1. Knowledge of economic principles is positively correlated with each of the following:
   a) knowledge of economic vocabulary.
   b) factual knowledge of the U.S. economy.
   c) academic achievement.
   d) parents' education.

2. Knowledge of economic vocabulary is positively correlated with each of the following:
   a) academic achievement.
   b) parents' education.
   c) factual knowledge of the U.S. economy.

3. Factual knowledge of the U.S. economy is positively correlated with each of the following:
   a) academic achievement.
   b) parents' education.

4. A relatively favorable attitude toward government controls of the U.S. economy tends to occur together with each of the following:
   a) lower than average knowledge of economic vocabulary.
   b) lower than average knowledge of economic principles.
   c) lower than average factual knowledge of the U.S. economy.
   d) lower than average academic achievement.
   e) lower than average educational level for the respondent's parents.
   f) an attitude toward private business and profits which is less favorable than average.

5. A relatively favorable attitude toward private

\(^1\)Ibid., p. 6.
business and profits tends to occur together with each of the following:

a) greater than average knowledge of economic vocabulary.
b) greater than average knowledge of principles.
c) greater than average factual knowledge of the U.S. economy.
d) greater than average educational level for the respondent's parents.

6. The educational level of attainment of the respondent's parents is positively correlated with academic achievement.

7. Male high school students are more favorable in their attitudes toward private business and profits than are female high school students.

8. Male high school students are superior to female high school students with respect to each of the following:

a) knowledge of economic principles.
b) knowledge of economic vocabulary.
c) factual knowledge of the U.S. economy.

9. Female high school students are more favorable in their attitudes toward government control of the economy than are male high school students.

10. Students from different geographical regions of the country differ with respect to knowledge of economic principles and factual knowledge of the economy. Urban students tend to be superior to students from rural areas.

11. Students who state a preference for continuing their education beyond high school are superior to students preferring not to continue their education with respect to the following:

a) knowledge of economic vocabulary.
b) factual knowledge of the economy.

12. Students from the higher socio-economic classes are superior to students from the lower classes with respect to the following:

a) knowledge of economic vocabulary.
b) knowledge of economic principles.
c) factual knowledge of the economy.¹

¹Ibid., pp. 102-107.
Seibert reasserted his basic purpose of the study in a concluding statement by saying:

This investigation has been undertaken to provide information concerning the economic knowledge possessed by high school youth, their attitudes on economic policies and practices, and some correlates of both economic knowledge and economic attitudes.¹

An outcome of the Seibert study was a major diagnostic analysis conducted by the National Task Force on Economic Education of economic educational needs deemed essential for effective citizenship.

Although the studies were similar, basic differences exist between the Seibert study and the present investigation. First, the present study was directed to high school seniors. Seibert's study encompassed students in grades ten through twelve. Second, the testing instruments were different. The Test of Economic Understanding employed in the current study was designed to determine student understanding of basic economic concepts. Seibert's instrument was constructed to assess student attitudes relating to economic concepts and knowledge.

The Linn Study

To compare the extent to which certain economic topics were taught in beginning economic and business classes at the junior college level, Linn conducted a study

¹Ibid., p. 117.
in 1957 using the causal-comparative method of research.  
He was concerned with showing a relationship between class success and personal characteristics of the teachers or the teaching techniques used by them.

An 80-item test was given to students at the beginning and at the end of the semester in 18 basic business classes and 18 economics classes from seven junior colleges and one four-year college. All of the schools were located in California. The test was created to illustrate the 47 topics declared to be "indispensable" for those who would be economically literate by the Council for the Advancement of Secondary Education. The 21 participating teachers contributed data concerning certain personal characteristics and teaching methods.

Linn concluded that the courses or units of economics were ineffective in advancing the level of economic comprehension of students. He found that sex and age were decisive factors in the ability to score well on the topic test. One finding of this study was of particular importance to the present study:

Over one-half of the students tested said that they had not had any economics in high school; yet, they scored significantly (beyond the one per cent level) better than did the others who had had some previous high school economics training.  

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2 Ibid., p. 163.
This finding was surprising. Provisions for further evidence on this issue were built into the present study.

Linn was positive in stating his first recommendation. He said:

The high school program in economics should be studied carefully. There is evidence in this study that topical economic information is not being taught to these students.¹

The Linn study is related to the present study in three distinct ways:

1. A multiple-choice examination was administered to determine the extent of economic comprehension of students. A similar type of instrument was used in the present study. Linn's study involved testing college students where the present study involved high school seniors.

2. Both studies dealt, in part, with relating the level of economic comprehension of students to their socio-economic status.

3. The present study and the Linn study both were concerned with determining significant differences of economic understanding on the basis of the sex of students tested.

¹ibid., p. 208.
The Marmas Study

Marmas made a study in 1961 that was concerned with teacher academic preparation in economic education.\(^1\) The objectives of this study were similar in one way to the objectives outlined in the present study. Marmas was interested in showing the relationship of knowledge of economics to certain characteristics of the students tested.

A sample was drawn from three state colleges in California. An objective test and a questionnaire were administered to a total of 181 state college students majoring in business education, social studies, and home economics. In stating the purpose of the study, Marmas said:

> It is the purpose of this study to analyze the academic preparation, work experience, and mastery of economic content and theory of prospective high school teachers of social studies, business education, and home economics who will teach courses having implications for the economic literacy of high school youth.\(^2\)

He summed up the value of his research by saying:

> If a comprehensive analysis is made of the preparation in economics of prospective high school teachers who will contribute to the economic literacy of high school youth, then appropriate programs can be developed to better teacher preparation in economics and ultimately to increase economic understandings among high school youth.\(^3\)


\(^2\)Ibid., p. 4.  \(^3\)Ibid., p. 5.
The Marmas study was based on nine assumptions. Two were of importance to the current study:

1. Economic literacy among our maturing population is essential in our complex society.

2. The school is the most logical institution to have responsibility for transmitting economic knowledge and understanding.

Marmas found that significant differences existed in economic understanding among the means of subgroups having various grade-point levels. He found that test scores were higher for groups with higher grade-point averages and that grade-point averages were positively related to performance on an economics test.

Marmas outlined five areas for future research. Two of the areas were significant to the present study. He recommended that:

1. A study [be] conducted on the high school level which would seek to determine whether students taking high school economics courses are significantly superior in their knowledge of economics to students not electing such courses. The contribution of courses in economics to the economic literacy of high school youth can thus be determined.

2. A great deal has been said about the merits of work experience for people in all lines of work, including those responsible for economic education. This study was not successful in determining whether work experience is a factor affecting a knowledge of economics because of grouping problems and the size of the sample. It is therefore recommended that additional research be conducted devoting primary attention to work experience. By sampling larger groups than
those involved in this study the problem which arose can be avoided.¹

Both of these recommendations were included in the present study. The area of research by Marmas pertaining to work experience as a contributing factor to economic understanding was of particular importance to the present study.

The Deitz Study

A California study by James Deitz in 1962 was important to the present study.² Deitz conducted his study in 19 selected high schools. The study involved two instruments—an economics test and a questionnaire to assess personal factors of students.

Deitz said his purpose was
to provide quantitative evidence to appraise levels of economic understanding of California high school seniors in terms of understanding deemed essential and minimal for effective citizenship.³

The Deitz study consisted of formulating, administering, and analyzing a 58-item questionnaire, in addition to the economics test, to determine attitudes in relation to economic understanding. The study presented evidence in

¹Ibid., pp. 155-156.


³Ibid., p. 10.
support of 24 major conclusions. The following six are relevant to the present study:

1. The height to which levels of economic understanding for high school students should be raised is a judgment to be decided by educators and the general public. Group differences must be considered in such determination. It is not defensible to expect similar levels of understanding for all groups of students.

2. Few attempts have been made to identify and promote the concept of a spectrum of economic understanding levels with need for attention toward increasing levels of understanding.

3. High school students depend primarily on teachers and high school classes for economic knowledge.

4. Males are superior to females in levels of economic understanding.

5. High school students who plan no further education after graduation are significantly inferior [in economic understanding] to those students who plan junior college, state college, university, and other forms of higher education.

6. Students with economic instruction were superior in economic understanding to those without such instruction.¹

It should be pointed out that the Deitz study and the present study were similar although basic differences exist. The measuring instruments were considerably different. Deitz constructed a 43-item test based on the findings of the 1961 Report of the National Task Force on Economic Education. The Test of Economic Understanding used in the current study was prepared by the Committee on

¹Ibid., pp. 223-226.
Measurement of Economic Understanding. This committee was appointed by the Joint Council on Economic Education.

No statistical comparisons can be made between the findings of the Deitz study and those of the present study due to differences in the test instruments. In addition, the Deitz study attempted to assess political and economic attitudes of students in relation to their comprehension of economics. The present study was concerned with showing the relationship of economic understanding to selected personal factors of students tested.

The Vivian Study

A study was undertaken by Vivian in 1963 to compare the level of economic understanding of students who had completed a distributive education program with those who had not taken the program.\(^1\) The SRA Test of Economic Understanding was administered to all twelfth-grade students in 21 high schools in Indiana. A comparison of pre-test and post-test scores resulted in the following conclusions related to the present study:

1. Formal instruction in economics, participation in the distributive education program and in the Junior Achievement program are not significantly related to the level of economic understanding of high school seniors.

2. Although both the economics and the distributive education groups gained in economic understanding during the year, those who took both courses did not gain as much as those who took one or the other.

3. Socio-economic background as measured by parental occupation is not significantly related to the level of economic understanding of the student.

4. Scholastic ability of the students as indicated by class rank is significantly related to the level of their economic understanding.\(^1\)

The Vivian study was important to the present investigation. Both studies dealt, in part, with showing the relationships of economic understanding to (1) the socio-economic level of students tested, (2) instruction in economics, and (3) scholastic ability. In addition, the SRA Test of Economic Understanding was used in both studies.

Vivian's finding that economic instruction was not significantly related to the level of economic understanding of high school seniors was in agreement with the findings made by Linn and opposite to that reported by Deitz. The conclusion by Vivian that the socio-economic background of students was not significantly related to the level of economic understanding was in disagreement with the conclusion drawn by Seibert. In comparing the findings of Vivian to the findings of Linn, Deitz, and Seibert, it must be kept in mind that different instruments were used in all four studies. In addition, considerable differences existed in the sample used in each study.

\(^1\)Ibid., pp. 74-75.
The Millington Study

In 1964 Millington completed a doctoral study with objectives similar to those outlined in the present study but on an entirely different level. In the Millington study, a dual purpose was sought. His stated purpose was to define the administrative and instructional practices that would be most important in developing an effective economic program; to survey existing economic education administrative and instructional practices.

In cooperation with a jury, Millington developed evaluative criteria in the form of recommended economic educational administrative and instructional practices to be followed in integrating economic concepts into courses in various high schools. Questionnaires were administered to all teachers, except those teaching art, music, and physical education, in 44 of the 46 Oklahoma high schools with enrollment of 500 students or more.

The Millington study listed fifty findings. Two of his findings were applicable to the present study:

1. Principals and teachers indicated that economic understanding is a vital requisite for effective citizenship.

2. Many teachers appeared to lack a clear understanding of the philosophy and objectives of the integrated approach to economic education.

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2 Ibid., p. 2.
Millington's recommendation that further studies should be conducted to measure the economic understanding of students was incorporated as a part of the current study.

The Millington study is related to the present study in one distinct way. One of the objectives of Millington's study was to offer recommendations to school administrators leading to the improvement of economic understanding of high school students. This goal was part of the present study stated in the ultimate objective on page 2.

The Paul Study

A Georgia study by Joel Paul in 1964 was important to the present study. Paul conducted his study in six selected Georgia high schools. His study was undertaken to measure the understanding of economic concepts and to evaluate student opinions and attitudes relative to these concepts.

The instruments used in Paul's investigation consisted of the Test of Economic Understanding, the California Short Form Test of Mental Maturity, and a personal data form constructed by the investigator. Data were collected from 720 students enrolled in six high schools representing six types of communities.

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Pertinent findings supported by evidence collected in Paul's research included the following:

1. Boys scored higher than girls on the Test of Economic Understanding.

2. The more social studies taken, the higher the scores.

3. Students enrolled in a college preparatory course of study scored higher on the test than those enrolled in a general or vocational course of study.

4. Students who participated in a course of economics scored higher than those who had not participated in such a course.\(^1\)

The Paul study was related to the present study in several ways. Both studies dealt with testing high school seniors to determine their level of economic comprehension. The Test of Economic Understanding was used in both studies. The present study did not, as did the Paul study, involve an evaluation of student opinions and attitudes.

Paul's finding that economic instruction was a significant contributor to better economic understanding was in agreement with the findings made by Deitz and opposite to that reported by Linn and Vivian. The finding that boys scored higher than girls in understanding economic concepts was in agreement with the research reported by Deitz and Seibert and in the report of the Purdue study.

\(^1\)Ibid., pp. 124-126.
The National Association of Secondary School Principals Study

In 1964, the National Association of Secondary School Principals in collaboration with the Council for the Advancement of Secondary Education constructed a questionnaire entitled an "Inquiry about the Teaching of Economics in the High Schools of the United States, 1964-65." The questionnaire was mailed to all public high schools enrolling 300 or more pupils and to all private or independent high schools.

By mid-April 1965, when the processing of the replies had been completed, it was found that 50.9 per cent of the 12,331 schools surveyed had responded.

The study presented evidence in six major areas. Four of these areas were significant to the current study:

1. There has been an increase in the number of high schools offering economics as a separate course.

2. There has been a trend toward both offering a separate course in economics and also incorporating economics in other courses.

3. There are more (a larger percentage of) students being given instruction in economics than in 1950.

4. The number of college and graduate courses in economics taken by high school teachers of economics increased over the number of courses taken ten years prior to the study date.2

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1Galen Jones, op. cit.

2Ibid., pp. 4-5.
The report of this study showed that one twelfth-grade pupil in five (20 per cent), among the schools responding, was studying economics in a separate course. This percentage is considerably higher than that reported by the Brookings Institution in 1951, which found that less than 5 per cent of all high school students took the equivalent of a semester course in economics.¹

In response to the question on incorporating economics in other courses, the following was stated in the report:

Slightly more than four-fifths (81.0 per cent) of the schools include some economics instruction in other courses. 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 (Home Economics), and Business Law.²

Pertaining to the percentage increase of students studying economics during the decade from 1954-55 to 1964-65, it was reported that the number of students studying economics had doubled during the decade.³

The shortage of teachers qualified to teach economics was pointed out by the National Association of Secondary School Principals study. In reporting on this study, Galen Jones said:

The most frequently mentioned problem faced by the high schools in carrying out their hopes and plans

for economic education is that of finding teachers who like the subject and can make it interesting. "Our main need is a qualified teacher" is the "theme song" of the many who commented on this problem.

A goodly number of those stressing this shortage of teachers remarked that, by reason of the work of the Joint Council on Economic Education, the growing interest of the American Economic Association in this problem, and the new interest of some college and university faculties to work with secondary schools, they looked to the future with some hope. They recognize that the problem is a perennial one, however, and that much time will pass before their needs are met.¹

The National Association of Secondary School Principals' inquiry about the teaching of economics in the high schools of the United States provides both encouragement and challenge. In the report, it was further pointed out that economic literacy has increased. The report said:

Gratifying progress has been made during the decade and a half since the Brookings Institution alerted the nation to the importance of increasing the economic literacy of its citizens.

At the same time the data support the assertion that the task of assuring economic understanding on the part of the overwhelming majority of students and adults is yet to be realized.²

Determining the direction and the need, not quantification of that need, was the basic purpose of the National Association of Secondary School Principals study. The results pointed out the practicability of subsequent studies to begin from this point and go on to quantify and more precisely identify the general need. The determination of this need has been included in the present study.

The McElroy Study

A study was undertaken by McElroy in 1965 to analyze existing programs of economic education within the social studies departments of 36 selected high schools in the United States. In this study, a questionnaire was submitted to teachers to determine significant statements relating to minimum economic information and understandings considered essential for responsible citizenship.

McElroy's investigation led him to conclude that students, of the teachers surveyed, did not receive the necessary background of information needed to interpret intelligently the world in which they lived. Over one-half of the teachers indicated no coverage of such matters as tariffs, the relationship between public and private enterprise, and other important elements of our economic system. He further concluded that the teachers' objectives in teaching economic theory appeared to be less well defined than those for teaching political and social affairs.

Eight recommendations were listed by McElroy. Two of these were pertinent to the present study:

1. Before great strides can be made in these schools, teachers must recognize the importance of economic education and include economic literacy as a major goal of social studies teaching.

2. The development of economic literacy should be recognized as one of the primary objectives of social studies.¹

The McElroy study, although considerably different from the present study, was related to it. Both studies involved determining factors that contributed to increased levels of economic comprehension of students.

The Wilson Study

In 1966 Wilson made a study to determine the growth of Junior Achievers in understanding selected economic concepts.² The experimental factor of the study was the Junior Achievement experience. The design of this study involved two groups: an experimental group, composed of 150 randomly selected first-year Achievers from the Franklin County, Ohio, Junior Achievement, Incorporated; and a control group, composed of 150 randomly selected students from four high schools in Franklin County, Ohio.

A test of 50 multiple-choice questions, constructed and validated by Wilson, was administered to the experimental and control groups at the beginning and end of the school year. Wilson drew six conclusions from her study. The following three were applicable to the present study:

1. The Junior Achievement program does contribute

¹Ibid., p. 301.

significantly toward developing an understanding of economic concepts that everyone should know. This conclusion is based upon the fact that Achievers scored significantly higher than the non-Achievers of the control group on the test of selected economic understandings.

2. Grade-point average, socio-economic level, and I.Q. are significant predictors of Achievers' understanding of selected economic concepts.

3. The above-average group of Achievers, classified according to grade-point average, socio-economic level, or I.Q., enjoy a significant advantage in understanding selected economic concepts over Achievers of average or below-average groups.¹

Wilson's conclusions that the Junior Achievement experience does significantly contribute to economic understanding was opposite to the conclusion drawn by Vivian regarding the experience. It should be noted, however, that a change in emphasis took place in the Junior Achievement program during the period between the Vivian study (1963) and Wilson's study (1966) regarding the emphasis placed on understanding economic concepts.

The study made by Wilson was significant to the present study. Both studies involved testing high school seniors to determine whether certain personal factors were related to economic comprehension. In both studies, a multiple-choice test instrument was used—the SRA Test of Economic Understanding in the present study and a self-constructed and validated test in the Wilson study.

Although both studies were related, the procedures

¹Ibid., p. 86.
of the two differed in several ways. Wilson's study was one designed to determine the impact of the Junior Achievement experience on economic understanding. The present study was a status study to determine current levels of economic comprehension of high school seniors. Because of differences in procedures and instruments used, Wilson's study cannot be statistically compared with the present study.

**Summary**

The economic understanding of the high school graduate has been measured in several studies. The most comprehensive studies involving measuring the degree of economic comprehension of high school seniors were conducted by Seibert in 1956, Deitz in 1962, and Vivian in 1963.

The conclusions drawn in several of the studies relating to the present study cannot be compared with the present study due to differences in the instruments used, concentration on other than high school seniors, and minimum attention to school and personal factors related to levels of economic understanding.
CHAPTER III

METHOD AND PROCEDURES

The purpose of this chapter is to describe the method and procedures used in the study. The chapter is divided into four parts: (1) selection of subjects for the investigation, (2) description of the instruments, (3) collection of the data, and (4) statistical treatment of the data.

Selection of Subjects for the Investigation

The primary purpose of this study was to determine the extent of economic understanding of high school seniors. In order to fulfill this purpose, a random sampling of students was initially considered. However, after contacting the Joint Council on Economic Education, it was found that only 30 per cent of the nation's schools offer economics as a separate course. Because completion of an economics course was a factor in the study, the idea of a random sample was abandoned.

Participating schools

Five schools in Ohio were selected to participate in the study. Each school was known to have at least two
classes of economics available to students in their junior and senior years. It was necessary that economics classes be available to the students in their junior year, since the testing took place prior to the end of the first term of their senior year.

The students in the participating schools varied in socio-economic background. There was no reason to believe that the students from these schools would be different from a cross section of students obtained from a random sample. The following schools participated in the study:

  Worthington Senior High School - Worthington, Ohio
  Lincoln Senior High School - Gahanna, Ohio
  Upper Arlington High School - Upper Arlington, Ohio
  New Albany Plain High School - New Albany, Ohio
  Newark City High School - Newark, Ohio

The names of the individuals who granted permission and assisted in administering the instruments at each school are included in Appendix A.

Securing permission

Permission was granted to conduct the research in the schools with the following two provisions: (1) that the results of the completed study be given to the various schools participating, and (2) that the study not involve individual school data identification.

Permission for students to participate in three of
the schools--Lincoln, Upper Arlington, and Newark--was secured from the school superintendents of the three systems. The assistant superintendent of the Worthington School System granted permission for students to participate at Worthington High School. Permission was secured for the fifth school, New Albany, from the school principal.

Dates and times for administering the instruments were confirmed with the principals of the participating schools.

Description of the Instruments

Two instruments were used to gather data for this study. These instruments, an objective test and a questionnaire, are described in this section and are shown in Appendixes B and C. In addition, data regarding students' grade-point averages were obtained. This information was furnished by school counsellors at four of the participating schools. At the fifth school, the information was obtained directly from students' files by the researcher. The accuracy of the grade-point information furnished by school counsellors must be assumed.

The testing instrument

In order to fulfill the purpose of the study, determining the economic understanding of high school seniors, it was necessary to select a measuring instrument. The
testing instrument used was Science Research Associates' Test of Economic Understanding, Revised Edition, Form B.

The test was produced under the sponsorship of the Joint Council on Economic Education. It was prepared by their Committee for Measurement of Economic Understanding. The nine authors of the test include practicing and professional economists and educators in administration, research, and teaching. The names of these individuals are shown in Appendix D. There are two forms of the fifty-item, forty-minute test. Form B was used in this investigation.

In the publisher's manual for the test, the background and rationale for the content of the test are explained in the following manner:

In July 1960 the National Task Force on Economic Education was created through a joint undertaking by the American Economic Association, which appointed the task force members, and the Committee for Economic Development (CED), which financed the work of the task force. Once created, however, the National Task Force became completely independent of the two organizations and every precaution was taken to establish a group with unquestioned objectivity, protected from any trace of pressure from interest groups. Unique in the history of American economics, this task force included leading secondary school educators and some of the nation's outstanding economics authors and teachers. Its primary goal was to provide guidelines for teachers, school boards, and interested business organizations by describing the minimum level of economic understanding essential for the practice of good citizenship--to define the objectives of economic education, establishing what can and must be taught at the high school level.

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In September 1961, after a year of study and discussion, the report of the National Task Force on Economic Education, Economic Education in the Schools, was published stating in detail a well-rounded and objective outline of the basic economic concepts. Early the following year a national policy statement was made by the CED, praising the work of the National Task Force and discussing some of the remaining problems confronting educators and school administrators.

One of these problems—the difficulty school systems have had in measuring the success of their efforts in economic education—was considered the most important to overcome. Now, with the increasing availability of new texts and materials in economic education, the needs of schools for standards by which to measure the effectiveness of their instruction are becoming more acute.

In recognition of this need for measurement, the Joint Council on Economic Education appointed a special committee, the Committee on Measurement of Economic Understanding, to prepare two forms of a test of economic understanding for students in secondary schools and colleges. The 50 questions constituting each form were based on the guidelines reported by the National Task Force.

The primary value of the Test of Economic Understanding lies in assessing student understanding of the basic economic concepts essential for good citizenship.\(^1\)

An economics professor who participated in the economics education movement commented on the contents of the test by stating:

The questions cover the basic areas of micro and macro-economics, plus some questions on "applied" fields such as international economics and comparative systems, but they omit all technical details beyond such simple concepts as supply and demand. Each question was pre-tested on thousands of students, many were revised, and the test was carefully balanced for coverage, concepts involved, degree of

difficulty, and types of understandings involved—all within the practical limits imposed by the need for a mass testing instrument.¹

While the instrument is not divided into sub-tests, the authors have included questions in each of the topical areas of economics which they considered basic to effective citizenship. The four topical areas and the number of test items related to each on Form B of the test are:

- What the Economy Produces and How 21
- Economic Growth and Stability 28
- The Distribution of Income 6
- Comparison of Economic Systems 4

The total is more than 50 because some test items are related to more than one topical area.

Norms for the test were established from scores of 6,435 students from 62 schools in 24 states representing six geographical regions of the United States. Estimates of reliability, using the Kuder-Richardson Formula 20, based on item-total score interrelationships, were computed for with-economics and without-economics sub-samples; coefficients were .83 and .82 with standard errors of measurement of 2.04 and 1.64 respectively.²

Because the kind and amount of economics content are

² Walter P. Jones, op. cit., p. 32.
controversial, criteria with which to validate a test are limited. In such cases, the opinion of a panel of competent judges is usually relied upon. 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, therefore, has been nationally acceptable. Validity was determined by before-economic and after-economic instruction performance on the test. In all but one case, the mean difference was found to be significant at the .01 level of confidence. ¹

The questionnaire

The second instrument used in the study consisted of a questionnaire. A copy is included in Appendix C. This instrument, constructed by the investigator, was designed to furnish student data regarding: (1) completion of an economics course, (2) completion of a general business course, (3) future educational plans, (4) high school major, (5) sex, (6) work experience, and (7) socio-economic background.

In addition to this information, the grade-point average of participating students was needed to complete the study. Provisions were not included on the questionnaire to obtain this information, since it was believed

¹Ibid., p. 35.
that students would have difficulty in responding to this type of question.

The instrument was submitted to a graduate research seminar for suggestions and criticism. After the revisions suggested by this group were made, copies of the instrument were prepared for a pilot study.

The pilot study

A school in suburban Columbus was selected to test the questionnaire in early October, 1970. The school was not one of the five schools selected to participate in the study. Nineteen senior students were used in the pilot study.

The purposes of the pilot study were to (1) determine the amount of time needed to complete the instrument, (2) see whether the instructions to be followed in completing the instrument were clear, and (3) determine whether students could furnish the information requested.

It was found that all of the students were able to complete the questionnaire in less than two minutes. It was essential that this instrument be completed in a short amount of time, since the other instrument used in the study, a test of economic understanding, was designed to be completed in 40 minutes. All of the students appeared to understand the instructions for filling out the questionnaire. They were able to furnish the information requested.
Copies of the questionnaire, along with the test and accompanying answer sheet, were then submitted during a study-hall period to another group of six seniors at the same school. They were asked to respond to the questionnaire and to take the test.

It was found that this group did not have any difficulty in completing the two instruments. All of the students were able to finish both the test and questionnaire during the single class period of 42 minutes.

The questionnaire was then reproduced commercially by means of xerography. An additional 800 copies of the test and 1600 copies of the answer sheet were obtained from Science Research Associates. The materials were delivered to the five participating schools during the last week of November, 1970. The investigator met with the individuals at each school designated to assist with the testing. Final instructions were given for administering the instruments.

Collection of the Data

Due to the difficulty in determining a single day in which surveying of students could take place, the instruments were administered at the participating schools on various days during the week of December 7, 1970. Senior social studies classes were used to reach students since this course was required of all seniors in Ohio public schools. Thus, it was possible to ensure that all seniors
present for school on the day of the testing would be included in the study.

The entire senior population was included in the study at four of the participating schools. Permission was granted on a limited basis for students to participate at the fifth school. Approximately 50 per cent of the students at this school, representing the classes of two senior social studies teachers, were included in the study.

**Sample purification**

Missing or incomplete information on several of the questionnaires was obtained by the researcher from guidance counsellors at the participating schools. In addition, every twentieth questionnaire was checked for accuracy against information in the students' files at each school. It was found that the information given by students agreed generally with the information found in their files.

The responses of two students from Mexico, participating in a school exchange program, were eliminated from the study. Their classroom teachers, along with the investigator, believed that it was unfair to include these students due to the difficulty they had encountered with the language of the test.

After purification of the sample through the addition of data that had been omitted on the questionnaires of some students and the elimination of the two exchange students'
questionnaires, the net yield of usable responses totaled 1,271.

**Grade-point average**

In order to have information regarding grades released from the various schools, permission was secured in December, 1970, from administrative personnel of the various school systems. Their names are shown in Appendix A. These individuals had been contacted earlier for permission to conduct the study in their schools. The investigator visited each person again to explain further the study and to explain why the information was needed and how it was to be used.

Student grade-point averages were obtained during February, 1971, as this information became available at the participating schools. Grades were computed as of the end of the 1970 Fall term. This information was furnished by senior guidance counsellors at four of the schools. At the fifth school, the data were obtained by the investigator directly from students' files.

**Statistical Treatment of the Data**

The two instruments used in the study, along with the information furnished by the participating schools, yielded the following raw data about each student: (1) test response, (2) sex, (3) completion of an economics course,
(4) completion of a general business course, (5) future educational plans, (6) high school major, (7) parent's occupation, (8) work experience, and (9) grade-point average.

After students' test-answer sheets were scored, the number of correct answers was recorded on each student's questionnaire. Grade-point averages were recorded also on each questionnaire as these data were received. Prior to developing a numeric code to be used for preparing the data for processing, classifications were developed to group the raw data.

Grade-point average grouping

The grade-point averages of students were available, computed by the guidance staff at the participating schools, on a four-point basis: A—4, B—3, C—2, D—1, and F—0. The data were classified then by the investigator in the following four groups:

<table>
<thead>
<tr>
<th>Group</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>3.00 to 4.00</td>
</tr>
<tr>
<td>II</td>
<td>2.00 to 2.99</td>
</tr>
<tr>
<td>III</td>
<td>1.00 to 1.99</td>
</tr>
<tr>
<td>IV</td>
<td>Below 1.00</td>
</tr>
</tbody>
</table>

It must be assumed that standard grading existed among the participating schools in computing grade-point averages of students.
Socio-economic grouping

The information for grouping students according to socio-economic background was obtained from the section of the questionnaire that asked for parent's occupation. A check of school records was made for those questionnaires with this information omitted. For those responses containing answers such as "retired" or "deceased," the legal guardian or person with whom the student lived, provided the basis for determining an occupational classification.

The Minnesota Scale for Paternal Occupations was used to classify students into socio-economic groups. This scale provides the following seven classes:

I  Professional
II  Semi-Professional and Managerial
III Clerical, Skilled Trades and Retail Business
IV  Farmers
V  Semi-Skilled Occupations and Minor Business
VI  Slightly Skilled Trades requiring little training
VII  Day Laborers of all classes

For the purpose of this study, the above seven classifications were combined and arranged to yield the following four categories:

Group I Occupations classified as I and II
Group II Occupations classified as III
Group III Occupations classified as IV and V
Group IV Occupations classified as VI and VII

1Institute of Child Welfare, Minnesota Scale for Paternal Occupations (Minneapolis: University of Minnesota Press).
School major grouping

The responses of students regarding their high school major area of study served as the basis for grouping students according to the type of school program pursued.

Information on a number of school programs was obtained. However, for the purpose of this study, students were classified according to the following types of school majors: academic, vocational, and social studies. As a sub-classification, vocational majors were grouped into five areas—distributive education, business and office education, trade and industrial education, agricultural education, and home economics education.

Work experience grouping

The effect of work experience on economic understanding was a factor considered in the study. Students were asked to indicate whether they had had paid work experience. Non-paid work was not considered as work experience in this study. Information regarding the amount and nature of their work experience was received, in addition to the names of their employers.

As sub-classifications, students with work experience were further grouped according to (1) the amount of work experience, (2) skilled or non-skilled work experience, and (3) self-employed\(^1\) or non-self-employed work experience.

\(^1\)"Self-employed" work experience refers to students'
Data regarding the amount of work experience were converted into equivalent months of fulltime employment and categorized in the following four groups:

Group I  Under 2 months
Group II  2 to 4 months
Group III  5 to 6 months
Group IV  More than 6 months

Other data grouping

In addition to grouping student information data by grade-point average, socio-economic background, school major, and work experience, students were classified according to their school, sex, completion of an economics course, completion of a general business course, and post-high school plans.

Data regarding post-high school plans were tabulated in four groups--four-year college planned, junior college or technical school planned, "other" education planned, and no further education planned.

Preparation of the data

After the various classifications were completed, the student data were coded and punched on IBM-type data processing cards. The numeric code used in transferring the information to the cards is shown in Appendix E. Two experience gained through employment at jobs such as caring for lawns and baby-sitting.
decks of cards were punched to facilitate computation for several analyses. All cards were checked and verified for accuracy.

The Computing Center of The Ohio State University processed the data, using an IBM 360/75 computer. The cards were sorted and processed several times to provide group scores, frequency counts, means, sums of scores, scores squared, and sums of scores squared.

The computer programs employed to analyze the data were (1) The Multivariate Analysis of Variance, BMD02R; and (2) The Analysis of Covariance—Multiple Covariates, BMD04V. These programs were developed at the University of California at Los Angeles. They were available as part of the Biomedical Computer Programs on the IBM computer in The Ohio State University Computing Center.

The data and explanation of the results of these programs are presented in Chapter IV.

Statistical model

The primary purposes to be served by the data collected were: (1) measuring seniors' understanding of economic concepts deemed essential for effective citizenship by members of the Committee on Economic Development, and (2) observing differences in economic understanding among

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those tested who differ in regard to sex, completion of an economics or a general business course, post-high school plans, school major, socio-economic background, grade average, and work experience.

The determination was made that the data could be interpreted effectively by observation and through the use of the t-test and F-test of significance.

The F-test was employed in some of the analyses due to certain limitations of using only the t-test. Dixon and Massey point out the disadvantage of using the t-test alone by saying:

If we wish to investigate the differences among five means by performing a t-test on each pair of means, there would be ten t-values to compute. There are several reasons why it is not good statistical procedure to do this. First, if we use a 5 per cent critical value and then test a number of means in this manner, the level of significance will be much larger than 5 per cent for testing the hypothesis of no difference in means as a group since even though all samples are from the same population, 5 per cent of the t-values will exceed the critical value on the average.1

In the present study the F-test was used to compare three or more values. The t-test was limited to the comparison of two values.

The formulas for arriving at the value of t and F,

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using the BMD02R and BMD04V computer programs, are as fol-

\[ t = \frac{M_1 - M_2}{\sqrt{\frac{\sum X_1^2 - M_1^2}{N_1} + \frac{\sum X_2^2 - M_2^2}{N_2}}} \]

\[ \sqrt{N - 1} \]

where:

- \( M_1 \) = the mean of the scores in group 1
- \( M_2 \) = the mean of the scores in group 2
- \( X_1 \) = a score from group 1
- \( X_2 \) = a score from group 2
- \( N_1 \) = the number of scores in group 1
- \( N_2 \) = the number of scores in group 2
- \( E \) = sum of\(^1\)

\[ F = \frac{(Nt M_2g) - (Nt M_2t)}{(EX_2) - (Nt M_2t)} \frac{k - 1}{\frac{E(NgM_2g) - (Nt M_2t)}{Nt - k}} \]

where:

- \( Nt \) = number of scores in total group

\(^1\)W. J. Dixon, Biomedical Computer Programs, p. 235.
$M_{2g}$ = a general expression for the mean of the scores in any group

$M_t$ = the mean of all the scores in all groups

df$_{bg}$ = the degrees of freedom between groups,
  $k \ (\text{number of groups}) - 1$

df$_{wg}$ = the degrees of freedom within groups,
  $N_t - k$

EX = the sum of scores

$k$ = the number of groups—(eight in this study)

$X_g$ = a score from any one of the groups (1, 2, etc. substituted for $g$ where group number designation is required)

EX$_g$ = the sum of scores for any one group

$EX^2$ = sum of squared scores for total in all groups

$EX_g^2$ = sum of squared scores for total in any one group

The eight groups representing $k$ in the above formula were designated:

$k_1$ = Sex

$k_2$ = Economics course

$k_3$ = General business course

$k_4$ = Post-high school plans

$k_5$ = High school major

$k_6$ = Socio-economic background

---

1Ibid., p. 528.
$k_7 = \text{Grade-point average}$

$k_8 = \text{Work experience}$

**Level of significance**

Two levels of significance or confidence commonly accepted in educational and psychological research are:

1. value significant at the .05 level—only five chances out of 100 that a value as large as the one obtained would occur through chance factors or sampling variations; and
2. value significant at the .01 level—only one chance out of 100 that a value as large as the one obtained would occur through chance factors or sampling variations.

The .05 level of significance was used throughout this study. A more conservative level of significance (.01) was not justifiable for several reasons:

1. Each of the populations from which the groups in the study were drawn were not normally distributed.
2. The standard deviation values for the populations were unequal.
3. The participants in the study were not randomly and independently drawn from their respective populations.

According to several statisticians, the above conditions should be met before making a conservative interpretation of significance.¹

Summary

A resume of the procedures used in this study begins with the selection of the participants. Five Ohio public high schools were selected to participate. These schools were known to offer economics as a separate course to students in their junior and senior year.

A pilot study of the instruments used in the study was conducted to (1) determine the amount of time needed to complete the instruments, (2) see whether the instructions to be followed were clear, and (3) determine whether students could furnish the information requested.

The SRA Test of Economic Understanding, Revised Edition, Form B, and a questionnaire constructed by the writer were administered in December, 1970, to seniors in the participating schools. These instruments, along with the information furnished by counsellors at each school, yielded the following data on 1,271 seniors: test score, sex, completion of an economics course, completion of a general business course, future educational plans, high school major, parent's occupation, work experience, and grade-point average.

The data were coded and punched on IBM-type data processing cards. The Computing Center of The Ohio State University

University processed the data, using the Multivariate Analysis of Variance, BMD02R; and the Analysis of Covariance—Multiple Covariates, BMD04V. The data were interpreted using the t-test and F-test of significance.

The presentation and interpretation of the data are given in the next chapter.
CHAPTER IV

ANALYSIS OF THE DATA

Upon completion of the statistical computation of the data, an analysis of the results was made to determine answers to the questions raised in Chapter I, in which the purpose of the investigation was outlined.

Presented in this chapter is an analysis of test scores shown according to the following groups: schools, completion of an economics course, completion of a general business course, grade average, work experience, future educational plans, high school major, sex, and socio-economic background.

Test Results by Schools

A major purpose of this study was to determine the extent of economic understanding of senior students as measured by the Test of Economic Understanding.

Test results for 1,271 seniors were included in the study. The raw score test data for the students are shown in Table 1 according to school groups. Mean scores ranged from 26.26 to 20.74. Individual test scores ranged from 9 to 43 correct responses.
All of these data, shown in Table 1, are discussed further with the various group comparisons.

TABLE 1

COMPARISON OF ECONOMIC UNDERSTANDING LEVELS OF OHIO HIGH SCHOOL SENIORS GROUPED BY SCHOOLS

<table>
<thead>
<tr>
<th>School</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>449</td>
<td>35.33</td>
<td>24.82</td>
<td>6.46</td>
</tr>
<tr>
<td>B</td>
<td>258</td>
<td>20.30</td>
<td>22.52</td>
<td>6.37</td>
</tr>
<tr>
<td>C</td>
<td>292</td>
<td>22.97</td>
<td>26.26</td>
<td>6.22</td>
</tr>
<tr>
<td>D</td>
<td>72</td>
<td>5.66</td>
<td>20.74</td>
<td>3.99</td>
</tr>
<tr>
<td>E</td>
<td>200</td>
<td>15.74</td>
<td>22.25</td>
<td>7.26</td>
</tr>
<tr>
<td>Total</td>
<td>1,271</td>
<td>100.00</td>
<td>24.04</td>
<td>6.12</td>
</tr>
</tbody>
</table>

The mean score for all of the students tested of 24.04 shows that seniors answered questions to indicate a level of economic understanding below the fiftieth percentile rank. Implications for additional emphasis in economic education are evident. To achieve levels of understanding outlined by the National Task Force on Economic Education, which were incorporated into the Test of Economic Understanding, would require increased effectiveness in teaching economic understanding in Ohio public schools.

Another view of the test results is presented in the frequency distribution for scores shown in Appendix F. The
total frequency column shows that 12 students, or .94 per cent of the total, made scores of 40 or above while 13, or 1.02 per cent, made scores of 10 or below. The distribution of scores also shows a modal value of 23 and an observed median of 24.

Comparison on the Basis of an Economics Course

Previous research findings regarding the positive effect of formal economics instruction on economic understanding was substantiated in the present investigation. Table 2 reveals that seniors who had completed a course in economics scored better on the test than those who had not taken a course.

TABLE 2

COMPARISON OF SCORES FOR SENIOR GROUPS CLASSIFIED ON COMPLETION OF AN ECONOMICS COURSE

<table>
<thead>
<tr>
<th>Economics Course</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>With</td>
<td>476</td>
<td>37.45</td>
<td>28.06</td>
<td>6.18</td>
<td></td>
</tr>
<tr>
<td>Without</td>
<td>795</td>
<td>62.55</td>
<td>21.64</td>
<td>5.64</td>
<td>18.46a</td>
</tr>
</tbody>
</table>

*a*t value of 1.96 is demanded for significance at the .05 level of confidence.

The t value of 18.46 in Table 2 is far greater than that required for statistical significance at the .05 level of confidence. Therefore, formal instruction in economics,
as qualified in this study, was accepted as being significantly related to economic understanding.

As indicated in Table 2, 37.45 per cent of the students answered affirmatively on the questionnaire regarding completion of an economics course. This percentage was higher than that anticipated by the investigator. However, a check of records at the participating schools confirmed that this amount was a close approximation (within 1 per cent) of the actual number of students who had completed a course. The difference between the responses of students and school records is not great enough to alter the findings of this study significantly.

Comparison with National norms

By using the Test of Economic Understanding, a comparison of student test scores can be made with National norms established for the test. Table 3 shows the comparison of the means of the Ohio with-economics and without-economics groups with those shown in the test publisher's manual for the National norming group.

For the with-economics group, the National group mean of 30.48 was 2.42 points higher than the mean of 28.06 for the Ohio group. A similar difference, 2.73 points, occurred between the National and Ohio without-economics groups, and the difference also favored the National group.

A comparison of the means of the National with-
economics and without-economics groups shows a difference of 6.11 favoring the with-economics group. The same comparison of the Ohio means shows a difference of 6.42 also favoring the with-economics group.

TABLE 3

COMPARISON OF NATIONAL NORMS AND OHIO TEST RESULTS FOR WITH-ECONOMICS AND WITHOUT-ECONOMICS GROUPS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Economics:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National(^a)</td>
<td>927</td>
<td>30.48</td>
<td>8.29</td>
</tr>
<tr>
<td>Ohio</td>
<td>476</td>
<td>28.06</td>
<td>6.18</td>
</tr>
<tr>
<td>Without Economics:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>2,307</td>
<td>24.37</td>
<td>6.65</td>
</tr>
<tr>
<td>Ohio</td>
<td>795</td>
<td>21.64</td>
<td>5.67</td>
</tr>
</tbody>
</table>

\(^a\)Interpretive Manual for Test of Economic Understanding, pp. 6, 34.

Comparison on the Basis of a General Business Course

An important feature of this study was the comparison of student test scores on the basis of whether they had completed a formal course in general business. Table 4 shows a significant difference between the two groups, with those indicating a course in general business scoring lower. The t value of 6.04 in Table 4 is greater than that required (1.96) for statistical significance at the .05 level of confidence.
**TABLE 4**

**COMPARISON OF SCORES FOR SENIOR GROUPS CLASSIFIED ON COMPLETION OF A GENERAL BUSINESS COURSE**

<table>
<thead>
<tr>
<th>General Business Course</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>With</td>
<td>357</td>
<td>28.09</td>
<td>22.19</td>
<td>6.98</td>
<td></td>
</tr>
<tr>
<td>Without</td>
<td>914</td>
<td>71.91</td>
<td>24.77</td>
<td>6.33</td>
<td>6.04a</td>
</tr>
</tbody>
</table>

*a* Significant at the .05 level of confidence.

The completion of a general business course was, therefore, rejected as being a significant factor in contributing to increased levels of economic understanding.

As indicated in Table 4, the mean score of 22.19 for those who had completed a course in general business was 2.58 points lower than the mean score for those who had not taken a course and 1.85 points lower than the mean score of 24.04, shown in Table 1 on page 61, for all of the participating students. The lack of economic understanding by this group, as indicated by a lower mean score, is contrary to the claims made in the literature regarding the value of a general business course in the development of students' economic understanding.
Comparison on the Basis of Grade-Point Average

As was pointed out in Chapter III, the grade-point average for each student was obtained as of the Fall term, 1970. The academic average was computed on a four-point basis. For the purpose of this study, student grade averages were grouped according to the following:

- 3.00 to 4.00
- 2.00 to 2.99
- 1.00 to 1.99
- Below 1.00

Table 5 shows a comparison of test scores according to the above four grade-point groupings. By observation there is considerable difference in the mean scores in favor of students with higher grades.

TABLE 5

COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF GRADE-POINT AVERAGE

<table>
<thead>
<tr>
<th>Grade Average</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00 - 4.00</td>
<td>341</td>
<td>26.83</td>
<td>28.93</td>
<td>5.60</td>
</tr>
<tr>
<td>2.00 - 2.99</td>
<td>793</td>
<td>62.39</td>
<td>23.45</td>
<td>5.52</td>
</tr>
<tr>
<td>1.00 - 1.99</td>
<td>123</td>
<td>9.68</td>
<td>15.69</td>
<td>3.95</td>
</tr>
<tr>
<td>Below 1.00</td>
<td>14</td>
<td>1.10</td>
<td>12.07</td>
<td>2.12</td>
</tr>
</tbody>
</table>
As shown in Table 6, the analysis of variance for students grouped according to grade-point average reveals an observed F value of 218.43. This value is well beyond the level demanded for statistical significance (2.40 for df of 1267 and 3) at the .05 level of confidence. Therefore, grade-point average was accepted as being significantly related to students' performance on the test.

TABLE 6

SUMMARY OF ANALYSIS OF VARIANCE FOR TEST SCORES FOR SENIORS GROUPED BY GRADE-POINT AVERAGE

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>36776.473</td>
<td>1267</td>
<td>29.02</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>19021.223</td>
<td>3</td>
<td>6340.40</td>
<td>218.43</td>
</tr>
</tbody>
</table>

*Significant at the .05 level of confidence.

The Test of Economic Understanding, as was pointed out in Chapter III, is an achievement test and does not require students to know complex, elaborate concepts and theories or the ability to recall factual subject matter. The pattern of students' performance, as reflected by the mean scores in Table 5, is one that may be expected for any achievement test; students with higher academic ability perform better than those with lower ability. This observation regarding student performance on an achievement test
may or may not be applicable in interpreting the pattern of students' performance on the test in the present study.

**Comparison on the Basis of Work Experience**

The feeling among the general public and some educators that work experience contributes to economic understanding is not unusual. This general attitude influenced the investigator to include student work experience as part of the current study. Several analyses were made regarding the relationship of work experience to students' performance on the test.

The first analysis, shown in Table 7, is a comparison of mean scores for students with and without work experience. The amount or type of work experience is not reflected in this table.

**TABLE 7**

**COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF WORK EXPERIENCE**

<table>
<thead>
<tr>
<th>Work Experience</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>With</td>
<td>1,145</td>
<td>90.09</td>
<td>24.17</td>
<td>6.56</td>
<td></td>
</tr>
<tr>
<td>Without</td>
<td>126</td>
<td>9.91</td>
<td>22.88</td>
<td>7.05</td>
<td>1.95^{a}</td>
</tr>
</tbody>
</table>

^{a}Not significant. A t value of 1.96 is demanded for significance at the .05 level of confidence.
As shown in the table, the t value of 1.95 is slightly less than that required for significance at the .05 level of confidence. Therefore, work experience as qualified in this study was not accepted as being significantly related to economic understanding.

These findings should not be interpreted to imply that work experience does not contribute to educational growth. However, evidence in this study cannot support the position that work experience contributes to increased levels of economic understanding.

Table 7 reveals that less than 10 per cent of the total group participating in the study indicated no work experience. This finding was not anticipated by the investigator. The extreme unevenness of the two groups compared should be noted in interpreting this finding. The group sizes may or may not be significant in influencing the results of the comparison.

Amount of work experience

As a sub-classification, the 1,145 students with work experience were grouped and compared in Table 8 according to the amount of their experience. Student information on the questionnaire regarding the number of hours worked was converted into equivalent months of full-time employment. For the purpose of this study, 168 hours was considered the equivalent of one month of full-time work.
TABLE 8

COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF THE AMOUNT OF WORK EXPERIENCE

<table>
<thead>
<tr>
<th>Amount of Work Experience</th>
<th>Number of Students</th>
<th>Per Cent of Group</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 months</td>
<td>173</td>
<td>15.11</td>
<td>24.28</td>
<td>7.10</td>
</tr>
<tr>
<td>2 to 4 months</td>
<td>446</td>
<td>38.95</td>
<td>23.94</td>
<td>6.84</td>
</tr>
<tr>
<td>5 to 6 months</td>
<td>178</td>
<td>15.55</td>
<td>24.75</td>
<td>6.09</td>
</tr>
<tr>
<td>More than 6 months</td>
<td>348</td>
<td>30.39</td>
<td>24.11</td>
<td>6.16</td>
</tr>
</tbody>
</table>

Table 8 shows that no observable pattern of performance on the test is evident. Students with the greatest amount of work experience (more than 6 months) scored slightly higher than those with 2 to 4 months experience and lower than those with less than 2 months or those with 5 to 6 months experience.

An analysis of variance of scores grouped according to the amount of work experience is given in Table 9. The observed F value of 0.63 is less than that required for significance at the .05 level of confidence. The amount of work experience was not accepted in this study as being significantly related to student levels of economic understanding.

Skilled work experience

In addition to comparing the amount of work experience, students with work experience were grouped also on
the basis of whether their experience was of a skilled or non-skilled nature. For the purpose of this study, skilled work experience was considered employment with a requirement for specific training for the job prior to employment. Examples of work included in the study as skilled employment were: machine operators, welders, clerk typists, stenographers, salesmen, dental assistants, and key-punch operators.

### TABLE 9

**SUMMARY OF ANALYSIS OF VARIANCE FOR TEST SCORES GROUPED ON THE BASIS OF THE AMOUNT OF WORK EXPERIENCE**

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>49252.412</td>
<td>1141</td>
<td>43.16</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>82.676</td>
<td>3</td>
<td>27.55</td>
<td>0.63&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>Not significant at the .05 level of confidence.

Table 10 shows that the number of non-skilled students far exceeds the number of skilled students. The t value of 0.42 reveals a value less than that required (1.96) for statistical significance at the .05 level of confidence. Therefore, the type of work experience (skilled or non-skilled) was not accepted in the study as being significantly related to economic understanding. Mean scores differ by .31 point in favor of the non-skilled group.
### TABLE 10

**COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF SKILLED WORK EXPERIENCE**

<table>
<thead>
<tr>
<th>Type of Experience</th>
<th>Number of Students</th>
<th>Per Cent of Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled</td>
<td>91</td>
<td>7.95</td>
<td>23.88</td>
<td>6.77</td>
<td></td>
</tr>
<tr>
<td>Non-Skilled</td>
<td>1,054</td>
<td>92.05</td>
<td>24.19</td>
<td>6.54</td>
<td>0.42a</td>
</tr>
</tbody>
</table>

*aNot significant at the .05 level of confidence.

**Self-employed work experience**

Of the 1,145 students reporting work experience, approximately one-third indicated that their experience had involved work of a self-employed nature. Examples of this type of work reported by students in the study include baby-sitting, caring for lawns, caddying, tutoring, delivering newspapers, and dressmaking.

Table 11 shows a comparison of test scores on the basis of work experience of self-employed students. The obtained t value of 0.45 is less than that demanded for statistical significance at the .05 level of confidence. Work experience of a self-employed nature was not accepted in the study as being significantly related to economic understanding. The mean scores differ in this comparison by only .18 point in favor of the non-self-employed group.
TABLE 11

COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF SELF-EMPLOYED WORK EXPERIENCE

<table>
<thead>
<tr>
<th>Type of Employment</th>
<th>Number of Students</th>
<th>Per Cent of Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>372</td>
<td>32.49</td>
<td>24.04</td>
<td>6.47</td>
<td></td>
</tr>
<tr>
<td>Non-Self</td>
<td>773</td>
<td>67.51</td>
<td>24.22</td>
<td>6.59</td>
<td>0.45(^a)</td>
</tr>
</tbody>
</table>

\(^a\)Not significant at the .05 level of confidence.

Comparison on the Basis of Future Educational Plans

In response to the question regarding future educational plans, Table 12 shows that approximately 63 per cent of the seniors surveyed indicated plans to attend a four-year college or university. Less than 15 per cent projected intentions of attending a junior college or technical school. Of the total group, approximately 12.5 per cent of the seniors indicated "other" educational plans for the future. These plans include private business schools, trade schools, and military service. In a number of cases, students included on-the-job training at specific companies as "other" educational plans. Approximately 10 per cent of the students projected no further educational plans after graduation from high school.

Considerable differences are indicated in Table 12 in mean scores among the four groups identifying various post-high school plans. The seniors bound for four-year
colleges or universities scored higher than the other three groups. There was only 2.11 points difference between the highest and lowest mean scores of the groups indicating plans other than attending a four-year college or university. Those planning to attend junior colleges or technical schools were slightly favored over the next two lowest scoring groups.

**TABLE 12**

COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF FUTURE EDUCATIONAL PLANS

<table>
<thead>
<tr>
<th>Educational Plans</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four-Year College or University</td>
<td>800</td>
<td>62.94</td>
<td>25.95</td>
<td>6.24</td>
</tr>
<tr>
<td>Junior College or Technical School</td>
<td>180</td>
<td>14.16</td>
<td>21.87</td>
<td>6.34</td>
</tr>
<tr>
<td>Other School Plans</td>
<td>159</td>
<td>12.51</td>
<td>20.49</td>
<td>5.51</td>
</tr>
<tr>
<td>No Further Plans</td>
<td>132</td>
<td>10.39</td>
<td>19.76</td>
<td>5.83</td>
</tr>
</tbody>
</table>

The F value shown in Table 13 is greater than that demanded for statistical significance at the .05 level of confidence. Therefore, future educational plans of seniors were accepted as being significantly related to students' levels of economic understanding.
TABLE 13
SUMMARY OF ANALYSIS OF VARIANCE FOR TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF FUTURE EDUCATIONAL PLANS

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>47614.772</td>
<td>1267</td>
<td>37.58</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>8182.884</td>
<td>3</td>
<td>2727.62</td>
<td>72.58^a</td>
</tr>
</tbody>
</table>

^aSignificant at the .05 level of confidence.

Comparison on the Basis of High School Major

Students' response regarding their high school major yielded information about a number of school programs. However, for the purpose of this study, comparisons were made for three types of school majors—academic, vocational, and social studies.

Academic major

Table 14 shows that nearly 80 per cent of all of the seniors included in the study indicated an academic high school major. Examples of school programs considered academic include mathematics, sciences, languages, social studies, and fine arts.

The academic group, as observed in Table 14, scored 3.85 points higher than the non-academic group. The t value of 9.41 is greater than that required for statistical significance at the .05 level of confidence. Therefore, an
academic major was accepted in this study as being related in a significant way to economic understanding.

TABLE 14
COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF AN ACADEMIC SCHOOL MAJOR

<table>
<thead>
<tr>
<th>Type of School Major</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>1,012</td>
<td>79.62</td>
<td>24.83</td>
<td>6.63</td>
<td></td>
</tr>
<tr>
<td>Non-Academic</td>
<td>259</td>
<td>20.38</td>
<td>20.98</td>
<td>5.64</td>
<td>9.41</td>
</tr>
</tbody>
</table>

*aSignificant at the .05 level of confidence.

Vocational major

Students indicating a non-academic major were grouped as a sub-classification according to their specific vocational area of interest. Out of the 259 students specifying a non-academic major, 17 were in special education programs. These students were not included in the vocational grouping. Table 15 shows that a total of 242 students were included in the vocational comparison. Programs in technical and health education were not included in this grouping since no students indicated a specific major in either of these.

Mean scores in Table 15 vary by 3.68 points between the highest and lowest groups. As shown in the table, those indicating a distributive education vocational major scored the highest, followed by home economics, agriculture, business and office, and trade and industrial education.
TABLE 15

COMPARISON OF TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF A VOCATIONAL SCHOOL MAJOR

<table>
<thead>
<tr>
<th>School Major</th>
<th>Number of Students</th>
<th>Per Cent of Group</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributive Education</td>
<td>71</td>
<td>29.34</td>
<td>23.68</td>
<td>5.92</td>
</tr>
<tr>
<td>Bus. &amp; Office Education</td>
<td>87</td>
<td>35.95</td>
<td>20.28</td>
<td>5.33</td>
</tr>
<tr>
<td>Trade &amp; Ind. Education</td>
<td>30</td>
<td>12.39</td>
<td>20.04</td>
<td>4.28</td>
</tr>
<tr>
<td>Agricultural Education</td>
<td>12</td>
<td>4.96</td>
<td>20.61</td>
<td>5.82</td>
</tr>
<tr>
<td>Home Economics Education</td>
<td>42</td>
<td>17.36</td>
<td>21.36</td>
<td>5.96</td>
</tr>
</tbody>
</table>

Table 16 reveals an observed F value of 3.69. This value is greater than that needed for statistical significance at the .05 level of confidence. The type of vocational major elected by students in the study was accepted as being significantly related to levels of economic understanding.

TABLE 16

SUMMARY OF ANALYSIS OF VARIANCE FOR TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF A VOCATIONAL EDUCATION MAJOR

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>7534.207</td>
<td>238</td>
<td>29.66</td>
<td>3.69a</td>
</tr>
<tr>
<td>Within Groups</td>
<td>329.146</td>
<td>3</td>
<td>109.71</td>
<td></td>
</tr>
</tbody>
</table>

aSignificant at the .05 level of confidence.
Social studies major

As a final comparison of school majors, all students participating in the study were grouped according to whether they had elected a social studies major. Since units in economics are included in most social studies classes, it is believed generally that students majoring in this area have greater opportunity for developing economic understanding than those not majoring in social studies.

Table 17 shows that students with a social studies major, representing approximately one-fourth of the total group, scored 2.54 mean points higher than those with a non-social studies major. This was 1.93 points higher than the mean score of 24.04 for the entire population as reflected in Table 1 on page 61. The t value of 5.77 shown in Table 17 is greater than that demanded for significance at the .05 level of confidence. A major in social studies was, therefore, accepted as being related to economic understanding as measured by the test.

**TABLE 17**

<table>
<thead>
<tr>
<th>Type of Major</th>
<th>Number of Students</th>
<th>Per Cent of Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Studies</td>
<td>307</td>
<td>24.15</td>
<td>25.97</td>
<td>6.78</td>
<td></td>
</tr>
<tr>
<td>Non-Social Studies</td>
<td>964</td>
<td>75.85</td>
<td>23.43</td>
<td>6.45</td>
<td>5.77a</td>
</tr>
</tbody>
</table>

aSignificant at the .05 level of confidence.
The comparison of scores made on the bases of school majors reveals that significant differences exist between academic and non-academic majors (Table 14, page 76) in favor of the academic group and between social studies and non-social studies majors (Table 17, page 78) favoring the social studies group. Of those with a vocational major, students majoring in distributive education scored the highest.

Comparison on the Basis of Sex

A comparison of mean scores on the basis of sex reveals that males scored slightly better on the test than females. The observed $t$ in Table 18 of 4.34 is more than that demanded for significance at the .05 level of confidence. Sex was accepted in this study as being significantly related to students' level of economic understanding.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>652</td>
<td>51.30</td>
<td>24.82</td>
<td>6.70</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>619</td>
<td>48.70</td>
<td>23.22</td>
<td>6.44</td>
<td>4.34$^a$</td>
</tr>
</tbody>
</table>

$^a$Significant at the .05 level of confidence.
Comparison on the Basis of Socio-Economic Background

As was pointed out in Chapter III, the occupations of students' parents were used to classify students into socio-economic groups. The following four occupational groups were established, using the seven classifications of the Minnesota Scale for Paternal Occupations:

- Group I: Occupations classified as I and II
- Group II: Occupations classified as III
- Group III: Occupations classified as IV and V
- Group IV: Occupations classified as VI and VII

By observing Table 19, it can be seen that the means of the occupational groups follow a distinct pattern or trend. Group I had the highest mean score, followed by Group II, Group III, and Group IV, respectfully.

<table>
<thead>
<tr>
<th>Socio-Economic Classification</th>
<th>Number of Students</th>
<th>Per Cent of Total Group</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>261</td>
<td>20.54</td>
<td>26.28</td>
<td>6.37</td>
</tr>
<tr>
<td>Group II</td>
<td>537</td>
<td>42.25</td>
<td>24.57</td>
<td>6.46</td>
</tr>
<tr>
<td>Group III</td>
<td>407</td>
<td>32.02</td>
<td>22.38</td>
<td>6.60</td>
</tr>
<tr>
<td>Group IV</td>
<td>66</td>
<td>5.19</td>
<td>21.32</td>
<td>5.68</td>
</tr>
</tbody>
</table>

Almost 75 per cent of the students were in the second and third socio-economic groups, with 2.19 points
difference in their mean scores. A difference of 1.71 mean points exists between Group I and Group II. The score for Group III is better by 1.06 points than the lowest scoring students (Group IV). A total of 4.96 points separate the highest from the lowest scoring groups.

Groups I and II, representing 62.79 per cent of the participating students, scored above the mean average of 24.04 as shown in Table 1 on page 61 for the total population.

The results of the analysis of variance in Table 20, showing an F value of 24.67, indicate a significant difference at the .05 level among the mean scores of the parental occupation groups. The comparison of the groups shows that socio-economic status, as qualified in this study, is significantly related to student achievement in economics.

**TABLE 20**

**SUMMARY OF ANALYSIS OF VARIANCE FOR TEST SCORES FOR SENIOR GROUPS FORMED ON THE BASIS OF SOCIO-ECONOMIC BACKGROUND**

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>52718.64</td>
<td>1267</td>
<td>41.61</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>2079.23</td>
<td>3</td>
<td>1026.41</td>
<td>24.67a</td>
</tr>
</tbody>
</table>

*aSignificant at the .05 level of confidence.*
Two-Way Analysis of Selected Factors

Because of the relevancy of economic understanding to students having completed formal courses in economics and general business, 18 two-way analyses were performed with the completion of these courses as variables. Several student and school factors were held constant in the analyses.

Table 21 shows the comparison of mean scores for students varying as to the completion of an economics course. The factors of grade-point average, work experience, future educational plans, academic major, sex, and socio-economic background are held constant in the comparisons. For each comparison, a t test was computed to analyze differences between those with a course in economics and those without a course.

Significant differences exist for all of the comparisons except for those students with a grade-point average of 3.00 or better. In this comparison, scores differ by only .75 point. In each comparison, students with a course in economics scored higher than those without a course.

For those students with an economics course, scores ranged from a high of 30.46 (those with a GPA of 3.00 to 4.00) to a low of 18.39 (those with a GPA of below 1.00). Students compared without a course had scores ranging from
<table>
<thead>
<tr>
<th>Selected Groups</th>
<th>With Economics Course</th>
<th>Without Economics Course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Students</td>
<td>Mean Score</td>
</tr>
<tr>
<td>3.00 - 4.00 GPA&lt;sup&gt;a&lt;/sup&gt;</td>
<td>129</td>
<td>30.46</td>
</tr>
<tr>
<td>2.00 - 2.99 GPA</td>
<td>295</td>
<td>27.51</td>
</tr>
<tr>
<td>1.00 - 1.99 GPA</td>
<td>47</td>
<td>22.63</td>
</tr>
<tr>
<td>Below 1.00 GPA</td>
<td>5</td>
<td>18.39</td>
</tr>
<tr>
<td>Work Experience</td>
<td>429</td>
<td>25.37</td>
</tr>
<tr>
<td>No Work Experience</td>
<td>47</td>
<td>24.82</td>
</tr>
<tr>
<td>Four-Year College</td>
<td>308</td>
<td>26.69</td>
</tr>
<tr>
<td>Junior-Tech. College</td>
<td>67</td>
<td>22.00</td>
</tr>
<tr>
<td>Other Edu. Plans</td>
<td>60</td>
<td>22.14</td>
</tr>
<tr>
<td>No Further Edu. Plans</td>
<td>49</td>
<td>22.34</td>
</tr>
<tr>
<td>Academic Major</td>
<td>379</td>
<td>28.62</td>
</tr>
<tr>
<td>Non-Academic Major</td>
<td>97</td>
<td>25.09</td>
</tr>
<tr>
<td>Selected Groups</td>
<td>With Economics Course</td>
<td>Without Economics Course</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td>Number of Students</td>
<td>Mean Score</td>
</tr>
<tr>
<td>Male</td>
<td>244</td>
<td>25.05</td>
</tr>
<tr>
<td>Female</td>
<td>232</td>
<td>24.09</td>
</tr>
<tr>
<td>Socio-Economic Group I</td>
<td>98</td>
<td>27.58</td>
</tr>
<tr>
<td>Socio-Economic Group II</td>
<td>201</td>
<td>26.13</td>
</tr>
<tr>
<td>Socio-Economic Group III</td>
<td>152</td>
<td>23.75</td>
</tr>
<tr>
<td>Socio-Economic Group IV</td>
<td>25</td>
<td>23.68</td>
</tr>
<tr>
<td></td>
<td>408</td>
<td>20.62</td>
</tr>
<tr>
<td></td>
<td>387</td>
<td>20.94</td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>24.19</td>
</tr>
<tr>
<td></td>
<td>336</td>
<td>20.73</td>
</tr>
<tr>
<td></td>
<td>255</td>
<td>18.33</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>17.86</td>
</tr>
</tbody>
</table>

\(^{a}\text{Grade-Point Average.}\)

\(^{b}\text{Significant at the .05 level of confidence.}\)
a high of 29.71 (those with a GPA of 3.00 to 4.00) to a low of 15.78 (those with a GPA below 1.00).

In Table 22, a comparison is shown of mean scores for students varying as to the completion of a general business course. The same factors are held constant in this comparison as are held in the previous comparison (Table 21, pages 83 and 84).

Significant differences in mean scores exist in all of the comparisons except for the following groups: students with a grade-point average below 1.00, those planning to attend a junior college or technical school, students indicating no future educational plans, those with a non-academic major, and students classified in socio-economic groups two and three.

Students without a general business course scored better in all of the comparisons than those with a course in general business except for those with a grade-point average below 1.00, those with no future educational plans, and students in the fourth socio-economic group.

As was the case in the comparison shown in Table 21 on pages 83 and 84, students with the highest grade-point average had the highest mean scores for both those with and those without a general business course. Likewise, those with the lowest grade-point average had the lowest test scores.
TABLE 22

A SUMMARY OF t VALUES OF MEAN TEST SCORES FOR SELECTED SENIOR GROUPS
WHO DIFFER IN GENERAL BUSINESS EDUCATION

<table>
<thead>
<tr>
<th>Selected Groups</th>
<th>With General Business</th>
<th>Without General Business</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Students</td>
<td>Mean Score</td>
</tr>
<tr>
<td>3.00 - 4.00 GPA&lt;sup&gt;a&lt;/sup&gt;</td>
<td>95</td>
<td>26.12</td>
</tr>
<tr>
<td>2.00 - 2.99 GPA</td>
<td>223</td>
<td>23.16</td>
</tr>
<tr>
<td>1.00 - 1.99 GPA</td>
<td>35</td>
<td>19.16</td>
</tr>
<tr>
<td>Below 1.00 GPA</td>
<td>4</td>
<td>16.82</td>
</tr>
<tr>
<td>Work Experience</td>
<td>322</td>
<td>23.38</td>
</tr>
<tr>
<td>No Work Experience</td>
<td>35</td>
<td>20.79</td>
</tr>
<tr>
<td>Four-Year College</td>
<td>225</td>
<td>21.75</td>
</tr>
<tr>
<td>Junior-Tech. College</td>
<td>50</td>
<td>22.19</td>
</tr>
<tr>
<td>Other Edu. Plans</td>
<td>45</td>
<td>18.76</td>
</tr>
<tr>
<td>No Further Edu. Plans</td>
<td>37</td>
<td>18.55</td>
</tr>
</tbody>
</table>
### TABLE 22—Continued

<table>
<thead>
<tr>
<th>Selected Groups</th>
<th>With General Business</th>
<th>Without General Business</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Students</td>
<td>Mean Score</td>
<td>SD</td>
<td>Number of Students</td>
<td>Mean Score</td>
<td>SD</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Major</td>
<td>284</td>
<td>22.93</td>
<td>5.17</td>
<td>728</td>
<td>26.49</td>
<td>7.03</td>
<td>7.10b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Academic Major</td>
<td>73</td>
<td>20.53</td>
<td>6.14</td>
<td>186</td>
<td>21.27</td>
<td>5.93</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>183</td>
<td>21.91</td>
<td>7.41</td>
<td>469</td>
<td>25.83</td>
<td>8.64</td>
<td>7.30b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>174</td>
<td>19.63</td>
<td>6.35</td>
<td>445</td>
<td>24.27</td>
<td>7.29</td>
<td>11.93b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Group I</td>
<td>73</td>
<td>23.91</td>
<td>5.96</td>
<td>188</td>
<td>28.06</td>
<td>7.41</td>
<td>9.47b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Group II</td>
<td>151</td>
<td>24.13</td>
<td>6.40</td>
<td>386</td>
<td>24.75</td>
<td>7.01</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Group III</td>
<td>114</td>
<td>20.62</td>
<td>5.71</td>
<td>293</td>
<td>22.93</td>
<td>6.39</td>
<td>2.96b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Group IV</td>
<td>19</td>
<td>20.97</td>
<td>6.79</td>
<td>47</td>
<td>21.56</td>
<td>5.15</td>
<td>0.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a* Grade-Point Average.

*b* Significant at the .05 level of confidence.
Summary

The findings of the investigation have been presented in this chapter. Results of the Test of Economic Understanding were tabulated for 1,271 seniors enrolled in five Ohio public schools. Individual test scores ranged from 9 to 43 correct responses. School means ranged from 20.74 to 26.26. The mean score for all seniors tested was 24.04.

The findings provided significant descriptions of students participating in the study. The majority of seniors surveyed (1) had never taken a course in economics or general business, (2) had a grade-point average between 2.00 and 2.99, (3) had paid work experience, (4) expect to continue their education beyond high school, (5) majored in an academic area, (6) are male, and (7) are from middle socio-economic groups.

The following observable differences exist among the group levels of economic understanding: (1) Seniors with an economics course scored better than those without a course. (2) Those with a general business course did not score as well as those without a course. (3) Students with higher grade-point averages did better on the test than those with lower grade averages. (4) Those planning to attend a four-year college or university scored higher than those with other plans for the future. (5) Students with an academic major did better on the test than those with a
non-academic major. (6) Seniors with a social studies major performed better on the test than non-social studies majors. (7) Males scored better than females. (8) Those from higher socio-economic groups did better on the test than those from lower socio-economic groups.

These findings are discussed further in Chapter V, along with the conclusions drawn from the study.
CHAPTER V

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to summarize the investigation, report the findings, and present conclusions and recommendations based on the findings.

Summary

As stated in the first chapter, the purpose of this investigation was to determine the extent of economic understanding of high school seniors and to determine whether differences in economic understanding exist among senior students who differ in course selection and selected personal factors. The following factors were compared: completion of an economics course, completion of a general business course, grade average, work experience, future educational plans, high school major, sex, and socio-economic background.

Review of related literature

A review was made of the literature to provide a background for the study and to determine the results of other investigations pertaining to the measurement of
economic understanding. The survey disclosed four premises regarding economic literacy which had broad coverage in the literature and which became the basis for the study. They are: (1) There is general and widespread recognition of the need for economic understanding. (2) Efforts to expand instruction for economic understanding have been increasing during the past two decades. (3) There is general concurrence that economic education should be provided at the secondary school level. (4) Emphasis has been placed on exploration of means to increase high school economic instruction with indicators pointing to continued and growing emphasis.

The population

The population for this study consisted of 1,271 seniors in five Ohio public schools. Schools were selected where economic classes were available to students during their junior and senior years. The students at the participating schools varied in socio-economic background.

The following schools participated in the study: Worthington Senior High School, Worthington, Ohio; Lincoln Senior High School, Gahanna, Ohio; Upper Arlington High School, Upper Arlington, Ohio; New Albany Plain High School, New Albany, Ohio; and Newark City High School, Newark, Ohio.
The data involved

Data used in the study were obtained through the administration of a standardized test and a questionnaire. In addition, data regarding students' grade averages were obtained by the investigator from the guidance staff at the participating schools or from student files.

A fifty-item, forty-minute Test of Economic Understanding published by Science Research Associates was given to all the seniors at four of the schools and to approximately 50 per cent of the students at the fifth participating school. In addition, students responded to a one-page questionnaire constructed by the investigator. Both of the instruments were administered during the week of December 7, 1970.

Information from students' test response and the questionnaire, along with the grade information, provided the basis for grouping students according to the completion of an economics or a general business course, grade-point average, work experience, future educational plans, school major, sex, and socio-economic status.

Analysis of the data

The basic statistical techniques used in the study were the analysis of variance and the t test of significance, with student test scores as the single criterion to determine whether a significant difference existed among
the various groupings. Means, standard deviations, and raw test score ranges were used for analysis and for comparison with established norms for the test.

Limitations of the study

All of the findings and conclusions drawn from the present study should be made with the following limitations noted:

1. The investigation was confined to 1,271 senior students in five Ohio public schools.

2. The study was limited to an examination of economic understanding as measured by the SRA Test of Economic Understanding, Revised Edition, Form B.

Findings

Findings made as a result of the analysis of the data are summarized as follows:

1. The mean of the 1,271 scores on the fifty-item test was 24.04 with a standard deviation of 6.62. In a range between 9 and 43 correct responses, 12 students, or .94 per cent, scored 40 or above; 13 students, or 1.02 per cent, scored 10 or below.

The lack of economic understanding evidenced in this finding substantiates the findings reported in Chapter II of previous research conducted by Maucker, Moorman, and the Purdue Opinion Panel.
2. Out of the total group of 1,271 students, 37.45 per cent had completed an economics course at the time of the testing. Seniors with a course in economics scored 6.42 mean points higher than those who had not completed a course. An obtained t value of 18.46, favoring those with a course, was significant at the 5 per cent level of confidence. This finding is in general agreement with those cited previously by Deitz, Paul, and McElroy and is opposite to those made by Linn and Vivian.

Significant differences in mean scores favoring students who had completed a course in economics exist in all comparisons except for those seniors with a grade-point average of 3.00 or better. A comparison of mean scores of students in this group yielded an observed t value of 0.58 which is less than that required for significance at the 5 per cent level of confidence.

3. Performance of the Ohio group on the test was lower than the National norming group for both students who had completed an economics course and students who had not. Comparison of the means of the with-economics groups showed a difference of 2.42 points in favor of the National group. Comparison of the without-economics groups revealed a difference of 2.73 points, also favoring the National group.

When the two National groups were compared, those who had had economics scored 6.11 mean points higher on the test than those who had not had economics. The same
comparison of the Ohio groups showed a mean difference of 6.42 points in favor of the with-economics group.

4. In comparing test scores of seniors on the basis of whether they had completed a general business course, those students who had completed a course (28.09 per cent of the total population) scored 2.58 points lower as a group on the Test of Economic Understanding than those who had not completed a course. The observed t value of 6.04, favoring those without a general business course, is greater than that required for significance at the 5 per cent level of confidence.

No significant differences in mean scores were found between those with and those without a general business course for the following groups of students: those with a grade-point average of 1.00 or lower, students planning to attend a junior college or technical school, those with no further educational plans, seniors with a non-academic school major, and students from socio-economic Group II. In all other group comparisons, significant differences exist in mean scores for those with and those without a general business course.

5. When students were compared according to grade-point average, mean scores ranged from a high of 28.93 for those with a grade-point of 3.00 or better to a low of 12.07 for students below a 1.00 grade average. A positive relationship between levels of economic understanding and
grades was found in the present study, favoring students with better grades. This finding substantiates similar findings reported by Seibert, Marmas, Vivian, and Wilson.

When mean scores were compared according to grade-point average, the obtained F value was substantially greater than that needed for statistical significance at the 5 per cent level.

6. Seniors with paid work experience scored slightly higher (1.29 points) on the test than those without paid work experience. A comparison of mean scores yielded a t value of 1.95 which is not significant at the 5 per cent level of confidence.

7. When students with paid work experience were compared as a sub-classification on the basis of the amount of their work experience, those with 5 to 6 months experience scored slightly higher than those with more experience or than those with less experience. A comparison of mean scores resulted in an F value less than that needed for statistical significance.

8. Students with skilled work experience scored lower on the test by .31 point than those whose experience required no special skills. The comparison of mean scores for these two groups led to a t value of 0.42. This value was not significant at the 5 per cent level.

9. An analysis of mean scores compared on the basis of work experience of self-employed students resulted in a
slightly higher mean score (.18 point) favoring those in the non-self-employed group. The resulting t value from the comparison of these two groups is less than that needed for significance at the .05 level of confidence.

10. Seniors indicating plans to attend a four-year college or university after graduation from high school had the highest mean score, followed in descending order by those planning to attend a junior college or technical school, those with other educational plans, and those indicating no further educational plans after graduation. An F value of 72.58 indicated a significant difference at the .05 level among the groups compared on this basis.

This finding is in agreement with one made in a previous study. Linn found in 1957 that students planning no further education after graduation were inferior in economic understanding to those students planning to attend junior college, state college, or other forms of higher educational institutions.

11. Those participating in the study with an academic high school major scored 3.85 mean points higher on the test than those with a non-academic major. This difference was significant (t value of 9.41) at the 5 per cent level.

12. An F value of 3.69, indicating significance at the 5 per cent level, was found for mean scores grouped and compared on the basis of a vocational school major.
Distributive education majors scored the highest, followed by students in home economics, agriculture, business and office education, and trade and industrial education.

13. Students with a social studies major performed better as a group on the test than those with a major other than social studies. A difference of 2.54 points in mean scores between social studies and non-social studies majors resulted in a t value of 5.77, greater than that needed for significance at the .05 level.

This finding regarding the positive effect of the study of social studies on economic understanding is in general agreement with a finding made in a previous investigation. Paul found a positive relationship between the amount of social studies taken and students' understanding of economics.

14. Out of the total population, male students scored higher on the test than females. The obtained t value of 4.34, resulting when mean scores were compared on the basis of sex, is slightly greater than that demanded for significance at the .05 level of confidence.

The finding that males perform better than females on an economics test is in agreement with the findings made in the Purdue study and by Seibert, Linn, Deitz, and Paul.

15. A positive relationship exists between mean scores and students' socio-economic background as qualified in this study using parental occupations, grouped into four
classifications based on the seven occupational classes of the Minnesota Scale for Paternal Occupations.

Students with parents classified as professional, semi-professional, and managerial (Group I) scored the highest with a mean score of 26.28. Those with parents classified as clerical, skilled workers, or employed in distribution (Group II) scored the second highest with a mean score of 24.57. Students with parents classified as farmers or semi-skilled workers (Group III) scored the third highest with a mean score of 22.38. The lowest mean score (21.32) was obtained by students whose parents were classified as slightly skilled and unskilled laborers (Group IV). A comparison of scores for the four groups resulted in an F value of 24.67 which is significant at the 5 per cent level of confidence.

The finding of the Purdue study that higher socio-economic groups perform better than lower groups on a measurement of economic understanding was substantiated by the present investigation. In addition, Seibert and Wilson made similar findings in this area.

Conclusions

This study sought answers to the questions raised in Chapter I regarding the economic understanding of high school seniors in Ohio public schools. On the basis of the results
of the study and in view of the limitations cited previously, the conclusions which follow seem justified.

1. Judged by their performance on the Test of Economic Understanding, the level of economic understanding for the seniors in the present study is lower than that considered by a panel of competent judges as essential to effective citizenship. While not totally illiterate about economics, the 1,271 students were able to register a mean score of only 24.04, slightly below the fiftieth percentile rank.

The evidence from this study disclosed that the test performance of students in the present study was inferior to that of the National norming group in both the with and without economics comparisons.

2. The formal study of economics significantly improves economic understanding for most students. The 18 comparisons in Table 21 on pages 83 and 84 show that all groups of students, with one exception, who had completed a course in economics scored significantly better at the .05 level on the test than those who had not completed an economics course.

When compared on the basis of grade-point average, significantly higher mean scores were obtained for those students who had completed an economics course at all grade-point levels, except for those with a 3.00 average or
better. For this group, no significant difference was found in the comparison of mean scores.

As shown in the comparisons, both students with and without work experience who had completed an economics course performed better on the test than students who had not completed a course. The obtained t values for these groups were greater than that needed for significance at the .05 level of confidence.

When students' mean scores were compared according to future educational plans, students in all four groups with an economics course scored significantly higher than those without a similar course.

The positive effect of the formal study of economics holds true for students' mean scores compared according to school major. Both academic and non-academic students with an economics course scored significantly higher on the test.

A similar finding is true for mean scores compared on the basis of sex. Both male and female students who had completed a course in economics performed significantly better on the test than those who had not completed a course.

The final comparisons for students grouped according to socio-economic background show similar findings. All four socio-economic groups of students who had taken a course in economics showed significantly better performance on the test than those who had not taken a course.
3. The study of general business does not contribute to economic understanding. As shown in Table 22 on pages 86 and 87, most groups of students who had taken a course in general business scored significantly lower on the test than those who had not taken a course.

When compared on the basis of grade-point average, students with a general business course scored significantly lower on the test than those without a course except for those students with a grade-point average below 1.00. For this comparison, students with a general business course scored higher on the test. However, the difference in mean scores was not significant at the .05 level of confidence.

Mean scores compared on the basis of work experience and no work experience also showed that students with a course in general business scored lower on the test than those without a course. When mean scores were compared for these groups, the obtained t values were significant at the .05 level of confidence.

Similar findings are shown for the comparisons of students' mean scores grouped according to future educational plans. Significantly lower scores were obtained for those with general business projecting intentions for attending a four-year college or university and for those with "other" educational plans after graduation. A lower score was also obtained for those with general business projecting plans for attending a junior college or technical
school. The difference in mean scores was not significant at the .05 level. The with general business group planning no further education after graduation scored higher on the test than the without general business group but not significant at the .05 level.

Those with general business compared on the basis of an academic and non-academic major scored lower on the test than those without a course. The difference for the students with an academic major was significantly lower at the .05 level of confidence.

When students' test scores were compared on the basis of sex, both male and female students who had taken a general business course scored significantly lower than those who had not taken a course.

The comparisons for students grouped according to socio-economic background show that those with a general business course scored lower on the test than those without a course. The difference was significantly lower for socio-economic Groups I and III.

4. Students with a higher academic ability are superior, generally, in economic understanding to those with a lower academic ability. The comparison of mean scores for seniors grouped according to grade-point averages in Table 5 on page 66 shows that the highest mean score was obtained by students with a grade-point average of 3.00 to 4.00, followed in descending order by those with a grade-
point of 2.00 to 2.99, those with a grade-point of 1.00 to 1.99, and those below a 1.00 grade average.

The F value shown in Table 6 on page 67 indicates a significant difference at the .05 level among the four groups compared on the basis of grade-point average.

5. Work experience available to high school students does not contribute to increasing levels of economic understanding. As shown in Table 7 on page 68, students with work experience scored higher on the test but not significantly higher at the .05 level of confidence. In addition, the amount of work experience does not increase economic understanding. As can be seen in Table 9 on page 71, a comparison of mean scores grouped according to the amount of students' work experience, reveals an obtained F value less than that needed for statistical significance at the .05 level.

The nature of students' work experience also does not contribute to economic understanding. As shown in Table 10 on page 72, students with work experience of a non-skilled nature scored higher on the test than students with work experience of a skilled nature. However, the difference was not significantly higher. In addition, no significant difference in mean scores occurred when scores were compared, as shown in Table 11 on page 73, on the basis of work experience of self- and non-self-employed students.
6. Seniors with no further educational plans after graduation from high school, representing approximately 10 per cent of the total population in the study, are inferior in economic understanding to those planning various forms of post-high school study. As can be seen in Table 12 on page 74, students projecting plans to attend a four-year college or university scored the highest, followed in descending order by those planning to attend a junior college or technical school, those with other educational plans, and those with no further educational plans. Table 13 on page 75 shows that the difference between mean scores of students compared on the basis of future educational plans is significant at the .05 level of confidence.

7. There is a significant relationship between levels of economic understanding and students' major area of study. Those students with an academic major, as reflected in Table 14 on page 76, scored significantly better on the test than those with a non-academic school major. As can be seen in Table 17 on page 78, students electing a social studies major performed significantly better on the test than those with a non-social studies major. Students majoring in distributive education, as shown in Table 15 on page 77, performed better on the test than those with other types of vocational majors. The difference between mean scores of students compared on the
basis of a vocational major was significant at the .05 level as reflected in Table 16 on page 77.

8. Male high school students are superior to female students with respect to economic understanding. The t test performed, as shown in Table 18 on page 79, comparing students on the basis of sex indicates a significant difference in mean scores.

9. The socio-economic background of students is significantly related to levels of economic understanding. As shown in Table 19 on page 80, students from higher socio-economic groups performed better on the test than those from lower socio-economic groups. The F value shown in Table 20 on page 81 indicates that the difference in mean scores is significant at the .05 level for students compared according to socio-economic background.

**Recommendations**

Based upon the findings of the study, the following recommendations seem to be justified:

1. An evaluation of general business courses should be made to determine the reasons for the fact that these courses, as claimed in the literature, do not contribute as greatly as they should to the economic understanding of students.

   There exists within general business classes outstanding potential for teaching economic understanding.
Business teachers are usually qualified to teach for economic understanding since most are required to complete courses in economics as part of their pre-service teacher training. In addition, many of the newer general business textbooks now available for these classes have been improved from the standpoint of including greater emphasis on economic understanding. However, the findings of this study indicate that general business courses are not being taught within an economics framework.

The content and activities of general business classes should be examined by the classroom teachers to determine whether students are developing a foundation to better understand the American economic system, especially the business sector. For those classes where this objective is not being met, the teaching methods, course objectives, and classroom materials should be carefully examined in view of the needed changes to promote economic understanding.

2. A study should be made to determine the influence of scholastic ability on the selection of the study of general business and to determine whether a correlation exists between this ability and the development of economic understanding.

3. A study should be made to determine to what degree the Ohio economics courses cover the content guidelines set forth in the National Task Force Report, assuming
the suggested content is in agreement with local school philosophy. The study should explore the reasons for the disparity between the performance of the Ohio group and the National norming group on the test.

4. Because the teachers of economics courses are likely to be their schools' specialists in economics, it is recommended that these teachers assume the primary responsibility for determining what instructional materials in economics are needed by their respective schools and for requesting their schools to purchase economics materials for both their school library and classroom use. Teachers can receive assistance in this task by contacting the Joint Council on Economic Education, their state council on economic education, or college and university centers for economic education.

5. It is recommended that special courses in economics be made available for those students who do not plan any form of post-high school education and for those with a lower than average grade-point standing. These courses are especially needed for these groups of students in view of their lack of economic understanding as found in the study. Because of the severe time limitation imposed as a result of restricting these courses to a single semester, it is recommended that those teaching the courses examine the cost of teaching any given topic in terms of what other topics will have to be sacrificed. While admittedly diffi-
cult to identify, those topics which give evidence of having lasting significance to the students should receive primary emphasis. Since economic issues are constantly changing through time, it is recommended that those teaching this course place special emphasis on stressing how to analyze economic problems and how to arrive at conclusions concerning specific economic issues. The course should be taught so as to provide the basis for self-directed study that will further develop economic understanding, since these groups of students are not likely to have the opportunity for further formal study of economics.

6. For colleges and universities which have the resources, it is recommended that in-service economic education be available to high school teachers of economics and general business courses. Such in-service training might be offered in the form of evening courses, extension courses, or short workshops. In addition, college and university faculty members should provide high school staff members with additional assistance in curriculum planning of economics.

7. The Ohio schools should be commended for taking the initial steps toward improving economic literacy by adding economics to the curriculum and by permitting this investigation of their economic education program. However, based on the widely acclaimed need for the improvement of economic literacy among Americans, on the acceptance of
this task as an objective of education, and on the rela-
tively low level of the economic understanding of the
participating students, it is recommended that the Ohio
public school systems give strong consideration to improv-
ing their programs of economic education for every student.

8. It is recommended that the norms established in
this study be used as a beginning for a continuous evalua-
tion program of economic understanding for Ohio students,
with the obtainment of the National norms or better as an
immediate goal of economic education.
APPENDIX A

LIST OF PARTICIPATING SCHOOLS AND PERSONNEL
ASSISTING IN THE TESTING
# List of Participating Schools and Personnel

**Assisting in the Testing**

## Pilot Study

Whitehall Yearling High School  
675 Yearling Road  
Columbus, Ohio  

Mr. Robert T. Addison  
C.O.E. Coordinator

## Participating Schools

Worthington Senior High School  
300 West Granville Road  
Worthington, Ohio  
Ass't. Superintendent:  
Mr. Earl Lane

Mr. John Steitz  
Chairman, Social Studies Department

Lincoln High School  
160 North Hamilton Road  
Gahanna, Ohio  
Superintendent:  
Mr. Calvin Leader

Mr. Robert Kostecka  
Vice-Principal

Upper Arlington High School  
1650 Ridgeview Avenue  
Upper Arlington, Ohio  
Superintendent:  
Mr. Walter Heischman

Mr. David Miller  
Chairman, Social Studies Department

New Albany Plain High School  
170 High Avenue  
New Albany, Ohio  
Superintendent:  
Mr. William Roy

Mr. Richard Rosato  
Ass't. Principal  
Miss Nancy Bower  
Social Studies Teacher

Newark City High School  
Wright Street  
Newark, Ohio  
Superintendent:  
Mr. Loren Briggs

Mr. Paul Nabors  
Principal  
Mr. George Roberts  
Ass't. Principal
APPENDIX B

TEST OF ECONOMIC UNDERSTANDING
TEST OF ECONOMIC UNDERSTANDING

Directions

This test is designed to measure your understanding of economics. Not all students have taken a formal course in economics, but most have learned something about the subject in their regular courses, through reading, listening to the radio, or watching television. These questions will measure how well you understand the principles of economics and the way our economy operates. It is probable that you will not know the answers to some questions. However, you should answer every question by marking what you think is the best choice, using the information you do have in selecting your answer. Work at a comfortable speed, but do not spend too much time on any one item.

The test consists of fifty questions or incomplete statements, for each of which you are to choose the one best answer. Even though in some instances more than one answer may appear to be correct, your task is to choose the best answer. After you have read the question and chosen your answer, use your pencil to blacken the space on the answer sheet that corresponds to the answer you have chosen. Now read the sample questions below and mark your answers on the answer sheet.

Sample Question 1

Prices are usually lower for a product when

A. only one company produces it
B. several competing companies produce it
C. labor unions are strong where it is produced
D. the federal government controls its production

Sample Question 2

The federal government exercises the closest control over

A. banking and money
B. high school education
C. food distribution
D. oil companies

Sample Question 3

For which of the following groups is the average income lowest?

A. Business executives
B. Physicians
C. Engineers
D. Farmers
1. When a nation's human and material resources are being fully and efficiently used, more of any one product
A. cannot be produced
B. cannot be produced unless private enterprise rather than government does so
C. can be produced only if there is less production of some other products
D. can be produced only if there is a general decrease in prices

2. All economic systems (capitalist, communist, feudal, or any other) face similar economic problems. Which one of the following questions would some but not all economies face?
A. What will be produced and how?
B. How can markets be kept competitive?
C. How many resources will be devoted to maintaining and increasing future capacity?
D. For whom will the goods be produced?

3. In a basically private enterprise economy, which group exercises the principal influence on the choice of goods produced over a long period of time?
A. Consumers
B. Government
C. Big business
D. Labor unions

4. Of the following, which is not a function of profits in a basically private enterprise economy?
A. Providing an incentive for efficient production by businesses
B. Rewarding producers who give consumers what they demand
C. Inducing businessmen to assume necessary business risks
D. Indicating to the government where wages are too low

5. How does a family's saving most clearly influence capital formation?
A. Saving means spending less; therefore family saving hurts the seller and thus discourages capital formation.
B. Savings are always invested by the saver; therefore an increase in family saving increases capital formation.
C. A family's savings are normally channeled through financial institutions to firms that usually use the savings for capital formation.
D. A family's savings lead to capital formation when they are used to pay off debts.
6. In a basically private enterprise economy, the main objective of businessmen is to
   A. provide good jobs for workers at reasonable wages
   B. secure government regulation that is favorable to business
   C. try to make profits
   D. provide highest-quality products

7. If a consumer is to exercise his freedom of choice wisely in a private enterprise economy,
   A. he should know whether a product was produced by a monopolist
   B. he must know where products are produced so that he may purchase those made locally if possible
   C. he should know what alternative goods and services are available as well as their qualities and prices
   D. he must have sufficient income to permit him to purchase whatever he chooses

8. Assume that the demand increases for a commodity produced by many competitive firms. The resulting rise in price of the commodity will usually lead to
   A. less being produced
   B. more being produced
   C. no change in production
   D. elimination of inefficient businesses from the market

9. If the supply of a commodity increases at the same time the demand for it falls, in the absence of countering forces its price will
   A. rise
   B. fall
   C. stay the same
   D. be indeterminate

10. In a private enterprise economy, the public interest is served even when individuals pursue their own private economic goals, because of
    A. the social responsibility of private businessmen
    B. careful planning and coordination of economic activity
    C. the operation of competitive markets
    D. individuals who understand what is in the public interest

11. Under a private enterprise economy the function of competition is to
    A. eliminate wasteful advertising
    B. eliminate interest and profits
    C. prevent large firms from driving small ones out of business
    D. force prices to the lowest level consistent with a reasonable profit
12. Of the following factors, which one is not likely to increase the demand for bricks?

A. An increase in the price of home construction
B. An increase in the incomes of potential home builders
C. A decrease in the price of mortar (i.e., a complementary commodity)
D. An increase in the price of lumber (i.e., a substitute for bricks)

13. Which of the following is the most basic economic objection to monopolies?

A. Prices set by monopolies are usually too low.
B. Monopolies exert disproportionate political power.
C. When a monopoly fails, the effect upon our economy is far more serious than when a competitive enterprise fails.
D. Economic resources will tend to be less efficiently allocated.

14. Which one of the following is untrue of the economy of the United States over the past fifty years?

A. Monopoly has increased to the point where it controls more than half of our production.
B. The average size of firms has grown substantially.
C. Small firms and large firms have both increased in number.
D. Improved transportation and communication have resulted in firms competing over larger markets.

15. When the federal government attempts to eliminate monopolies, it does so mainly in order to

A. ensure competition
B. prevent small firms from decreasing
C. expand public utilities
D. prevent the growth of big business

16. In large business corporations the common stockholders generally do not

A. own the business
B. receive a share of the profits
C. vote for the board of directors
D. manage the day-to-day business

17. The opportunity cost (or alternative cost) of a new public high school is the

A. money cost of the new building
B. other desirable economic goods that must be forgone to secure the school
C. necessary increase in the annual tax rate
D. cost of constructing it now as opposed to the cost of a new school at a later date
18. Government expenditures (federal, state, and local combined) now represent about what portion of the gross national product?

A. A tenth
B. A quarter
C. Half
D. Three-fourths

19. The bulk of federal government expenditure during the past few years has been for

A. foreign aid
B. the space program
C. special benefits for the poor and unemployed
D. national defense

20. In a basically private enterprise economy, which tax is likely to alter most the pattern of consumer choice among alternative products?

A. A general sales tax
B. A personal income tax
C. An excise tax on particular products
D. A tax on business profits

21. Specialization and exchange within a nation or between nations tend to have which of the following effects?

A. A larger total quantity of wanted goods and services can be produced.
B. The independence of both nations and individuals is increased.
C. The danger of economic instability is reduced.
D. All costs of production will rise, but not proportionately.

22. When a nation is running a deficit in its international balance of payments, it is always currently

A. exporting more goods than it is importing
B. importing more goods than it is exporting
C. paying more to other nations than others are paying to it
D. helping less fortunate nations to develop economically

23. Reduced U.S. tariffs would probably

A. lessen job opportunities in our export industries
B. injure most farmers
C. force some workers out of jobs in presently protected industries
D. lower the average U.S. standard of living
24. When obtained at various intervals, which one of the following four types of statistics will give the best measure of the economic growth of a nation?

A. Balance of payments
B. Index of stock prices
C. Total employment
D. Real income per capita

25. Annual gross national product is a measure of

A. the quantity of goods and services produced by private businesses
B. the value of a nation's total output of goods and services
C. the price level of goods and services sold
D. that part of production which is used by the government

26. The maximum gross national product a nation can produce in any one year is set by

A. its natural resources
B. families' demand for products
C. the amount of money people have to spend
D. its productive resources

27. Often an economy operates at less than full employment. This is most likely to occur

A. when total spending is inadequate
B. when there is inflation
C. when there is a scarcity of unskilled labor
D. whenever competition is intense

28. The total output of the economy is bought by which of the following three large groups of spenders?

A. Farmers, laborers, and housewives
B. Consumers, business firms, and governments
C. Investors, speculators, and bankers
D. Corporations, households, and capitalists

29. In recessions in the United States since World War II, which of the following has declined most sharply?

A. Family spending on consumer goods
B. Business firms' spending on plants, equipment, and inventories
C. Family spending on services
D. Government spending on goods and services

30. Increasing the government budgetary surplus or decreasing the deficit is particularly desirable in a period of

A. inflation
B. mass unemployment
C. depression
D. economic instability
31. The primary reason for the growth in federal debt over the last century has been government deficits caused by

A. wasteful domestic expenditures and social welfare payments
B. depressions and recessions
C. declining tax receipts
D. wars

32. An increase in the amount of money in the nation usually leads to higher prices, except

A. when there is widespread unemployment of men and machines
B. when labor unions are strong
C. when the nation's gold reserves are adequate
D. in periods of general prosperity

33. When commercial banks increase their loans to businesses and consumers, the result is

A. a decrease in the spending power of consumers and businesses
B. an increase in the nation's money supply
C. an increase in government control over the economy
D. an increase in the banks' excess reserves

34. In an inflationary period an appropriate policy for the Federal Reserve would be to

A. sell government securities on the open market
B. lower legal reserve requirements
C. decrease the discount rate
D. encourage member banks to increase their loans

35. Which of the following groups is typically hurt the most by inflation?

A. Farmers
B. Debtors
C. Government bondholders
D. Businessmen

36. Assume our economy is operating at full capacity. Of the following policies, which one would not be appropriate to increase our rate of economic growth?

A. Encouraging an increase of private savings and investment in capital goods and equipment
B. Improving the skill and knowledge of people through increased education
C. Developing technology and managerial ability
D. Encouraging an increase in personal consumption

37. If total demand declines relative to the productive capacity of the economy,

A. the growth rate is likely to slow down, at least temporarily
B. inflation is likely to occur
C. a large government budgetary surplus is likely to occur
D. employment is likely to increase
38. The average per capita income of the two-thirds of the world's population in the so-called underdeveloped nations is
   A. less than one-tenth of ours
   B. about one-quarter of ours
   C. about one-half of ours
   D. about three-fourths of ours

59. The most general cause of low individual incomes in the United States is
   A. lack of valuable productive services to sell
   B. unwillingness to work
   C. automation
   D. discrimination against nonunion employees

40. In the United States during the present century
   A. inequality in personal incomes has been largely eliminated
   B. the rich have become richer and the poor poorer
   C. average real family income after taxes has remained generally unchanged
   D. income inequality has been somewhat reduced

41. High wages in the United States are based on the high productivity of U.S. labor. All of the following contribute to this high productivity except
   A. the skill and work habits of U.S. labor
   B. our accumulation of a large stock of capital goods
   C. our technological and managerial advances
   D. tariff protection from competition of low-paid foreign workers

42. Both featherbedding by unions and monopolistic practices by employers are likely to result in
   A. an increase in average labor productivity for the nation as a whole
   B. a less efficient use of resources
   C. less labor being used in the industry affected
   D. a raising of average real wages in the nation as a whole

43. Which of the following has been the most obvious result of our governmental policy toward agriculture?
   A. The average farm income has been raised almost to the level of the average nonfarm income.
   B. Large surpluses of farm commodities have been accumulated by the government.
   C. Capital and labor have turned to agriculture to take advantage of guaranteed high prices and profits.
   D. The family farm has been almost completely replaced by the large corporate farm.

44. Measures to increase economic security against unemployment will tend to increase economic efficiency if
   A. one cannot transfer to better-paying jobs offered by other employers, to be eligible for benefits
   B. the security the measure provides tends to reduce one's incentive to produce
   C. the costs of the measures are borne equally by firms regardless of their record for causing economic insecurity
   D. the average output per worker is increased as a result of improved economic security
GROSS NATIONAL PRODUCT, PRICES, AND UNEMPLOYMENT, 1930 - PRESENT

GROSS NATIONAL PRODUCT

CONSUMER PRICE INDEX
(1957-59 = 100)

UNEMPLOYMENT
(Percent of civilian labor force)

Source: Economic Report of the President, 1964
45. In the United States, in contrast to the U.S.S.R. (Russia),

A. the problem of scarcity has been eliminated  
B. consumer spending largely determines what commodities are produced  
C. incomes are unequally distributed  
D. government plays an insignificant role in economic life

46. Which of the following characterizes the economic system in the U.S.S.R.?

A. The average standard of living is declining.  
B. The level of investment is based entirely on military needs.  
C. Economic growth depends on the diversion of resources from consumption to investment.  
D. Central planning has eliminated all need for prices on goods and services.

47. Compared with the U.S. economy, the democratic socialist economies of the United Kingdom, the Scandinavian countries, and India

A. are considerably more productive  
B. have more government ownership and control  
C. demonstrate clearly that only private enterprise is compatible with democracy  
D. have been short-lived, for in two of the cases socialism has been abandoned

48. We desire a growing economy in which the price level is stable and employment reasonably high. The charts on page 10 show that we have most fully approximated this ideal between

A. 1937 and 1938  
B. 1940 and 1941  
C. 1945 and 1947  
D. 1955 and 1956

49. Judging from your inspection of the three charts, which of the following seems to be the most serious economic problem of the immediate postwar period (1946-48)?

A. Decline in the output of the economy  
B. Inflation  
C. Unemployment  
D. Declining output per worker

50. On the charts, note the behavior of the economy between 1950 and 1952. Which of the following statements most correctly analyzes the situation and states the most appropriate monetary and fiscal policies for these years?

A. The GNP is moving to an all-time high and prices are stable; no change in policy is called for.  
B. Unemployment is rising; a budgetary deficit and/or an easy money policy is called for.  
C. It is a period of inflation; a budgetary surplus and/or a tight money policy is called for.  
D. Employment is falling and prices are rising; therefore a budgetary deficit and/or a tight money policy is called for.
APPENDIX C

QUESTIONNAIRE
A SURVEY OF ECONOMIC UNDERSTANDING

To the Student:

This survey is a part of a study being conducted in selected Ohio public high schools. Your cooperation in this study will be appreciated. There are two parts to the survey. The first part (personal data sheet below) is a set of questions about yourself. Please answer all the questions. The second part is a Test of Economic Understanding. Answer all the questions you can by marking what you think is the best choice.

PERSONAL DATA SHEET

Name ________________________________________________ Boy __ Girl __

Have you ever taken a course in economics? Do not answer "Yes" for courses taken in consumer economics or home economics.

___ Yes
___ No

Have you ever taken a general business course?

___ Yes
___ No

What are your educational plans after high school?

___ Four-year college or university
___ Junior-community college or technical school
___ No further formal education planned at this time
___ Other (please specify) __________________________

What is your father's (or guardian's) occupation? ________
Have you ever had paid work experience?

___ Yes
___ No

For a "Yes" response to the question immediately above, please complete the following: (If self-employed, such as baby-sitting or caring for lawns, please write "self" for the name of the employer.)

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APPENDIX D

COMMITTEE FOR MEASUREMENT OF ECONOMIC UNDERSTANDING
COMMITTEE FOR MEASUREMENT OF ECONOMIC UNDERSTANDING

John M. Stalnaker, Chairman; President, National Merit Scholarship Corporation

Albert Alexander, Executive Secretary, New York Council on Economic Education

George Leland Back, Maurice Falk Professor of Economics and Social Science, Graduate School of Industrial Administration, Carnegie Institute of Technology

Arno A. Bellack, Professor of Education, Teachers College, Columbia University

Bernard Berelson, Vice-President, The Population Council, New York City

Edgar O. Edwards, Chairman, Department of Economics, Rice University

Joseph A. Kershaw, Provost, Williams College

Ben W. Lewis, Chairman, Department of Economics, Oberlin College

Lewis E. Wagner, Director, Bureau of Business and Economic Research, University of Iowa

CONSULTANTS TO THE COMMITTEE

Laurence E. Leamer, Professor of Economics, Harpur College

Ralph W. Tyler, Director, Center for Advanced Study in the Behavioral Sciences
APPENDIX E

NUMERIC CODE FOR PREPARING
DATA FOR PROCESSING
NUMERIC CODE FOR PREPARING DATA FOR PROCESSING

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APPENDIX F

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RAW TEST SCORES
FREQUENCY DISTRIBUTION OF RAW TEST SCORES

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