DEVELOPMENT OF SELECTED MARKETING COMPETENCIES THROUGH UTILIZATION OF TWO METHODS OF TEACHING IN THE SECONDARY SCHOOL

By

Kenneth L. Rowe

AN ABSTRACT

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY
(Business and Distributive Education)

College of Education

1969

ABSTRACT

DEVELOPMENT OF SELECTED MARKETING COMPETENCIES THROUGH UTILIZATION OF TWO METHODS OF TEACHING IN THE SECONDARY SCHOOL

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Purpose of the Study

The purpose of this study was to compare the achievement of eleventh grade high school distributive education students who received instruction through the "project method" with that of twelfth grade distributive education students who received instruction through the "cooperative method." The study also included a descriptive analysis and a comparison of student achievement of twelfth grade distributive education students who received instruction through the "project method" and twelfth grade distributive education students who received instruction through the "cooperative method." To more accurately compare the effectiveness of the two methods of instruction, the variables of the socio-economic background, age, sex of the student, and prior achievement of the students were also considered.

Procedures

The sample for the study consisted of twelve hundred students in eleven Arizona high schools. Each school contained four groups of students included in the study: an eleventh grade "project method" distributive education class, an eleventh grade control non-distributive education group, a twelfth grade "cooperative method" distributive education class, and a twelfth grade control (non-distributive education) group. Three of these high schools included an additional class, a twelfth grade "project method" distributive education class.

The types of data gathered were: (1) socio-economic status information about the school communities and the students in the study; (2) reading scores as a measure of students' prior achievement; (3) scores on the tests of economic understanding, forms A and B (pre-tests and post-tests); (4) the test of sales aptitude (test for measuring knowledge of basic principles of selling) and the sales terms tests (pre-test and post-test); and, (5) personal data on all the students. The statistical procedure used in the analysis of the data were correlations analyses for analysis of covariance.

Major Findings

1. There was no statistically significant correlation between students' socio-economic status--students' age--students' sex and scores attained on standardized tests measuring economic understanding and sales comprehension.

2. Scores of the control groups and the respective distributive education groups were not significantly different on the tests of sales comprehension and economic understanding. There appeared to be a significant difference in the scores of the twelfth grade cooperative distributive education students and the twelfth grade project distributive education students on the test of economic understanding.

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Central High School
Charlene Lyons

East High School
Roxie Roels

Palo Verde High School
William Antrim

Pueblo High School
Tony Fuscaldo

Safford High School
Zelma Hawthorne

Washington High School
Hallie Jimerson

West High School
Patricia Dugan

Yuma High School
Tom Daniel

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TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

TABLE PAGE

CHAPTER I

THE PROBLEM OF THE STUDY

Education, historically speaking, has never given to vocational education so much time nor space on the printed page as has been the case in the decade of the sixties. Not in its history has vocational education merited so much federal and state legislative attention or been exposed to such opportunities for growth and development. Never before in history have vocational educators been faced with the range and scope of challenges that are reflected in current legislation affecting vocational education.

In 1961, President John F. Kennedy appointed a Panel of Consultants to study the vocational needs of this country. The Panel's report suggested several changes in existing programs in vocational education and recommended additional programs. The Panel recognized that the present programs as designed were not "doing the job." Not enough people were benefiting from existing programs. Programs were too narrow in scope and content. Foremost among the Panel's recommendations was "vocational education programs would be

made available to more students in the secondary schools."[1] As a result of the Panel's report, The Vocational Education Act of 1963 was passed.

I. INTRODUCTION

Source of the problem. One of the most dramatic changes in the development of programming of education in the field of marketing and distribution was envisioned as a result of the federal Vocational Education Act of 1963. Specifically, a recommendation was made that would avail instruction to more students by the establishment of in-school training programs in marketing and distribution which would operate in addition to the existing cooperative occupational experience programs. Prior to the passage of this Act, only employed workers sixteen years or older could receive training in distributive education under federal statutes. The 1963 Act provided great latitude for program development in the field of marketing and distribution. Section 10(d) of the Act reads as follows:

> Any amounts allotted . . . for distributive occupations may be used for vocational education for any

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[1] U. S. Department of Health, Education, and Welfare, Office of Education, Education for a Changing World of Work, OE 80021 (Washington: Government Printing Office, 1963), p. 226.

> person over fourteen years of age who has entered upon or is preparing to enter upon such an occupation, and such education need not be provided in part-time or evening schools.[2]

John Beaumont, Director of the Distributive Education Branch of the United States Office of Education, addressed a National Clinic on Distributive Education in October of 1963. In his address, Mr. Beaumont made reference to the impact of the report of the Panel of Consultants when he said,

> This report and the proposed legislation challenge distributive educators to think first of people in organizing programs for the distributive occupations . . . The major concern in the past history of distributive education has been with an extension program. Instruction has been limited to employed persons . . . There is, however, this emerging opportunity to consider the needs of people in the developing occupational mix. Further, there is the added challenge to prepare individuals for the initial job. In this context, employment would follow education, rather than as at present precede education.[3]

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[2]Edwin L. Nelson, "Project Training--Its Impact on Program Development," Division of Vocational and Technical Education, U. S. Office of Education, prepared for the 1967 National Seminar in Distributive Education. In Readings in Distributive Education, Peter G. Haines, et al. (East Lansing: Department of Secondary Education and Curriculum, Michigan State University, 1968), p. 7.

[3]John A. Beaumont, "The Emerging Program of Distributive Education," (address before the National Clinic on Distributive Education, Washington, D. C., October 14, 1963), pp. 7-8. (USOE Mimeo Printing.)

The "proposed legislation" referred to by Mr. Beaumont became the Vocational Education Act of 1963 (Public Law 88-210).

Until the passage of the Vocational Education Act of 1963, distributive education and the cooperative method were synonomous as far as the secondary education program was concerned. Currently, distributive educators are being asked to pursue other methods of instruction and yet preserve the vocational integrity of the distributive education program. Mary V. Marks, USOE Program Specialist in Distributive Education, suggested how instruction could be provided in this new program concept. She stated:

> With the evidence mounting that learning which is to be assessed by performance is best achieved through participation activities, there is ample justification for us to continue to require these in the methodology of distributive education. But let us not be limited to cooperative training on a school-work schedule as we now know it. Let us find other ways to provide for experiences to develop and consolidate employment qualifications at entry and career levels.[4]

In the same presentation, Marks made first mention of utilization of another method of instruction and called it the "project method."

> In addition to the cooperative method of training, participation activities . . . also include group or

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[4]Mary V. Marks, "The Vocational Approach in Education for Distribution," (address before the National Clinic on Distributive Education, Washington, D. C., October, 1963), p. 3. (USOE Mimeo Printing.)

> individual projects which may be used by the instructor to encourage vocationally-centered learning. These may take place in a specially equipped classroom, in a field assignment of narrow scope, and in situations simulating experiences of varying degrees of sophistication related to employment opportunities.[5]

Evidence continued to mount that the "project method" would be the method utilized by distributive educators to put into practice the recommendations outlined in the Act of 1963. At a meeting of the National Association of Distributive Education Teachers in December 1965, Marks reported that the "project method" as a teaching device "seeks the same learning outcomes as does the cooperative method . . ."[6] She concluded in 1967 that "the goals of project and cooperative training are the same. No matter how instruction is organized, when it is identified as vocational distributive education, there are no differences in the results desired."[7]

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[5] Ibid., pp. 4-5.

[6] Mary V. Marks, "The Project Method in Action," (address before the National Association of Distributive Education Teachers, American Vocational Association Convention, Miami Beach, Florida, December 9, 1965), p. 2. (USOE Mimeo.)

[7] Mary V. Marks, "Similarities and Differences in Project and Cooperative Training," Division of Vocational & Technical Education, U. S. Office of Education, prepared for the 1967 National Seminar in Distributive Teacher Education. In Readings in Distributive Education, Peter G. Haines, et al. (East Lansing: Department of Secondary Education and Curriculum, Michigan State University, 1968), p. 11.

The United States Office of Education gave further endorsement of the "project method" when in 1967 Edwin Nelson, Distributive Education Specialist, Division of Vocational and Technical Education, United States Office of Education, said,

> Project training in distributive education represents a promising technique in preparing persons for employment in distribution and marketing. Joining cooperative training as a principal method in achieving vocational purposes, project training provides the needed flexibility in program design--needed if distributive education is to make a greater impact upon the manpower requirements in the extensive field of distribution.[8]

The passage of the Vocational Education Act of 1963 freed distributive educators from the limitations for program expansion imposed by the "cooperative method." No longer would it be necessary to depend upon required daily on-the-job training in order to provide instruction for the field of marketing and distribution. It was believed that employment of the "project method" would:

1. allow the immature student a longer period of time to develop under a controlled situation.

2. offer pre-employment training for the student whose physical development or appearance makes on-the-job training during high school inappropriate

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[8]Nelson, op. cit., p. 5.

3. allow students of lesser academic ability a longer period of time to develop under a controlled situation

4. provide instruction for those students who do not meet employment qualifications because of age

5. provide instruction for an unlimited number of students in an in-school program in communities that are feeling a strain to provide adequate on-the-job training stations for their cooperative students

6. allow for the student who has a definite career interest in the field of marketing and distribution, but desires to participate in other campus activities and also perhaps the need to carry a heavy course load. He cannot schedule a course in distributive education not requiring the block of time for on-the-job training as a part of his school schedule.

II. STATEMENT OF THE PROBLEM

The experts agree that students should be equally as employable upon completion of distributive education programs employing the "project method" as those who enroll in classes employing the "cooperative method." Therefore, this study is both a descriptive analysis as well as a comparison of

student achievement between distributive education students who received instruction through the "project method" and those who received instruction through the "cooperative method." The study includes eleventh and twelfth grade distributive education students.

The prime research hypothesis under test was: the results of the "project method" of instruction for preparatory distributive education will not be materially different for selected outcomes[9] from those now being obtained from the "cooperative method" of instruction.

The problem was specified by the following questions:

1. Are the results on certain standardized tests in sales comprehension significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

2. Are the results on certain standardized tests in economic understanding significantly different for eleventh grade distributive education students who have been taught

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[9]The study attempted to measure competency development only in the areas of sales aptitudes, sales terms, and economic understandings. The two methods of instruction are being compared only in these competency areas. It is these "selected outcomes" that the research was concerned about.

by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

3. Are the results on certain standardized tests in sales comprehension and economic understanding significantly different for twelfth grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

4. Of what importance is students' level of prior achievement in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

5. Of what importance are the socio-economic status, age, and sex of students in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

6. Are the results on certain standardized tests in sales comprehension significantly different for eleventh and twelfth grade distributive education students who are enrolled or have completed a course in marketing?

7. Are the results on certain standardized tests in economic understanding significantly different for eleventh

or twelfth graders who are enrolled in or have completed a course in economics?

Importance of the study. Nelson in his impact paper of 1967 pointed out that:

> Undoubtedly the import of project training relates to the very fundamental fact that through this method more people can be served. A balance between supply and demand is suggested in the foregoing discussion. It is our responsibility to place in the pipeline sufficient numbers who will fortify quality performance in the marketing process. At the same time, an expanded distributive education program will also make a contribution to the alleviation of certain social, economic, and education problems facing this nation.[10]

Nelson was talking about both quantity and quality when he referred to the expanding program. It is, therefore, imperative that project training be subjected to some form of analysis and evaluation before it comes under common usage. This study not only analyzes, but also compares the outcomes of student learnings taught by the "project method" with those taught by the "cooperative method."

Distributive education programs in the past have, through utilization of the "cooperative method" of instruction, striven for student employability as their standard of measurement. Instructional materials and methodology

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[10]Nelson, loc. cit.

were planned with this goal in mind. Personnel in the field looked with a certain degree of satisfaction and success upon follow-up studies which reflected statistics showing a high degree of successful employment on the part of graduates of distributive education programs. If the "project method" is going to be utilized successfully, then it must achieve the same results that have been achieved by the "cooperative method." Because the "project method" is relatively new to distributive education, many have had doubts as to whether it can achieve these same results.[11] Before any new method of teaching can gain wide acceptance, it should be tested and evaluated as to its effectiveness and feasibility as an educational tool for the classroom.

School administrators in Arizona public high schools have generally accepted the "project method" of instruction in distributive education largely on faith and belief in the recommendations of the State Department of Vocational Education and their own teacher-coordinator. They have in turn allowed their distributive education programs to expand, but more or less on a pilot program basis hoping for

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[11]From discussions at the 1967 National Seminar in Distributive Teacher Education conducted at Michigan State University and Arizona State University; the author was the co-director.

further evidence of the success of the method. They, too, know that the only real test of learning is performance.[12] The immediate feedback provided through the "cooperative method" has conditioned school administrators to hope for tangible evidence of this same vocational competence through any other instructional method employed. They are not alone in this concern. The Arizona State Department of Vocational Education, local district teacher-coordinators, and this researcher as a teacher-educator, would join the public school administrators in searching for more concrete evidence of learning outcomes before allowing distributive education programs in Arizona to expand further.

With the urging of the State Department of Vocational Education in Arizona and the concerns of other affected personnel, the researcher investigated the feelings of the public school administrators in cooperating in such a study. They were eager to endorse the idea and promised to cooperate in the testing and to provide other information as it was needed.

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[12]Most learning theory experts would agree that immediate application of theory reinforces the theory learned and more often than not results in a change of behavior in the learner. It also provides a chance for immediate evaluation by the observer to determine whether the theory has been learned correctly or not and whether the learner has learned it adequately to practice it in a realistic situation and, thus, exhibit acceptance of the theory by continued practice. The "cooperative method" provides for this immediate application.

It is believed that the findings of this study might contribute not only to a better understanding of the merits of the "project method" of instruction, but also provide information concerning the relationships between distributive education students and non-distributive education students.

The question of replication. The Ferguson study done in ten Michigan high schools was the first formal research attempt, since the passage of the Vocational Education Act of 1963, to compare and analyze the two methods of instruction in distributive education.[13] Though the results may be considered to be valid in those ten high schools in Michigan, distributive educators want more evidence to either support or differ with the findings of the Ferguson study before they react to his conclusions.

The purpose of this study is not to replicate exactly the Ferguson study, but rather to add to the body of knowledge

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[13]Edward T. Ferguson, Jr., "A Comparison of the Effectiveness of the Project and Cooperative Methods of Instruction on Selected Competencies in Distributive Education at the Secondary Level" (unpublished Doctoral dissertation, Michigan State University, East Lansing, 1967); and Edward T. Ferguson, Jr., "A Selected and Annotated Bibliography Related to Cooperative and Project Methods in Distributive Education" (a document published by the Research and Development Program in Vocational-Technical Education as a result of the Ferguson study, 1967).

which resulted from the Ferguson study. Ferguson tested 733 students in ten Michigan high schools (about 5 per cent of the distributive education enrollments). The researcher in this study tested twelve hundred students in eleven Arizona high schools (about 33 per cent of the distributive education enrollments). The same standardized tests to measure competency development in the areas of sales and economics were used in both studies. This study differs from the Ferguson study in the following areas:

1. The period of time between the pre-test and post-test was twice as long.

2. This study includes a sample which is larger in number of students and more representative of various school sizes, socio-economic levels, and geographic locations in the state.

3. All schools included in this study have offered distributive education at both the junior and senior levels for a minimum of two years. The juniors were taught via the "project method." (Some Michigan schools were first-year programs.)

4. Three high schools included in this study offer classes at the twelfth grade level utilizing the "project method" and in the same school, classes taught by the traditional "cooperative method." Therefore, in these

three schools, the researcher can measure seniors against seniors comparing the two methods. (Not possible in the Ferguson study.)

Basic assumptions. Underlying the study were the following basic assumptions:

1. that the competencies of selling and economic understanding can be indirectly measured through student performance on standardized tests

2. that student performance on these tests represents a valid index of the effectiveness of some areas of instruction in distributive education

3. that scores on reading achievement tests are valid indications of students' prior achievement

4. that the effects of maturation can be statistically controlled for by the inclusion of two control groups, one for each grade level

5. that socio-economic data gathered from students and school administrators are accurate representations of the socio-economic status of the students and schools included in the study

6. that each of the teachers performed with equal effectiveness in teaching by the two methods of instruction.

7. that the content taught and the amount of emphasis placed on certain aspects of the content is similar among schools included in the study.

Delimitations. The delimiting factors established for this study were as follows:

1. The data collected were drawn from eleven high schools located in the State of Arizona. This was 33 per cent of schools having distributive education.

2. Students enroll in the distributive education classes on the basis of an expressed interest in a career in the field of marketing and distribution. (Those registering for the twelfth grade "cooperative method" classes are screened to be sure they can be placed in on-the-job situations since this is a requirement of the program.)

3. Measures of prior academic achievement of students were limited to scores achieved on standard reading achievement tests.

4. Measures of student achievement for selected competencies were limited to scores on tests of the competencies of economic understanding and sales comprehension.

5. The data accepted for analysis were limited to the scores on standardized tests and socio-economic indices

gathered by student information data sheets and interviews with school administrators.

III. DEFINITION OF TERMS

It is important that agreement is reached on the definition of certain terms used throughout this study. The meanings intended are as follows:

Distributive occupation. ". . . an occupation that is followed by proprietors, managers, or employees engaged primarily in marketing or merchandising of goods or services. These occupations are commonly found in various (kinds of) business establishments such as retailing, wholesaling, manufacturing, storing, transporting, financing, and risk-bearing."[14]

Competency. Skill, knowledge, or understanding necessary for the successful performance of those tasks which compose the job.

Cooperative method. The coordination of classroom instruction with a series of on-the-job learning

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[14]U. S. Department of Health, Education, and Welfare, Office of Education, "Rules and Regulations," Administration of Vocational Education, Bulletin No. 1 (Washington: Government Printing Office, 1966), p. 44.

experiences related to each student's occupational interest.

Cooperative plan. "Organizational pattern for preparatory instruction in which regularly scheduled part-time employment gives students an opportunity to experience theory in practice while developing competencies through training on a job related to their distributive occupational objectives."[15]

Project. "A significant, practical unit of activity having educational value and aimed at one or more definite goals of understanding; involves investigation and solution of problems and, frequently, the use and manipulation of physical materials; planned and carried to completion by the pupils and teacher in a natural, 'real-life' manner."[16]

Project method. "Coordination of classroom instruction with a series of individually designed learning

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[15]U. S. Department of Health, Education, and Welfare, Office of Education, Distributive Education in the High School (Washington: U.S. Office of Education, 1965), p. 92.

[16]Carter V. Good, (ed.), Dictionary of Education (New York: McGraw-Hill Book Company, 1959), p. 314.

activities or projects related to each student's occupational objective."[17]

Project plan. "Organizational pattern for preparatory instruction which involves a regularly scheduled series of individually designed learning activities that give students an opportunity to apply theory in practice while developing competencies through projects related to their distributive occupational objectives."[18]

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[17]U. S. Department of Health, Education, and Welfare, Distributive Education in the High School, op. cit., p. 93.

[18]Ibid.

CHAPTER II

REVIEW OF RELATED LITERATURE

For the purposes of this study, the related literature was examined from two points of view: (1) other research studies done where students were tested on similar competency areas, and (2) literature directly related to the "project method" of instruction and its application to distributive education.

In general, the review indicated that extensive material exists emphasizing the need for educational programs to prepare young people for employment in the field of marketing and distribution. However, comparatively little research has been done to measure the competency development in the various areas that make up the field or the methodology utilized to teach the content.

I. RESEARCH MEASURING COMPETENCY DEVELOPMENT

The researcher was especially interested in finding related research which utilized the same or similar test instruments as being utilized in this research study.

Only one was discovered utilizing the same test instrument for measuring marketing competency development as was used in this study. In fact, it was the only study found that attempted to measure what was being taught in the marketing competency area in the distributive education classroom. This was the Ferguson study done at Michigan State University in 1967.[1] As one reflects historically on the structure of the distributive education program at the high school level, one will quickly recognize that it was centered entirely around the "cooperative method." This meant that in order for a student to be enrolled in the program, he had to be employed. This employability factor seemed to indicate adequate competency development. Personnel in the field of distributive education believed that the measurement of learning was performance and if a student could adequately perform on the job, then apparently the content being taught and the methodology were also adequate. Therefore, it was thought that there was no need for research to examine what was being taught in the classroom.

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[1]Edward T. Ferguson, Jr., "A Comparison of the Effectiveness of the Project and Cooperative Methods of Instruction on Selected Competencies in Distributive Education at the Secondary Level" (unpublished Doctoral dissertation, Michigan State University, East Lansing, 1967.)

In examining related studies in the area of economic understanding, it was noted that the same or similar tests were used in several studies. However, not all of them pertained to distributive education programs. In all cases, in the studies of economic understandings and in the Ferguson study as well, the findings are characterized by certain influential factors which were also being examined in this study. The factors include socio-economic background as reflected by parental occupations, scholastic ability, subjects completed in school, sex of the student, and grade level.

Socio-economic factor. Most related studies indicate that socio-economic background and occupation of parents bear no relationship to the economic understanding of the students as measured by achievement tests. Clark[2] in 1960 and Ousdigian[3] in 1962, conducted similar studies

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[2]Marvin A. Clark, "Economic Understandings of Tenth Grade Students; A Comparison of Students Who Have Taken General Business With Those Who Have Not Taken the Course" (unpublished Master's thesis, University of Minnesota, Minneapolis, 1960).

[3]Theodore O. Ousdigian, "Economic Understandings of Ninth Grade Students: A Comparison of Students' Knowledge of Fundamental Economic Concepts Before and After a Course in Basic Business" (unpublished Master's thesis, University of Minnesota, Minneapolis, 1962).

using the Standard Achievement Test in Economic Understandings for Secondary Schools developed by E. C. Alft. Clark administered the test to a group of tenth grade students, while Ousdigian used the pre-test and post-test technique with ninth graders. Both reported that parental occupation was unrelated to the economic understanding of the students. Marmas, in a 1961 study utilizing college students, reported similar findings.[4] His study utilized an Economic Topics Test developed by John Linn[5] and William Mason.[6] Among the factors that he reported as not being significantly related to achievement in economics were sex and father's occupation. Vivian[7] administered the Test of Economic Understanding, Form B using a pre-test post-test design. He too found that socio-economic

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[4]James Gust Marmas, "Teacher Preparation in Economics at California State Colleges" (unpublished Doctoral dissertation, Leland Stanford University, Palo Alto, 1961).

[5]John Howard Linn, "An Analysis of the Teaching of Certain Economic Topics in the California Public Junior Colleges" (unpublished Doctoral dissertation, University of Southern California, Los Angeles, 1959).

[6]William John Mason, "Studies in Economic Education in Iowa, Part II: A Survey of the Status of Economic Education in Social Studies and Business Education in Iowa Accredited Public High Schools" (unpublished Doctoral dissertation, State University of Iowa, Iowa City, 1949.

[7]Neal Edward Vivian, "Economic Understanding of Distributive Education Students" (unpublished Doctoral dissertation, University of Minnesota, Minneapolis, 1966).

background as measured by parental occupation is not significantly related to the level of economic understanding of the student. Vivian administered the test to 5,047 seniors in selected Indiana high schools offering distributive education. Ferguson[8] administered the same test using Form A for the pre-test and Form B for the post-test. Unlike Vivian's study which measured student growth for an entire school year, the Ferguson study measured student growth over a period of one semester. Ferguson tested students in ten Michigan high schools where he compared distributive education students enrolled in eleventh and twelfth grade classes with students not enrolled in distributive education. He found no significant difference in student's performance on the standardized tests in economic understanding or sales comprehension in relation to the socio-economic status of the parents. Therefore, all studies examined find no relationship between socio-economic background and occupation of parents and the economic understanding of students.

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[8]Edward T. Ferguson, Jr., "A Comparison of the Effectiveness of the Project and Cooperative Methods of Instruction on Selected Competencies in Distributive Education at the Secondary Level" (unpublished Doctoral dissertation, Michigan State University, East Lansing, 1967).

Scholastic ability. Results of all research examined indicate that the scholastic ability or the student's prior achievement test scores do indeed have a relationship to the student's economic understanding. Different measures of scholastic ability were utilized by researchers. Clark and Ousdigian used scores on general intelligence tests; Marmas used grade point averages. Vivian used rank in the senior class as his means of classification due to the variety of different intelligence tests used in his selected schools. Ferguson believed that use of a reading comprehension test was an adequate means of measuring student's prior achievement and, therefore, used the STEP-Reading Test. Vivian reported that scholastic ability of the students as indicated by class rank is significantly related to the level of their economic understanding. Ferguson found a positive correlation between student prior achievement, as inferred from test scores achieved on the STEP-Reading Test, and scores students attain on standardized achievement tests of economic understanding and sales comprehension.

Subjects completed in school. Researchers are not conclusive in their evidence that other instructional

subject matter is related to economic understandings. Breneman[9] and Tidman[10] both reported no evidence that pupils electing economics and those required to take it made significantly different scores on the test. Madsen[11] reported no significant differences in achievement between the students who had taken classes with economic content and those students who had not taken them. Linn, in his study found that college students who had not had any economics in high school scored significantly better (at the 1 per cent level) than the students who had had some previous high school economics training. Vivian reports that formal instruction in economics and 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.

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[9]Everett W. Breneman, "An Item Analysis of the Iowa 1936 Every-Pupil Test in Economics" (unpublished Master's thesis, State University of Iowa, Iowa City, 1937).

[10]Raymond Joseph Tidman, "Analysis of the Data Secured from the Every-Pupil Test in Economics" (unpublished Master's thesis, State University of Iowa, Iowa City, 1932).

[11]Gibb Russell Madsen, "Economic Concepts and Understandings of Senior High School Students" (unpublished Doctoral dissertation, University of Utah, Salt Lake City, 1961).

Swenson[12] used the test instrument developed by Linn and Mason in 180 students in teacher education at Chico State College in California. He reported that the following factors failed to show any significant relationship to economic literacy:

1. high school economics and business courses
2. college economics and business courses
3. college upper division social science courses, excluding economics
4. business experience.

Sex of the student and grade level. The findings of several studies concerning the sex of the student as a factor in achievement of economic understandings were inconsistent. As many reported male students to be superior as the opposite. Tidman, Peterson,[13] and Bucknell,[14] reported male students as being superior to female students in

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[12]Daniel Hart Swenson, "A Comparative Study of the Economic Literacy and the Economic and Business Education of Prospective Secondary and Elementary School Teachers" (unpublished Master's thesis, Chico State College, Chico, California, 1962).

[13]Rudolph Peterson, "Some Aspects of the College Course in the Principles of Economics, Its Objectives, Content and Achievement," The Journal of Political Economy, 34:7420762, December, 1926.

[14]LeRoy Bucknell, "The Status of Economics in Certain Junior Colleges of California" (unpublished Master's thesis, University of Southern California, Los Angeles, 1941).

economic undeestandings. On the other hand, Frost,[15] Larson, [16] and Linn reported females to be superior. The Marmas study reported little or no difference. Ferguson reported no significant difference.

Most studies reported test results in favor of older or more advanced students. Studies by Marmas, Linn and Morrman, and Tidman and Breneman, reported higher results for high school seniors when compared to their underclassmen, but the differences were not large enough to be statistically significant. Ferguson reported that seniors scored higher than juniors on the test of economic understanding, but not statistically significantly higher.

To summarize briefly, it appears that in examining research related to the measuring of competency development in scholastic ability or prior achievement, age and grade level seem to be the only consistent factors that affect student achievement. There is no evidence to show that

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[15]Anita Frost, "Students' Interest in High School Economics Prior to Taking the Course as Shown in Response to Statements and Questions" (unpublished Master's thesis, College of the City of New York, New York City, 1933).

[16]Etta Lillian Larson, "Results from the Use of an Objective Test and a Questionnaire in a Senior High School Course in Economics" (unpublished Master's thesis, University of Chicago, Chicago, 1936).

factors such as parental occupation, sex of the student, and related educational programs affect student achievement.

II. FOLLOW-UP STUDIES IN DISTRIBUTIVE EDUCATION

Distributive education programs almost exclusively reflect findings from follow-up studies of students rather than experimental research measuring competency growth. In examining the literature, two such follow-up studies are somewhat related to the problem being investigated in this study. Zancanella attempted to determine whether or not there were important differences between employees in distributive occupations who participated in a secondary school distributive education cooperative program and those who did not.[17] His population included ten cities from the states of Colorado, Nebraska, South Dakota, and Wyoming, involving fifty-eight high school distributive education program graduates, and eight-six non-distributive education program graduates, who were both employed in distributive occupations. There seemed to be very little conclusive evidence in his study. The sample was too small to be representative of such an

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[17]James A. Zancanella, "An Exploratory Study of the Effect of the Secondary School Cooperative Part-Time Training Program in the Distributive Education Occupations on Selected Employment Factors" (unpublished Doctoral dissertation, Colorado State College, Greeley, 1965.

extensive geographical area. He did point out that the non-distributive education program graduates included in the study had a higher grade point average than did the distributive education students which in itself might influence their success on the job. The primary significant difference discovered was that a majority of the distributive education program employees planned to continue in a distributive occupation as compared to the non-distributive education group.

A study by Ralph Mason in 1961 examined the related classroom instruction and its value to the future success of the distributive education student.[18] His hypotheses and conclusions were as follows:

1. Major hypothesis. Distributive education related instruction in the high school classroom and in the cooperating business establishments prepares student learners for occupational growth and advancement in the distributive occupations.

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[18]Ralph A. Mason, "An Analysis of Related Instruction for Cooperative Part-Time Programs in Distributive Education in Illinois" (unpublished Doctoral dissertation, University of Illinois, Urbana, 1961).

A. Conclusions

1. Growth and advancement on the job as the result of training was not pronounced when comparing the distributive education graduates and the non-distributive education graduates.

2. Employer opinion, however, gave stronger indication of growth and advancement of the distributive education graduates when compared to the non-distributive education graduates.

II. Sub-hypothesis a. The basic and specific information learned in distributive education has been useful in the distributive education graduate's occupational progress.

A. Conclusions

1. Supported through employer opinion and through the returns from graduate respondents indicating the distributive education graduates were relatively more in the top management bracket than the non-distributive education graduates and indicating the distributive education graduates were prepared for

advanced positions rather than for entry positions.

III. Sub-hypothesis b. Teacher-coordinators plan related instruction for the occupational growth and advancement of graduates in the distributive occupations.

A. Conclusion

1. Not fully supported by the fact there was not a precise fit between what business wants from training and what teacher-coordinators do in providing the training.

III. THE PROJECT METHOD IN DISTRIBUTIVE EDUCATION

Ferguson provides an excellent review of the historical development of the "project method" in education in general and its acceptance and utilization by distributive educators. He points out that the "project method" is certainly not new to education and was mentioned in the field of distributive education as early as 1939 by A. L. Demond, who suggested that projects be used to complement cooperative training and "to provide a substitute for it where it has been found impractical."[19]

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[19]A. L. Demond, "Practical Projects for Courses in Distributive Education," National Business Education Quarterly, VII (May, 1939), 30-34.

The Ferguson Study. Because this study is a partial replication of the Ferguson study, there is a very close relationship in the problem being investigated in both studies. Therefore, in this chapter concerning related research and related literature it is necessary to examine the problem that was being investigated in the Ferguson study and his findings. His investigation intended to test the hypothesis that: the eleventh grade "project method" of instruction for preparatory distributive education can produce outcomes in student achievement on tests of economic understanding and sales comprehension as high as those now being obtained through the "cooperative method" of instruction in the traditional twelfth grade distributive education class.

Specifically, Ferguson posed his problem as several questions which consider the association between these items:[20]

1. Are the results on certain standardized tests in sales comprehension significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade

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[20]Ferguson, op. cit., p. 6-7.

distributive education students who have been taught by the "cooperative method" of instruction.

2. Are the results on certain standardized tests in economic understanding significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

3. Of what importance is students' level of prior achievement in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

4. Of what importance are the socio-economic status, age, and sex of students in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

5. Of what importance is teacher attitude in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

His study extended over the period of one semester and utilized the pre-test and post-test design. Standardized tests of economic understanding, sales comprehension,

and reading comprehension were administered to 733 students representing ten Michigan high schools.

The major findings of the Ferguson study were as follows:

1. There was no statistically significant correlation between: (a) the variables of students' socio-economic status, students' age, students' sex, and teachers' attitude inventory scores; and (b) the scores students attain on standardized achievement tests measuring reading comprehension, economic understanding, and sales comprehension.

2. There was a positive correlation between students' prior achievement and scores students attain on standardized achievement tests of economic understanding and sales comprehension. This was inferred from scores achieved on the STEP-Reading Tests.

3. The two control groups (English and/or social science classes) on the whole performed as well as or, in some cases, better than the two distributive education groups on the tests of economic understanding and sales comprehension. However, the differences in the scores of the two grade level control groups and their respective distributive education groups were not significant.

4. The achievement of twelfth grade "cooperative method" classes on the tests of sales comprehension were significantly higher than those of the eleventh grade "project method" classes.

5. There was no significant difference between the scores of the "project method" and "cooperative method" groups on the tests of economic understanding.[21]

Ferguson concluded that on the whole, the "cooperative method" group performed somewhat better than the "project method" group.

IV. RECENT REFLECTIONS ON THE PROJECT METHOD

Since the completion of the Ferguson study, others in the field have reacted to the implementation of project training in distributive education programs at the high school level. In 1967 Nelson said:

> Project training in distributive education represents a promising technique in preparing persons for employment in distribution and marketing. Joining cooperative training as a principal method in achieving vocational purposes, project training provides the needed flexibility in program design--needed if distributive education is to make a greater

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[21]Ferguson, op. cit., pp. 120-124.

> impact upon the manpower requirements in the extensive field of distribution.[22]

Several teachers and leaders in distributive education have raised questions concerning the ability of the "project method" to duplicate the learning outcomes of the "cooperative method." Nelson summarized some of these doubts when he said:

> Perhaps one of the chief doubts about project training is its ability to produce the same kind of results that are achieved through cooperative training. A list might include: the opportunity to gain job experience, to give meaning to course content, to develop judgment abilities, to interpret consumer needs, to improve personality, to learn how to get along with people, to confirm or reject an occupational choice, to recognize the demands of the adult world, to see the marketing process in action, to participate in marketing techniques. These are some of the values placed on cooperative training. The question facing us today is, "Can we have the same expectations for project training?"[23]

Marks partially answered this question when she said, "The goals of project and cooperative training are the same. No matter how instruction is organized, when

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[22]Edwin L. Nelson, "Project Training--Its Impact on Program Development," Division of Vocational and Technical Education, U. S. Office of Education, prepared for the 1967 National Seminar in Distributive Teacher Education. In Readings in Distributive Education, Peter G. Haines, et al. (East Lansing: Department of Secondary Education and Curriculum, Michigan State University, 1968), p. 5.

[23]Ibid., p. 10.

it is identified as vocational distributive education, there are no differences in the results desired."[24]

Cooperative training has survived the test of experience and is recognized and accepted as being a successful, valid method of instruction. The term, cooperative education, had been synonomous with distributive education until 1963 when distributive education programs were released from this limitation. Many educators in the field of marketing and distribution are skeptical of the results of any other method. As Marks said in 1967:

> Distributive education, as is all of education, is in a period of self-testing and adaptation as it seeks to respond to the emerging economic and social value system being identified with manpower training and development. During the past twenty-nine years distributive cooperative training has gained the confidence of educators and employers because teacher-coordinators have successfully blended coordination, instructional materials and evaluation. This has yet to be adequately demonstrated in distributive project training.[25]

Dr. Ernest E. Bayles, Professor of Education at the University of Kansas, discussed the history of the "project

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[24]Mary V. Marks, "Similarities and Differences in Project and Cooperative Training," Division of Vocational and Technical Education, U. S. Office of Education, prepared for the 1967 National Seminar in Distributive Teacher Education. In Readings in Distributive Education, Peter G. Haines, et al. (East Lansing: Department of Secondary Education and Curriculum, Michigan State University, 1968), p. 11.

[25]Ibid., p. 17.

method" in education in a paper entitled, "Project Method in Education." Dr. Bayles defined and clarified the method as it pertained to education in general. He went on to say:

> I see no reason that Distributive Education could not make use of the project idea, if only it is clearly understood and kept in mind that project method is indeed a method. It is not a philosophy or a program, for it seemingly suffers when stretched to include ends as well as ways and means. That, I think, is what contributed to the progressive dilemma of seeming to tell us that pupil purposes should rule, yet all of us (including the Progressives) know that we as teachers are obligated to see that things do not get out of hand. The point in theory seems to be that teachers have to have a basic, overall educational purpose; one that is clearly formulated, consistently followed, and can be explained and defended when needful. Then, and only then, can any method be judged as applicable or not applicable in particular cases and, if applicable, put to work with successful results. Project method is a method; not a philosophy.[26]

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[26]Ernest E. Bayles, "Project Method in Education," Division of Vocational and Technical Education, U. S. Office of Education, prepared for the 1967 National Seminar in Distributive Teacher Education. In Readings in Distributive Education, Peter G. Haines, et al. (East Lansing: Department of Secondary Education and Curriculum, Michigan State University, 1968), p. 26.

CHAPTER III

PROCEDURES FOLLOWED THROUGHOUT THE STUDY

The description of the procedures followed throughout this study will be presented in four divisions: (1) sample and population, (2) experimental treatments, (3) analysis procedures, and (4) experimental design and treatment of the data.

I. SAMPLE AND POPULATION

Eleven Arizona high schools (33 per cent of those offering distributive education) were chosen to provide the population for the study. This selection was made on the basis of administrative support, teacher-coordinator interest, size and geographical location of school, variation of socio-economic background of the student body, mixture of racial-ethnic groups, a complete distributive education program that had been in operation a minimum of two years, and teachers who understood and were practicing the "project method" of instruction.

Schools. In each of the eleven schools selected for this research, the same teacher-coordinator taught both the preparatory "project method" class, called marketing, and the "cooperative method" related class. The marketing class was offered at the eleventh grade level and the "cooperative method" class at the twelfth grade level. Three high schools included in the study also offered a class at the twelfth grade level employing the "project method" for those students who could not schedule the occupational experience requirement of the "cooperative method." The schools represented communities of various sizes, distributed throughout the state in proportion to concentration of population. (See Table 1.)

It was decided that this study should be representative of the population of the state. The population of the State of Arizona is heavily concentrated in the two largest cities, Phoenix and Tucson (Maricopa and Pima Counties). This concentration is reflected in the high school population of this study. But, several schools were selected from within these two areas so as to be representative of different socio-economic levels within these communities.

The class sizes in all schools tested were about the same. The distributive education laboratories in all

TABLE 1

CHARACTERISTICS OF THE ELEVEN ARIZONA PUBLIC HIGH SCHOOLS INCLUDED IN THE STUDY

Name of High School	Location	Enrollment Grades 10-12	Type of Community
Alhambra	Phoenix	3,332	City
Camelback	Phoenix	2,819	City
Catalina	Tucson	2,576	City
Central	Phoenix	2,590	City
East	Phoenix	1,872	City
Palo Verde	Tucson	4,262	City
Pueblo	Tucson	2,597	City
Safford	Safford	770	Town
Washington	Glendale	1,940	Suburb
West	Phoenix	2,666	City
Yuma	Yuma	1,450	Small City

eleven schools were outfitted with comparable equipment necessary for teaching of the competencies of marketing and distribution at the high school level. All distributive education classes included in the study participate in the DECA (Distributive Education Club of America) program and in these schools the teacher-coordinator views the youth club program as an integral part of the instructional program.

Teachers. All teachers participating in this research study not only met Arizona secondary teaching certification requirements, but also were certified to teach vocational distributive education both by the "cooperative method" and the "project method." All teachers had been teaching distributive education classes for two years or more. Since the "project method" is relatively new to distributive education, all teachers had attended workshops on the "project method" for the two summers preceding the study. In addition, the teacher-educator for distributive education in Arizona worked closely with the teachers concerning the "project method" since its inclusion in the distributive education program.

Instruction. Both the "project method" classes and the "cooperative method" classes were a single period of fifty minutes in length and met five days a week. Students in the "cooperative method" classes were employed a minimum of fifteen hours a week in positions according to their career interests and their classroom instruction, then, was related to these on-the-job experiences.

The "project method" classes were taught by using the project approach. Projects were developed to simulate those experiences which were assumed to be gained on the job by the "cooperative method" classes. The same teachers taught both classes in each school. A state curriculum guide developed by teacher-coordinators in Arizona suggests the following units to be taught in the related class serving the "cooperative method" students:

1. orientation
2. advanced salesmanship and merchandising information
3. sales promotion
4. visual merchandising
5. inventory
6. business organization
7. business services
8. leadership

9. advanced market research

10. human relations

11. economics of distribution

12. professional improvement in career development

13. individualized instruction (interspersed throughout the year).

Individual coordinators may vary the time spent on certain units, depending upon individual and group needs of students and the ability level of the student during a given year.[1]

Following is the course of study generally used in the eleventh grade marketing classes:

1. orientation to distributive education

2. the marketing process

3. retailing--the last step in marketing

4. market research

5. communications in distributive education

6. basic selling and human relations

7. inventory and stock control

8. marketing in our economy

9. mathematics of distribution

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[1]In checking with the teacher-coordinators in this study, they unanimously agreed that they generally do follow these course outlines.

10. buying

11. resources

12. negotiating for price

13. preparing goods for selling

14. pricing for profit

15. sales promotion and advertising

16. display

17. fundamental records

18. business data processing

19. planning for profit

20. government regulation of distribution

21. individual instruction

22. DECA activities and special events.

In the marketing classes especially, projects--both individual and group--are used to add vocational integrity to the instructional program. Some of these projects require on-the-job experience for the eleventh grade student. Some examples of these projects are:

1. participating with local merchants in carrying out inventory procedures on the job

2. developing a plan for newspaper advertising for specialized business

3. participating in a market research project within the local community

4. procuring product information

5. designing and building window displays.

The utilization of projects will differ somewhat with the creativity and imagination of the individual teacher. However, projects such as the examples given here were available to all teacher-coordinators in the study and were utilized by most of them.

Students. The student population involved in this study were enrolled in one of five different courses at each of the eleven schools:

1. group one -- eleventh grade students enrolled in the "project method" distributive education class called marketing

2. group two -- eleventh grade English or social science students not enrolled in distributive classes

3. group three -- twelfth grade students enrolled in the non-cooperative (project method) distributive education class

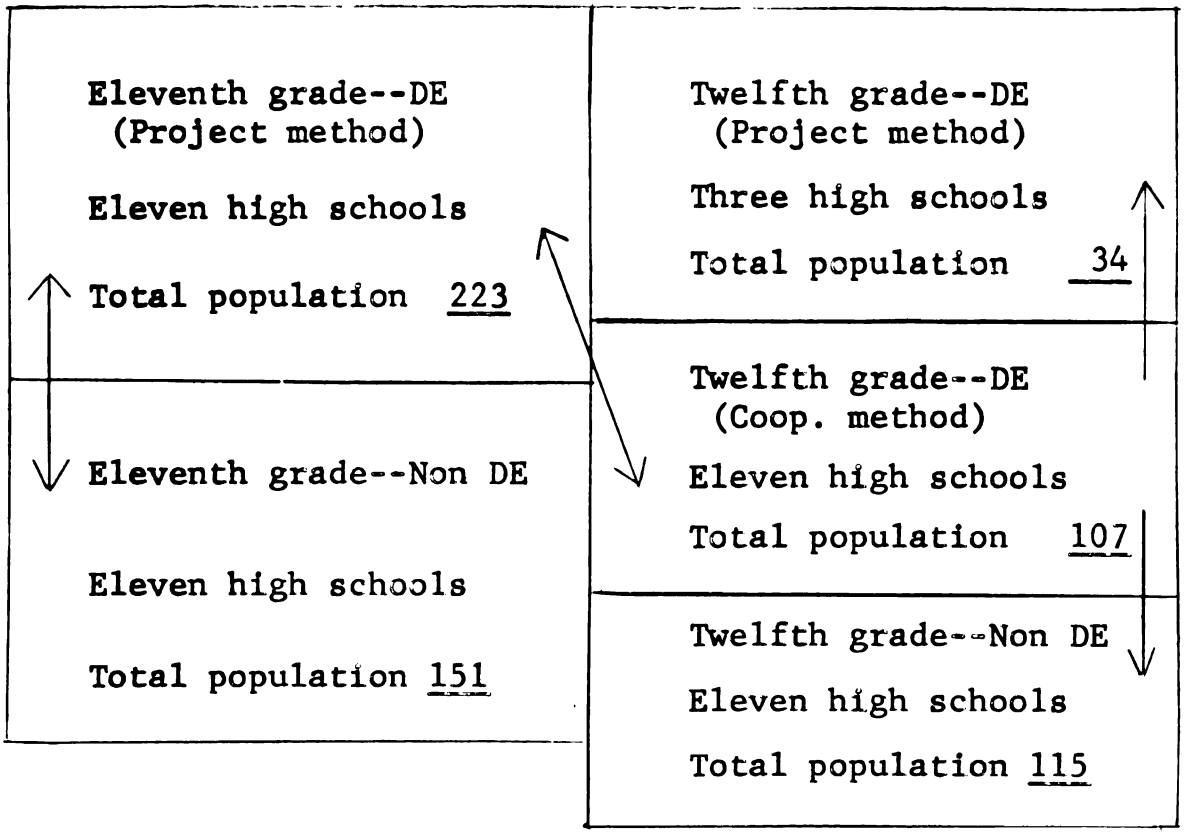
4. group four -- twelfth grade students enrolled in the cooperative distributive education class

5. group five -- twelfth grade English or social science students not enrolled in distributive education classes.

Only those students who were present for both the pre-testing and post-testing were included in the final sample. Therefore, though the initial population included in the study was twelve hundred students, the final data did not include a population of that size. In order to run correlations, data from the pre-test and post-test results from all three test instruments had to be used. The pre-tests were given in September and the post-tests in April. If a student was absent during the administering of any one of the pre-test or post-tests, then all his test results were discarded. Care was taken to insure that only non-distributive education students were enrolled in those classes used as control classes. The students in the control classes were not grouped according to ability. An attempt was made to use as control classes those not made up of advanced or low level students alone but consisting of a cross-section of the school population.

This selection procedure produced a final sample of 223 subjects in the eleventh grade "project method" group, 151 in the eleventh grade control group, 34 in the twelfth grade "project method" group, 107 in the twelfth grade "cooperative method" group, and 115 in the twelfth grade control group, making a total population of 630 students.

The population utilized in this study may be categorized as indicated in the following cells:



Correlations were run to determine the relationships between student test scores between and among the cells indicated above. Also, correlations were run to determine the effects of the independent variables such as age, sex, socio-economic status, and prior student achievement on the dependent variables which were the standardized test scores.

II. EXPERIMENTAL TREATMENTS

Instruments. Data collected for this study included the following: (1) scores for each student on standardized

tests of economic understanding, sales comprehension, and sales terms; (2) estimates of each student's prior achievement based on reading achievement scores; (3) personal data sheets filled out by each student tested; and (4) information regarding the socio-economic status of the school community and of the parents of the students included in the study.

Such factors as age, sex of the student, socio-economic environment of the student, and the student's prior achievement were recognized as possible factors that might influence standardized tests. In examining the related research to the measuring of competency development, only scholastic ability or prior achievement at each grade level seemed to be the consistent factors affecting student achievement.

Socio-economic status. It seemed highly probable to the researcher that the socio-economic status of the school communities and of the parents of the students tested might affect the test outcomes. In searching for an instrument to measure this variable, a decision was reached to utilize the same instruments used in the Ferguson study. The first step was a personal interview with the principal of each school, using an interview

sheet and an index previously developed for this purpose and used in an educational research study at Michigan State University.[2] The index, developed by Paul Messier, was designed to estimate the socio-economic status of the students involved in that particular study. Items used in the index were derived from the "Index of Status Characteristics" developed by W. L. Warner, et al.[3] Messier's instrument includes the same general social, economic, educational, and ethnic categories as Warner's index. Once the interviews with the administrators were completed, their responses to the items were scored on the instrument. The Messier Index is divided into six categories as follows: (A) area live in, (B) house type, (C) source of income, (D) education, (E) racial background, and (F) occupations. The scores from the first four categories were grouped and labeled the socio-economic index. The remaining two scores, racial-ethnic intermix and occupational level, were treated separately.

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[2]Karl T. Hereford, et al., "Relationships Among School Design, Utilization, Personnel Interaction, and Attitudes," Educational Research Series, No. 7 (East Lansing, Michigan: Bureau of Educational Research, Michigan State University, 1963), p. A.4.3.

[3]W. L. Warner, et al., Social Class in America (Chicago, Illinois: Science Research Associates, 1949), pp. 121-129, 177-185.

Duncan's socio-economic index[4] was also used and the information was compared with the information derived from the Messier index.[5] Duncan's index provides ratings based on the occupation of the head of the household. Each student tested was asked to provide information regarding parent's occupation. Thereby, an index score expressing the income and educational level coefficient, ranging from 00-99 was obtained for each student in the study.

Student prior achievement. It was assumed that the reading level of students tested would more than likely affect the results on the standardized tests. Therefore, it was decided that reading achievement level scores would reflect the prior achievement level of all the students in the study. All schools included in the study had on record scores from standardized tests in reading achievement for all students.

Test of Economic Understanding. In order to measure the economic understandings of the students involved in this study, it was necessary to select a measuring instrument. The instrument selected for this study was

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[4]See Appendix B for Duncan's Socio-Economic Index.

[5]Warner, loc. cit.

both Forms A and B of the Standardized Test of Economic Understanding.[6] Form A was administered to all students before October 1, 1967 and Form B between April 15 and May 1, 1968.

Even though concepts of economic understanding are taught periodically throughout other units of instruction to which distributive education students are exposed, a concentrated unit on the economics of distribution is included in the instruction program. It would also be expected that both the eleventh and twelfth grade non-distributive education students would gain to some degree additional economic understanding through their course work during the school year. For this reason, pre-tests and post-tests were given.

The items included in the test of economic understanding were designed to cover those aspects of economics considered by a group of experts, a National Task Force on Economic Education, to be basic economic concepts.

The test publishers provided additional information which provided further justification to the researcher

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[6]Council on Economic Education, Test of Economic Understanding (Chicago, Illinois: Science Research Associates, 1963). (See Appendix B for sample page of test.)

for the appropriateness of the use of these test instruments for this particular study:

1. Estimates of the reliability of the tests, using the Kuder-Richardson Formula #20, were computed for scaled scores, differences between Forms A and B, for over three hundred high school students of the eleventh and twelfth grade levels.

2. No significant difference in means on test performance was found between male and female students tested.

3. Measurement showed no significant differences between eleventh and twelfth grade students.[7]

Test of Sales Aptitude. The Test of Sales Aptitude (a test for measuring knowledge of basic principles of selling) by Martin M. Bruce[8] and the Sales Terms Test by Joseph E. King[9] were administered to the students in all

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[7]Council on Economic Education, "Interpretive Manual and Discussion Guide," Test of Economic Understanding (Chicago, Illinois: Science Research Associates, 1963, pp. 34-36.

[8]Martin M. Bruce, Test of Sales Aptitude, New Rochelle, New York: Martin M. Bruce, Ph.D., 1960). (See Appendix B for sample page of test.

[9]Joseph E. King, Factored Aptitude Series, Sales Terms Test (New York: Industrial Psychology, Inc., 1956). See Appendix B for sample page of test.

groups in April. They had been previously administered to all distributive education students in late September. By administering this test as a pre-test to the distributive education students, the researcher was also able to determine the growth in the competency development as a result of the instructional program in distributive education. Since the non-distributive education students in both the eleventh and twelfth grades had not had a high school course related to the sales competency, it was deemed unnecessary to administer both pre-tests and post-tests. One testing did give sufficient indication as to the effect of the "project method" and the "cooperative method" on greater understanding of the sales competency.

Student information sheets. Each student included in this study completed a student data sheet at the time of the first testing in September, 1967. These data sheets included such items as: (1) name, (2) age, (3) date of birth, (4) sex of student, (5) school, (6) grade, (7) father's occupation; and (8) whether the student had a previous course in either marketing or economics or was enrolled in one at the present time. This data was used to draw comparisons among the groups tested.

III. ANALYSIS PROCEDURES

The data utilized in this study was first divided into four different categories: (1) information regarding the socio-economic status of the community and of the students; (2) reading achievement level scores; (3) scores on economic understanding (pre-tests and post-tests), sales comprehension, and sales terms; and (4) personal data on all students. The different kinds of data were prepared and processed for analysis in a variety of ways.

Socio-economic status. The first four categories of the Messier index were examined to arrive at the socio-economic level of the community. These categories were: (A) area live in, (B) house type, (C) source of income, and (D) education. Within these four categories, weightings of one through seven were used. (1 = highest status, 7 = lowest status). The status statements were listed in descending order on the instrument. The socio-economic index for each school was calculated by multiplying the weightings by the percentages given and then summing the weighted figures of the first four categories. This procedure netted an index range from 4.00 to 28.00, with a low index indicating a high socio-economic level within the community.

The remaining two groups, racial-ethnic intermix and occupations, were weighted in the same manner as used in the four previous sections of the Messier index. This procedure netted a racial-ethnic intermix index ranging from 1.00 to 8.00, with a low index indicating a low racial-ethnic intermix within the community; and an occupations index ranging from 1.00 to 13.00, with a low index indicating a high occupational level among members of the community.

During the September testing period, students filled out information sheets which were to be utilized in the study. The students were asked to provide their father's occupation or the occupation of their mother or guardian if the father was deceased. If the head of the household was unemployed, students were asked to indicate the usual line of work of this person. Using the Duncan index scale,[10] the researcher determined the index number applicable for each of the occupations reported by the students. A mean index rating was derived for each school in order to facilitate analysis and comparison of the Duncan index with the occupations index derived

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[10]See Appendix B for Duncan's Socio-Economic Index.

from the Messier index, which obtained information from school administrators.

IV. EXPERIMENTAL DESIGN AND TREATMENT OF THE DATA

Experimental design. A non-equivalent control group design was used to conduct this quasi-experimental study. A paradigm was as follows:

$$\begin{array}{ccc} 0 & X_1 & 0 \\ \hline 0 & X & 0 \end{array}$$

The paradigm, as illustrated, is a modification of Quasi-Experimental Design 10 from Campbell and Stanley.[11] X_1 represented the treatment as exposure of one group to an experimental program and X represented the control group; the 0's preceding the X's represented pre-testing with economic understanding, sales terms, and sales aptitude; the 0's following the X's represented the post-testing with the same instruments.

Sources of internal invalidity controlled for by the non-equivalent control group design, as shown in Table 2, are history, maturation, testing, instrumentation,

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[11]Donald T. Campbell and Julian C. Stanley, "Experimental and Quasi-Experimental Designs for Research on Teaching," Handbook of Research on Teaching, N. L. Gage, ed. (Chicago: Rand McNally and Company, 1963), p. 47.

TABLE 2

SOURCES OF INTERNAL AND EXTERNAL INVALIDITY APPLICABLE TO THE NON-EQUIVALENT CONTROL GROUP DESIGN

Sources of Invalidity	Control
Internal	
History	+
Maturation	+
Testing	+
Instrumentation	+
Regression	?
Selection	+
Mortality	+
Interaction of Selection and Maturation, etc.	-
External	
Interaction of Testing and Treatment	-
Interaction of Selection and Treatment	?
Reactive Arrangements	?

selection, and mortality. One source of internal invalidity not controlled for is interaction of selection and maturation, or interaction of selection with another variable. In the present study, the interaction of selection may occur because the experimental group is no doubt composed of different kinds of pupils than the control group. (The source of internal invalidity called regression will not be a problem in the present study because the experimental groups are not extreme groups such as high and low intelligence.)

One source of external invalidity not intrinsically controlled for by this design is the interaction between testing and treatment. In the study, however, the pre-test, a standardized achievement test, was not expected to influence the treatment. Even though the pre-test were to interact with treatment, the results would still be generalizable to schools using standardized testing before, or at the beginning of, their programs.

The interaction of selection and treatment was not controlled for to the degree that the children included in the study react differently to treatment than will children in other schools. If personnel in other schools desire to use the results of this study, then they must decide whether their school is sufficiently similar to warrant generalizing to their situation.

Reactive arrangements will not occur if personnel using the results of the experiment follow the same procedures. The experiment will be performed in a normal school setting. There will be no special arrangements made other than the procedures for giving homework.

Treatment of the data. Data were collected from pre-treatment and post-treatment administrations of the three instruments, economics, sales terms, and sales aptitudes. Students included in the study recorded their answers on machine scored answer sheets in both the pre-tests and post-tests. These answer sheets were then processed and cards were automatically punched. Each answer sheet was hand coded by the researcher so that when punched the necessary data would be included on the card and allow for the running of correlations. This also provided for rapid machine sorting to eliminate members of the population who did not take each test due to absences. Since the tests were not all administered the same day, some students failed to take the entire battery in the pre-test or in the post-test.

The statistical treatment was that of analysis of covariance where the criterion post-treatment measures were adjusted for pre-treatment differences on the basis

of the pre-treatment criterion measures used as covariates. The tests for significance were at the 0.05 level.

CHAPTER IV

FINDINGS

I. PURPOSE

The purpose of this study was to determine differences in achievement between eleventh and twelfth grade distributive education programs as affected by program, sex of student, age, previous courses in marketing and economics, and socio-economic status. The achievements consisted of economics, sales terms, and sales aptitudes. The analysis of data was accomplished for each of these criteria.

II. ANALYSIS OF DATA

Data collected from eleventh and twelfth grade distributive education pupils consisted of the criterion measures economics, sales terms, and sales aptitude as well as the statistical control variates, reading achievement and socio-economic status. Mean scores for the statistical control variates, shown in Table 3, reveal that pupils in the four programs were very similar. The effect of any differences in criterion measures caused by

TABLE 3

MEAN SCORES FOR SUBJECTS IN FIVE PROGRAMS ON READING ACHIEVEMENT AND THE SOCIO-ECONOMIC VARIABLES

VARIABLE	CONTROL (11)	CONTROL (12)	MARKETING (11)	CO-OP (12)	MERCHANDISING (12)
Reading Achievement	5.44	5.45	4.99	5.41	5.49
Duncan	44.60	43.70	47.09	45.44	43.95
Messier	15.62	15.21	14.64	15.11	15.40
Race	3.15	2.97	2.52	2.51	3.03
Messier Occupation	6.33	6.32	5.62	5.96	6.06

these differences was adjusted, however, to obtain greater precision in the results. The total number of subjects completing the pre-treatment and post-treatment instruments was shown in Table 4. The statistical strategy used in analysis of data was that in which groups and cross-classifications were equalized by random selection of subjects from each group or cross-classification. This strategy was used so as to insure robustness of the F-Statistic.

III. ECONOMICS

Subjects' achievement in economics was analyzed in order to reveal the relationship to distributive education programs. The analysis was accomplished by using two-way analyses of covariance where program was one factor and the second factor was either sex of student, age, previous marketing course, or previous economics course. The analyses were performed, first, using pre-treatment achievement in economics as a covariate and, second, using pre-treatment achievement in economics, pre-treatment achievement in reading, and socio-economic status as covariates. Thus, it was possible to ascertain differences first, on the basis of control for prior achievement in economics and, second, on the basis of control for prior

TABLE 4

NUMBER OF PUPILS COMPLETING PRE-TREATMENT AND POST-TREATMENT CRITERION INSTRUMENTS BY PROGRAM

PROGRAM	INSTRUMENT		
	ECONOMICS	SALES TERMS	SALES APTITUDE
1 Control (11)	151	0	0
2 Control (12)	115	0	0
3 Marketing (11)	213	220	223
4 Co-op (12)	95	106	107
5 Merchandising (12)	30	25	34
TOTAL	604	351	364

differences in economics and reading achievement and socio-economic status.

The mean pre-treatment and post-treatment scores in economics achievement, shown in Table 5, reveal pre-treatment and post-treatment differences for the five programs. The analysis of covariance technique adjusted the post-treatment means on the basis of the pre-treatment means and on the basis of the reading achievement and socio-economic status means shown in Table 3, page 64. Thus, the results were assumed to be caused by program only.

Sex of the student. When subjects were classified by sex and program, the number of subjects in each cross-classification was as shown in Table 6, page 69. The number of male subjects in twelfth grade merchandising was only nine. The decision was made, therefore, to eliminate the twelfth grade merchandising course from the comparison of groups by sex of students. In other words, only the eleventh grade control, twelfth grade control, eleventh grade marketing, and twelfth grade co-op courses were included in comparison of all groups. The analysis of covariance, summarized in Table 7, page 70, reveals no significant F-values at the 0.05 level for programs, sex, or interaction between programs and sex for the analysis

TABLE 5

MEAN PRE-TREATMENT AND POST-TREATMENT SCORES FOR PROGRAMS ON THE INSTRUMENT ECONOMICS

PROGRAM	PRE-TREATMENT	POST-TREATMENT
1 Control (11)	20.03	21.18
2 Control (12)	22.95	24.20
3 Marketing (11)	19.17	20.61
4 Co-op (12)	21.90	23.59
5 Merchandising (12)	22.17	20.50

TABLE 6

FREQUENCIES OF SUBJECTS BY PROGRAM AND SEX
FOR THE INSTRUMENT (1) ECONOMICS

PROGRAM	MALE	FEMALE	TOTAL
1 Control (11)	71	80	151
2 Control (12)	62	53	115
3 Marketing (11)	108	105	213
4 Co-op (12)	34	61	95
5 Merchandising (12)	9	21	30

TABLE 7

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENT (1) ECONOMICS FOR SUBJECTS CLASSIFIED BY PROGRAM AND SEX

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Program	3	7.74	2.58	0.08
Sex	1	2.16	2.16	0.07
Interaction	3	125.70	41.90	1.34
Within	263	8245.41	31.35	
PRE-TREATMENT & SES				
Program	3	7.18	2.39	0.08
Sex	1	7.42	7.42	0.26
Interaction	3	158.78	52.93	1.82
Within	258	7495.50	29.05	

where (1) the covariate was pre-treatment achievement in economics, or (2) the covariates were pre-treatment achievement in economics and socio-economic status variables. Consequently, it was assumed that there were no differences between groups when classified by sex of the students.

Age. When subjects were classified by age and program, the number of subjects in cross-classifications was obviously directly related with age, as shown in Table 8. Inspection of the frequencies reveals a logical division; programs one and three with age groups 15-16 and 17-19 and programs two, four, and five with age groups 15-17 and 18-19. The analysis of covariance for the former comparison, summarized in Table 9, page 73, reveals no significant F-values at the 0.05 level for groups, age, or interaction regardless of whether the covariate was pre-treatment achievement in economics and socio-economic status variables. The summary of the analyses of covariance for twelfth grade programs by age groups 15-16-17 and 18-19 reveals a significant F-value of 3.87 at the 0.05 level for groups when the only covariate was pre-treatment achievement, as shown in Table 10, page 74 After post-treatment mean scores were adjusted, the control

TABLE 8

FREQUENCIES OF SUBJECTS BY PROGRAM AND AGE
FOR THE INSTRUMENT (1) ECONOMICS

PROGRAM	AGE					TOTAL
	15	16	17	18	19	
1 Control (11)	[a](2	92)	(51	6	0)	151
2 Control (12)	[b](1	1	60)	(46	7)	115
3 Marketing (11)	[a](0	111)	(90	11	1)	213
4 Co-op (12)	[b](0	0	56)	(36	0)	92
5 Merchandising (12)	[b](0	1	13)	(10	6)	30
TOTAL	3	205	270	109	14	601

[a]Collapsed for programs one and three.

[b]Collapsed for programs two, four, and five.

TABLE 9

SUMMARY OF ANALYSES OF COVARIANCE OF SCORES ON THE INSTRUMENT (1) ECONOMICS FOR ELEVENTH GRADE CONTROL AND ELEVENTH GRADE MARKETING IN THE AGE GROUPS 15-16 and 17-18-19 YEARS

SOURCE OF VARIATES AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARES	F
PRE-TREATMENT				
Groups	1	3.17	3.17	0.10
Age	1	39.97	39.97	1.26
Interaction	1	5.97	5.97	0.19
Within	219	6924.94	31.62	
PRE-TREATMENT & SES				
Groups	1	81.15	81.15	2.71
Age	1	30.24	30.24	1.01
Interaction	1	10.83	10.83	0.36
Within	214	6406.77	29.94	

TABLE 10

SUMMARY OF ANALYSES OF COVARIANCE OF SCORES ON THE INSTRUMENT (1) ECONOMICS FOR TWELFTH GRADE CONTROL, TWELFTH GRADE CO-OP AND TWELFTH GRADE MERCHANDISING IN THE AGE GROUPS 15-16-17 AND 18-19 YEARS

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE TREATMENT				
Groups	2	252.47	126.23	3.87*
Age	1	54.29	54.29	1.67
Interaction	2	172.85	86.42	2.65
Within	77	2509.75	32.59	
PRE-TREATMENT & SES				
Groups	2	82.22	41.11	1.51
Age	1	50.25	50.25	1.85
Interaction	2	135.74	67.87	2.49
Within	72	1960.02	27.22	

*$p < 0.05$

TABLE 11

ADJUSTED POST TREATMENT MEAN SCORES IN ECONOMICS FOR TWELFTH GRADE CONTROL, CO-OP AND MARKETING PROGRAMS

PROGRAM	ADJUSTED POST TREATMENT MEAN
Control	24.01
Co-op	23.72
Marketing	20.53

program still had a greater mean than the co-op program, and the co-op program had a greater mean than the marketing program.

Marketing. When subjects were classified by program and whether they had a marketing program finished, had a program in progress, or not had a marketing program, as shown in Table 12, the paucity of frequencies in some cross-classifications precluded the comparison groups one and two by status with respect to having had a marketing program. The only comparison justified was groups four and five for had and not had a marketing course. The analyses of covariance, summarized in Table 13, page 78, reveal no significant F-values at the 0.05 level regardless of covariates.

Economics. When subjects were classified by program and whether an economics course was completed, in progress or did not have, as shown in Table 14, page 79, the frequencies of some cross-classifications were insufficient to effect comparisons. The one comparison made was for programs three and four with categories had and in progress collapsed. The analyses of covariance, summarized in Table 15, page 80, uncovered no significant F-values at the 0.05 level.

TABLE 12

FREQUENCIES FOR SUBJECTS BY PROGRAM AND MARKETING
ON THE INSTRUMENT (1) ECONOMICS

PROGRAM	HAD	IN PROGRESS	NOT HAD	TOTAL
1 Control (11)	2	2	147	151
2 Control (12)	10	3	102	115
3 Marketing (11)	34	176	3	213
4 Co-op (12)	67	9	16	92
5 Merchandising (12)	15	0	15	30
TOTAL	128	190	283	601

TABLE 13

SUMMARY OF ANALYSES OF COVARIANCE OF SCORES ON THE INSTRUMENT ECONOMICS FOR TWELFTH GRADE CO OP AND TWELFTH GRADE MERCHANDISING WHEN CLASSIFIED BY STATUS OF A MARKETING COURSE

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	1	15.63	15.63	0.14
Status	1	8.78	8.79	0.08
Interaction	1	20.62	20.62	0.19
Within	55	5983.91	108.80	
PRE-TREATMENT & SES				
Groups	1	25.78	25.78	0.22
Status	1	17.98	17.98	0.16
Interaction	1	21.01	21.01	0.18
Within	50	5791.83	115.84	

TABLE 14

FREQUENCIES FOR SUBJECTS BY PROGRAM AND ECONOMICS
ON THE INSTRUMENT (1) ECONOMICS

PROGRAM	HAD	IN PROGRESS	NONE	TOTAL
1 Control (11)	2	1	148	151
2 Control (12)	3	0	112	115
3 Marketing (11)	[a](8	15)	(190)	213
4 Co-op (12)	[a](11	24)	(57)	92
5 Merchandising (12)	3	0	27	30
TOTAL	27	40	534	601

[a]Collapsed for comparison

TABLE 15

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENT (1) ECONOMICS FOR ELEVENTH GRADE MARKETING AND TWELFTH GRADE CO-OP PROGRAMS WHEN CLASSIFIED BY STATUS OF AN ECONOMICS COURSE

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	1	18.91	18.91	0.27
Status	1	19.93	19.93	0.29
Interaction	1	16.73	16.73	0.24
Within	87	6011.13	69.09	
PRE-TREATMENT & SES				
Groups	1	35.11	35.11	0.49
Status	1	21.35	21.35	0.30
Interaction	1	46.78	46.78	0.65
Within	82	5913.97	72.12	

IV. SALES TERMS

Subjects' achievement in sales terms was analyzed in order to reveal the relationship to the distributive education program. The analysis was accomplished by using two-way analyses of covariance where program was one factor and the other factor was sex of the student, age, previous marketing course, and previous economics course. The analyses were performed, first, using pre-treatment achievement in sales terms as a covariate and, second, using pre-treatment achievement in sales terms, pre-treatment achievement in reading, and socio-economic status as covariates. Thus, it was possible to determine differences, first, on the basis of control for prior achievement on the criterion and, second, for prior achievement in the criterion reading and socio-economic status.

The mean pre-treatment and post-treatment scores for sales terms, shown in Table 16, reveals differences for these programs. Because the analysis of covariance was assumed to control for all differences before treatment, the results were considered to be caused by program only.

Sex of the student. When subjects were classified by sex of the student and program, the number of subjects in each cross-classification was as shown in Table 17, page 83.

TABLE 16

PRE-TREATMENT AND POST-TREATMENT SCORES FOR PROGRAMS ON THE INSTRUMENT SALES TERMS

PROGRAM	PRE-TREATMENT	POST-TREATMENT
3 Marketing (11)	22.07	24.41
4 Co-op (12)	23.98	25.78
5 Merchandising (12)	22.56	24.78

TABLE 17

FREQUENCIES FOR SUBJECTS BY PROGRAM AND SEX ON THE INSTRUMENT (2) SALES TERMS

PROGRAM	MALE	FEMALE	TOTAL
1 Control (11)	0	0	0
2 Control (12)	0	0	0
3 Marketing (11)	140	120	220
4 Co-op (12)	42	64	106
5 Merchandising (12)	8	17	25

Because there were only eight subjects in the male category of the merchandising (twelfth grade) program, that program was omitted from the analysis. Therefore, only the twelfth grade co-op and eleventh grade marketing programs were included in the analysis. The summary of analysis of covariance, shown in Table 18, reveals no significant F-values at the 0.05 level regardless of the covariate being pre-treatment achievement in sales terms, or the covariates being pre-treatment achievement in sales terms and reading and socio-economic status.

Age. When subjects were classified by age and program, the number of subjects in cross-classification were as shown in Table 19, page 86. The age categories 16-17 and 18-19 were collapsed for the analysis of covariance. The analyses of covariance, summarized in Table 20, page 87, revealed a significant F-value of 3.76 for interaction between programs and age. There were no significant F-values for groups or age on either covariance and no significant interaction when pre-treatment achievement was the covariate. The significant interaction indicates merely that male and female subjects responded differently in some programs from how they responded in other programs, as far as sales terms were concerned.

TABLE 18

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENTS (2) SALES TERMS FOR SUBJECTS CLASSIFIED BY PROGRAM AND SEX

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Program	1	2.73	2.73	0.09
Sex	1	7.60	7.60	0.25
Interaction	1	50.13	50.13	1.66
Within	163	4928.04	30.23	
PRE-TREATMENT & SES				
Program	1	0.35	0.35	0.01
Sex	1	0.94	0.94	0.03
Interaction	1	56.58	56.58	1.84
Within	158	4865.52	30.79	

TABLE 19

FREQUENCIES FOR SUBJECTS BY PROGRAM AND AGE
ON THE INSTRUMENT (2) SALES TERMS

PROGRAM	AGE					TOTAL
	15	16	17	18	19	
1 Control (11)	0	0	0	0	0	0
2 Control (12)	0	0	0	0	0	0
3 Marketing (11)	0	[a](122	89)	[a](8	1)	220
4 Co-op (12)	0	0	65	[a](34	7)	106
5 Merchandising (12)	0	0	10	[a](10	5)	25
TOTAL	0	122	164	52	13	351

[a]Collapsed for analysis

TABLE 20

SUMMARY OF ANALYSES OF COVARIANCE OF SCORES ON THE INSTRUMENT (2) SALES TERMS FOR ELEVENTH GRADE MARKETING AND TWELFTH GRADE CO-OP IN THE AGE GROUPS 16-17 AND 18-19 YEARS

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	2	12.09	6.04	0.34
Age	1	5.63	5.63	0.32
Interaction	2	79.24	39.62	2.25
Within	47	826.48	17.58	
PRE-TREATMENT & SES				
Groups	2	9.90	4.95	0.31
Age	1	1.00	1.00	0.06
Interaction	2	120.28	60.14	3.76*
Within	42	671.16	15.98	

*$p < 0.05$

Marketing. When subjects were classified by status with regard to a marketing course, the frequencies for cross-classifications were as shown in Table 21. Because of the paucity of subjects in the none category, that category was combined with the in progress category. There were no significant F-values for either of the two analyses summarized in Table 22, page 90.

Economics. When subjects were classified by program and status with regard to status of an economics course, the number of subjects in each cross-classification was as shown in Table 23, page 91. The categories had an economics course and have in progress an economics course were combined for the analysis of the sales terms scores of the programs eleventh grade marketing and twelfth grade co-op. The summary of the analysis of covariance, shown in Table 24, page 92, revealed no significant F-values regardless of covariance.

IV. SALES APTITUDE

Subjects' sales aptitude was analyzed in order to reveal the relationship to distributive education programs. The analysis was accomplished the same as for achievement in economics and sales terms, that is, with two-way analyses of covariance where one factor was program and the other

TABLE 21

FREQUENCIES FOR SUBJECTS BY PROGRAM AND MARKETING ON THE INSTRUMENT (2) SALES TERMS

PROGRAM	HAD	IN PROGRESS	NONE	TOTAL
1 Control (11)	0	0	0	0
2 Control (12)	0	0	0	0
3 Marketing (11)	34	[a](181	5)	220
4 Co-op (12)	81	[a](10	15)	106
5 Merchandising (12)	11	[a](0	14)	25
TOTAL	126	191	34	351

[a]Collapsed for analysis

TABLE 22

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENT SALES TERMS FOR SUBJECTS CLASSIFIED BY PRIOR EDUCATION IN MARKETING

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	1	29.29	29.29	0.67
Marketing	1	15.31	15.31	0.35
Interaction	1	20.98	20.98	0.48
Within	95	4139.77	43.58	
PRE-TREATMENT & SES				
Groups	1	37.33	37.33	0.84
Marketing	1	17.31	17.31	0.39
Interaction	1	31.45	31.45	0.71
Within	90	4001.36	44.46	

TABLE 23

FREQUENCIES FOR SUBJECTS BY PROGRAM AND ECONOMICS
ON THE INSTRUMENT (2) SALES TERMS

PROGRAM	HAD	IN PROGRESS	NONE	TOTAL
1 Control (11)	0	0	0	0
2 Control (12)	0	0	0	0
3 Marketing (11)	[a](10	13)	197	220
4 Co-op (12)	[a](16	21)	69	106
5 Merchandising (12)	1	0	24	25
TOTAL	27	34	290	351

TABLE 24

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENT SALES TERMS FOR ELEVENTH GRADE MARKETING AND TWELFTH GRADE MARKETING AND TWELFTH GRADE CO-OP PROGRAMS WHEN CLASSIFIED BY STATUS OF AN ECONOMICS COURSE

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	1	41.56	41.56	1.04
Economics	1	19.87	19.87	0.50
Interaction	1	26.33	26.33	0.66
Within	87	3480.67	40.01	
PRE-TREATMENT & SES				
Groups	1	30.77	30.77	0.79
Economics	1	41.87	41.87	1.07
Interaction	1	45.99	45.99	1.18
Within	82	3205.34	39.09	

factor was either sex, age, previous marketing course, or previous economics course. Each analysis was accomplished, first, with pre-treatment aptitudes as a covariate and, second, with pre-treatment aptitudes, pre-treatment reading achievement, and socio-economic status as covariates. Thus, it was possible to ascertain differences first on the basis of control for prior sales aptitude and control for prior sales aptitude, reading achievement, and socio-economic status.

The mean pre-treatment and post-treatment scores in economics achievement, shown in Table 25, reveals that the marketing and co-op subjects increased this aptitude but the subjects in merchandising decreased in sales aptitude. The analysis of covariance technique was adjusted for pre-treatment differences in order to ascertain whether the programs alone resulted in the differences.

Sex of the student. When subjects were classified by sex of the student and program, the number of subjects in each cross-classification was as shown in Table 26, page 95. Because there were only twelve male subjects in the merchandising program, the decision was made to investigate only the eleventh grade marketing and twelfth grade co-op programs. In other words, only the eleventh grade marketing

TABLE 25

PRE-TREATMENT AND POST-TREATMENT MEAN SCORES ON SALES APTITUDES

PROGRAM	PRE-TREATMENT	POST-TREATMENT
3 Marketing (11)	15.76	18.74
4 Co-op (12)	24.35	26.24
5 Merchandising (12)	21.38	25.79

TABLE 26

FREQUENCIES FOR SUBJECTS BY PROGRAM AND SEX ON THE INSTRUMENT (3) SALES APTITUDE

PROGRAM	MALE	FEMALE	TOTAL
1 Control (11)	0	0	0
2 Control (12)	0	0	0
3 Marketing (11)	107	116	223
4 Co-op (12)	43	64	107
5 Merchandising (12)	12	22	34
TOTAL	162	202	364

and twelfth grade co-op programs were included in the analysis. The analysis of covariance, summarized in Table 27, revealed no significant F-values regardless of covariates.

Age. When subjects were classified by program and age, the number of subjects in each cross-classification was as shown in Table 28, page 98. Inspection of Table 28 reveals that the only possible combinations of frequencies reduces the smallest cross-classification to thirteen. Although this is a small frequency, it is the largest possible for any comparison. The analysis of covariance, summarized in Table 29, page 99, revealed no significant F-values regardless of covariates.

Marketing. When subjects were classified by program and whether they had a marketing course, the resulting cross-classification frequencies were as shown in Table 30, page 100. It was necessary to collapse the in progress and none categories in order to accomplish the analysis. The summary of the analysis of covariance, shown in Table 31, page 101, reveals no significant F-values regardless of covariance.

Economics. When subjects were classified by program and whether an economics course was completed, in progress, or did not have, as shown in Table 32, page 102, the

TABLE 27

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENT (3) SALES APTITUDES FOR SUBJECTS CLASSIFIED BY PROGRAM AND SEX

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Program	1	32.10	32.10	0.10
Sex	1	11.80	11.80	0.04
Interaction	1	408.25	408.25	1.21
Within	167	56268.15	336.94	
PRE-TREATMENT & SES				
Program	1	12.89	12.89	0.04
Sex	1	17.94	17.94	0.05
Interaction	1	371.43	371.43	1.11
Within	162	54445.86	336.09	

TABLE 28

FREQUENCIES FOR SUBJECTS BY PROGRAM AND AGE ON THE INSTRUMENT (3) SALES APTITUDE

PROGRAM	15	16	17	18	19	TOTAL
1 Control (11)	0	0	0	0	0	0
2 Control (12)	0	0	0	0	0	0
3 Marketing (11)	0	[a](113	97)	(11	2)	223
4 Co-op (12)	0	[a](0	73)	(28	6)	107
5 Merchandising (12)	0	[a](1	13)	(14	6)	34
TOTAL	0	114	183	53	14	364

[a]Collapsed for analysis

TABLE 29

SUMMARY OF ANALYSES OF COVARIANCE OF SCORES ON THE INSTRUMENT (3) SALES APTITUDE FOR ELEVENTH GRADE MARKETING, TWELFTH GRADE CO-OP, AND TWELFTH GRADE MERCHANDISING IN AGE GROUPS 16-17 AND 18-19 YEARS

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	2	32.50	16.25	0.05
Age	1	8.58	8.58	0.03
Interaction	2	828.53	414.27	1.25
Within	71	23581.66	332.14	
PRE-TREATMENT & SES				
Groups	2	127.91	63.95	0.19
Age	1	41.80	41.80	0.12
Interaction	2	760.94	380.47	1.11
Within	66	22684.80	343.71	

TABLE 30

FREQUENCIES FOR SUBJECTS BY PROGRAM AND STATUS OF A MARKETING COURSE ON THE INSTRUMENT SALES APTITUDE

PROGRAM	HAD	IN PROGRESS	NONE	TOTAL
1 Control (11)	0	0	0	0
2 Control (12)	0	0	0	0
3 Marketing (11)	40	[a](179	4)	223
4 Co-op (12)	87	[a](6	14)	107
5 Merchandising (12)	14	[a](0	20)	34
TOTAL	141	185	38	364

[a]Collapsed for analysis

TABLE 31

SUMMARY OF ANALYSES OF COVARIANCE OF SCORES ON THE INSTRUMENT SALES APTITUDE FOR ELEVENTH GRADE MARKETING, TWELFTH GRADE CO-OP, AND TWELFTH GRADE MERCHANDISING FOR STATUS ON A MARKETING COURSE

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	2	41.50	20.75	0.08
Marketing	1	20.56	20.56	0.08
Interaction	2	260.30	130.15	0.51
Within	77	19682.77	255.62	
PRE-TREATMENT & SES				
Groups	2	83.25	41.68	0.14
Marketing	1	76.76	76.76	0.27
Interaction	2	370.58	185.29	0.64
Within	72	20789.64	288.74	

TABLE 32

FREQUENCIES FOR SUBJECTS BY PROGRAM AND STATUS OF AN ECONOMICS COURSE ON THE INSTRUMENT SALES APTITUDE

PROGRAM	HAD	IN PROGRESS	NONE	TOTAL
1 Control (11	0	0	0	0
2 Control (12)	0	0	0	0
3 Marketing (11)	[a](8	16)	199	223
4 Co-op (12)	[a](14	23)	67	107
5 Merchandising (12)	3	0	31	34
TOTAL	25	39	297	364

[a]Collapsed for analysis

frequencies of the twelfth grade merchandising course were insufficient to include the course for comparison. The had and in progress categories were combined in order to effect analysis for eleventh grade marketing and twelfth grade co-op programs. The analysis of covariance, summarized in Table 33, uncovered no significant F-values at the 0.05 level.

VI. DISCUSSION OF THE FINDINGS

Sales comprehension. The two test instruments, sales terms and sales aptitudes were combined to measure the students' competency in sales comprehension. Unlike the Ferguson study, this study found no significant difference in student achievement on tests measuring sales comprehension whether students studied under the "project method" or the "cooperative method" of instruction.[1]

Economic understanding. This study found no significant difference in student achievement on tests of economic understanding between students who have been taught by the "project method" or "cooperative method" of instruction, except when twelfth graders in project classes were

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[1]The kinds of data measured by this test instrument apparently are not reflected necessarily in the on-the-job application.

TABLE 33

SUMMARY OF ANALYSIS OF COVARIANCE OF SCORES ON THE INSTRUMENT SALES APTITUDE FOR ELEVENTH GRADE MARKETING AND TWELFTH GRADE CO-OP FOR STATUS ON AN ECONOMICS COURSE

SOURCE OF VARIATION AND COVARIATE	DEGREES OF FREEDOM	SUMS OF SQUARES	MEAN SQUARE	F
PRE-TREATMENT				
Groups	1	83.75	83.75	0.37
Economics	1	90.55	90.55	0.40
Interaction	1	110.63	110.63	0.48
Within	91	20783.63	228.39	
PRE-TREATMENT & SES				
Groups	1	90.86	90.86	0.36
Economics	1	100.73	100.73	0.39
Interaction	1	173.96	173.96	0.68
Within	86	21933.45	255.04	

compared with twelfth graders in cooperative classes and, in this case, the cooperative classes did significantly better.[2]

Prior achievement. The prior academic achievement of students as inferred from scores on reading tests is of no significance in assessing the effect of each of the two methods of instruction as measured by standardized test scores in economic understanding and sales comprehension.

Socio-economic status. Several variables were considered in the analysis of the correlation between socio-economic status and student achievement on the several standardized tests. The background of the student was determined by use of the Duncan index and the Occupations index. According to the findings, socio-economic status is of no significance in assessing the effect of each of the two methods of instruction.

Since there was a slight age difference between the groups measured, it was decided to analyze this difference and see if there was a correlation between age and test scores. The findings indicated that student's age is of no

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[2]Since the population in the twelfth grade project class was so small, this difference should not be taken too seriously until further studies are undertaken.

significance in measuring the effect of each of the two methods of instruction. It was also found that the sex of the student was of no significance in measuring the effect of each of the two methods of instruction.

VII. SUMMARY OF FINDINGS

The analysis of data collected to reveal differences and similarities between the criteria economics, sales terms, and sales aptitudes as effected by five distributive education programs and the concomitant variables sex, age, previous marketing course, and previous economics course uncovered two significant relationships and many significant similarities. When subjects were classified by sex, there were no significant differences with regard to economic understanding, sales terms, and sales aptitudes regardless of whether the criterion was adjusted for pre-treatment achievement as the criterion only or adjusted for pre-treatment achievement on the criterion and in reading as well as socio-economic status. When subjects were classified by age, there were significant differences between the twelfth grade programs with regard to economic understanding. In this case the control and co-op programs were not greatly different, but both were ahead of the marketing program. In addition, there was a

significant interaction between program and age on the criterion sales terms for the eleventh grade marketing, twelfth grade co-op, and twelfth grade merchandising programs, providing the criterion was adjusted for both pre-treatment achievement in sales terms, pre-treatment achievement in reading, and socio-economic status. When only pre-treatment achievement in sales terms was controlled for, there was no significant interaction. When subjects were classified by status of marketing and economics courses, there were no significant differences on the criteria economic understanding, sales terms, and sales aptitudes, regardless of whether the criterion measures were controlled for pre-treatment achievement on the criterion only or for pre-treatment achievement on the criterion, pre-treatment achievement in reading, and socio-economic status.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

I. PROBLEM AND PROCEDURES

The purpose of this study was to compare the student achievement of eleventh grade high school distributive education students who received instruction through the "project method" and twelfth grade distributive education students who received instruction through the "cooperative method."

The study was intended to test the research hypothesis that: the results of the "project method" of instruction for preparatory distributive education would not be materially different from those now being obtained from the "cooperative method" of instruction. In other words, students should be equally as employable upon completion of distributive education programs employing the "project method" as those who enroll in classes employing the "cooperative method."

The eleventh grade, in-school distributive education class, utilizing the "project method" of instruction to

simulate the work environment in order to prepare students for specific occupational objectives, was used to test the research hypothesis that: there would be no significant difference in student achievement on the results of certain standardized tests that measure economic understandings and sales comprehension for those students who obtained instruction through the "cooperative method" in the traditional twelfth grade distributive education class than from those students who obtained instruction through the eleventh grade "project method." The twelfth grade, in-school distributive education class, utilizing the "project method" of instruction to simulate the work environment in order to prepare students for specific occupational objectives, would be used to test the research hypothesis that: there would not be a significant difference in student achievement on the results of certain standardized tests that measure economic understandings and sales comprehension for those students who obtained instruction through the "cooperative method" in the traditional twelfth grade distributive education class than from those students who obtained instruction through the twelfth grade "project method."

The problem investigated by this study provided answers to the following questions:

1. Are the results on certain standardized tests in sales comprehension significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

2. Are the results on certain standardized tests in economic understanding significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

3. Are the results on certain standardized tests in sales comprehension and economic understanding significantly different for twelfth grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?

4. Of what importance is students' level of prior achievement in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

5. Of what importance are the socio-economic status, age, and sex of students in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?

6. Are the results on certain standardized tests in sales comprehension significantly different for eleventh and twelfth grade distributive education students who are enrolled in or have completed a course in marketing?

7. Are the results on certain standardized tests in economic understanding significantly different for eleventh or twelfth graders who are enrolled in or have completed a course in economics?

Distributive education programs in the past have, through utilization of the "cooperative method" of instruction, striven for student employability as their standard of measurement. Instructional materials and methodology were planned with this goal in mind. Personnel in the field looked with a certain degree of satisfaction and success upon follow-up studies which reflected statistics showing a high degree of successful employment on the part of graduates of distributive education programs. If the "project method" is going to be utilized successfully,

then it must achieve the same results that have been achieved by the "cooperative method." Since the "project method" is relatively new to distributive education, there are some doubts as to whether it can achieve these same results. Before any new method of teaching can gain wide acceptance, it must be tested and evaluated as to its effectiveness and feasibility as an educational tool for the classroom.

Eleven schools (33 per cent of distributive education enrollments in the state) were chosen to provide the population for the study. This selection was made on the basis of administrative support, teacher-coordinator interest, size and geographical location of school, variation of socio-economic background of the student body, mixture of racial-ethnic groups, a complete distributive education program that had been in operation a minimum of two years, and teachers who understood and were practicing the "project method" of instruction. In each of the eleven schools selected for this research, the same teacher-coordinator taught both the preparatory "project method" class called marketing and the "cooperative method" related class. The marketing class is offered at the eleventh grade level and the "cooperative method" class at the twelfth grade level. Three high schools

included in the study also offer a class of the twelfth grade level employing the "project method" for those students who cannot schedule the work-experience requirement of the "cooperative method." The schools represented communities of various sizes, distributed throughout the state in proportion to concentration of population.

The population of the State of Arizona is heavily concentrated in the two largest cities, Phoenix and Tucson. It was decided that this study should be representative of the population of the state. Two counties in Arizona, Maricopa and Pima Counties which include the cities of Phoenix and Tucson, have 68.65 per cent of the high school population in this state. It is important to know that though several schools were selected from these two areas, the schools are representative of different socio-economic levels within these communities.

All teachers participating in this research study not only met Arizona secondary teaching certification requirements, but also were certified to teach vocational distributive education both by the "cooperative method" and the "project method." All teachers had been teaching distributive education classes for two years or more. Since the "project method" is relatively new to distributive

education, all teachers had attended workshops on the "project method" for the past two summers. In addition, the teacher-educator for distributive education in Arizona worked closely with the teachers concerning the "project method" since its inclusion in the distributive education program.

The student population involved in this study were enrolled in one of five different courses at each of the eleven schools. Group one consisted of the eleventh grade students enrolled in the "project method" distributive education class called marketing; group two, a group of eleventh grade English or social science students not enrolled in distributive classes; group three, the twelfth grade students enrolled in the non-cooperative (project method) distributive education class; group four, the twelfth-grade students enrolled in the cooperative distributive education class; and group five, a group of twelfth grade English or social science students not enrolled in distributive education classes. Only those students who were present for both the pre-testing and post-testing were included in the final sample. Care was taken to insure that only non-distributive education students were enrolled in those classes used as control classes. The students in the control classes were not

grouped according to ability. An attempt was made to use as control classes those not made up of advanced nor low-level students alone, but hopefully classes consisting of a cross-section of the school population.

Both the "project method" classes and the "cooperative method" classes were a single period in length, five days a week. The "cooperative method" students were employed a minimum of fifteen hours a week. Their classroom instruction was continuously related to their occupational experiences.

The "project method" classes were taught by using the project approach. Projects were developed to simulate experiences gained on the job by the "cooperative method" classes. The same teachers taught both classes in each school. The control classes were comprised of non-distributive education students, and were used for comparison purposes only.

Data collected for this study included the following: (1) scores for each student on standardized tests of economic understanding, sales comprehension, and sales terms; (2) estimates of each student's prior achievement based on reading achievement scores; (3) personal data sheets filled out by each student tested; and (4) information regarding the socio-economic status of the school

community and of the parents of the students included in the study.

Such factors as age, sex of the student, socio-economic environment of the student, and the students' prior achievement were recognized as influencing factors to the results of the standardized tests. In examining the related research to the measuring of competency development, scholastic ability or prior achievement, each grade level seemed to be the only consistent factors that affected student achievement. Therefore, it was assumed that these factors could make all, or 100 per cent, of the difference in student achievement on the standardized tests measuring sales comprehension and economic understanding. In order for the treatment to have any significance, it was necessary to adjust for these factors by the analysis of covariance statistical procedure.

It seemed highly probable to the researcher that the socio-economic status of the school communities and of the parents of the students tested might affect the test outcomes. The first step was a personal interview with the principal of each school, using an interview sheet and an index previously developed for this purpose and used in an educational research study at Michigan State. The index,

developed by Paul Messier, was designed to estimate the socio-economic status of the students. The Messier index is divided into six categories as follows: (A) area live in, (B) house type, (C) source of income, (D) education, (E) racial background, and (F) occupations. The scores from the first four categories were grouped and labeled the socio-economic index. The remaining two scores, racial-ethnic intermix and occupational level, were treated separately.

Duncan's socio-economic index was also used. Duncan's index provides ratings based on the occupation of the head of the household. Each student tested was asked to provide information regarding parent's occupation. Thereby, an index score expressing the income and educational level coefficient, ranging from 00-99 was obtained for each student in the study.

It is recognized that reading level of students tested will more than likely affect the results on the standardized tests. Therefore, it was also decided that reading achievement level scores would reflect the prior achievement level of all the students in the study. All schools included in the study had on record scores from standardized tests in reading achievement for all

students included in the study. These scores appear in this study as an independent variable indicating prior achievement.

In order to measure the economic understandings of the students involved in this study, it was necessary to select a measuring instrument. The instrument selected for this study was both Forms A and B of the Standardized Test of Economic Understanding.[1] Form A was administered to all students before October 1, 1967, and Form B between April 15 and May 1, 1968.

Even though concepts of economic understanding are taught throughout other units of instruction to which distributive education students are exposed, both the "project method" student and the "cooperative method" student are, at one time or another during the year, exposed to a concentrated unit on the economics of distribution. It would also be expected that both the eleventh and twelfth grade non-distributive education students would gain to some degree additional economic understanding through their course work during the course of the school year. For this reason, pre-tests and post-tests were given.

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[1]Council on Economic Education, Test of Economic Understanding (Chicago, Ill.: Science Research Associates, 1963). (See Appendix B for sample page of test.)

Only subjects having both pre-treatment and post-treatment data on the three criterion instruments were used for comparisons. This procedure was necessitated by the elimination of other variables which could account for differences between the groups. The statistical technique was the analysis of covariance which used the pre-treatment information as controlling for initial differences between groups. The findings summarized in Chapter IV result in the following conclusions.

IV. FINDINGS

The findings are presented as they relate to the questions presented in Chapter I and in the summary of the study.

The question "Are the results on certain standardized tests in sales comprehension significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?" can be answered by inference from the findings on sales terms and sales aptitudes: There were no significant differences between programs for these two criteria. Consequently, it was concluded that the eleventh grade

"project method" and twelfth grade "cooperative methods" of instruction are equally effective in teaching sales comprehension providing the pupils' previous achievement is adjusted for.

Similarly, the question "Are the results on certain standardized tests in economic understanding significantly different for eleventh grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?" was answered by reference to the findings. There was no significant differences between groups on the criterion economic understanding. The conclusion was inferred, therefore, that the eleventh grade project and twelfth grade cooperative programs are equally effective in teaching pupils economic understanding providing that previous achievement is controlled for.

The third question "Are the results on certain standardized tests in sales comprehension and economic understanding significantly different for twelfth grade distributive education students who have been taught by the "project method" of instruction and twelfth grade distributive education students who have been taught by the "cooperative method" of instruction?" was answered by

reference to the findings: There were no significant differences between the groups on the criteria sales terms and sales aptitudes. Therefore, it was concluded that the twelfth grade project and twelfth grade cooperative programs are equally effective in teaching sales comprehension provided previous achievement is controlled for.

The fourth question "Of what importance is students' level of prior achievement in determining the significance of students' scores on standardized tests in sales comprehension and economic understanding?" can be answered by reference to the statistical technique of analysis of covariance where pupils' prior achievement was used as control. Suggestions of the pre-treatment means supports the contention that twelfth graders generally have greater sales comprehension and economic understanding. Similarly, the post-treatment means maintain the orientation. Consequently, the covariance technique adjusted for the initial differences. It was concluded, therefore, that prior achievement in sales comprehension and economic understanding strongly predicts improvement in these areas.

The answer to the question "Of what importance are the socio-economic status, age, and sex of the students in determining the significance of students' scores on standardized tests in sales comprehension and economic

understanding?" can be answered by reference to the findings: When subjects were classified by sex and age, there were no significant differences between the sexes or between age categories even though the criteria were adjusted for pre-treatment difference in achievement and socio-economic status. Consequently, it was concluded that sex of the student, age, and socio-economic factors do not affect sales comprehension or economic understanding to any significant degree, provided prior achievement is controlled for.

The sixth question "Are the results on certain standardized tests in sales comprehension significantly different for eleventh and twelfth grade distributive education students who are enrolled in or have completed a course in marketing?" can be answered by inference from the findings: There were no significant differences in sales comprehension between groups when subjects were classified with regard to status of a prior course in marketing and controlled for prior achievement. The conclusion was drawn that previous education in marketing affects eleventh and twelfth grade distributive education pupils' knowledge of sales comprehension to the same degree.

The question "Are the results on certain standardized tests in economic understanding significantly

different for eleventh or twelfth graders who are enrolled in or have completed a course in economics?" was answered by reference to the findings: There were no significant differences in economic understanding between groups when students were classified by status of a prior course in economics and controlled for prior achievement. Consequently, it was concluded that previous education in economics affects eleventh and twelfth grade distributive education pupils' economic understanding to the same degree.

There was an additional finding which has implications for additional research. That is, there was a significant difference between the twelfth grade distributive education programs. The cooperative program apparently resulted in greater learning in economic understanding than did the project program. Therefore, it was concluded that the twelfth grade cooperative program effects greater growth in economic understanding than does the twelfth grade project program.

When the present study began, it was hypothesized that there would be little differences, if any, in the sales comprehension and economic understandings of eleventh and twelfth grade pupils subjected to project and cooperative programs. This contention was supported by the findings.

The findings of this study were not unlike the findings of the Ferguson study with the exception of one area. The Ferguson study did find a significant difference in student achievement on tests of sales comprehension between students who had studied under the "project method" of instruction and students who had studied under the "cooperative method" of instruction. This study did not find a significant difference between these groups. But Ferguson was comparing eleventh grade "project method" with twelfth grade "cooperative method" in programs where the "project method" was in its first year. One finding in this study that was not measured in the Ferguson study may have implications for additional research. There was an apparent significant difference between the twelfth grade distributive education programs. The students enrolled in the cooperative program in the twelfth grade did significantly better in the test of economic understanding than did students in the project program at the twelfth grade level. Since Ferguson did not have twelfth grade students enrolled in a project program, he could not compare these groups.

III. RECOMMENDATIONS

The findings and conclusions suggest several recommendations for either use or for additional research.

The preponderance of similarities in sales comprehension and economic understanding regardless of program suggests that present programs be continued. Even though the twelfth grade "cooperative method"classes generally did better than the twelfth grade "project method" classes, the paucity of data for the twelfth grade "project method" programs suggests caution in neglecting or using this program until further additional research can be accomplished in comparing this program to other programs.

Although the present study was expansive in that the sample was representative of a large metropolitan area, the possibility exists that there will be special interest for schools which are, say particularly close to one sort of industry such as electronics and those not particularly close to any industry. Thus, the demands of the area may require one sort of program which would be more effective than another sort of program. Establishing effectiveness, then, would require planned studies in individual schools.

The present study was limited to students in eleventh and twelfth grade but could be expanded into a follow-up study of pupils who enter the work-world on leaving high school and sub-testing for retention of information.

IV. IMPLICATIONS

The purpose of this study was not intended to approve or disapprove of the "project method" of instruction or the "cooperative method" of instruction. It is important in analyzing this study that the reader recognize that only two competency areas were examined, Economic Understandings, and Sales Aptitudes and Terms. The on-the-job experience gained through the "cooperative method" is assumed to provide student development in many other areas such as the building of confidence, the interrelationship and interaction between youth and adult employees, learning to accept responsibility, learning to work under supervision, and others. In no way, then, does this study suggest that in all areas of competency development provided by the distributive education program, students will benefit equally from either method. The data here merely suggests that in the two competency areas measured, the students appeared to gain similar understandings. Further research might be done to compare individual growth and development in other competency areas.

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APPENDICES

APPENDIX A

DOCUMENTS RELATING TO ESTABLISHMENT OF THE STUDY

(Sample)

ARIZONA STATE UNIVERSITY Tempe, Arizona 85281
College of Business Administration

September 22, 1967

Mr. Charles Burton, Principal
Alhambra High School
3839 West Camelback Road
Phoenix, Arizona 85019

Dear Mr. Burton

Distributive Education in Arizona has a rich heritage. This is due largely to outstanding leadership given by state and local administrators and strong teacher coordinators--all people who believe in a sound educational program founded on proved educational concepts.

Recently, due to a change in federal legislation, the program has been expanded to serve more students who can benefit by this kind of program. This has been possible because the on-the-job experience requirement has been made more flexible. As is true in any new program, we who are the guardians of the educational soundness of the program are interested in knowing whether a program without the work experience requirement can still teach the concepts that we feel are gained by the on-the-job experiences.

For my doctoral dissertation I am, therefore, going to attempt to measure the growth of the students who are not in the cooperative program and compare this with the growth of the students in the cooperative programs. I think our total instructional program in Arizona can benefit by such a study.

For this research I have selected twelve high schools, schools that have experienced coordinators and schools that have experimented with the marketing class as well

as the cooperative program. I would like your permission, Mr. Burton, to include your school in my study and to have your permission to administer certain tests to your students.

The tests would be designed to measure economic competencies as well as other sales and marketing concepts taught in the DE classroom. The number of students involved would be the DE cooperative students, the marketing students, and one control class made up of non-DE students. There would be about three tests administered, and I personally feel your program, your teacher-coordinators, and your students can benefit tremendously from the outcome of this study.

I hope you will consent to let me include Alhambra High School in my research. Your approval or disapproval in the very near future would be appreciated. If you like, you can have your teacher-coordinator contact me since I know you have a very busy schedule. I will be happy to discuss this further with you when I visit your school, but I do need to know your decision on the matter soon.

Sincerely

Kenneth L. Rowe
Teacher Educator
Distributive Education

KLR:ds

cc: Mrs. Jeanne Carver, Coordinator, Distributive Education, Alhambra High School

(Sample)

ARIZONA STATE UNIVERSITY Tempe, Arizona 85281
College of Business Administration

March 20, 1968

Mr. Charles Burton, Principal
Alhambra High School
3839 West Camelback Road
Phoenix, Arizona 85019

Dear Mr. Burton

You will recall that late last September you gave your approval for the cooperation of Alhambra High School to be involved in an experimental study to measure the competency development of students enrolled in the distributive education program. In order to do this, it was necessary to give a pre-test to control group students as well as students in the distributive education program. This was done through the fine cooperation of your social studies department and your DE teacher-coordinator.

It is about time to start the post-testing of the same students. I will be contacting those same teachers who participated in the pre-testing within a few days. The purpose of this letter is merely to keep you informed and in the event that you hear any reactions to or discussion of the post-testing, you will be alerted to what is taking place.

Thanks again, Mr. Burton, for your excellent cooperation. The teachers involved will receive a letter from me and I will be contacting them in person in a few days. You may remember that you are one of eleven high schools in the State of Arizona who are participating in this research study. You and your DE teacher will receive

copies of the findings and information regarding the testing of your students. I will keep you posted on the progress.

Sincerely

Kenneth L. Rowe
Teacher Educator
Distributive Education

KLR:rb

(Sample)

ARIZONA STATE UNIVERSITY Tempe, Arizona 85281
College of Business Administration

April 30, 1968

Mr. Robert E. Cognac
Alhambra High School
3839 West Camelback Road
Phoenix, Arizona 85019

Dear Mr. Cognac

In respect to extremely heavy teaching loads, curriculum work and extra duty assignments, one hesitates to add any additional responsibility to members of the teaching profession. Yet, it is imperative that a certain amount of research and evaluation take place periodically in an attempt to measure student growth in specific areas of the curriculum.

It is for this reason that I want to especially thank you for not only adding to your already busy schedule but for your wonderful cooperation in participating in my research study. The time you took to administer tests to your class is greatly appreciated. Eleven high schools in Arizona cooperated in this study and the results will be made available to those schools involved.

Your contribution to this research study speaks highly for your professional attitude and interest in the

growth and improvement of learning for young people. Thank you again for your tremendous cooperation.

Sincerely

Kenneth L. Rowe
Teacher Educator
Distributive Education

KLR:my

cc: Mr. Charles Burton

APPENDIX B

DOCUMENTS USED TO SECURE DATA FROM POPULATION

(Sample)

(Messier Index)

DISTRIBUTIVE EDUCATION PILOT PROJECT

MICHIGAN STATE UNIVERSITY

STUDENT PERSONNEL INDEX

Please indicate the percentage of parents of students that have the following circumstances.

	PERCENTAGE IN THIS SCHOOL
A. Area live in:	
1. Select residential area (or areas) of highest repute in the community.	_____
2. Better suburban and apartment house area; homes with large grounds.	_____
3. Preferred residential areas, adequate grounds, good apartment buildings.	_____
4. Residential neighborhoods with no deterioration, reputed to be average.	_____
5. Area beginning to deteriorate; business or industry entering into it.	_____
6. Area considerably deteriorated but not a slum area; depreciated reputation.	_____
7. Slum area (or areas) of the community neighborhood in bad repute.	_____
B. House type:	
1. Large houses in good condition; adequate grounds.	_____
2. Large house in medium condition; large apartments in well-kept buildings.	_____

Student Personnel Index (continued)

PERCENTAGE IN THIS SCHOOL

3. Moderate house in medium condition; large apartments in well-kept buildings. _____

4. Large house and moderate house in fair condition; apartment buildings in medium condition. _____

5. Small house in good condition; good apartments in remodeled houses. _____

6. Small house in medium condition or fair condition; apartments in fair condition. _____

7. All houses and apartments in bad condition; store fronts, etc. _____

C. Source of income:

1. Savings and investments, inherited--50% or more of the income. _____

2. Savings and investments, gained by the earner--not retirement pensions. _____

3. Profits and fees--including higher executives who share in profits. _____

4. Salary or commission--including retirement earned thereby. _____

5. Wages, based upon hourly rates on piece-work. (Time Card personnel). _____

6. Private aid or assistance--may be supplemented by part-time work. _____

7. Public relief and non-respectable income, according to reputation. _____

D. Education:

1. Completed one or more years of graduate work at college or University. _____

Student Personnel Index (continued)

	PERCENTAGE IN THIS SCHOOL
2. Graduated from four-year college, university, etc. or professional school.	_____
3. Attended college for two or more years, or equivalent higher education.	_____
4. Graduated from high school, or equivalent secondary education.	_____
5. Attended high school, completed at least one year but did not graduate.	_____
6. Completed no more than three to eight years of grade school.	_____
7. Completed no more than three years of grade school.	_____

E. Racial Background:

1. Old American or Old established community names.	_____
2. Assimilated American or community leader, etc., but not of "old names."	_____
3. French Canadian or Irish.	_____
4. Northern European ethnic group or sect.	_____
5. Southern European or Jewish.	_____
6. Eastern European or Near East.	_____
7. Colored- Negro, Oriental.	_____

F. Occupation

1. Lawyer, doctor, dentist, judge, minister, professor, engineer, or comparable occupations.	_____

Student Personnel Index (continued)

PERCENTAGE

2. High school teacher, trained nurse (RN) chiropodist, chiropractor, architect, undertaker, minister (no college), asst. office and dept. managers or supervisors, real estate salesmen in reputed firms, columnist or editorial writers, accountant, etc. _____

3. Grade school teacher, optometrist, pharmacist (employee), mgrs. of small branch stores and similar businesses, salesmen, buyers, bank and broker's clerks, RR agent, elected civic and county officials, newspaper reporter, etc. _____

4. Stenographer, bookkeeper, rural mail clerk, ticket agent, auto salesman, auto, clothing, book, drygoods, salesmen, etc. _____

5. Drugstore, hardware, grocery, dime store clerks, telephone or beauty operators, dressmaker, practical nurse, etc. _____

6. Gentlemen farmers, large landowners and operators who patronize the local activities. _____

7. Managers and land operators with active urban life. _____

8. Small contractor who works at or superintends his jobs; commercial pilot; owners and operators of good mechanized farms. _____

9. Factory or mine foreman; carpenter, electrician, plumber, welder, master mech., RR engineer and trainmen, linotype operator, printer, police captain, butcher, tailor, dry cleaner, small landowners and the "forgotten farmer" who owns a "decent" place, etc. _____

Student Personnel Index (continued)

PERCENTAGE

10. Apprentice to skilled trades; timekeeper, RR firemen and brakeman, tel and tel-lineman, medium-skilled factory worker, policeman, barber, gas station operators, bartender, liquor salesman, head waiter, tenants on good farms, owners of farms who just manage to make a living, etc. _____

11. Semi-skilled factory and production workers, warehouseman, janitor, watchman, cook, taxi and truck drivers, baggageman, delivery man, gas station attendant, waiter or waitress, etc. _____

12. Laborer, miner, mill hand, migrant worker, section hand, scrub woman, laundress, domestic servant, bus boy, etc. _____

13. Reputed lawbreakers, etc. _____

(Sample)

(Student Information Sheet)

ARIZONA STATE UNIVERSITY

DATA SHEET

NAME _____ DATE _____
last first initial mo. day yr.

AGE _____ DATE OF BIRTH _____ SEX M F
mo. day yr. (circle one)

SCHOOL _____

INSTRUCTOR _____ GRADE _____ COURSE _____

FATHER'S OCCUPATION _____

HAVE YOU HAD A COURSE IN ECONOMICS? YES___ NO__IN PROCESS_____
(check one)

HAVE YOU HAD A COURSE IN MARKETING? YES__NO___IN PROCESS _____
(check one)

(Sample)

TEST OF ECONOMIC UNDERSTANDING

FORM A

1. Every economic system faces the need to economize. In this context, which of the following is the best definition of "to economize"?

   A. To save money and thus reduce the national debt
   B. To dispense with the production of luxuries
   C. To balance the government's budget by reducing spending
   D. To make the best use of scarce resources that have alternative uses

2. What is meant by the assertion that every economic system (such as socialism, capitalism, communism) faces the fact of scarcity?

   A. There are insufficient productive resources to satisfy all wants of a society
   B. There are times when some products can be had only by paying high prices
   C. In the beginning every society faces shortages, but a mature economy, such as our own, overcomes scarcity in time.
   D. All economies have depressions during which scarcities exist.

3. Which of the following best characterizes the relation between producers, consumers, and government in a private enterprise economy?

   A. Producers decide what to produce, government how it shall be produced, and consumers who shall receive the product.
   B. Consumer spending leads producers to decide what shall be produced and how resources shall be used. Government seeks to maintain competition and the rights of private property.

TEST OF ECONOMIC UNDERSTANDING, FORM A (continued)

C. Consumers decide what should be produced, producers how best to produce it, and government who shall receive which products.
D. Government ultimately decides what shall be produced and how. Consumers and producers, as voters, control the government.

4. Three of the following are essential to the operation of a private enterprise economy. Which one might such an economy operate without?

A. Profit motive
B. Markets
C. Corporations
D. Prices

5. Of the following, the principle of diminishing returns is best illustrated by

A. small firms being driven out of business by large firms
B. any decline in the average rate of profits
C. a slowing rate of increase in output as a farmer adds increasing amounts of fertilizer to his land
D. the decline in personal income as workers age

6. Business firms wish to sell their products at a high price; households wish to buy products at low prices. In a private enterprise economy this conflict of interests

A. is reconciled by competitive markets
B. is reconciled by government regulation
C. does not exist; there is really no conflict of interest between households and firms
D. is not reconciled; since all household heads are members of firms, the interests of firms prevail

TEST OF ECONOMIC UNDERSTANDING, FORM A (contd)

7. In a private enterprise economy, government encourages freedom of choice by

   A. guaranteeing complete freedom of choice to households and firms
   B. limiting this freedom for some if their choices might reduce freedom of choice significantly for others
   C. requiring individuals and firms to use their freedom of choice wisely
   D. seeing that individuals and firms choose what the majority believes best

8. A rise in the price of which product would be likely to increase the demand for butter

   A. Butter
   B. Oleomargarine
   C. Bread
   D. Any of the above

9. Assuming that the supply of a product remains constant as the demand for it increases, its price will normally

   A. fall
   B. rise
   C. stay the same
   D. either rise or fall

10. Which of the following elements is the most essential for a private enterprise economy?

   A. Active competition in the marketplace
   B. The functioning of labor unions
   C. Action by responsible business leaders
   D. Extensive government regulation

11. The price of shoes is likely to be increased by

   A. more capital investment by producers
   B. a decrease in the demand for shoes
   C. a decrease in the supply of shoes
   D. new machines reducing the cost of shoe production

TEST OF ECONOMIC UNDERSTANDING, FORM A (contd)

12. If the government were to levy a tax of one dollar on every pair of shoes sold, which of the following would most likely result?

    A. Consumers would pay a higher price for shoes and probably buy a smaller quantity.

    B. Suppliers would increase the quantity sold in order to offset the taxes paid to the government

    C. Consumers would pay a higher price and as a result suppliers would make larger profits.

    D. Suppliers would sell more and charge a higher price.

(Sample)

TEST OF ECONOMIC UNDERSTANDING

FORM B

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 <u>some</u> 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 <u>not</u> a function of profits in a basically private enterprise economy?

   A. Providing an incentive for efficient production by business

TEST OF ECONOMIC UNDERSTANDING, FORM B (continued)

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

TEST OF ECONOMIC UNDERSTANDING, FORM B (continued)

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 counteracting 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

(Sample Page)

TEST OF SALES APTITUDE

4. A woman has requested a radiator cover firm to send one of their salesmen. Upon his arrival she says she has changed her mind. What is the best thing for the salesman to do?

(1) Politely explain that she is obligated to see the samples.
(2) Ask her, "Have you purchased some already?"
(3) Tell her she is making a serious mistake.
(4) Say to her, "As long as I am here, I may as well show you the samples."

5. A job lot dealer has bought up a large number of second hand cameras. He wishes to get rid of them quickly, but at a decent profit. Which one of the following groups will probably be the best market?

(1) camera shops selling second hand equipment
(2) schools offering art courses
(3) newspaper photography departments
(4) student camera clubs

6. Which one of the following items sells better in rural districts than in cities?

(1) overalls
(2) sporting goods
(3) books on animal husbandry
(4) building materials

7. A prospective customer comes to the stationery department of a store in search of desk accessories advertised in newspapers. After seeing the items as well as others not advertised, the man leaves without having purchased anything. What is the most probable reason for this?

8. The best thing for a hardware store salesman to do when a prospective customer indicates that he has not decided what to buy is to

(1) follow him about, pointing out the merits of each item

SALES APTITUDE (Continued)

(2) bring to his attention the most needed carpenter's tools
(3) stick close by, being ready to offer assistance in purchases
(4) show him a sample of the sale of the day

9. Most of the salesmen of a particular soap company are doing better than ever before but George is doing worse. He could probably MOST by

(1) finding out more about the product he is selling
(2) requesting a change in territory
(3) developing pleasant personality traits
(4) studying the methods of successful salesmen

10. In selling baby carriages to dealers it would be best to emphasize which one of the following points?

(1) all metal parts are chrome plated to resist rust
(2) only our carriages have the new "knee action" feature
(3) more of these carriages have been sold in the past year than any other make
(4) our company has spent $100,000 advertising this model

11. In a large city a telephone directory would be most helpful in selecting prospective buyers of which one of the following items?

(1) electric refrigerators
(2) automobiles
(3) magazine subscriptions
(4) vacuum cleaners

(Sample)

TEST OF SALES TERMS

	1	2	3	4
1. CONTRACT means the same as:	policy	connection	agreement	option
2. Area to which salesman is assigned	distribution	market	coverage	territory
3. He paid on the installment plan. (the underlined word means the sames as:	on time	in full	by check	in advance
4. PURCHASE means the opposite of:	client	sale	buy	commerce
5. Sale of goods in large quantity.	retail	mail order	wholesale	manufacture
6. Orders are backlogged for this product.	slack	cancelled	fluctuating	unfilled
7. COMMODITY means the same as:	service	consumer	merchandise	market
8. Payment made when goods delivered	c.o.d.	store-door	charge	cash sale
9. We underwrite the machine for one year	put on trial	guarantee	lease	service
10. COMPETITOR means the opposite of:	merchant	clientele	huckster	partner
11. To return money paid for goods.	discount	rebate	concession	receipt
12. A price quotation was furnished.	tariff	account	valuation	concession
13. INVOICE means the same as:	bill	endorsement	receipt	account
14. Annual account of goods.	catalog	audit	ledger	inventory
15. He was an accredited agent.	commissioned	abrogated	proxy	accessory

		1	2	3	4
16.	CONFIRMATION means the opposite of:	requisition	cancellation	contract	affirmation
17.	People to whom product is sold.	volume	outlet	market	demand
18.	It was a clearance sale.	wholesale	bankruptcy	budget	liquidation
19.	ITEMIZE means the same as:	underline	add	invoice	detail
20.	An investment policy of insurance	endowment	floater	casualty	liability
21.	He appraised the jewelry.	rebated	analyzed	set price	promoted
22.	DIVERSIFICATION means the opposite of:	innovation	permanence	variety	transferable
23.	Estimated volume of sales.	commission	budget	assessment	quota
24.	The price was made retroactive.	backward	reduced	transferred	subsequent
25.	CONTINGENT means the same as:	confirmatory	contractual	conditional	consecutive
26.	Retail association eliminating middle-man.	concession	syndicate	cooperative	supermarket
27.	The net profit was small.	unit	clear	retail	gross

(Sample Page)

DUNCAN'S SOCIO-ECONOMIC INDEX

Occupations, by major occupation group	Socio-economic index
Professional, technical, and kindred workers	
Accountants and auditors	78
Actors and actresses	60
Airplane pilots and navigators	79
Architects	90
Artists and art teachers	67
Athletes	52
Authors	76
Chemists	79
Chiropractors	75
Clergmen	52
College presidents, professors, and instructors (n.e.c.)	84
Dancers and dancing teachers	45
Dentists	96
Designers	73
Dieticians and nutritionists	39
Draftsmen	67
Editors and reporters	82
Engineers, technical	85
Aeronautical	87
Chemical	90
Civil	84
Electrical	84
Industrial	86
Mechanical	82
Metallurgical and metallurgists	82
Mining	85
Not elsewhere classified	87
Entertainers (n.e.c.)	31
Farm and hom management advisors	83
Foresters and conservationists	48
Funeral directors and embalmers	59
Lawyers and judges	93
Librarians	60
Musicians and music teachers	52

Occupations, by major occupation group	Socio-economic index
Natural scientists (n.e.c.)	80
Nurses, professional	46
Nurses, student professional	51
Optometrists	79
Osteopaths	96
Personnel and labor relations workers	84
Pharmacists	82
Photographers	50
Physicians and surgeons	92
Radio operators	69
Recreation and group workers	67
Religious workers	56
Social and welfare workers, except group	64
Social scientists	81
Sports instructors and officials	64
Surveyors	48
Teachers (n.e.c.)	72
Technicians, medical and dental	48
Technicians, testing	53
Technicians (n.e.c.)	62
Therapists and healers (n.e.c.)	58
Veterinarians	78
Professional, technical, and kindred workers (n.e.c.)	65
Farmers and farm managers	
Farmers (owners and tenants)	14
Farm managers	36
Managers, officials, and proprietors, except farm	
Buyers and department heads, store	72
Buyers and shippers, farm products	33
Conductors, railroad	58
Credit men	74
Floormen and floor managers, store	50
Inspectors, public administration	63
Federal public administration and postal services	72
State public administration	54
Local public administration	56

Occupations, by major occupation group	Socio-economic index
Managers and superintendents, building	32
Officers, pilots, pursers, and engineers, ship	54
Officials & administrators (n.e.c.) public administration	66
Federal public administration and postal service	84
State public administration	66
Local public administration	54
Officials, lodge, society, union, etc.	58
Postmasters	60
Purchasing agents and buyers (n.e.c.)	77
Managers, officials, & proprietors (n.e.c.) salaried	68
Construction	60
Manufacturing	79
Transportation	71
Telecommunications, & utilities & sanitary services	76
Wholesale trade	70
Retail trade	56
Food and dairy products stores, and milk retailing	50
General merchandise and five and ten cent stores	68
Apparel and accessories stores	69
Furniture, home furnishings, and equipment stores	68
Motor vehicles and accessories retailing	65
Gasoline service stations	31
Eating and drinking places	39
Hardware, farm implement, & bldg. material retail	64
Other retail trade	59
Banking and other finance	85
Insurance and real estate	84
Business services	60
Automobile repair services and garages	47
Miscellaneous repair services	53
Personal services	50
All other industries (incl. not reported)	62
Managers, officials, & propr's (n.e.c.) - self employed	48

Occupations, by major occupation group	Socio-economic index
Construction	51
Manufacturing	61
Transportation	43
Telecommunications, & utilities & sanitary services	44
Wholesale trade	59
Retail trade	43
Food and dairy products stores, and milk retailing	33
General merchandise and five and ten cent stores	47
Apparel and accessories stores	65
Furniture, home furnishings, and equipment stores	59
Motor vehicles and accessories retailing	70
Gasoline service stations	33
Eating and drinking places	37
Hardware, farm emplement, & bldg. material retail	61
Other retail trade	49
Banking and other finance	85
Insurance and real estate	76
Business services	67
Automobile repair services and garages	36
Miscellaneous repair services	34
Personal services	41
All other industries (incl not reported)	49
Clerical and kindred workers	
Agents (n.e.c.)	68
Attendants and assistants, library	44
Attendants, physician's and dentist's office	38
Baggagemen, transportation	25
Bank tellers	52
Bookkeepers	51
Cashiers	44
Collectors, bill and account	39
Dispatchers and starters, vehicle	40
Express messengers and railway mail clerks	67
Mail carriers	53
Messengers and office boys	28
Office machine operators	45

Occupations, by major occupation group	Socio-economic index
Shipping and receiving clerks	22
Stenographers, typists, and secretaries	61
Telegraph messengers	22
Telegraph operators	47
Telephone operators	45
Ticket, station, and express agents	60
Clerical and kindred workers (n.e.c.)	44
Sales workers	
Advertising agents and salesmen	66
Auctioneers	40
Demonstrators	35
Hucksters and peddlers	8
Insurance agents and brokers	66
Newsboys	27
Real estate agents and brokers	62
Stock and bond salesmen	73
Salesmen and sales clerks (n.e.c.)	47
Manufacturing	65
Wholesale trade	61
Retail trade	39
Other industries (incl. not reported)	50
Craftsmen, foremen, and kindred workers	
Bakers	22
Blacksmiths	16
Boilermakers	33
Bookbinders	39
Brickmasons, stonemasons, and tile setters	27
Cabinetmakers	23
Carpenters	19
Cement and concrete finishers	19
Compositors and typesetters	52
Cranemen, derrickmen, and hoistmen	21
Decorators and window dressers	40
Electricians	44
Electrotypers and stereotypers	55
Engravers, except photoengravers	47
Excavating, grading, and road machinery operators	24

Occupations, by major occupation group	Socio-economic index
Foremen (n.e.c.)	49
Construction	40
Manufacturing	53
Metal industries	54
Machinery, incl. electrical	60
Transportation equipment	66
Other durable goods	41
Textiles, textile products, and apparel	39
Other nondurable goods (incl. not specified mfg.)	53
Railroads and railway express service	36
Transportation, except railroad	45
Telecommunications, & utilities & sanitary services	56
Other industries (incl. not reported)	44
Forgemen and hammermen	23
Furriers	39
Glaziers	26
Heat treaters, annealers, & temperers	22
Inspectors, scalers, and graders, log and lumber	23
Inspectors (n.e.c.)	41
Construction	46
Railroads & railway express service	41
Transport, exc. rr., communication & other public utilities	45
Other industries (incl. not reported)	38
Jewelers, watchmakers, goldsmiths, and silversmiths	36
Job setters, metal	28
Linemen and servicemen, telegraph, telephone, and power	49
Locomotive engineers	58
Locomotive firemen	45
Loom fixers	10
Machinists	33
Mechanics and repairmen	25
Airplane	48
Automobile	19
Office machine	36
Radio and television	36

Occupations, by major occupation group	Socio-economic index
Railroad and car shop	23
Not elsewhere classified	27
Millers, grain, flour, fee, etc.	19
Millwrights	31
Molders, metal	12
Motion picture projectionists	43
Opticians, and lens grinders & polishers	39
Painters, construction & maintenance	16
Paperhangers	10
Pattern & model makers, except paper	44
Photoengravers and lithographers	64
Piano and organ tuners & repairmen	38
Plasterers	25
Plumbers & pipe fitters	34
Pressmen & plate printers, printing	49
Rollers and roll hands, metal	22
Roofers and slaters	15
Shoemakers & repairers, exc. factory	12
Stationary engineers	47
Stonecutters and stone carvers	25
Structural metal workers	34
Tailors and tailoresses	23
Tinsmiths, coppersmiths, & sheet metal workers	33
Toolmaker, and die makers and setters	50
Upholsterers	22
Craftsmen & kindred workers (n.e.c.)	32
Members of the armed forces	18
Operatives and kindred workers	
Apprentices	35
Auto mechanics	25
Bricklayers and masons	32
Carpenters	31
Electricians	37
Machinists & toolmakers	41
Mechanics, except auto	34
Plumbers & pipefitters	33
Building trades (n.e.c.)	29
Metal working trades (n.e.c.)	33
Printing trades	40

Occupations, by major occupation group	Socio-economic index
Other specified trades	31
Trade not specified	39
Asbestos and insulation	32
Attendants, auto service & parking	19
Blasters & powdermen	11
Boatmen, canalmen, & lock keepers	24
Brakemen, railroad	42
Bus drivers	24
Chainmen, rodmen, and asmen, surveying	25
Conductors, bus & street railway	30
Deliverymen & routemen	32
Dressmakers & seamstresses, exc. factory	23
Dyers	12
Filers, grinders, & polishers, metal	22
Fruit, nut, & vegetable graders & packers, exc. factory	10
Furnacemen, smeltermen, & pourers	18
Heaters, metal	29
Laundry & dry cleaning operatives	15
Meat cutters, except slaughter & packing house	29
Milliners	46
Mine operatives & laborers (n.e.c.)	10
Gold mining	2
Crude petroleum & natural gas extraction	38
Mining & quarrying, exc. fuel	12
Motormen, mine, factory, logging camp, etc.	3
Motormen, street, subway & elevated rr.	34
Oilers & greasers, except auto	15
Painters, exc. construction & maintenance	18
Photographic process workers	42
Power station operators	50
Sailors & deck hands	16
Sawyers	5
Spinners, textile	5
Stationary firemen	17
Switchmen, railroad	44
Taxicab drivers & chauffeurs	10
Truck & tractor drivers	15
Weavers, textile	6
Welders & flame-cutters	24
Operatives & kindred workers (n.e.c.)	18
Manufacturing	17

Occupations, by major occupation group	Socio-economic index
Durable goods	
Sawmills, planing mills, & Misc. wood products	7
Sawmills, planing mills, & mill work	7
Misc. wood products	9
Furniture & fixtures	9
Stone, clay, & glass products	17
Glass & glass products	23
Cement, & concrete, gypsum & plaster products	10
Structural clay products	10
Pottery & related products	21
Misc. nonmetallic mineral & stone products	15
Metal industries	16
Primary metal industries	15
Blast furnaces, steel works & rolling mills	17
Other primary iron & steel industries	12
Primary nonferrous industries	15
Fabricated metal ind. (incl. not spec. metal)	16
Fabricated steel products	16
Fabricated nonferrous metal products	15
Not spec. metal industries	14
Machinery, except electrical	22
Agricultural mach. & tractors	21
Office & store machines & devices	31
Misc. machinery	22
Electrical mach., equipment, & supplies	26
Transportation equipment	23
Motor vehicles & motor vehicle equip.	21
Aircraft & parts	34
Ship & boat building & repairing	16
Railroad & misc. transportation equipment	23
Professional & photographic equipment & watches	29
Professional equipment & supplies	23
Photographic equipment & supplies	40
Watches, clocks, & clockwork-operated devices	28

Occupations, by major occupation group	Socio-economic index
Miscellaneous manufacturing industries	16
Food & kindred products	16
Meat products	16
Dairy products	22
Canning & preserving fruits, vegetables, & sea foods	9
Grain-mill products	14
Bakery products	15
Confectionary & related products	12
Beverage industries	19
Misc. food preparations & kindred products	11
Not specified food industries	19
Tobacco manufacturers	2
Textile mill products	6
Knitting mills	21
Dyeing & finishing textiles, exc. knit goods	8
Carpets, rugs, & other floor coverings	14
Yarn, thread, & fabric mills	2
Misc. textile mill products	10
Apparel & other fabricated textile products	21
Apparel & accessories	22
Misc. fabricated textile products	17
Paper & allied products	19
Pulp, paper, & paperboard mills	19
Paperboard containers & boxes	17
Misc. paper & pulp products	19
Printing, publishing & allied industries	31
Chemicals & allied products	20
Synthetic fibers	9
Drugs & medecines	26
Paints, varnishes, & related products	15
Misc. chemicals & allied products	23
Petroleum & coal products	51
Petroleum refining	56
Misc. petroleum & coal products	14
Rubber products	22
Leather & leather products	16
Leather: tanned, curried & finished	10
Footwear, except rubber	9
Leather products, exc. footwear	14
Not specified manufacturing industries	16
Non-manufacturing industries (incl. not reported)	18

Occupations, by major occupation group	Socio-economic index
Construction	18
Railroads & railway express service	15
Transportation, except railroads	23
Telecommunications, & utilities & sanitary services	21
Wholesale & retail trade	17
Business & repair services	19
Personal services	11
Public administration	17
All other industries (incl. not reported)	20
Private household workers	
Housekeepers, private household	19
Living in	10
Living out	21
Laundresses, private household	12
Living in	--
Living out	12
Private household workers (n.e.c.)	7
Living in	12
Living out	6
Service workers, except private household	
Attendants, hospital & other institutions	13
Attendants, professional & personal service (n.e.c.)	26
Attendants, recreation & amusement	19
Barbers, beauticians, & manicurists	17
Bartenders	19
Boarding & lodging housekeepers	30
Bootblacks	8
Charwomen & cleaners	10
Cooks, except private household	15
Counter & fountain workers	17
Elevator operators	10
Firemen, fire protection	37
Guards, watchmen, & doorkeepers	18
Housekeepers & stewards, except private household	31
Janitors & sextons	9
Marshals & constables	21

Occupations, by major occupation group	Socio-economic index
Midwives	37
Policemen & detectives	39
Government	40
Private	36
Porters	4
Practical nurses	22
Sheriffs & bailiffs	34
Ushers, recreation & amusement	25
Waiters & waitresses	16
Watchmen (crossing) & bridge tenders	17
Service workers, except private household (n.e.c.)	11
Farm laborers & foremen	
Farm foremen	20
Farm laborers, wage workers	6
Farm laborers, unpaid family workers	17
Farm service laborers, self-employed	22
Fishermen & oystermen	10
Garage laborers, and car washers & greasers	8
Gardeners, except farm, & groundkeepers	11
Longshoremen & stevedores	11
Lumbermen, raftsmen, & wood choppers	4
Teamsters	8
Laborers (n.e.c.)	
Manufacturing	8
Durable goods	
Sawmills, planing mills & misc. wood products	3
Sawmills, planing mills & mill work	3
Misc. wood products	2
Furniture & fixtures	5
Stone, clay, & glass products	7
Glass & glass products	14
Cement, & concrete, gypsum & plaster prod.	5
Structural clay prod.	5
Pottery & related prod.	7
Misc.nonmetallic mineral & stone products	5

Occupations, by major occupation group	Socio-economic index
Metal industries	7
Primary metal ind.	7
Blast furnaces, steel works & rolling mills	9
Other primary iron & steel industries	4
Primary nonferrous industries	6
Fabricated metal ind. (incl. not spec. metal)	7
Fabricated steel prod.	7
Fabricated nonferrous metal products	10
Not spec. metal ind.	9
Machinery, exc. electrical	11
Agricultural machinery & tractors	14
Office & store machines & devices	17
Misc. machinery	10
Electrical mach., equipment, & supplies	14
Transportation equipment	11
Motor vehicles & motor vehicle equipment	13
Aircraft & parts	15
Ship & boat bldg. & repairing	2
Railroad & misc. transportation equipment	8
Prof. & photographic equip. & watches	11
Prof. equip. & supplies	10
Photographic Equip. & supplies	16
Watches, clocks & clockwork-operated devices	--
Misc. manufacturing industries	12
Nondurable goods	
Food and kindred products	9
Meat products	8
Dairy products	13
Canning & preserving fruits,veg.,& sea foods	6

Occupations, by major occupation groups	Socio-economic index
Grain-mill products	6
Bakery products	10
Confectionery & related products	10
Beverage industries	16
Misc. food preparations & kindred products	5
Not specified food industries	14
Tobacco manufacturers	0
Textile mill products	3
Knitting mills	4
Dyeing & finishing textiles, exc. knit goods	9
Carpets, rugs, & other floor coverings	14
Yarn, thread, and fabric mills	1
Misc. textile mill products	6
Apparel & other fabricated textile products	9
Apparel & accessories	11
Misc. fabricated textile products	6
Paper & allied products	7
Pulp, paper, & paperboard mills	6
Paperboard containers & boxes	10
Misc. fabricated textile products	8
Printing, publishing, & allied industries	23
Chemicals & allied products	8
Synthetic fibers	4
Drugs & medicines	22
Paints, varnishes, & related products	8
Misc. chemicals & allied products	8
Petroleum & coal products	22
Petroleum refining	26
Misc. petroleum & coal products	3
Rubber products	12
Leather & leather products	6
Leather: tanned, curried, & finished	2
Footwear, except rubber	10
Leather products, except footwear	12
Not specified manufacturing industries	8
Manufacturing industries (incl. not reported)	7
Construction	7
Railroads and railway express service	3
Transportation, except railroad	9
Telecommunications, & utilities and sanitary services	6

Occupations, by major occupation groups	Socio-economic index
Wholesale and retail trade	12
Business and repair services	9
Personal services	5
Public administration	7
All other industries (incl. not reported)	6
Occupation not reported	19