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Basic communication skills achievement of vocational business and academic education students

Ramey, Pamela Lane, Ph.D.
The Ohio State University, 1988

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UMI
BASIC COMMUNICATION SKILLS ACHIEVEMENT
OF VOCATIONAL BUSINESS AND ACADEMIC EDUCATION STUDENTS

DISSERTATION

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

By
Pamela Lane Ramey, B.S., M.S

* * * * *

The Ohio State University
1988

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# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ................................................................. ii
VITA ............................................................................................ iii
LIST OF TABLES ........................................................................ vi

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>9</td>
</tr>
<tr>
<td>Need for the Study</td>
<td>12</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>16</td>
</tr>
<tr>
<td>Research Questions</td>
<td>18</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>19</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>20</td>
</tr>
<tr>
<td>Basic Assumptions</td>
<td>24</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
<td>25</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>26</td>
</tr>
<tr>
<td>Organization of the Study</td>
<td>27</td>
</tr>
<tr>
<td>II. REVIEW OF RELATED LITERATURE AND RESEARCH.</td>
<td>29</td>
</tr>
<tr>
<td>Student Background Factors</td>
<td>31</td>
</tr>
<tr>
<td>Socioeconomic characteristics</td>
<td>33</td>
</tr>
<tr>
<td>Academic ability</td>
<td>37</td>
</tr>
<tr>
<td>Cooperative job placement</td>
<td>45</td>
</tr>
<tr>
<td>Vocational/Academic Comparisons on Miscellaneous Dimensions</td>
<td>49</td>
</tr>
<tr>
<td>Business Education Studies</td>
<td>56</td>
</tr>
<tr>
<td>Summary</td>
<td>59</td>
</tr>
</tbody>
</table>

iv
III. METHODOLOGY ................................................................. 62
  Research Procedure ......................................................... 63
  Description of Population .............................................. 64
  Outcome Measures ........................................................ 67
  Data Collection .............................................................. 70
  Treatment of the Data ..................................................... 71
  Summary ........................................................................... 72

IV. ANALYSIS OF DATA .......................................................... 73
  Description of the Subjects ............................................ 74
  Data Analysis ................................................................. 77
  Additional Findings ........................................................ 91
  Summary ........................................................................... 92

V. SUMMARY, CONCLUSIONS, RECOMMENDATIONS .......... 94
  Summary ........................................................................... 94
  Conclusions ....................................................................... 99
  Recommendations ......................................................... 102
    Procedural ................................................................. 103
    Substantive ............................................................... 103

BIBLIOGRAPHY ................................................................. 106

APPENDICES
  A. Preliminary Correspondence ........................................ 117
  B. Human Subjects Review Approval .............................. 120
  C. Instrumentation ........................................................ 122
  D. Supplementary Results of Analyses ......................... 131
# LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>Description</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Breakdown of Vocational and Academic Student Participants and Nonparticipants in Lucas County Schools</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>Number and Percent of Participants by School</td>
<td>76</td>
</tr>
<tr>
<td>3.</td>
<td>Summary Table: Mean Raw Score, Percent Correct, and Standard Deviation of Basic Communication Skills Achievement by Curriculum and by Program</td>
<td>79</td>
</tr>
<tr>
<td>4.</td>
<td>Summary Table: Mean Scores and Standard Deviations of Socioeconomic Background and Academic Ability by Curriculum and by Program</td>
<td>83</td>
</tr>
<tr>
<td>5.</td>
<td>Summary Table: Mean Score and Adjusted Score of Basic Communication Skills Achievement by Curriculum (Adjusted for Socioeconomic Background)</td>
<td>84</td>
</tr>
<tr>
<td>6.</td>
<td>Summary Table: Mean Raw Score and Adjusted Score of Basic Communication Skills Achievement by Curriculum (Adjusted for Academic Ability)</td>
<td>86</td>
</tr>
<tr>
<td>7.</td>
<td>Summary Table: Mean Score and Adjusted Score of Basic Communication Skills Achievement by Program (Adjusted for Socioeconomic Background)</td>
<td>89</td>
</tr>
<tr>
<td>8.</td>
<td>Summary Table: Mean Score and Adjusted Score of Basic Communication Skills Achievement by Program (Adjusted for Academic Ability)</td>
<td>90</td>
</tr>
<tr>
<td>9.</td>
<td>Analysis of Variance by Curriculum on Basic Communication Skills Scores</td>
<td>132</td>
</tr>
<tr>
<td>10.</td>
<td>Analysis of Variance by Vocational Business Education Program on Basic Communication Skills Scores</td>
<td>132</td>
</tr>
<tr>
<td>11.</td>
<td>Analysis of Variance by Curriculum on Socioeconomic Background</td>
<td>133</td>
</tr>
</tbody>
</table>
12. Analysis of Variance by Curriculum on Academic Ability ................ 133
13. Analysis of Covariance by Curriculum on Basic Communication Skills Scores Employing Socioeconomic Background as a Covariate 134
14. Analysis of Covariance by Curriculum on Basic Communication Skills Scores Employing Academic Ability as a Covariate 134
15. Correlation Matrix for Vocational Business Education Curriculum 135
16. Correlation Matrix for Academic Education Curriculum 135
17. Analysis of Covariance by Vocational Business Education Program on Basic Communication Skills Scores Employing Socioeconomic Background as a Covariate 136
18. Analysis of Covariance by Vocational Business Education Program on Basic Communication Skills Scores Employing Academic Ability as a Covariate 136
19. Correlation Matrix for Intensive Office Education Program 137
20. Correlation Matrix for Cooperative Office Education Program 137
CHAPTER I

Introduction

As long as vocational and academic education are in co-existence, there will be comparisons made on their inputs, processes, and outcomes. In the early 1970s, Sidney Marland, U.S. Commissioner of Education at the time, was an active proponent for the integration of education's separate entities. Marland believed education's most serious failing was its self-induced voluntary fragmentation that divided the enterprise against itself (Feldman, 1984). The war must end, Feldman admonished, and all factions must proceed with an integrated system to serve all students better. The curricular separation continues to be sensed today, with little being done to bring the factions together.

What Feldman viewed as war may be described less sensationally as competition. Even in education, part of the efficacy of competition is in the information it generates for making wise choices. This investigation was conducted in the spirit of such competition to obtain comparative information about basic communication skills as an indicator of basic skills achievement in language mechanics and language expression acquired by high school
seniors through the vocational business education curriculum and the academic curriculum. In addition, basic communication skills acquisition between Ohio's two methodologies in vocational business education programs, intensive office education (simulated laboratory) and cooperative office education, was compared. Whether reports of the early 1980s on the condition of education in the United States focused on vocational, college preparatory, or general education, the authors of these reports consistently called attention to the need for students to possess basic skills in order to function in society (National Commission on Excellence in Education, 1983; Boyer, 1983; Henry & Raymond, 1982; Sherman, 1983; Adler, 1982; Goodlad, 1983; Task Force on Education for Economic Growth, 1983; Twentieth Century Task Force on Federal Elementary and Secondary Education Policy, 1983; Sizer, 1984; National Commission on Secondary Vocational Education, 1985; National Business Education Association Public Relations Committee, 1984). In analyzing the reform reports, D'Amico and Adelman (1986) had no difficulty recognizing common threads of alleged mediocrity in education and recommendations for improved academics. More rigor in language arts, math, science, and social studies was urged by the team of researchers so that students in the United States could compete with students from other industrialized nations. Although international competitiveness in academic pursuits is of great import, certainly domestic competitiveness on an individual level to become productive members of the American society
serves this country equally well. Basic skills achievement is a minimum requisite.

In the private sector, business leaders place reading, writing, and computational skills (considered the key elements of basic skills) at the top of the list of requirements for all students ultimately seeking employment upon graduation from high school. Research to date has shown that employers are not happy with the basic skills they are seeing in students entering the work force for the first time. Hollenbeck and Smith (1984) studied the perceptions of not only business, but also labor and public education. They found that employers were anxious for action to be taken to improve basic skills and work-related attitudes of youth. Students without basic skills are at a disadvantage in the selection/hiring as well as in the evaluation/promotion routines. In a 1982 Center for Public Resources survey of businesses, basic skill deficiencies limited job advancement in approximately 70 percent of the cases for high school graduates and non-graduates (Henry and Raymond, 1982). It is the obligation of the schools to prepare students who can meet employers' needs throughout the life cycle of employment. Basic skills are enduring skills that transcend the bounds of obsolescence.

Employers have frequently responded to questionnaires about basic skills in general and about communication skills specifically. When Wisconsin employers were surveyed, they cited a lack of communication skills among youth - specifically, grammar,
spelling, and speaking (Oinonen, Gertner, Halfin, Melick, & Nelson, 1984). Similarly, in Nebraska and New York State, representatives from business and industry designated the ability to communicate effectively as one of the top three skills they wanted to see in the people they hired (Hutkin, 1976; Northwest Regional Education Lab, 1986). Distinguishable problems in basic communication skills were chronicled by responding companies in the Center for Public Resources data. Secretaries having difficulty reading at the level required by the job was a concern in 30 percent of the companies. Managers and supervisors being unable to write paragraphs free of mechanical errors plagued 50 percent of the companies. In addition, skilled and semiskilled employees including bookkeepers were unable to use decimals and fractions in math situations according to 50 percent of the responding companies (Henry and Raymond, 1982).

Testimony at government-sponsored conferences and hearings is characterized by the same themes of competency (or lack thereof) in basic skills. The National Commission for Excellence in Education invited corporate personnel officers to testify on the needs of business and industry. As a result of what they heard, the Commission recommended that schools and colleges adopt more rigorous and measurable standards as well as higher expectations for academic performance (Campbell, 1984).

The relevancy of public school students' basic skills training needed to function as employees has been, is currently being, and will
continue to be challenged. If an overabundance of time is spent in vocational classes, it may handicap students to the point that they are excluded from taking academic subjects that foster basic skill development. Paradoxically, the common argument is that students often do not realize the true meaning of learning until it is construed in a practical vein. The burden of proof for that theory rests with all vocational classroom teachers. Vocational business education classroom teachers are especially accountable because English is frequently singled out as a separate related subject called "business English" in their courses of study. Authors of the East Texas State University Guide for Coordinated Vocational-Academic Education Teacher Coordinators (1984) captured the substance of applicability in education in their opening statement, "If education is to be relevant to today's needs, it must include in its curriculum certain basic educational knowledges and skills plus preparation for entering and progressing in the world of work" (p. 1). The recently recognized need for upscaled retraining efforts demonstrates that labor market demands change and people are no longer married to a singular job for life. Therefore, transferability becomes a major factor.

Vocational education students are not exempt from high expectations of academic excellence (Hotchkiss, 1984). They are the ones who are most likely to launch their preferred careers early. Vocational education instruction should be a complement to basic
skills instruction; otherwise, students are faced with difficulty in finding employment and with unsatisfactory performance on the job (Lotto, 1983).

The duties and tasks performed in entry-level jobs is undergoing a metamorphosis of exponential speed and magnitude. As jobs requiring manual labor are replaced by machines, entry-level workers are shifted to the service and technology-related occupations. Consequently, a higher minimum level of basic skills (reading, writing, and computation) is required to perform satisfactorily (Sticht and Mikulecky, 1984). Campbell (1984) recalled that, at a hearing of the National Commission for Excellence in Education, it was disclosed that "about half of all the people employed in the United States today are in jobs related to knowledge and information generation, transmission, storage, retrieval, and use" (p. 2). An essential tool of the information society is the ability to communicate effectively. Similarly, Rushing (1985) envisioned English as the most valuable vocational skill for students aspiring to careers in high technology. Yet, one must be cautious in equating the number of years of training in English with the ability to communicate orally or in writing.

Prescriptions for additional graduation requirements represent an additional challenge in vocational education-academic education competition. D'Amico and Adelman (1986) contended that imposing more rigor in the basic skills was intended to enhance the academic track students' skills as they departed for college. When courses are added
to the list required for graduation, prospective vocational education students find that the path of least resistance is the college preparatory or general education curriculum. A newly mandated graduation requirement is easily assimilated into the college preparatory and general education curricula with little need for adjustment on the part of students. However, that same course represents an additional course for vocational students. To offset this demand on students' time, many vocational education program planners have integrated mathematics and English into the vocational education programs and have obtained the support of school administrators to grant units of credit for such instruction. However, sometimes administrators grant support sparingly. There was cause for alarm when in 1985 Dyrenfurth identified 27 states entertaining the idea of a separate "college preparatory" diploma. Dual high school credentials carry the potential interpretation that anything less than a college preparatory diploma is substandard and, therefore, not worthy of pursuit.

If public education does not assume the responsibility for basic skills training, business and industry will do so in order to have a competent work force. Historically, this has not been the case. In 1977, Lusterman found executives of large companies reluctant to deliver services that they thought schools should be providing. Two years later, Thurow (1979) argued that employers would not be willing to become involved in literacy training because it was
too costly to provide. Actually, it now has become too costly for them not to provide basic skills or literacy training. Evidence of a transposed perspective is revealed in a survey of Fortune 500 companies by Mikulecky and Cousin (1982). In this study, 67 percent of the companies reported some type of literacy training for employees, primarily during working hours. Program offerings included: effective writing, effective reading, business English, blueprint reading, and instruction reading. Six years later, it is safe to assume that the training and development concept has popularized the tendency for businesses to pick up where education (perhaps prematurely) left off.

Student outcomes are not necessarily clear cut and are not always easily interpreted. A great deal depends upon whether knowledge alone is sufficient for students to function in the business world or whether application is imperative. Basic skills are of educational value for all students, regardless of immediate or postponed economic rewards. The vocational classroom teacher is inclined to develop instructional goals that call for application. General concepts relate to specific examples being practiced in the field. By contrast, the academic teacher focuses more attention on exposure to a sound foundation in theory, providing a background for students to adapt to most situations. Keller (1986) maintained that liberal arts study develops skills that do not become outdated, unlike narrow vocational skills. All students are not capable of learning
equally well through the same vehicles; but, if they are exposed either directly or indirectly to comparative information on student achievement, such as that which is in the present research, they will stand a better chance of making optimum choices for themselves, based upon various circumstances.

Statement of the Problem

The problem of this study was to (a) determine if differences exist in socioeconomic background, academic ability, and curriculum with regard to basic communication skills achievement and to (b) determine if differences exist in socioeconomic background, academic ability and vocational business education programs with regard to basic communication skills achievement. It is noted that ex post facto researchers cannot establish cause and effect because of the multiplicity of potential attribute variables, but as Kerlinger (1973) observed, "If a tally of sound and important studies in the behavioral sciences and education were made, it is possible that ex post facto studies would outnumber and outrank experimental studies" (p. 392). Although through experimental research there is the capacity to control, ex post facto researchers applaud the natural conditions under which the treatment occurs.

Natural, unconstrained conditions characterized the present study. Consequently, students of varying backgrounds and abilities made a
curricular choice, and the researcher wished to observe whether this choice and their personological characteristics were related to their level of achievement in basic communication skills. The natural setting also introduced certain caveats that must not be overlooked. Were more able students attracted to a particular curriculum? Did students with higher socioeconomic backgrounds enroll in a particular curriculum? To answer these questions, attribute variables were built into the research, measured, and permitted to co-vary.

The results of the present study, a comparative assessment of basic skills acquisition between vocational business education and academic curricula, might serve as a tool to assist students in making decisions about curricula. These decisions are not easy since additional required academic subjects at the secondary level leave little time for students to pursue a vocational curriculum. In determining excellence standards at East Carolina University (1985), members of the executive committee warned of the urgent need for a re-evaluation of all aspects of business education to "ensure that the needs and demands for managers and technical workers will be met and that business education will continue to contribute to the general education of all citizens" (p. 1). In fact, by 1985, educational leaders in at least 27 states had initiated major curriculum overhauls in vocational education to improve basic skills content (Delaware State Department of Public Instruction, 1985). As extensive educational reform is being considered, curriculum planners will be
able to base their decisions upon more than speculation. The same can be said for guidance personnel, who need sound evidence to disseminate to advisees.

As public and private employers begin to take over the training of workers in skills that employees should have acquired in high school, a message is being communicated to the public. This message is that public education is turning out a product that is less than satisfactory to these employers. In addition, like most vocational education service areas, vocational business education is an expensive venture. Legislators and constituents, alike, seek evidence of returns on their investments in education. The larger the expenditure, the greater the pressure to justify basic skills proficiencies. What once started as an appeal for educational reform has developed into a political issue that demands empirical evidence. As Lotto (1986) articulated the research needs regarding the effects of vocational education, she communicated the following priorities:

Research also is needed to enrich our understanding of vocational education's contributions to societal goals. Too much emphasis has been placed substantively on the employment and wage effects and methodologically on the analysis of longitudinal databases. It is time to turn to investigations of other outcomes, using other methods. (p. 54)

This investigation was intended to meet the need for new measurements of outcomes using new approaches as Lotto described. It was conducted
with an element of optimism that posited no matter what the students' backgrounds and academic abilities, the investment in education can result in productive citizens and can be justified as being cost effective.

**Need for the Study**

Whether originating from government, education, or the general public, the recent clamor for excellence in education and basic skills improvement (National Commission on Excellence in Education, 1983; Boyer, 1983; Sherman, 1983; Adler, 1982; Goodlad, 1983; Task Force on Education for Economic Growth, 1983; Sizer, 1984; National Commission on Secondary Vocational Education, 1985; National Business Education Association Public Relations Committee, 1984) is of concern to all Americans. Youth Employment Initiatives (1980) warned, "lack of basic communication, comprehension and computational skills is the most serious barrier between these young people and successful entry into the labor market" (p. 3). While there may be some room for debate that lack of basic skills is the singularly predominant barrier to employment, few would disagree that lack of basic skills may be the one of the few tangible criteria upon which employment is denied.

Demographics have made an impact on basic skills training as the 18-24 age group has eroded. While the best-trained youth are electing to continue their education, some individuals contend that business
and industry is forced to choose from what remains (Sticht and Mikulecky, 1984). The residual includes recent graduates competing against individuals re-entering the workforce or those who have been displaced and retrained.

Although comparative investigations of vocational and academic programs have resulted in outcome measures of employee satisfaction, employer satisfaction, use of vocational training on the job, longevity, upward mobility, number of hours worked, pursuit of further education, and wage differentials, few have focused on content competency measures tied to survival skills for the business world (Lotto, 1983; Mertens, McElwain, Garcia, & Whitmore, 1980). Instead, most investigators who have compared competencies in vocational education have appeared to use either longitudinal data or data collected previously for other purposes.

In comparing curricula, the researcher must take into consideration the diverse abilities and backgrounds of the students. Not all students share the same starting points when registering for high school curricula. Of no small importance is level of ability or aptitude, a heavily researched area in its own right, in which investigators have difficulty extracting the true cause and effect of types of instruction. The purpose of most comparative studies has been to describe vocational, college preparatory, and general students on one or a number of background factors. Lotto (1981), in a synthesis of basic skills research, detected that a less able and
less socioeconomically fortunate group was attracted into vocational programs. She was less successful, however, in locating studies in the existing literature that went beyond description and showed conclusive effects of vocational education. Part of the reason for the lack of clear-cut interpretation is because of the perpetuation of inequities in the backgrounds of students and their access to social power and prestige. Each student brings a distinctive set of background or cultural variables to the learning environment. The question of "which came first? - socioeconomic background, academic ability, or curriculum" - is not an easy one to answer unequivocally. This investigation recognized the importance of cultural attribute variables in influencing student achievement and incorporated them in the research design. The question, "which came first?" was not answered, but interrelationships that existed among the variables were identified.

Crowe, Hettinger, Weber, and Johnson (1986) suggested that basic skills attainment may be quite different in settings utilizing work environments versus classroom environments. Improved basic skills may result from work experience; but, nonetheless, they may be a secondary benefit of work experience. Comparison groups from work versus classroom environments have seldom been matched according to similarity of subject matter received. Both Intensive Office Education and Cooperative Office Education students, however, receive much of the same curriculum content of business education classroom
Instruction, which can be determined through a careful examination of courses of study. The present study compared programs of business education in which instruction in business communication was a planned content area or was tied to work experience.

High school students often make curricular choices from faulty information about which curriculum is best for them. The lack of access to disseminated curricular information may be attributed to the need for scheduling expediency or mandated curricular requirements. Traditionally, many guidance counselors have not facilitated the dissemination of curricular information, holding onto the claim that academic education is for the "better" student. The multiple pathway (or multiple track) concept embraces the philosophy that various approaches work well for different individuals; and, in the case of this study, students can learn basic skills equally well from more than just one curriculum. Researchers have already demonstrated that when socioeconomic backgrounds and academic abilities are held constant, college preparatory is no longer the undisputed most effective curriculum in terms of basic skills achievement in mathematics and science when tied to occupational outcomes (Ludeman, 1976; Loadman & Rinderer, 1986). When students cannot make a choice, they may be inclined to become members of a noncommittal type of curriculum called general education. Feldman (1984) said the general education students have managed to fall between the cracks and are not subscribers to any one curriculum. When given access to a systematic,
research-based compilation of all the facts about curricular choices, all students are afforded the opportunity to select the best pathway to personal accomplishment - not a pathway that leads to nowhere.

The need for the study is apparent in the lack of comparative information upon which to make choices or to guide others in making choices. Correct individual curricular choices enhance the opportunities for educational successes. Educational successes increase the probability of successes in the world of work and society in general. The next section profiles the types of information to be extracted from the present investigation.

**Purpose of the Study**

The purposes of this study were threefold. The first purpose was to compare basic communication scores obtained on the Comprehensive Test of Basic Skills by high school seniors enrolled in the vocational business education curriculum and seniors enrolled in the academic curriculum. The second was to compare basic communication scores obtained on the Comprehensive Test of Basic Skills by high school seniors enrolled in the intensive office education program and seniors enrolled in the cooperative office education program. Finally, the third purpose of this study was to compare basic communication scores obtained on the Comprehensive Test of Basic Skills by high school seniors between curricula and between
vocational education business programs, while considering attribute variables of socioeconomic background and academic ability.

The following objectives provided direction for the study:

1. To obtain demographic data on academic ability using the Short Form Test of Academic Aptitude and socioeconomic background of students using the socioeconomic questionnaire so that differences between vocational business education and academic groups of students might be examined.

2. To compare students in vocational business education and academic curricula on indicators of basic communication skills achievement in language mechanics and language expression through experimental and statistical procedures.

3. To summarize the reported data and draw conclusions and recommendations for the improvement of instruction and the development of the curriculum in vocational business education.

4. To disseminate the results to professionals and the public through meetings, professional literature, and news media.

Data for the selected variables were collected through administration of a nationally normed test of academic ability, a short socioeconomic
background questionnaire, and a nationally normed test of basic skills achievement.

**Research Questions**

In view of the related literature on comparisons of academic ability, socioeconomic background, curricula, vocational business education programs, and basic communication skills achievement, five research questions were formulated for this investigation. The supporting rationale for the five questions is presented in Chapter II.

1. How can vocational business education, academic, intensive office education, and cooperative office education students be described in terms of basic communication skills achievement?

2. Does a difference exist between basic communication skills achievement and high school seniors' choice of curriculum — academic or vocational business education?

3. Does a difference exist between basic communication skills achievement and high school seniors' choice of vocational business education program — intensive office education or cooperative office education?

4. Does a difference exist between business communication skills achievement, high school seniors' choice of
curriculum, and socioeconomic background or academic ability?

5. Does a difference exist between basic communication skills achievement, high school seniors' choice of vocational business education program, and socioeconomic background or academic ability?

**Hypotheses**

The related literature on comparisons of academic ability, socioeconomic background, curricula, vocational business education programs, and basic communication skills achievement was the basis for the four null hypotheses in this investigation. They are stated in null form for statistical analysis:

**H₀₁:** There will be no statistically significant difference between basic communication skills achievement of students pursuing a vocational business education curriculum and those pursuing an academic curriculum.

**H₀₂:** There will be no statistically significant difference between basic communication skills achievement of students pursuing an intensive office education program and those pursuing a cooperative office education program.
H₀.₃: There will be no statistically significant difference between basic communication skills achievement of students pursuing a vocational business education curriculum and those pursuing an academic curriculum when socioeconomic background or academic ability is introduced as a covariate.

H₀.₄: There will be no statistically significant difference between basic communication skills achievement of students pursuing an intensive office education program and those pursuing a cooperative office education program when socioeconomic background or academic ability is introduced as a covariate.

**Definition of Terms**

The key terms operationalized from the context of this dissertation were: ability, academic curriculum, aptitude, basic communication skills, basic skills, cooperative office education, curricula, intensive office education, language expression, language mechanics, programs, socioeconomic background, taxonomy, VEPD, vocational business education, and vocational education. Many terms have been defined according to established practice in Ohio.

**Ability.** In this investigation, ability (as measured by the Short-Form Test of Academic Aptitude) was a measure of academic
aptitude, or the capability to respond to educational stimuli. It is not an index of innate qualities. Rather, the Short-Form Test of Academic Aptitude assesses ability to "engage in abstract reasoning, discern relationships among symbols, identify verbal concepts, and recall and interpret material which has been read" (CTB/McGraw-Hill, 1970, p. 24)

**Academic curriculum.** For the purposes of this research, the academic curriculum included college preparatory and general education studies. Echternacht's (1975) research profiling academic, general education, and vocational education students gave credence to the present grouping, which parallels vocational/nonvocational.

**Aptitude.** Turney and Robb (1971) described aptitude as that which "a person can accomplish with appropriate teaching, training, or experience" (p. 153). Aptitude has been likened to measures of intelligence, but, because of its predictive capacity, (Ary, Jacobs, & Razavieh, 1985) is more closely aligned with ability. Although CTB/McGraw-Hill calls its shortened version of the California Test of Mental Maturity the Short-Form Test of Academic Aptitude, the Short-Form Test of Academic Aptitude is used in this study to measure students' general ability.

**Basic communication skills.** Language mechanics and language expression were the basic skills assessed for the dependent variable in this study, basic communication skills achievement.
Basic skills. The three most commonly identified basic skills are reading, writing, and mathematics. These are minimum skills that are necessary to survive in society as a producer and consumer. Harman (1970) refers to these skills as functional literacy.

Cooperative office education. Otherwise known as COE, this is one of the types of programs funded with monies earmarked for vocational business education. Students attend classes in skill training for office occupations for a portion of the day as well as work in an office occupation for a portion of the school day.

Curricula. In this study, curricula were dichotomized into the vocational business education curriculum and the academic curriculum.

Intensive office education. Otherwise known as IOE, this is one of two types of programs funded with monies earmarked for vocational business education. Students attend classes in enhanced skill training for office occupations utilizing an uninterrupted block of classroom time.

Language expression. Using various parts of speech, forming sentences, writing for clarity, and applying various writing styles are language expression competencies (CTB/McGraw-Hill, 1984). These skills were measured in the language section of the Comprehensive Test of Basic Skills.

Language mechanics. Capitalization, punctuation, and editing are language mechanics competencies (CTB/McGraw-Hill, 1984). These
skills were measured in the context of passages in various formats in
the language section of the Comprehensive Test of Basic Skills.

Programs. Cooperative office education and intensive office
education are two types of programs, or delivery systems, for
vocational business education.

Socioeconomic background. Five components are weighted and
averaged to control for differences in family background (Grasso &
Shea, 1979; Kohen, 1973; Bachman, 1970; Flanagan et al., 1962a):
"level of education of (a) father; (b) mother; and, (c) oldest older
sibling; (d) father's occupation when respondent was age 14; and (e)
an index of the availability of reading materials in the home at the
time" (p. 5). The term socioeconomic background was used instead of
socioeconomic status to indicate aggregate factors that lead to
status attainment.

Taxonomy. Classifications within vocational education that
categorize occupational clusters of job titles are taxonomies.

VEPD. Vocational Education Planning Districts are geographic
territories in the State of Ohio responsible for delivering a
comprehensive vocational education curriculum for all the students
within that planning district.

Vocational business education curriculum. In this study, funded
programs earmarked for Intensive Office Education and Cooperative
Office Education are considered vocational business education.
Students receive training in skills needed for employment in office occupations.

**Vocational education.** For the purposes of this study, vocational education was interpreted as instruction preparing students for a lifetime of work in an occupational area and funded with earmarked monies by the State of Ohio. Vocational business education programs are instructional areas and were the objects of this investigation. Vocational students other than those in vocational business education were excluded from the study.

**Basic Assumptions**

The following fundamental assumptions formed the basis of this investigation:

1. That the most dominant explanations for variance in basic communication skills achievement were built into the design and measured;

2. That the conditions in administering the tests were similar for all subjects;

3. That subjects were expected to respond to questions in a manner that was a valid and reliable estimate of their basic communication skills;

4. That the Comprehensive Test of Basic Skills, the Short Form Test of Academic Aptitude, and the socioeconomic
background questionnaire were accurate measures of the constructs of basic communication skills achievement, socioeconomic background, and academic ability;

5. That the participating intact classes were similar to the intact classes not participating;

6. That there were no systematic explanations for nonresponse error.

**Delimitations of the Study**

The scope of this investigation was deliberately narrowed in the following ways:

1. Only comparison groups of high school seniors in Lucas County, Ohio, were included;

2. Only students enrolled in funded (with earmarked vocational funds) vocational business education programs were identified as business education students;

3. Only schools providing both vocational and academic curricula as well as both intensive office education and cooperative office education programs were included.
Limitations of the Study

When examining this study and attempting to apply its findings to other situations, the reader should be aware that the following limitations prevailed:

1. The results should not be generalized beyond participants who voluntarily participated in this study and who were from Lucas County, Ohio;

2. Special-purpose schools or schools without curricular offerings in both vocational business education and academic education were not included;

3. The population was limited to volunteer intact classes; school administrators and teachers had the option of involving or not involving their schools or classes in the testing; it is not known what decisive factor(s) prevailed to induce participation or nonparticipation;

4. In order to comply with human subjects review guidelines, students, as well, were permitted to be excused from taking the tests; again, it is not known what decisive factor(s) prevailed to induce participation or nonparticipation;

5. It is recognized that a bias existed in the formation of comparison groups used in this dissertation, and selection biases are an inherent problem with most ex post facto studies. Although an effort was made to build
in the two most dominant background variables, an exhaustive search for all intervening variables remains unfinished in educational research (Kerlinger, 1973);

6. Data were collected during the final weeks of the academic year; had data been gathered at another point in time, the results might have been different; problems in scheduling an optimum testing time were the result of conflicting commitments in the students' and teachers' efforts to conclude the school year; it was assumed, however, that comparison groups were affected similarly;

7. There are no statistical tools that can fully compensate for the lack of control in an ex post facto study (Ary et al., 1985), nor for the lack of academic comparison groups in many of the schools considered to be part of this study.

**Organization of the Study**

This study consists of five chapters. The following chapter format is employed:

- **Chapter I** - Introduction; including the problem statement, hypotheses, definition of terms, limitations, basic assumptions, and organization of the study
- **Chapter II** - Review of related research and literature
Chapter III - Methodology
Chapter IV - Analysis of data
Chapter V - Summary, conclusions, and recommendations
CHAPTER II
Review of Related Literature and Research

Vocational education and academic education have been described as a balancing act with society acting as the fulcrum (Miller, 1985). Each time the fulcrum is shifted in either direction, old allegations of inadequacies are revived and placed in active duty for a familiar battle in a new context. Peterson (1983) cautioned that the 30 to 40 commission reports on educational excellence appearing in the early eighties "make exaggerated claims on flimsy evidence, pontificate on matters about which there could scarcely be agreement, and make recommendations that either cost too much, cannot be implemented, or are too general to have any meaning" (p. 1). Allegations do little to provide solutions. Through research, however, new knowledge is generated from theories, and time-honored beliefs are put to the test (Swanson, 1971).

The latest round of criticism of public education in the United States has been focused on the acquisition of basic skills; that is, reading, writing, and mathematics. Survey responses demonstrate that parents are uncertain about desirable options for their children. In a Gallup poll asking what should get more attention in the schools, 80
to 90 percent of the parents said career education. In a different question in the same survey, however, 83 percent indicated there was a need for more basic education. Another 85 percent said that extracurricular activities were very important or fairly important (Elam, 1978). From this survey, it may be concluded that parents "want it all" for their children, not realizing there is a trade-off in quality and quantity.

Basic skills are considered fundamental to successful participation in adult society (Lotto, 1983). Crowe, Hettinger, Weber, and Johnson (1986) observed that there are profound societal and corporate costs for inadequate basic skills preparation, and some less scholarly attempts have estimated those costs to be in the millions of dollars. Regardless of the vocational-academic education dichotomy in delivery systems, all educational curricula must include basic educational knowledges and skills plus preparation for entering and progressing in the world of work (East Texas State University, 1984).

Researchers have examined learning environments and standardized test results extensively in response to growing concern about the perceived decline in basic skills proficiency by American youth in school, on standardized tests, and on the job. Lotto (1983), in a comprehensive review, summarized much of the contemporary literature on basic skills proficiencies of vocational and nonvocational students. There appears to be a paucity of relevant research,
however, in specific basic communication skills outcomes experienced through various curricula and programs of study that are related to meeting life's challenges and, ultimately, to success on the job. If disparities are discovered, educators should examine scenarios that are working well and take steps to remove the inequalities of less successful settings. Aspects of the variables selected for investigation in the present study have been researched from the perspectives of curricula and their relationships with socioeconomic origins, academic ability, and work experience programs; curricula and their impacts upon miscellaneous dimensions; and business education's relationship with basic skills achievement. It is acknowledged that an extensive review of each of the areas listed above would produce categories with a voluminous amount of information while leaving some variables contributing nearly nothing. The objective of the present review is to identify research efforts which support the conceptual base of the present investigation into the relationships between curricula and basic communication skills achievement.

**Student Background Factors**

Curricula may differ in the inputs (characteristics of students attracted into the programs), processes (educational treatments), or outputs (changes in the students as a result of the educational
treatments). This section of the related literature will concentrate primarily on research investigations comparing the inputs of vocational and academic instruction. The processes and outputs are reserved for discussion in the next section.

As a result of their backgrounds, students bring with them to the learning environment assorted characteristics, or inputs. Many comparative studies of vocational and academic education programs have built in a number of these background variables including socioeconomic status (SES), sex, race, focus on the work world, aspirations, alienation, self-image, personality, interests, peer groups, participation in federal programs, exposure to counseling, school status, social supports, residence, parents' occupations, and parental aspirations (Alexander, Cook, & McDill, 1977; Heyns, 1974; Grasso & Shea, 1979; Creech, 1974; Alexander & McDill, 1976; Echternacht, 1975; Evans & Galloway, 1973; Crowe et al., 1986; Plisko, 1984; Halasz & Behm, 1983; Rosenbaum, 1975; Hilton, 1971; Parnes & Kohen, 1975). Background characteristics, alone, are subtle, but their impact upon a student's membership in a vocational, college preparatory, or general program of study are deep seated. In reviewing large-scale statistical studies, Hotchkiss (1984) found socioeconomic status and personal characteristics weigh even more heavily upon student test scores than do the school inputs. In the following paragraphs, some the above-mentioned studies are reviewed.
Socioeconomic characteristics. Educational stratification by socioeconomic characteristics has been examined as an attribute variable in many studies. Alexander, Cook, and McDill (1977) chose to take a closer look at background variables as antecedents to and consequences of curriculum placement. Using longitudinal data from the Academic Growth Study, they examined students as they progressed from 9th to 12th grade. Their results suggested that socioeconomic characteristics of students do affect their curriculum enrollments through influence upon achievement, goals, and encouragement during the junior high school years prior to choosing or being placed in a curriculum. These would be described as secondary effects of socioeconomic characteristics on curriculum enrollment. In contrast, the primary effects are less frequently observed.

By controlling variables contributing to curriculum placement, primary effects can be posited. Through an analysis of existing longitudinal data for curriculum effects, Alexander and Eckland (1975) found supporting evidence that status origin does affect curriculum placement at both the sophomore and senior years, even with student ability and sex controlled, possibly due to peer associations as well as parental and teacher contact regarding educational intentions. Similar findings were obtained by Hauser, Sewell, and Alwin (1976) on Wisconsin data. Heyns' (1974) earlier research denying a relationship between background indicators and curriculum placement was not
substantiated by either Alexander and Eckland or Hauser, Sewell, and Alwin.

Alexander, Cook, and McDill (1977) further stated that background variables are associated with almost 60 percent the variance in curriculum placement. Background characteristics provide documentation for the tendency of higher status students to be disproportionately channeled into the college preparatory curriculum. Although the study was reported a decade ago and used longitudinal data from two decades ago, it is assumed that the passage of time has done little to mitigate this problem. In fact, the 1984 National Center for Educational Statistics indicated that students from low socioeconomic status (SES) backgrounds and students who scored low on cognitive tests were inclined to earn more vocational credits than their classmates (Pilsko, 1984).

More documentation on the stratification of curriculum by socioeconomic status is seen in the results of Creech's (1974) massive analysis of 3 million students taking part in the National Longitudinal Survey. Hypothesized relationships between socioeconomic status and curricula were strongly supported. The socioeconomic status of academic students was higher than general and vocational students. In Creech's study, even general education students had a higher socioeconomic status than vocational/technical students.

Project TALENT data collected by Evans and Galloway (1973) predictably profiled both male and female 9th to 12th grade
populations of students in vocational education as primarily ranking in the bottom two quartiles of the project's socioeconomic index. Likewise, college preparatory students dominated the top two quartiles of the index. While the vocational and college preparatory curricula showed consistent positive relationships between socioeconomic environment and academic ability, the male general education students were less predictable in their progression from the 9th to 12th grade, where there was an increase in both low socioeconomic environment and low academic ability.

Further substantiation that vocational education students come from a lower socioeconomic class than other students in the public schools was provided by Davidson and Johnston (1976) in their Youth in Transition study. Socioeconomic indicators were father's and mother's education, father's occupation, possessions and books in the home, and number of rooms in the house. Three of these indicators are identical to the ones used in the present study.

It is helpful to examine the characteristics of a typical vocational education student. A profile was drawn by researchers as they completed a three-year pilot program in high school vocational education at the Wisconsin State Department of Public Instruction. In comparison to other students in high school, the vocational student had a lower self-image, found high school uninteresting, was influenced by parents and less frequently by teachers and counselors in determining future plans, came from blue-collar families, and
worked part time (Wisconsin State Department of Public Instruction, 1968; Bowles and Slocum, 1968; and Kay, 1971). An admonition in interpretation is that in vocational education the occupations are too diverse to make broad generalizations.

The importance of background is underscored by the Panel on Youth of the President's Science Advisory Committee (Coleman et al., 1974) who reported that parents are most instrumental in influencing the vocational aims of youth. In lesser order, the school, peers, relatives or other adults, and work experience show evidence of an impact. The findings, however, bear further explanation. The Panel points out that student peer groups as well as parental friendships are comparable in terms of status of the homes, family values, socioeconomic status, and interests. Family income helps to determine the likelihood of higher education, place of residence, types of neighbors, and caliber of pre-high school education. Students with similar backgrounds, find a "niche and future direction with which they can identify" (Berryman, 1980, p. 23) in vocational education. This cohesiveness may be misinterpreted as the catalyst for vocational education's influencing of student values and attitudes rather than a phenomenon that existed a priori. Hotchkiss (1984) also noted the interrelationships of socioeconomic status, career expectations, and test scores observed through better performance and higher career expectations for high socioeconomic status students. Thus, the
complexities of the behavioral sciences once again make it difficult to untangle the main effects of curriculum.

The review of socioeconomic characteristics in this section is grounded in the theory that the relationship between curriculum placement and socioeconomic status is strong. Explanations for this relationship are focused on the wide range of "contacts" that a given status provides and the values that are formed from those contacts; the pre-natal care and the resulting increased risk of congenital abnormality and brain damage to low-status individuals; and the reinforcement received and successes one has encountered prior to enrollment in the curriculum. The same factors should be operating in the students' choice of vocational business education program as well. Therefore, the differences in curriculum and program enrollment due to socioeconomic background as presented in the third and fourth hypotheses of the present study would lend support to the following assumption: Students of a high socioeconomic status might enroll in a college preparatory or an academic type of curriculum, whereas students of a low socioeconomic status might have a tendency to enroll in a general education or vocational type curriculum if all factors are operating similarly to the studies cited in this section.

Academic ability. The face-value assumption that college preparatory students are superior to vocational students and general education students in academic ability is well supported in research. In a literature review conducted by Lotto (1981), nine out of ten
studies provided evidence that college preparatory students were substantially more proficient than vocational students in basic skills. Typically, vocational students enroll in their high school curriculum one standard deviation below college preparatory students. In addition, Grasso and Shea (1979) reported that, on the average, vocational and general students do not differ very much in mental ability. Once students were tracked, Rosenbaum (1975) found that lower IQ track students experienced a homogenizing effect, yet peers and students in the upper IQ track became more differentiated.

It is interesting to observe that the pre-enrollment differences in academic ability are present not only immediately before enrolling in a secondary education vocational, college preparatory, or general program of study but also several years prior to entry. From a panel of 2,000 boys in American high schools in the late 1960s, Davidson and Johnson (1976) were able to examine the inputs, processes, and outputs of the students. Tenth-grade boys were selected because measurement differences resulting from the self-selection process was most "pure" at this time, before transfers from other programs occurred during the eleventh and twelfth grades. The researchers determined that the boys opting for vocational education were two-fifths of a standard deviation below students enrolled in other curricula on the Ammons Quick Test of Intelligence administered during the sophomore year. This difference continued throughout high school, although it was smaller when compared to the scores of students in either the
business or the general curriculum. Moreover, it was statistically shown in this study that vocational education students' perceptions of their academic abilities paralleled their actual performance. Such evidence of differences accentuates the need for instruction to be different.

In a similar and somewhat earlier longitudinal study of approximately 32,000 subjects in 17 communities, Hilton (1971) used a post-hoc analysis to examine the differences in test scores of students who would later enter the vocational, college preparatory, or general programs of study. Since the differences between programs at grade 5 were of nearly the same magnitude as the differences at grade 11, the assumption was that enrollment in a program of study did little to alter relative performance between groups. Therefore, it may be possible to identify at an early age likely candidates for the three programs of study, taking into consideration additional demographic variables.

It has been shown that comparing the effects of programs of study if the groups are stratified either voluntarily (by student self-selection) or involuntarily (by school personnel) according to ability level is confounded by rates of growth. If the more able students are identified with the college preparatory programs, and the less able are selected into the vocational and general education programs, it will be difficult to distinguish the effects of the programs purely from rates of growth (Lotto, 1983). Ordinarily, one
would think a discriminatory analysis of trend lines would indicate any departures from the norm, but Hilton (1971) warned that not only do nonacademic students have uniformly lower achievement, but it is also more uneven. This is a systematic problem that must not be ignored.

An investigation by Market Opinion Research (1973) examined the class standing of vocational and nonvocational students in Ohio. They found that students who ranked in the top quarter of their class according to class standing typically enrolled in the college preparatory program, students in the bottom quarter enrolled in the general program, and students in the middle two quarters were spread across all curricula but formed a large proportion of those in vocational programs.

The Davidson and Johnston (1976) study was one of the few that gave attention to transfers in the latter high school years, which confounded the determination of differences among curricula. They found that when the definition of vocational students included these transfers, the differences in intelligence became smaller. Actually, in most cases, students do not identify with vocational education until the eleventh or twelfth grades, so researchers not conducting longitudinal studies have little choice but to live with the problem of transfers or do without subjects.

The various curricula do either primarily or secondarily independently affect the achievements of their members. The use of
High School and Beyond survey data led Gordon (1985) to the discovery that students' educational expectations and math test scores rise with membership in the academic track, while taking vocational courses often has the reverse effect upon expectations and test scores. The effects of curricular enrollment are compounded as students who are favored for enrollment into the college preparatory curriculum because of their earlier academic performance are subsequently afforded preferential admission to college and accolades for graduating from a prestigious curriculum. Alexander, Cook, and McDill (1977) supported the belief that differential tracking in secondary schools introduces academic inequalities where none previously existed. Then, while socioeconomic and educational inequalities initially create differentiation, the outcome produces educational and socioeconomic inequalities generated from enrollment in the curriculum.

Heyns (1974) described educational stratification by ability level as being an optimum allocation of limited educational resources. Once enrolled, college preparatory students are challenged to achieve their higher potential with advanced materials, exposure to equally endowed peers, positive reinforcement, and comfort in knowing they are, indeed, college material. Conversely, non-college preparatory students may be exposed to less challenging materials, form associations with less capable peers, receive no reinforcement or even be punished, and develop feelings of insecurity and hopelessness. Discussion of the Heyns' research cannot be abandoned without
acknowledging that benefits might accrue to less able students if they are integrated with more able students.

The literature contains assorted versions regarding curriculum and its either being a consequence of or an antecedent to achievement. Heyns' (1974) analysis of the Equality of Educational Opportunity database revealed that curriculum placement was more likely determined by performance on verbal achievement tests than by background indicators. Curriculum placement became the dependent variable in a study by Alexander and Eckland (1975). Employing longitudinal data from a national sample of high school students, the researchers concluded that curriculum enrollment was a major determinant of educational attainment. As students progressed through their high school curriculum, their plans, peer associations, and parent-teacher contact were mediated by the curriculum. Therefore, the high-ability students were exposed to challenging opportunities while the less able non-college-bound remained uninspired.

Alexander and McDill teamed up in 1976 to examine some the causes and consequences of curriculum placement. They found that high ability and high socioeconomic status both appreciably increase the likelihood of placement in a college preparatory program, and do so to a substantially greater degree than other social background and demographic characteristics. It should be noted in this longitudinal study of students from twenty schools, with maximized variation of educational and social climates, that the term academic aptitude was
used interchangeably with academic ability. The researchers cited Shaycroft (1967) who defended the stability of abstract reasoning scores through the high school years as a measure of mental ability. Similarly, Echternacht (1975), using data from the Longitudinal Study of Educational Effects of the Class of 1972 and multivariate techniques, determined that college preparatory students were superior to both general and vocational students in terms of measured academic ability.

Although Heyns (1974) addressed the issue of educational resource allocation, she was not without company. Parsons (1959), in his classic paper on educational resources, advocated allocation to the group of students most able to produce maximum returns. Similarly, Rosenbaum (1975) was quoted as saying that with ability curriculum tracking, students of lesser ability went to the vocational and general tracks, whereas students with higher levels of performance were routed to the college preparatory track so they could be taught at levels appropriate to their potential. Rosenbaum did not recommend ability tracking as a preferred practice; in fact, he believed non-college bound students were often denied passage to the resources that could improve their performance. In another source, Rosenbaum (1976) described the stratification system as analogous to a tournament in which an individual may fall at any point by being placed in a nonacademic curriculum track. Once having fallen out of the academic track, it is virtually impossible to re-enter it.
Ramsøy (1965) related nearly identical information, adding that enrollment in the college preparatory track may be a scarce resource in the social organization of the school. On the other hand, non-college preparatory students often suffer from non-competitiveness, inferiority feelings, and lack of insights concerning educational and institutional functioning.

The description of nonacademic classes from some observational studies are less than desirable. The nonacademic track classes were portrayed as having a watered-down curriculum focusing on rudimentary basic skills rather than analytic skills, lower expectations, less homework, conformity at the expense of problem solving, less clear class presentations, and less time on task (Oakes, 1982). In one of Rosenbaum's (1976) observations of nonacademic classes at a Boston high school, he identified examples of discrimination in the form of repeated teacher insults, a diluted curriculum, and an unfair weighting system for class rank that penalized nonacademic students.

Bowles and Gintis (1976) maintained that all of the above-mentioned factors would prevent non-college preparatory students from competing successfully with their more advantaged classmates. Commonly termed the "status attainment paradigm", socioeconomic background may be transmitted between generations through assignment of low socioeconomic status youth to nonacademic tracks, having nothing to do with ability differences. Consequently, the curriculum track bears influence upon cognitive development, the nature of the
peers with whom one associates, career plans, and other attitudes (Alexander & McDill, 1976).

The review of academic ability in this section is grounded in the theory that the relationship between curriculum placement and academic ability is also very strong. Explanations for this relationship are focused on the positive reinforcement one has received and the successes one has encountered prior to enrollment in the curriculum; educational resource allocation in which tangibles are directed toward the curriculum assumed to receive the greatest benefit and yield the greatest return (ordinarily the academic or college preparatory curriculum); and the wide range of "contacts" that reinforce values, competitiveness, and feelings of well being. The factors of reinforcement patterns and contact with "significant others" should be operating in the students' choice of vocational business education program as well. Therefore, the differences in curriculum and program enrollment due to socioeconomic background as presented in the third and fourth hypotheses of the present study would seem to indicate that students of a high academic ability would be likely to enroll in a college preparatory or academic type of curriculum whereas students of a low academic ability would be inclined to enroll in a general education or vocational type curriculum if all factors are operating similarly to the studies cited in this section.

**Cooperative job placement.** Cooperative job placement often produces varied observations within vocational programs as well as
within curricula. Stern, Hochlander, Gareth, Choy, and Benson (1986), in a study of California eleventh- and twelfth-grade students, found that graduates of vocational programs were not experiencing any advantage over college preparatory and general education students in labor market success. In secondary vocational education, many schools are designed to help prepare students for work, yet they simultaneously keep students out of the job market by not providing cooperative programs. The researchers suggested that comprehensive high schools stop trying to provide skill training for entry-level jobs and instead use vocational education to prepare young people for a working life of continual learning, problem solving, and communicating (basic skills) — to use their heads at work. The Northwest Regional Educational Lab (1986) in a literature review of improving secondary vocational education effectiveness cited similar desirable outcomes of vocational education programs that are gaining general acceptance.

In an examination of alternative environments for basic skills development, Crowe, Abram, and Bart (1984) in 193 observations of 45 students discovered that students can receive as much basic skills exposure in a work experience program as they would receive in a traditional classroom. It must be emphasized, however, that not all programs and settings enhance all basic skills in the same ways. For example, in the Crowe study, classrooms were significantly higher
on exposure to reading and writing skills, while psychomotor and reasoning skills were more frequently enhanced at the work site.

The content of exposure to basic skills also may be quite different at the work site as compared to school. Kirsh and Guthrie (1984) examined the types of items that were read at work and found that employees read forms, instructions, notices, labels, memoranda, and notes and did so for the purpose of solving specific problems. Conversely, students overwhelmingly read textbook material to gather literal facts, rather than for any specific immediate practical application. Few academic students are given the opportunity to skim material for specific information, make decisions, and apply skills based upon reading. On the other hand, few vocational students reach a level of proficiency during their high school careers to extensively involve them in information generation. It would be interesting to posit what Crowe et al. (1984) might have found if cooperative students who were exposed to writing assignments were compared with noncooperative students in terms of writing skills.

In a review of the effects of participating in cooperative vocational education, Mertens, McElwain, Garcia, and Whitmore (1980) classified a study by Custer (1973) as "less rigorous", but it is worthy of mention at this juncture. In a study of 16 matched pairs, cooperative students were compared with non-cooperative students. During the time of enrollment in the cooperative program, the level
of reading achievement increased significantly, while a similar impact was not observed in the non-cooperative students.

Echternacht (1975) and Davidson and Johnston (1976) did find vocational education students more likely to be job oriented and training motivated than school oriented and pay motivated. As college preparatory students took on part-time jobs during their senior year, the differences became less profound. The salaries received by cooperative versus non-cooperative students are seldom significantly different.

The present study operates under the premise that the experiences described above are not unlike those encountered by cooperative office education (COE) students. With the classroom curriculum content in the intensive office education (IOE) and cooperative office education (COE) classes being very similar, the work experience comparison should be even more powerful.

The review of cooperative job placement in this section is grounded in the theory of applied performance. Explanations for this relationship are focused on a close association between that which is taught in the formal classroom and that which is performed on the job; motivation for training; and the amount of time on task at the worksite. Therefore, the differences in program enrollment as presented in the second hypothesis of the present study would seem to indicate that students enrolled in a cooperative office education program would be afforded more opportunities to excel in basic
communication skills achievement than the intensive office education students if all factors are operating similarly to the studies cited in this section.

**Vocational/Academic Comparisons on Miscellaneous Dimensions**

Knowing the characteristics unique to high school students enrolled in vocational education programs can provide valuable base-line information for program planners and evaluators. If students were homogeneous, there would be a need for only one curriculum. Hilton (1971) found that student development involves an interaction over time and between students--their perceptions, skills, beliefs, needs, and values, and their environment, especially families and peers. At the secondary level, students must decide whether to pursue vocational, college preparatory, or general curricula. Evans and Galloway (1973) concluded that the self-selection sorting process has produced markedly different populations in these three curricular categories. Even after the selection process has been completed, students do not always report the accurate curricular enrollment. Fetters (1975) predictably found that students tended to overindicate they were academic students when they were not. In addition, students were not able to ascertain the difference between general and vocational curricula. Given no option but to use the self-report
data, Grasso and Shea (1979) recommended that the self-report data be used as proxies for student orientations to instructional experiences.

The factors that go into making program selection are not always predictable, but several researchers have unveiled explanations for pre-enrollment differences (Alexander & McDill, 1976; Wiley & Harnischfeger, 1974; Rosenbaum, 1975; Heyns, 1974; Jencks, 1972; Massachusetts Assessment of Basic Skills, 1979; Grasso and Shea, 1979; Echternacht, 1975; Alexander, Cook, & McDill, 1977). In an analysis of the effects of curricula, therefore, characteristics of the comparison groups should not go unrecognized. Crowe et al. (1984), using the National Center for Education Statistics data, recognized that, while consistent relationships exist between curricula and basic skills achievement, basic skills may be acquired through multiple avenues.

Creech (1974) was able to single out differences by program of study in four categories of basic skills. In vocabulary and reading, the difference between means of academic students and other students was approximately one standard deviation. Academic students were about one standard deviation above general students in mathematics ability, and vocational students scored slightly below general students. Finally, a composite ability score placed academic students about one standard deviation above other students, with no apparent difference between vocational and general students. This one standard
deviation differential in basic skills is not uncommon in vocational-academic comparisons.

Hilton's (1971) earlier study of intellectual growth yielded similar differences in mathematics achievement. In the seventh grade, college preparatory students were performing at a level of sophistication in mathematics that vocational, home economics, and business students would not attain until the eleventh grade. However, he did observe that basic skill proficiencies improve for vocational students from the time they enter the program until they exit.

Overall mathematics achievement was once again the focus of a Minnesota study of approximately 16,000 cases in which there was no significant difference between vocational and academic students. Academic students outperformed vocational students in areas of high math concepts, but vocational students were superior in the practical application of math skills. Specifically, students with greater amounts of vocational education performed better than the group as a whole in knowledge of basic arithmetic, approximations, linear and quadratic equations, interpretations of tables, using formulas, solving thought problems and consumer problems, and translating verbal to mathematical statements. Those same students were below the group as a whole in trigonometric functions, graphing functions, and expanding a binomial (Ludeman, 1976).

In a 1986 Ohio study of 2,372 vocational, college preparatory, and general students, Loadman and Rinderer extended the practical
application theory of basic skills by examining students in the areas of mathematics and science using problems tied to practical applications in occupational categories. Items from the Ohio Vocational Education Achievement Tests were extracted and administered to a group of "traditional" education students (college preparatory and general education), as had previously been done for the vocational education comparison group. Once academic ability (aptitude) and socioeconomic background were entered as covariates, the vocational education students scored significantly better than their general and college preparatory counterparts.

Achievement test scores and grades do not always coincide. In fact, grades are inherently weak and inconsistent measures of academic achievement, yet one study will be reported to demonstrate that grades are easily obtainable and frequently used in research perhaps not as the singular nor the primary measure of achievement but, nonetheless, as an outcome indicator. School type and curriculum were the focus of an analysis of National Longitudinal Survey data conducted by Andrew Kolstad in 1979. When college preparatory high school students were compared with vocational-technical high school students in approximately 1,000 schools, grades were higher at the vocational-technical high school.

The Crowe et al. (1984) study of alternative environments was not intended to compare and contrast vocational and academic curricula. However, in their observations of four classifications of models of
classroom and work experiences, 61 percent of the vocational education experiences both in the classroom and work site yielded as much exposure to basic skills as academic classrooms supplemented with part-time work. In 28 percent of the cases, vocational education had a significantly higher frequency of basic skills being used. These data provide interesting support that the learning of basic skills may occur in a different setting or a different format, but it may still be just as likely to occur.

Crowe et al. (1986) followed up the 1984 Crowe, Abram, and Bart study with an investigation of vocational noncooperative, vocational cooperative, general education, and college preparatory curricula in six schools in the Midwest. A repeated measures design was used to gather data through observations, testing, and interviews of 400 students. Frequency and level of exposure to basic skills instruction was measured. Language arts skill demands were lower for vocational students than for college preparatory students. Vocational cooperative work sites required the lowest level of overall language skills and writing skills of all groups. On the other hand, all vocational programs required greater exposure to and a higher level of speaking skills than academic programs did, with the cooperative work sites requiring the highest level of speaking skills. Students in the college preparatory curriculum had the highest frequency of exposure to basic skills and the highest level of usage of those skills actually demonstrated. The researchers concluded that each curriculum
has its strengths in particular areas. No mention of the type of mathematics achievement was made, but on standardized tests of theory, vocational students do not do particularly well.

To examine the degree to which vocational education influenced mathematics achievement, Ludeman (1976) hypothesized that there was a relationship between the number of vocational classes taken and the level of math achievement of Minnesota twelfth-grade students. He found that in three out of seven vocational curricula, achievement varied inversely with the intensity of the vocational experience (the number of vocational classes taken).

Vocational education also impacts upon the level of involvement (measured by number of activities) in extracurricular school activities. Researchers Davidson and Johnston (1976) cautioned that the quantity of time spent on each activity may be misleading, since vocational clubs may require a heavier time commitment. This argument may be considered weak today because teachers have become more adept in integrating club activities as a co-curricular arrangement.

Club activities were but one dimension upon which Echternacht (1975) compared vocational and academic students. Employing multivariate techniques, he tried to find significant relationships between curriculum and variables of alienation, channeling, sex, and race. Post-secondary school plans, student ratings of their school, psychological variables, values, extracurricular activities, and the
influence of key people were used as independent measures for identifying vocational students. While there were no distinguishing variables between academic and vocational or general students, there were distinguishing variables between vocational and general students. Vocational students were less alienated from school, experienced less channeling, expressed more choice in selecting programs, and were proportionally more likely to be women and whites than general education students.

In the Youth in Transition study (Davidson and Johnston, 1976), the team of researchers could not find evidence that vocational education students are more likely to be high school dropouts than are students in other programs. In guidance, vocational education students receive their vocational counseling from vocational education teachers and not from school counselors. There is a possibility that this finding has changed over the past decade, since more designated "vocational" guidance counselors have been employed to serve vocational students.

In a reflective look at post-high school pursuits, Hilton (1971) discovered that academic students were more likely to attend college than vocational students. Both family background and ability were controlled in his study. Therefore, if a vocational and a college preparatory student with the same family background and ability were matched, it is reasonable to assume the vocational student's chances of not going to college are considerably increased.
The review of vocational education and academic education performance in this section is also grounded in the theory of applied performance. Explanations for this relationship are focused on the concept that concrete examples give meaning to instruction and are, therefore, more likely to be learned. This concept has been reinforced in several of the studies mentioned in this section. Several vocational education taxonomies have produced students who exceed their academic counterparts in basic skills. However, not all vocational students are alike, and interpretations should be made only within the realm of the designated subpopulation being examined. In making comparisons, the factors of socioeconomic background and academic ability should be given consideration and built into the analysis. Therefore, the differences in basic skills achievement by curriculum enrollment, as presented in the first hypothesis of the present study and taking into consideration socioeconomic background and academic ability, would seem to indicate that students enrolled in a vocational business education program would be likely to outperform students in an academic education program, if all factors are operating similarly to the studies cited in this section.

**Business Education Studies**

As indicated in the previous section, in some circumstances, students in vocational business education programs do not fit the
stereotypes commonly associated with vocational education such as unmotivated; underachieving; socioeconomically deprived; less academically able; alienated; and incapable of cognitive, academic learning. The literature in this section provides justification for the present study through review of studies in which vocational business education has differed on various dimensions.

In two large-scale studies, business education students' performance has been examined separately. In the Youth in Transition study (Davidson and Johnston, 1976) and the Massachusetts Assessment of Basic Skills (1979), business education students registered lower mathematics scores than other vocational students, college preparatory students, and general education students. Their average reading level was very much like the vocational and general education students. In writing skills, business education students were superior to other vocational students.

Although Gordon (1985) reported that vocational courses deflated test scores and career expectations, there was an irregularity in her findings. Business and office courses increased the verbal test scores of females and increased the work values of all students. Duplicate evidence of business and office courses increasing verbal test scores for females (but not for males) was disclosed by Hotchkiss (1984) and Oinonen et al. (1984). These same courses tended to deflate mathematics and science test scores but tended to raise civics test scores for both genders. The inherent interpretations of these
findings would be that either business and office education programs place more emphasis on verbal skills, that atypical students are enrolling in vocational business education, or that details not revealed in the studies render the interpretation invalid for interpretation in this specific discussion.

Vocational education students learn occupational and job-specific skills. Lotto (1986) cited the example of business education's focus on taking dictation, a technical skill rather than a basic skill. However, inherent in dictation and transcription instruction is a central core of English grammar, a basic skill. Another case in point are mathematical computations in accounting courses. It might be that business education has been doing what other vocational programs have only recently begun to emulate.

Meyer (1981) reported strong positive effects of labor market success from female students enrolled in business education programs. The use of smaller categories of vocational education students such as business education students permits clearer and meaningful interpretations of outcomes. On the other hand, the composite category that includes all vocational education students is too heterogeneous to adequately characterize vocational education.

The review of vocational business education performance in this section is once again grounded in the theory of applied performance. Explanations for this relationship are focused on the concept that concrete examples give meaning to instruction and are, therefore, more
likely to be learned. This concept as it specifically relates to business education has been reinforced in several of the studies mentioned in this section of the review. Several vocational business education programs have produced students who have exceeded their academic counterparts in basic skills. In making comparisons, the factors of socioeconomic background and academic ability should be given consideration and built into the analysis. Therefore, the differences in basic skills achievement by curriculum enrollment, as presented in the first hypothesis of the present study and taking into consideration socioeconomic background and academic ability, would indicate that students enrolled in a vocational business education program would be likely to outperform students in an academic education program, if all factors are operating similarly to the studies cited in this section.

The paucity of research in business education settings with regard to basic skills has left this section of the literature review noticeably brief. There are many avenues to pursue with vocational business education students and basic skills, and the present investigation is an effort in that direction.

Summary

Although family background and intelligence differences do exist, the vocational curriculum serves to mediate these differences.
Both the vocational education curriculum and the vocational education teachers make important and valuable contributions to the experiences of students in high school vocational education programs. Empirical evidence suggests that while vocational students make gains in basic skills achievement, the magnitude of the gains are not as intense or as regular as their academic counterparts. In addition, background characteristics relating to socioeconomic status and academic ability obfuscate the effects of curriculum. Spurious results from these two attribute variables may occur as a direct effect in terms of curriculum as well as an indirect effect through access to educational resources and perpetuation of the existing socioeconomic status or academic ability level.

The literature in this chapter supports the functional context theory of education that states, "Skills and knowledges are best learned if they are presented in a context that is meaningful to the persons. Training should, therefore, use job reading and numeracy materials and tasks" (Sticht & Mikulecky, 1984, p. 9). It also supports the theoretical framework that the self-selection process produces stratified comparison groups. From these theories, the four hypotheses for the present study have been developed and restated in null form.

Even with fragmented yet substantive information comparing vocational and academic education, researchers still have countless
questions to answer. The immediate answers will deal with curricula; the enduring answers will be determined through employment outcomes.
CHAPTER III
Methodology

The purpose of this chapter is to detail the methodology utilized in this study. The research design is described, and the variables of concern are listed. Outcome measures and data collection procedures are explained. The chapter concludes with a report of the treatment of the data and a summary of the methodological information.

This investigation was designed to compare basic communication skills achievement by high school seniors in a specific setting, Lucas County, Ohio. Two comparisons were sought: (a) Basic communication skills achievement of seniors enrolled in the vocational business education curriculum and seniors enrolled in the academic curriculum; and (b) Basic communication skills achievement of vocational business education seniors enrolled in the intensive office education program and seniors enrolled in cooperative office education program. The language mechanics and language expression sections of the Comprehensive Test of Basic Skills were employed to measure the dependent variable. The
primary units of analysis were students clustered within various types of curricula.

**Research Procedure**

The investigation was an ex post facto study conducted in a field setting. Although it is acknowledged that manipulation is not possible in ex post facto studies, the terms "independent variables" and "dependent variables" were used by Ary (1985) and Kerlinger (1973) within discussions of ex post facto studies. Therefore, the dependent variable in this investigation was basic communication skills achievement, as measured by performance on the Comprehensive Test of Basic Skills - language mechanics and language expression sections. In the first section of the study comparing basic communication skills achievement and curricular membership, the primary independent variable was curriculum. There were two levels of the independent variable - the vocational business education curriculum, which was comprised of intensive office education and cooperative office education programs, and the academic curriculum, which included college preparatory and general tracks. The second section compared basic communication skills achievement and vocational business education programs - cooperative and intensive; therefore, the independent variable was
vocational business education program, of which there were two levels - cooperative and intensive.

It was important to expand the interpretation of the data by building in two attribute variables that were known to explain a large portion of the variance in outcome measures associated with vocational and academic curricula (Alexander and McDill, 1976; Alexander, Cook, and McDill, 1977; Creech, 1974; Heyns, 1974; Crowe, Hettinger, Weber, and Johnson, 1986; Davidson and Johnston, 1976; Echternacht, 1975; Evans and Galloway, 1973; Grasso, 1975; Hilton, 1971; Hotchkiss, 1984; and Rosenbaum, 1975). The attribute variables were: academic ability (indicated by composite scores on the Short Form Test of Academic Aptitude) and socioeconomic background (computed as a weighted average on five criteria from derived from seven questions) (Grasso and Shea, 1979; Kohen, 1973; and Bachman, 1970).

**Description of Population**

The target population for this investigation was defined as high school seniors enrolled in vocational business education or academic curricula in Lucas County, Ohio, schools. The population was further limited to only those schools within the county that offered both vocational and academic curricula as well as both intensive office education and cooperative office education. Lucas
County schools can be described as having urban, suburban, and rural school settings as well as vocational skill centers, comprehensive high schools, and comprehensive high schools serving as self-contained VEPDs. According to the 1986-87 Annual Report, approximately 52 percent of all the students were male and 48 percent were female. The distribution of the student population by race indicated 58 percent were white, 36 percent were black, 5 percent were hispanic, with the remaining 1 percent coming from various racial backgrounds. The percentage of students participating in the free lunch program has been used on some occasions as an indicator of socioeconomic status. Approximately 26 percent of the Lucas County students in the target population for this study received free lunches.

The accessible population for this study was limited by the voluntary participation of school administrators, teachers, and students. Groups of intensive office education classes and cooperative office education intact classes were recruited by the researcher. The 9 intensive office education classes and 12 cooperative office education classes represented 100 percent participation from the available population of vocational business education classes. Vocational business education units of analysis were easily delineated by classroom enrollment in a state-funded vocational business education taxonomy. Two delivery systems of vocational business education, the second of which involves work
experience, were examined through the use of comparison groups of
intensive office education classes and cooperative office education
classes.

School system and building administrators assisted the
researcher in obtaining academic teachers to volunteer their
classes. American government and sociology classes provided the
greatest clustering of senior academic students. As a result, 11
intact academic classes in American government and sociology
participated, involving approximately 30 percent of the total
number of available senior social studies classes. Data from
students who were enrolled in funded vocational programs other than
business education or from students who were not seniors were set
aside and not included in the analysis.

It must be noted that no effort was made to randomize or to
establish the representativeness of the academic classes on the
basis of one or a number of criteria. Therefore, the participants
in this study were high school seniors whose teachers had been
contacted and had volunteered their classes for participation in
the study. Students were enrolled in one of the schools in Lucas,
County, Ohio, that met the criteria of having both vocational and
academic education as well as both intensive office education and
cooperative office education programs. Generalizations are not
intended to go beyond those bounds.
Outcome Measures

Three instruments were employed in this study. First, the Comprehensive Test of Basic Skills, Form U, Level J (Grades 8.6 - 12.9) is a nationally normed test yielding two separate scores as well as a combined score for language achievement. The language mechanics portion requires 14 minutes of working time, and language expression may be completed in 33 minutes. The number of correct responses is used as a measure of the dependent variable and as a test of the four hypotheses of this study.

Kuder-Richardson formula 20 coefficients of reliability for the language section using the split-half method are: .86 for language mechanics, .90 for language expression, and .93 for the combined language section. Content validity was established through the use of content curriculum guides of state departments of education; a large pool of items for final test selection; reference to vocabulary specifications and readability formulas; field testing; and attention to ethnic, racial, age, and gender bias (CTB/McGraw-Hill, 1984). A similar Kuder-Richardson formula 20 of 92.7 was obtained as the data from the present study were scored.

The second measurement was the Short-Form Test of Academic Aptitude (SFTAA), level 5. This test has demonstrated a Kuder-Richardson formula 20 reliability coefficient of .93 and high
levels of content validity. The Short-Form Test of Academic Aptitude is comprised of 85 items divided into four subtests: (a) sequence (20 items), (b) analogies (20 items), (c) vocabulary (25 items), and (d) memory (20 items). Separate scores for each subtest as well as a non-language subtest score (sequence plus analogies), a language subtest score (vocabulary plus memory) and a total academic aptitude score (sum of the four subtests) are produced. The Short-Form Test of Academic Aptitude is recognized as an excellent indicator of general academic ability (Loadman, 1986). It is not uncommon for researchers to use an aptitude test to measure ability. The Project TALENT test battery used in vocational and academic settings by Evans and Galloway (1973) and Flanagan (1962b and 1964) and subsequent reports are examples. In fact, painstaking efforts were made by the authors of the Short-Form Test of Academic Aptitude to design a test that was a measure of both ability and achievement. It is suggested that the Short-Form Test of Academic Aptitude be used in conjunction with the Comprehensive Test of Basic Skills as a predictor test (CTB/McGraw-Hill, 1970). The following paragraphs have been extracted from the Short-Form Test of Academic Aptitude Manual (1970) to clarify the issue of using an aptitude test to measure ability:

The Short-Form Test of Academic Aptitude is intended for use in the schools. It does not claim to measure all aspects
of mental ability. Emphasis is placed on those intellectual functions of a relatively abstract nature which are important for success in an educational program. These include facility in dealing with verbal and non-verbal concepts and in comprehending relationships among ideas presented in various forms.

The Short-Form Test of Academic Aptitude is designed to yield a useful measure of general ability by combining several intellectual tasks into a single score. Total score on the test is the most dependable estimate of general ability, with language and non-language scores constituting two separate estimates of more specific abilities. (p. 6)

The scores (reflected by the number of correct responses) obtained from administration of this instrument were used for the academic ability covariate in the testing of the third and fourth hypotheses.

The third measurement was a short questionnaire of seven questions used to arrive at an weighted five-item average for socioeconomic background, as adapted by Kohen (1973) from the Youth in Transition studies conducted by Bachman (1970). The instrument was incorporated in Grasso and Shea's (1979) study of the impact of vocational education on youth, and slight variations are seen in many research efforts.
Socioeconomic background is determined from the level of education of (a) father (in years); (b) mother (in years); and, if appropriate, (c) oldest older sibling (in years); (d) father's occupation when respondent was age 14 (using Duncan's [1961] index); and (e) an index of availability of reading materials in the home when the respondent was age 14 (using an ordinal scale and calculating an average for three items relating to reading materials). A combined score is calculated for each respondent for whom at least three of the five measures are available. Although the present study used continuous data, for young men a total score of 11.5-15.8 defines high third; 9.8-11.4, middle; and 2.1-9.7, low. In the case of young women, an aggregate score of 11.5-16.2 defines high; 9.7-11.4, middle; and 1.1-9.6, low (Kohen, 1973, pp. 173-179). This short instrument was used as the measure for socioeconomic background, one of the covariates used in the testing of the third and fourth hypotheses in this study.

Data Collection

Data for this study were obtained through student responses on the Comprehensive Test of Basic Skills language section, the Short Form Test of Academic Aptitude, and the socioeconomic origins questionnaire. The tests were administered by the researcher to
all classes within a span of three weeks between May 19 and June 4, 1987. An 81 percent response rate was obtained.

Students were provided with test booklets. Answers to all three measures were recorded on two machine-scored forms. Since these were grouped data, no student names appeared on any of the answer sheets. The guidelines for human subjects review were followed.

**Treatment of the Data**

Regression procedures were used to analyze the data and provide specific interpretations concerning relationships to the dependent variable. An analysis of variance was used to test the first and second hypotheses, and an analysis of covariance was used to test the third and fourth hypotheses. Consistent with the literature reviewed in Chapter II, all statistics were tested at the .05 level of significance. This level provided enough rigor for confidence in the results yet did not introduce undue risks of a Type II error.

Although 72 (19 percent) of the test forms were ruled invalid, this figure must interpreted with caution. No effort was made to follow up on test forms with incomplete or missing data. Since the testing session covered a two-day period in most cases, there were situations where students were present for only half of the test. Many of these absences were the result of end-of-the-year school
activities, including banquets, concerts, assemblies, or other senior functions. Test forms for some students who were not part of the target population were also removed from the study including 8 vocational students (2 percent) who were not enrolled in business education.

Summary

This study investigated the whether differences existed between curricula, vocational business education programs, academic aptitude, and socioeconomic origins with regard to basic communication skills achievement. Subjects, seniors attending Lucas County, Ohio, schools, were retained in their intact classes and were administered a nationally normed test of basic communication skills, a nationally normed test of academic aptitude (ability), and a short background questionnaire used to assess socioeconomic origins.

Regression procedures were employed to determine significant differences among variables in the analysis of the data. Specialized correlation coefficients further explained the variables under investigation. The following chapter presents and discusses the results of the analysis.
CHAPTER IV

Analysis of Data

In order to assess whether vocational business education students and academic students differed in basic communication skills achievement, it was necessary to generate and analyze data. The Comprehensive Test of Basic Skills, Language Mechanics and Language Expression sections; the Short Form Test of Academic Aptitude; and a socioeconomic background questionnaire were the three instruments selected to provide the measurements. This chapter contains a presentation and analysis of the findings from the study.

In order the examine the four hypotheses and establish statistical precision, four procedures were deemed appropriate, using the Statistical Analysis System (SAS) packaged program:

1. Analysis of variance (ANOVA) procedures were performed to determine if the vocational business education and academic groups as well as the intensive office education and cooperative office education groups differed significantly.

2. An analysis of covariance (ANCOVA) was performed in an effort to determine the extent to which other covariates contributed to the variance in basic communication skills achievement.
Since it was apparent from existing literature that two student attributes, socioeconomic background and ability, were related to the dependent variable, basic communication skills achievement, the means of the dependent variable were adjusted to remove the effects of the attribute variables, or covariates. The adjusted means for the groups were compared through these ANCOVAs.

3. Tukey's Studentized Range Test was performed post hoc to control for Type I errors and determine significant differences among groups after the corrections.

4. Significant and meaningful relationships (Glassnapp and Poggio, 1985; Schmidt, 1975) were identified through correlation coefficients. The threshold significance level for this study was set a priori at $p < .05$. The level of .05 has traditionally been considered an acceptable level for determining statistical significance.

**Description of the Subjects**

The discussion, herein, describes the participants of the study. Students were public high school seniors in schools in Lucas County, Ohio. Intact classes were volunteered by teachers of (a) American government, (b) sociology, (c) intensive office education, and (d) cooperative office education. A total of 386 students were
tested, and 314 answer sheets were acceptable for analysis. The 314 students became the population for this study. A breakdown of the 386 students in the accessible population according to reasons for exclusion or inclusion in the study is provided in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed fewer than 50 percent of the examination questions</td>
<td>42</td>
<td>11</td>
</tr>
<tr>
<td>Fewer than 3 questions answered regarding socioeconomic background</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>Enrolled in vocational program other than business education</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Fictitious information</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Curriculum not identified</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Included in study as a participant</td>
<td>314</td>
<td>81</td>
</tr>
<tr>
<td>Total</td>
<td>386</td>
<td>100</td>
</tr>
</tbody>
</table>

The 314 students whose test forms were acceptable represented 81 percent of the accessible population. Vocational business education students who were members of one of the academic classes tested in this study were asked to take the test with their vocational business
education class, thereby avoiding duplication. A listing by school and number of respondents is provided in Table 2.

Table 2

Number and Percent of Participants by School

<table>
<thead>
<tr>
<th>School</th>
<th>Total</th>
<th>% of Responding Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowsher</td>
<td>43</td>
<td>14</td>
</tr>
<tr>
<td>Clay</td>
<td>78</td>
<td>24</td>
</tr>
<tr>
<td>DeVilbiss</td>
<td>43</td>
<td>14</td>
</tr>
<tr>
<td>Libbey</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>Rogers</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Scott</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Start</td>
<td>31</td>
<td>10</td>
</tr>
<tr>
<td>Waite</td>
<td>26</td>
<td>8</td>
</tr>
<tr>
<td>Woodward</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
<td>100</td>
</tr>
</tbody>
</table>
Data Analysis

The results of the analyses of these data are presented in the sequence of the research questions presented in Chapter I. The first research question asked, "How can vocational business education, academic, intensive office education, and cooperative education students be described in terms of basic communication skills achievement?"

An extensive analysis was performed for all possible combinations of variables examined in this study and went beyond what is reported in this chapter. Strong explanations for that portion of the total variance attributable to curriculum and program variables as well as the socioeconomic background covariate could not be found. Academic ability was the only covariate that consistently produced significant and meaningful differences in the basic communication skills adjusted scores. Although the results of the analysis do little to bring about closure on which curriculum or program is producing higher achievers in basic communication skills, the concept of "no difference" is meaningful, too. Therefore, until other variables and a more representative population are examined, all comparison groups may be described as relatively similar and very competitive.

A more detailed description of the results will be presented in answer to the final four research questions that correspond to the
four null hypotheses in Chapter I. Each null hypothesis is restated prior to the discussion to establish the context of the analysis.

\[ H_0 \text{ I: } \text{There will be no statistically significant difference between basic communication skills achievement of students pursuing a vocational business education curriculum and those pursuing an academic curriculum.} \]

An analysis of variance was performed to determine if any significant difference in basic communication skills existed between curricula. There was a significant difference between the means of the two groups at the .05 level. The F-test yielded a F-value of 30.45 at 1, 312 df, which was significant (\( p < .0001 \)) at the pre-established level of significance. Tukey's post hoc analysis confirmed the means of the vocational and academic students were significantly different even after corrections for Type I errors. The null hypothesis was not supported. The findings indicated that the vocational business education students significantly outperformed (as measured by number of correct responses) the academic students on the basic communication skills test. In addition, vocational business education students' test performance was superior to both college preparatory and general education students' performance when examined separately.

The \( r^2 \) coefficient of determination indicated that 9 percent of the total variance was accounted for by the variable, curriculum. Although the raw score difference between the vocational business
education group and the academic education group was statistically significant, the coefficient of determination could not be reported as meaningful. The results are summarized in Table 3. Table 9, found in Appendix D, provides the complete ANOVA results.

Table 3
Summary Table: Mean Raw Score, Percent Correct, and Standard Deviation of Basic Communication Skills Achievement by Curriculum and by Program

<table>
<thead>
<tr>
<th>Curriculum or Program</th>
<th>n</th>
<th>( \bar{X} )</th>
<th>Percent</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td>80</td>
<td>46.47</td>
<td>62</td>
<td>12.63</td>
</tr>
<tr>
<td>General</td>
<td>46</td>
<td>33.00</td>
<td>44</td>
<td>13.20</td>
</tr>
<tr>
<td>Total Academic</td>
<td>126</td>
<td>41.55</td>
<td>55</td>
<td>14.35</td>
</tr>
<tr>
<td><strong>Vocational Business</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensive Office</td>
<td>62</td>
<td>48.23</td>
<td>64</td>
<td>13.04</td>
</tr>
<tr>
<td>Cooperative Office</td>
<td>126</td>
<td>50.49</td>
<td>67</td>
<td>11.13</td>
</tr>
<tr>
<td>Total Vocational Business</td>
<td>188</td>
<td>49.74</td>
<td>66</td>
<td>11.81</td>
</tr>
</tbody>
</table>
H₀ 2: "There will be no statistically significant difference between basic communication skills achievement of students pursuing an intensive office education program and those pursuing a cooperative office education program."

An analysis of variance was performed to determine if any significant difference in basic communication skills existed between vocational business education programs. There was no significant difference between the intensive office education group and the cooperative office education group at the .05 level. An F-value of 1.53 with 1, 186 df was not significant (p < .2171 > .05) at the pre-established level of significance. The null hypothesis was retained. The findings revealed that although cooperative office education participants received slightly higher mean scores on the basic communication skills test than their intensive office education counterparts (see Table 3), the scores were not significantly different. Tukey's post hoc analysis reaffirmed the lack of a significant difference between the two groups on basic communication skills.

The r² coefficient of determination indicated that 1 percent of the total variance was accounted for by the variable, program. Therefore, the difference between the intensive office education group and the cooperative office education group was neither statistically significant nor meaningful. The ANOVA results are summarized in Table 10 of Appendix D.
H_0 3: "There will be no statistically significant difference between basic communication skills achievement of students pursuing a vocational business education curriculum and those pursuing an academic curriculum when covariates are introduced."

Tests of the first hypothesis revealed that groups of students enrolled in vocational business education and academic curricula did differ significantly in basic communication skills achievement. Existing literature indicated there is more than a casual relationship between curricula and socioeconomic background as well as between curricula and academic ability. Therefore, an analysis of variance was conducted using (a) socioeconomic background and (b) academic ability taken independently or separately as dependent variables and types of curricula and types of programs as independent variables. There were significant differences between types of curricula and types of programs on socioeconomic background, F (3, 310) = 10.41, p .0001 < .05. Similarly, significant differences between types of curricula and types of programs on academic ability, F (3, 310) = 12.88, p .0001 < .05 were evident. Tukey's Studentized Range Test, using the covariate, socioeconomic background, indicated that the academic education subcategory of college preparatory participants had significantly higher socioeconomic backgrounds than the other three curricular and program groups at the .05 level. Tukey's Studentized Range Test was once again performed on the academic ability covariate,
for which general education students had a significantly lower ($p < .05$) academic ability than the other three groups of students.

The $r^2$ coefficient of determination indicated that 11 percent of the total variance in socioeconomic background was accounted for by the variable, curriculum. A similar coefficient of determination of 9 percent was reported for academic ability. Therefore, neither association was considered meaningful. The results of the ANOVA may be found in Tables 11 and 12 of Appendix D. Table 4 summarizes the mean differences among the covariates and the four curricular and program comparison groups.
Table 4

Summary Table: Mean Scores and Standard Deviations of Socioeconomic Background and Academic Ability by Curriculum and by Program

<table>
<thead>
<tr>
<th>Curriculum or Program</th>
<th>Socioeconomic Background</th>
<th>Academic Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>X</td>
</tr>
<tr>
<td>Academic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td>80</td>
<td>13.20</td>
</tr>
<tr>
<td>General</td>
<td>46</td>
<td>11.97</td>
</tr>
<tr>
<td>Total Academic</td>
<td>126</td>
<td>12.75</td>
</tr>
<tr>
<td>Vocational Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensive Office</td>
<td>62</td>
<td>12.22</td>
</tr>
<tr>
<td>Cooperative Office</td>
<td>126</td>
<td>11.92</td>
</tr>
<tr>
<td>Total Vocational Bus.</td>
<td>188</td>
<td>12.02</td>
</tr>
</tbody>
</table>

An analysis of covariance (ANCOVA) was performed to equate the effects of curricula statistically, based upon any existing differences between the groups on socioeconomic background or academic ability. In Table 5, the basic communication skills scores were adjusted to reflect socioeconomic background as a covariate. The result was a small downward adjustment for socioeconomic background in the values for academic students' basic communication skills scores,
and slight upward adjustment for the vocational business education students.

Table 5
Summary Table: Mean Score and Adjusted Score of Basic Communication Skills Achievement by Curriculum (Adjusted for Socioeconomic Background)

<table>
<thead>
<tr>
<th>Curriculum</th>
<th>n</th>
<th>Raw Score</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td>80</td>
<td>46.47</td>
<td>45.31</td>
</tr>
<tr>
<td>General</td>
<td>46</td>
<td>33.00</td>
<td>33.45</td>
</tr>
<tr>
<td>Total Academic</td>
<td>126</td>
<td>41.56</td>
<td>40.80</td>
</tr>
<tr>
<td>Total Vocational Business</td>
<td>188</td>
<td>49.75</td>
<td>50.25</td>
</tr>
</tbody>
</table>

Verification that socioeconomic background produced significant differences between the adjusted means of the two curricular groups at the .05 level is shown in Table 5. The F-test yielded a F-value of 24.83 with 2, 311 df, which was significant (p < .0001) at the pre-established level of significance. Tukey's Studentized Range Test confirmed significant differences between curricular groups. Vocational business education participants significantly outperformed
academic students (as measured by the adjusted mean score) on the basic communication skills test when socioeconomic background was used as a covariate.

The \( r^2 \) coefficient of determination indicated that 14 percent of the total variance was accounted for by the variable, curriculum, and the covariate, socioeconomic background. Although the adjusted mean difference between the vocational business education group and the academic education group was statistically significant, the coefficient of determination could not be reported as meaningful.

In Table 6, basic communication skills scores were modified to reflect academic ability as a covariate. Academic ability scores produced upward adjustments in the values of basic communication skills scores for the academic curriculum, but there was a downward adjustment for the vocational business education group.

The \( r^2 \) coefficient of determination indicated that 55 percent of the total variance was accounted for by the variable, curriculum, and the covariate, academic ability. The association between the variables was interpreted as statistically significant and meaningful.
<table>
<thead>
<tr>
<th>Curriculum</th>
<th>n</th>
<th>Raw Score $\bar{X}$</th>
<th>Adjusted $\bar{X}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td>80</td>
<td>46.47</td>
<td>44.96</td>
</tr>
<tr>
<td>General</td>
<td>46</td>
<td>33.00</td>
<td>39.98</td>
</tr>
<tr>
<td>Total Academic</td>
<td>126</td>
<td>41.55</td>
<td>43.21</td>
</tr>
<tr>
<td>Total Vocational Business</td>
<td>188</td>
<td>49.74</td>
<td>48.63</td>
</tr>
</tbody>
</table>

When academic ability was entered as a covariate, significant differences remained between the adjusted means of the vocational business education and academic groups for basic communication skills, $F = 187.33$ with 2, 311 df, which was significant ($p < .0001$) at the pre-established level of significance. Vocational business education participants had significantly higher adjusted mean scores than academic participants for basic communication skills achievement. Application of Tukey's Studentized Range Test yielded significant differences between the two curricular groups.
Based upon the significant differences when covariates of either socioeconomic background or academic ability were added, the null hypothesis was not supported. Tables 13 and 14 in Appendix D summarize the results of the ANCOVAs for socioeconomic background and academic ability.

H₀ 4: "There will be no statistically significant difference between basic communication skills achievement of students pursuing an intensive office education program and those pursuing a cooperative office education program when covariates are introduced."

Tests of the second hypothesis disclosed that groups of students who were enrolled in intensive or cooperative education did not differ significantly in basic communication skills achievement. Furthermore, an analysis of variance using (a) socioeconomic background and (b) academic ability as dependent variables and the comparison groups as independent variables followed by Tukey's Studentized Range Test produced no significant differences between type of vocational business education program and socioeconomic background. Academic ability furnished no significant difference, as well (see Tables 11 and 12 of Appendix D). Table 4 includes a summary of the mean differences among the covariates and the program comparison groups.

An analysis of covariance (ANCOVA) was performed to adjust statistically the effects of vocational business education programs, based upon any existing differences between the groups on
socioeconomic background or academic ability. In Table 7, the basic communication skill scores were modified to reflect socioeconomic background as a covariate. The result was a small downward adjustment for socioeconomic background in the values for the intensive office education students' basic communication skills scores and a slight upward adjustment for the cooperative office education students. No significant difference between programs was reported in the analysis, $F = 1.03$ with 2, 185 df ($p = .3579 > .05$), at the pre-established level of significance. Tukey's Studentized Range Test confirmed that there was no significant difference between programs. Although intensive office education students had a slightly higher adjusted mean score than cooperative office education students on basic communication skills achievement when socioeconomic background was used as a covariate, the difference was not strong enough to be considered statistically significant.

The $r^2$ coefficient of determination indicated that only 1 percent of the total variance was accounted for by the variable, program, and the covariate, socioeconomic background. Therefore, the difference between the adjusted scores for the intensive office education group and the cooperative office education group was neither statistically significant nor meaningful.
Table 7

Summary Table: Mean Score and Adjusted Score of Basic Communication Skills Achievement by Program
(Adjusted for Socioeconomic Background)

<table>
<thead>
<tr>
<th>Program</th>
<th>n</th>
<th>Raw Score</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensive Office</td>
<td>62</td>
<td>48.23</td>
<td>48.14</td>
</tr>
<tr>
<td>Cooperative Office</td>
<td>126</td>
<td>50.49</td>
<td>50.53</td>
</tr>
<tr>
<td>Total Vocational Business</td>
<td>188</td>
<td>49.74</td>
<td>50.25</td>
</tr>
</tbody>
</table>

In Table 8, basic communication skill scores were modified to reflect academic ability as a covariate. Academic ability scores produced downward adjustments in the values of basic communication skills scores for intensive office education students and upward adjustments of less magnitude for cooperative office education students. When academic ability was entered as a covariate, significant differences occurred between the adjusted means of the intensive office education and cooperative office education groups for basic communication skills, $F = 125.86$ with 2, 185 df, which was significant ($p < .05$) at the pre-established level of significance.
The $r^2$ coefficient of determination indicated that 58 percent of the total variance was accounted for by the variable, program, and the covariate, academic ability. The association between the variables was interpreted as both statistically significant and meaningful.

Table 8
Summary Table: Mean Score and Adjusted Score of Basic Communication Skills Achievement by Program
(Adjusted for Academic Ability)

<table>
<thead>
<tr>
<th>Program</th>
<th>n</th>
<th>Raw Score</th>
<th>Adjusted X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensive Office</td>
<td>62</td>
<td>48.23</td>
<td>47.30</td>
</tr>
<tr>
<td>Cooperative Office</td>
<td>126</td>
<td>50.49</td>
<td>50.95</td>
</tr>
<tr>
<td>Total Vocational Business</td>
<td>188</td>
<td>49.74</td>
<td>53.74</td>
</tr>
</tbody>
</table>

The decision to retain the null hypothesis was based upon the failure of socioeconomic background to produce a significant difference between the intensive office education and cooperative office education groups. It must be noted, however, that academic ability generated a moderate to high ($r = .75$) significant difference between the comparison groups in basic skills achievement. Tables 17
and 18 in Appendix D summarize the results of the ANCOVAs for socioeconomic background and academic ability.

**Additional Findings**

Correlation coefficients were calculated at the .05 level of significance to further explain the relationships between variables. For the vocational business education participants, the correlation between academic ability and basic communication skills achievement was $r = .75$, which Glassnapp and Poggio (1985) classify as a moderate to high type of relationship. On the other hand, the relationship between socioeconomic background and basic communication skills achievement was $r = .04$, considered very low.

The same classification system of correlation coefficients led to an interpretation of a moderate to high association of $r = .67$ between academic ability and basic communication skills for academic education students. Socioeconomic background was moderately related ($r = .40$) to the basic communication skills achievement of academic education students. The correlation matrices for curriculum are shown in Tables 15 and 16 of Appendix D.

For the intensive office education participants, the correlation between academic ability and basic communication skills achievement was $r = .75$, which Glassnapp and Poggio (1985) classify as a moderate to high type of relationship. On the other hand, the relationship
between socioeconomic background and basic communication skills achievement was $r = .06$, considered very low.

A moderate to high association of $r = .76$ between academic ability and basic communication skills for cooperative office education students was shown. Conversely, socioeconomic background produced a very low relationship (.05) to the basic communication skills achievement of cooperative office education students. The correlation matrices for program are shown in Tables 19 and 20 of Appendix D.

**Summary**

This chapter presented the data resulting from the statistical procedures performed in this study. The ANOVAs produced a significant difference between the vocational business education and academic education curricular groups but failed to demonstrate a significant difference between the intensive office education and cooperative office education programs.

The ANCOVAs for socioeconomic background as a covariate produced a significant difference between the vocational business education and academic education groups, but a significant difference between intensive office education and cooperative office education groups was not observed. When academic ability was used as the covariate, significant differences were found in both the vocational business
education/academic education comparison as well as in the intensive office education/cooperative office education comparison.

From the four null hypotheses examined, the first and third were not supported, the second was retained, and the fourth was retained with reservations. Chapter V will summarize the entire study and will discuss conclusions and recommendations resulting from these analyses.
CHAPTER V

Summary, Conclusions, and Recommendations

Chapter V contains a summary of this research beginning with the background and statement of the problem, procedures, and results. These are followed by conclusions and recommendations from the study.

**Summary**

Mounting debate in recent years has focused on which avenues of curricular pursuit produce students with the best basic skills. Although some research has been conducted to compare the relationships of student participation in vocational education to those in academic education, much of those data have been analyzed in a post hoc fashion from prior longitudinal studies. When vocational and academic students are assumed to come from the same population, the findings invariably favor the academic students. Some studies have shown, however, that these two curricular groups are from two separate populations, thus making the results suspect in terms of validity.

Not to be ignored are two major background factors that make the vocational and academic populations of students different: (a)
socioeconomic background and (b) academic ability. When these two variables are entered into the equation, researchers report interesting and positive adjustments to vocational education students' performance in basic skills.

Furthermore, some research has suggested that vocational business education students may be different from the mainstream of other vocational education students, especially in the area of basic communication skills. If this evidence is valid, then empirical investigations should lead to conclusions of significant relationships upon which curricular decisions should be based.

The purpose of this study was to compare basic communication scores of (a) vocational business education and academic students, first by using raw scores and second by considering attribute variables of socioeconomic background and academic ability; and (b) intensive office education and cooperative office education students, first by using raw scores and second by considering attribute variables of socioeconomic background and academic ability.

Volunteer intact classes from schools in Lucas County, Ohio, comprised the accessible population. The 314 high school seniors in the population of respondents were distributed by the following enrollments: 126 academic education (80 college preparatory and 46 general education) and 188 vocational business education (62 intensive office education and 126 cooperative office education). Generalizations are not extended beyond the responding population. A
nationally normed test of basic communication skills, a nationally normed test of academic ability, and a socioeconomic survey refined from the Youth in Transition national longitudinal studies were administered to the students.

Four hypotheses were developed to determine if a difference existed between the vocational business education and academic education curricula and between the intensive office education and cooperative office education programs in the limited population examined. Hypotheses 1 and 2 were tested by computing an analysis of variance test to compare the raw scores on the basic communication skills test. Hypotheses 3 and 4, incorporating the attribute variables of socioeconomic background and academic ability, were tested using an analysis of covariance. A post hoc treatment using Tukey's Studentized Range Test was employed to control for Type I errors. The data derived from the statistical analysis of these procedures yielded these findings:

1. Vocational business education and academic education participants differed significantly (p < .05) in their basic communication skills achievement. The number of correct responses of the vocational business education students consistently exceeded those of the academic education students, either analyzed separately as college preparatory and general education groups or as a composite academic education group.
2. No conclusive evidence was discovered that intensive office education or cooperative office education participants differed significantly \((p < .05)\) in their basic communication skills achievement. Although cooperative office education participants received slightly higher mean raw scores on the basic communication skills test than the intensive office education participants, the differences were not great enough to be considered statistically significant.

3. Vocational business education and academic education participants continued to differ significantly \((p < .05)\) in their basic communication skills achievement when the covariate of socioeconomic background was introduced. Socioeconomic background had the effect of adjusting the vocational business education participants' scores upward and adjusting the academic education participants' scores downward. In addition, the adjusted means of the vocational business education students consistently exceeded those of the academic education students, either analyzed separately as college preparatory and general education groups or as a composite academic education group.

4. Vocational business education and academic education participants continued to differ significantly \((p < .05)\) in their basic communication skills achievement when the covariate of academic ability was introduced. Academic
ability had the effect of adjusting the vocational business education participants' scores downward and the academic education participants' scores upward. In the academic group, the mean score for general education participants was dramatically adjusted upward, and the mean score for college preparatory participants was adjusted downward slightly. The adjusted means of the vocational business education students consistently exceeded those of the academic education students, either analyzed separately as college preparatory and general education groups or as a composite academic education group.

5. No conclusive evidence was revealed to indicate that intensive office education and cooperative office education participants differed significantly (p < .05) in their basic communication skills achievement, even when the covariate socioeconomic background was introduced. Socioeconomic background had the effect of adjusting the intensive office education participants' scores downward slightly and the cooperative office education participants' scores upward slightly, but not producing any new interpretations in the adjusted means.

6. Intensive office education and cooperative office education participants differed significantly (p < .05) in their basic communication skills achievement when the covariate, academic
ability, was introduced. Academic ability had the effect of adjusting the intensive office education participants' scores downward and raising the mean scores of the cooperative office education participants. The adjusted mean score for cooperative office education participants was significantly higher than that of intensive office education participants.

Conclusions

Taking into consideration the limitations listed in Chapter I, the extent to which the data from the research procedures were valid and reliable as reported in Chapters III and IV, and the limited population, conclusions are drawn from this study. Evidence gleaned from the findings indicates that the population examined demonstrated a set of higher mean raw scores for vocational business education participants than for academic education participants in basic communication skills. However, it also must be noted that only 9 percent of the variance could be explained in this relationship. The finding of a significant difference between vocational business education and academic education students is consistent with the limited amount of existing literature indicating increased verbal and language test scores for business education students (Davidson and Johnston, 1976; Massachusetts Assessment of Basic Skills, 1979; and Gordon, 1985). The findings for this population are not consistent,
however, with the body of literature comparing vocational and academic students, in which a difference of one standard deviation between the two groups is considered a norm (Creech, 1974).

The assumption in previous research that socioeconomic background would mediate the differences between vocational business education and academic participants was paralleled in the results of the analysis of the third hypothesis. These findings support the recent research of Loadman and Rinderer (1986) who discovered that means of vocational students were superior to academic students when adjusted for socioeconomic background. However, due to the negligible explained variance for socioeconomic background and curriculum in the present study, these same findings might also be used to support 1984 National Center for Educational Statistics data that students from low socioeconomic status backgrounds and students who scored low on cognitive tests were inclined to earn more vocational credits than their academic classmates.

Academic ability and achievement consistently show signs of high relationships. Moreover, the relationship between academic ability and curriculum is frequently noted in the literature (Lotto, 1981). In the limited population studied, the academic ability scores provide interesting discussion, since intensive office education students demonstrate superior academic abilities to college preparatory as well as general education students. These data might conservatively reaffirm evidence that some vocational business
education students are a separate population of vocational students that may not only enter the program with atypical backgrounds and abilities but also may achieve in a manner superior to their vocational education peers.

It is not easy to compare the effects of participation in non-cooperative versus cooperative vocational education programs because of the diversity of related instruction accompanying the programs. Studies by Mertens, McElwain, Garcia, and Whitmore (1980) and Custer (1973) led to the assumption that cooperative experiences would produce higher achievement. In comparing intensive office education and cooperative office education, however, the related instruction is very similar. Perhaps as a result of this similarity in the content of the instruction, the findings in this study did not differ significantly between intensive office education and cooperative office education participants; however, even findings of no difference can prove beneficial under the right circumstances.

Although cooperative office education participants' raw scores for basic communication skills exceeded those of the intensive office education participants before the covariate of academic ability was introduced, there was not a statistically significant main effect. The higher academic ability of the intensive office education group increased the difference between the adjusted means of the two programs to the extent that there was a statistically significant difference. The difference between the two programs in socioeconomic
background, however, was not great enough to produce adjustments in the basic communication scores to effect a statistically significant difference. The lack of strong evidence supporting differences between intensive office education and cooperative office education participants in this study might possibly serve as a disclaimer that the two vocational business education programs are different in Lucas County. The differences in programs may be only an artifact of personal preference, or an indication of other factors operating which have not been examined within the context of the present research.

**Recommendations**

As a result of the present research, the following recommendations for practical use are extended:

1. It is recommended that findings from comparative studies of vocational and academic education become tools for guidance personnel and school administrators to use in helping students make wise curricular choices.

2. It is recommended that findings from comparative studies become marketing devices for the employment of vocational business education students in business-related positions.

Further research is needed to continue examining the impact of specific vocational education programs in contributing to basic skills achievement. Utilizing this study as a framework for
improvement and expansion, recommendations are categorized as procedural and substantive.

**Procedural**

1. It is recommended that this study be replicated on a larger perhaps statewide scale with random sampling to enhance generalizability. This study dealt with a voluntary population of limited size.

2. It is recommended that this study be replicated and that an optimum time be established for the tests to be administered.

3. It is recommended that students' self-reports of curricular enrollment be confirmed through an examination of school records to the extent that human subjects review procedures are not jeopardized. Fetters (1975) noted that students are less than accurate in their self-reports.

4. It is recommended that another instrument to assess socioeconomic background be employed to avoid making this covariate a continuous measure.

**Substantive**

1. The instruments that were used in the present study, the Short Form Test of Academic Aptitude and the Comprehensive Test of Basic Skills, are integrated tests. The SFTAA may be used, therefore, as a predictor test to infer whether a
student is achieving "up to ability" (SFTAA Manual, 1970). In addition, the language section of the SFTAA and the language section of the CTBS may be coordinated. Adding this predictive dimension provides many interesting opportunities for analysis of basic skills achievement.

2. Investigations into how all vocational programs differ from one another in basic skills achievement would be worthwhile since a diverse student population is being stereotyped as a homogeneous group.

3. More evidence is needed to determine if intensive office education and cooperative office education students are being recruited systematically into the programs, if the educational processes differ, and if student performance differs between programs.

4. Carefully controlled studies that follow students from the time of entry into a vocational program to time of exit need to be conducted with control groups to establish cause and effect relationships. Ex post facto researchers are unable to make such determinations.

5. More comparative studies among curricula need to be conducted using background factors to adjust for pre-existing differences.

In conclusion, this study was not intended to bring about closure on qualitative matters concerning curriculum choices or decision
making. However, the intended results have tended to open doors for inquiry, not to close them.
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107


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Lotto, L. S. (1981). *Basic skills and vocational education*. Columbus, OH: The Ohio State University, National Center for Research in Vocational Education.

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APPENDIX A

Preliminary Correspondence
Educational excellence has been the theme of newspaper articles, television programs, open houses, parent-teacher meetings, campaign speeches, and bumper stickers during much of the 1980s. Your child deserves the best that public education has to offer, and one way of getting the best is to occasionally examine how your schools are doing by conducting educational research.

As part of the requirements to complete my doctoral degree at Ohio State, I am conducting at no cost to the school district a study that compares basic communication skills of vocational business education students with academic students. No matter what the results, the information may be used:

1. By high school students to make better choices about entering a vocational or academic curriculum.
2. By high school teachers to see if their instruction has made a difference.
3. By school officials to offer the right kinds of courses in needed areas.

Students participating in this study will be high school seniors in American government, intensive office education, and cooperative office education classes. They will be given a test that takes approximately two class hours to complete. Because students are not to write their names on the answer sheets, the information cannot be used against them in any way. I am looking for information about groups of people, not individuals. I would like to ask that you give permission for your child to participate by signing the attached form.

Toward the end of the summer you might expect to read an article about this project in The Blade. Take pride in the fact that your child played a part in this research.

Pamela Ramey  
Ph.D. Candidate  
Educational Policy and Leadership  
The Ohio State University
TO THE STUDENT:

I would like to ask for your participation in a research study conducted as part of the requirements for me to obtain a doctoral degree at Ohio State. You will be asked by your teacher to take a test that lasts about 1 hour and 45 minutes. The test may be given in two days or double class periods, and it covers basic communication skills and a short aptitude test.

You will not be asked to write your name on the test or the answer sheet, so the information may not be used against you in any way. There is no risk to you in taking the test, and participation is voluntary.

Since you are a senior, you will probably not get to see the good things that can come from a study like this. But for your younger friends and relatives, we hope this study will give them better instruction and information to make wise choices about courses. Please consider participating in the study, and obtain permission by taking the bottom portion of this letter home and having it signed if you are under 18, or sign the form yourself if you are over 18. I look forward to meeting you.

[Signature]
Pam Ramey, Ph.D. Candidate
The Ohio State University

THE OHIO STATE UNIVERSITY

CONSENT FOR PARTICIPATION IN SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in (or my child's participation in) research entitled Basic Communication Skills of Vocational and Academic Students. Pamela Ramey or Dr. Thomas White has explained the purpose of the study, the procedures to be followed, the expected duration of my (my child's) participation, and the possible benefits of the study.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child). Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily.

Date: ___________________ Signed: ___________________ (Participant)

Signed: ___________________ Signed: ___________________ (Principal Investigator or his Authorized Representative)

Signed: ___________________ Signed: ___________________ (Person Authorized to Consent for Participant - If Required)
APPENDIX B

Human Subjects Review Approval
ACTION OF THE REVIEW COMMITTEE

With regard to the employment of human subjects in the proposed research protocol:

87B0092 BASIC COMMUNICATION SKILLS OF VOCATIONAL AND ACADEMIC STUDENTS, Thomas R. White, Pamela L. Ramey, Educational Policy and Leadership

THE BEHAVIORAL AND SOCIAL SCIENCES REVIEW COMMITTEE HAS TAKEN THE FOLLOWING ACTION:

- APPROVED
- DISAPPROVED
- APPROVED WITH CONDITIONS
- WAIVER OF WRITTEN CONSENT GRANTED

* Conditions stated by the Committee have been met by the Investigator and, therefore, the protocol is APPROVED.

It is the responsibility of the principal investigator to retain a copy of each signed consent form for at least four (4) years beyond the termination of the subject's participation in the proposed activity. Should the principal investigator leave the University, signed consent forms are to be transferred to the Human Subjects Review Committee for the required retention period. This application has been approved for the period of one year. You are reminded that you must promptly report any problems to the Review Committee, and that no procedural changes may be made without prior review and approval. You are also reminded that the identity of the research participants must be kept confidential.

Date: May 21, 1987  Signed: [Signature]

HS-025B (Rev. 3/85)
APPENDIX C

Instrumentation
PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

APPENDIX C: 123-130

University Microfilms International
300 N. ZEEB RD., ANN ARBOR, MI 48106 (313) 761-4700
APPENDIX D

Supplementary Results of Analyses
Table 9

Analysis of Variance by Curriculum on Basic Communication Skills Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
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<th>F Prob.</th>
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</thead>
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<td>.0001</td>
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<td>166.144</td>
<td></td>
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<tr>
<td>Total</td>
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Table 10

Analysis of Variance by Vocational Business Education Program on Basic Communication Skills Scores

<table>
<thead>
<tr>
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<th>F Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
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</table>
### Table 11

**Analysis of Variance by Curriculum on Socioeconomic Background**

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<th>F Prob.</th>
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</thead>
<tbody>
<tr>
<td>Curriculum</td>
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<td>10.41</td>
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<td>Error</td>
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<td>2.832</td>
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### Table 12

**Analysis of Variance by Curriculum on Academic Ability**

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Table 13

**Analysis of Covariance by Curriculum on Basic Communication Skills Scores Employing Socioeconomic Background as a Covariate**

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</thead>
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<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Background</td>
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<td>3917.541</td>
<td>24.83</td>
<td>.0001</td>
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<td>Error</td>
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<td>157.752</td>
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Table 14

**Analysis of Covariance by Curriculum on Basic Communication Skills Scores Employing Academic Ability as a Covariate**

<table>
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Table 15

Correlation Matrix for Vocational Business Education Curriculum

<table>
<thead>
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</thead>
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<td>Communication</td>
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<td>.74515</td>
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<td>Skills</td>
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<td>1.00000</td>
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Table 16

Correlation Matrix for Academic Education Curriculum

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<th>Academic Ability</th>
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<tr>
<td>Background</td>
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<td>Academic</td>
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<td>Ability</td>
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Table 17

Analysis of Covariance by Vocational Business Education Program on Basic Communication Skills Scores Employing Socioeconomic Background as a Covariate

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<td></td>
<td></td>
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Table 18

Analysis of Covariance by Vocational Business Education Program on Basic Communication Skills Scores Employing Academic Ability as a Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
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Table 19

**Correlation Matrix for Intensive Office Education Program**

<table>
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<th>Academic Ability</th>
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</thead>
<tbody>
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<td>.75345</td>
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<tr>
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<td>.10001</td>
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<td>Academic Ability</td>
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<td>.10001</td>
<td>1.00000</td>
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Table 20

**Correlation Matrix for Cooperative Office Education Program**

<table>
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<tr>
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<th>Academic Ability</th>
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</thead>
<tbody>
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<td>Basic Communication Skills</td>
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