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A STUDY OF A COMPREHENSIVE
CAREER EDUCATION PROGRAM:
EFFECTIVENESS IN THIRD AND FIFTH GRADES

DISSERTATION

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

By

Alan James Yarletts, B.S.Ed., M.A.

* * * * *

The Ohio State University

1983

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* * * * *

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CHAPTER I

INTRODUCTION

Introduction

The major purpose of education is to provide students with opportunities which enable them to evolve as productive members of society (Havighurst and Neugarten, 1969). This suggests that the experiences and needs of individuals in today's dynamically complex society require education to focus on developmental experiences within the school setting. From a life-span perspective on learning, this means an emphasis on educating children for competence in basic academic skills; ones that are required for adaptability to a rapidly changing society.

An assessment of contemporary academic instructional curricula would result in the conclusion that it is equally important to direct students' experience toward skills in other areas of life. These areas would include prosumer economics, career education and other roles in which academic skills are used. Such an ideology endorses the provision of services that address variability and individuality in learning processes.

Toffler suggests that humanity "faces a quantum leap forward... the deepest social upheaval and creative restructuring of all time"
(Toffler, 1980, p. 26). Phenomenally juxtaposed with the pervading philosophy of entitlement, such contemplation dictates that educators make a concerted effort to refocus the attention of schooling on the ideals of producing benefits for world community fellowship.

At the foundation of nearly all contemporary educational criticisms, a concern for the fostering of empathy, understanding and identity of individuals can be evidenced. For the past two decades there have been numerous cogent arguments for schooling which is vastly more humanizing than that which presently exists (Rogers, 1969; Postman and Weingartner, 1969; Glasser, 1969; Silberman, 1970; and, Elkind, 1981).

In scope and method, education is becoming increasingly focused on children as uniquely creative enterprises. To this end, the aim is to provide a comprehensive program of complementary, integrated services which attend to the complete cognitive, affective, and psycho-motor functioning of the individual. A further tendency is evident toward developmental and preventive functions in preference to the more traditional diagnostic and remedial approaches. With the advent of career education, a nucleus for growth enriching experiences generated by life-long learning has been propagated.

Broadly conceived, the main purpose of teaching is to change behavior in a desired direction. Since its inception in 1970, career education has stressed consistently a number of unique elements that address this notion through a school-community collaborative effort. It has been comprehensive in its scope to include curriculum infusion
strategies. It has been nurtured by a strong grass roots approach whereby the widest range of participants have been offered a platform for purposeful input and a vehicle for the use of their energy in program development.

As a result of this involvement, career education has evolved to address the educational and societal needs that have been recognized as a result of the incongruency between provincial instructional programs and the rapidly escalating technology about us. Sidney P. Marland Jr., United States Commissioner of Education during 1971-1972, proposed to a consortium of educational leaders "that a universal goal of American education, starting now, be this: that every young person completing our school program at grade twelve be ready to enter higher education or to enter useful and rewarding employment" (Marland, 1971, p. 1). Concomitantly, the genesis of career education began to unfold.

This study was designed to determine the effectiveness of a comprehensive career education program at the third and fifth grade levels. The effectiveness included measures of basic academic skills and career knowledge and attitude. This investigation was conducted in a Central Ohio suburban school district to determine the degree to which the fifth-four treatment elements [(Appendix A); Hoyt, 1978] of a comprehensive career education program were presently in operation.

Statement of the Problem

The major purposes of this study were (1) to verify that all fifty-four treatment elements were in place and functioning
satisfactorily; (2) to identify a control group and describe it by assessing that no more than thirty-five percent of the fifty-four treatment elements were in place and of acceptable quality; and, (3) to assess the effectiveness of the complete career education treatment in terms of the Nine Learner Outcomes (Appendix B) specified in *A Primer for Career Education* by Kenneth B. Hoyt (1978).

Specifically, the evaluation sought to answer the following questions:

**Major Question 1**

To what extent will the effectiveness of the complete career education treatment in terms of the Nine Learner Outcomes be the same or significantly higher for third and fifth grade comprehensive career education program students when compared with matched non-comprehensive career education program students on the California Achievement Test?

**Minor Question 1.1**

Do students in the experimental group at grade three show significantly higher pre/post scores appropriate for grade level achievement for the period of the evaluation in Reading, Language, and Mathematics (Basic Academic Skills) as measured by the California Achievement Test (CAT)?

**Minor Question 1.2**

Do students in the experimental group at grade five show significantly higher pre/post scores appropriate for grade level achievement for the period of the evaluation in Reading, Language, and Mathematics (Basic Academic Skills) as measured by the C.A.T.?
Major Question 2

To what extent will comprehensive career education program students at the third and fifth grade levels increase their understanding relative to work habits; work values; decision-making; awareness of and knowledge about work; awareness of means available for continuing and recurrent education, to include economics concepts; educational and job placement; productive use of leisure time; and, reduction of bias when compared with matched non-comprehensive career education students on the Ohio Career Education Inventory?

Minor Question 2.1

Do students in the experimental group at grade three show significantly higher pre/post scores on the Work Habits subscale of the Ohio Career Education Inventory (OCEI)?

Minor Question 2.2

Do students in the experimental group at grade five show significantly higher pre/post scores on the Work Habits subscale of the OCEI?

Minor Question 2.3

Do students in the experimental group at grade three show significantly higher pre/post scores on the Work Values subscale of the OCEI?

Minor Question 2.4

Do students in the experimental group at grade five show significantly higher pre/post scores on the Work Values subscale of the OCEI?

Minor Question 2.5

Do students in the experimental group at grade three show significantly higher pre/post scores on the Decision-Making subscale of the OCEI?
Minor Question 2.6

Do students in the experimental group at grade five show significantly higher pre/post scores on the Decision-Making subscale of the OCEI?

Minor Question 2.7

Do students in the experimental group at grade three show significantly higher pre/post scores on the Career Awareness subscale of the OCEI?

Minor Question 2.8

Do students in the experimental group at grade five show significantly higher pre/post scores on the Career Awareness subscale of the OCEI?

Minor Question 2.9

Do students in the experimental group at grade three show significantly higher pre/post scores on the Educational Awareness subscale of the OCEI?

Minor Question 2.10

Do students in the experimental group at grade five show significantly higher pre/post scores on the Educational Awareness subscale of the OCEI?

Minor Question 2.11

Do students in the experimental group at grade three show significantly higher pre/post scores on the Job Seeking subscale of the OCEI?

Minor Question 2.12

Do students in the experimental group at grade five show significantly higher pre/post scores on the Job Seeking subscale of the OCEI?
**Minor Question 2.13**

Do students in the experimental group at grade three show significantly higher pre/post scores on the Leisure Time subscale of the OCEI?

**Minor Question 2.14**

Do students in the experimental group at grade five show significantly higher pre/post scores on the Leisure Time subscale of the OCEI?

**Minor Question 2.15**

Do students in the experimental group at grade three show significantly higher pre/post scores on the Reduction of Bias subscale of the OCEI?

**Minor Question 2.16**

Do students in the experimental group at grade five show significantly higher pre/post scores on the Reduction of Bias subscale of the OCEI?

**Major Question 3**

To what extent do students in a career education program demonstrate the following skills related to career maturity at grades three and five: resume writing, job interview skills, and community contacts through service learning activities?

**Major Question 4**

What recommendations can be made for comprehensive career education programming at the elementary level in a suburban setting?
Significance of the Study

The reform movement of career education has been embraced fervently by some and criticized by others. Many critics do not understand the movement's underlying philosophy, tending to confuse it with its component, vocational education, and suggesting it is contrary to the values of a liberal education. [Figure 1 depicts a relational paradigm of vocational education to career education a la Hoyt (1973)].

Furthermore, critics antagonistic toward the philosophical precepts of career education cite attitudes of proponents as potentially destructive, leading to programmatic demise.

Grubb and Lazerson (1976) question the values inculcated by some current career education curriculum materials that promise a reality that cannot be fulfilled, ergo, placing the individual in an untenable situation:

Career education has little to offer in resolving the problems of school and work. Despite its assertions to the contrary, it is primarily a renewal and expansion of vocational education, a movement that has proved itself ineffective in reducing the gap between rich and poor, in enhancing school learning, in solving social and economic problems, and in improving the status of physical work. Career education is not directed at resolving social problems, developing avenues of upward mobility, or making school and work more satisfying experiences. It is aimed instead at reducing expectations, limiting aspirations, and increasing commitments to the existing social structure (pp. 7-11).

Some critics allude to career education as mandated by the federal government to be an emphasis that defies definition and evaluation. Maher (1977) also challenges the movement as a replication of the
Career Education's Place in Education

FIGURE I
vocational education cycles America has been through: "Oriented as career education is to employment, it is destined to fail" (pp. 29-31). A similar theme and conclusion states "...that industrial society's edifice, not school programs, is responsible for the social scourge of unemployment" (Maher, pp. 29-31).

Additionally, Fitzgerald (1973) has stated that the difficulties facing career education have to do with the realities of labor markets, jobs and job choice, and with the relationship of work to education, mobility, and social utility. He suggests that "career education is a superficial philosophy of education because a primary orientation toward work is not an adequate response to the needs of education in a free but complex society" (p. 93).

Other individuals denounce career education based on its "unwillingness to focus, to concentrate, and its penchant for continuous broadening, to deal with all of life, as a good reason for rejecting it. Educators have sold their product on its inclusiveness" (McQuigg, 1977, pp. 7-11). Hruska (1974) implies that scientific studies be pursued so that people understand the way the world fits together and how their behavior alters that world:

While the selection and preparation for one's life work is a serious matter, and the present unemployment and underemployment is alarming, to suggest that this become the cornerstone for all education is to tragically misjudge...the needs of our society on one hand, and the personal growth needs of our young people on the other. Yet it is this tantalizing and seductive urge, blatantly focusing education around careers...that we must resist (p. 348).
Disclaiming these critics of career education are a multitude of scholars who steadfastly defend the urgency of revitalizing educational orientation -- to resolve the interstice between a rapidly escalating, high technological society and a fundamentally outdated academic framework. Nelson (1980) stated that career education's slow beginning is a direct result of "an education movement born of uncertain parentage, having neither the benefit of teacher education nor counselor education as its midwife. (Nevertheless), career education has continually gained momentum, and it is stronger today than at any time in its brief history" (p. 1).

Toffler's notion of future shock lends credence to the reformation of a dilapidated educational structure. Toffler (1971) observed that people live in an age of stress and anxiety precipitated by the rapid escalation of high technology. Pronounced dysfunctional behaviors within individuals have been made manifest through a societal shift toward impermanence marked by transience. This phenomenon has created the inability of people to assimilate and cope with the proliferation of information bombarding individuals (Toffler, 1980).

Another analyst contends that the evaluation of the old American work ethic and the contemporary values of today's youth provided a background for the development of career education (Paulovits, 1980). James Coleman (1972) has pointed out, "ours is an 'information rich' society which needs 'action rich education'" (pp. 226-230). That is, contemporary basic education needs to include activities which relate information to work.
The socialization of students in order that they adequately become successful workers entails shaping students in ways which their consciousness -- ideas, values, personality and activity -- becomes consistent with the maintenance of free enterprise relationships. Sidney Marland (1974), former Commissioner of Education in the United States and a major spokesperson for career education, states:

...the career education theory declares that education should include knowledge and experience literally related to work. Growing up to work is an economic and psychological necessity for virtually all people. Accordingly, we ask for a much larger and more operational relationship between schools and colleges and the work place (p. 256).

Career education presents itself as the means through which individuals can develop their needs in terms of preparation for the work world and life in a world community. Marland (1974) writes:

The way toward change, then, begins with a new curriculum that places the student at the center of all learning. We need to be truly committed to giving every student the opportunity to develop himself or herself to the fullest capacity (p. 265).

In summary, throughout recent years criticism of career education philosophies has been useful in shaping the direction of the movement. Contrary to that view, some experts hold career education as a necessity in acquiring knowledge about the opportunities in education, work, and leisure worlds.

This investigation was an exploration of the latter contention as it might impact on academic achievement and the Student Learner Outcomes of third and fifth grade students. As well, the establishment of a rationale for a schooling experience which would promote growth -- cognitive, affective, psychomotor -- was considered.
Definition of Terms

**Academic achievement** -- For the purpose of this study academic achievement was operationally defined as a score in the areas of reading, language, and mathematics, as well as, the total score on the California Achievement Test.

**Career knowledge** -- For the purpose of this study, career knowledge was operationally defined as a score on each of eight factors (career awareness; decision-making; job seeking skills; work values; work habits; educational awareness; reduction of bias; and, productive use of leisure time) which are assessed by the Ohio Career Education Inventory (Appendix C).

**Career education** -- "An effort aimed at refocusing American education and the actions of the broader community in ways that will help individuals acquire and utilize the knowledge, skills, and attitudes necessary for each to make work a meaningful, productive, and satisfying part of his or her way of living" (Hoyt, 1978, p. 5).

**Learner outcomes** -- "Statements of knowledge, attitudes, and skills which should result from proposed career education activities" [(Appendix B); Upper Arlington City Schools, 1980, pp. 11-12].

**Treatment elements** -- "Fifty-four roles and functions outlined for the eight kinds of key career education 'actors' (teaching faculty; school board members; educational administrators and supervisors; counseling and guidance personnel; business/labor/industry/
professional/government community; existing community organizations having education/work goals; parents; and, career education coordinator)" [(Appendix A); Hoyt, 1978, pp. 27-34].

Limitations of the Study

Any research carries with it inherent limitations. These may serve to confine the scope of the study within manageable guidelines and in this light are listed as follows:

First, instruments which are standardized and which adequately measure the Nine Student Learner Outcomes of third and fifth grade children are limited. A number of instruments were examined and the O.C.E.I. was selected on the basis of the cognitive and affective component areas related to the Nine Learner Outcomes. The O.C.E.I. measured knowledge and attitude in seven career areas as stated in the Ohio model. These Seven Developmental Levels were limited to Nine Learner Outcomes. To the extent that these areas would measure comparable variables they were determined appropriate for use in this study.

Another limitation associated with the instrument resides in the self-report nature of the test. The accuracy of the measure of the test is often determined by the subject's response to and rapport with the test administrator.

Secondly, the multigroup research design employed contains inherent artifacts that represent potential threats to internal validity. Such artifacts considered are history, maturation of subjects over
time, differential mortality, Pygmalion Effect, John Henry Effect, and chance. The design was quasi-experimental, therefore, it was not possible to directly determine a cause and effect relationship between the treatment program and the Nine Learner Outcomes. However, this design does approximate the use of a true experimental design.

Thirdly, the sample of the population of third and fifth grade students was confined to two White-Angle-Saxon-Protestant, affluent, upper-middle class suburbs, thus limiting generalizability to larger populations with dissimilar demographics. A further limitation of this study was in the narrow range of scores at the upper levels indicating less possibility for change to occur. In addition, the treatment group appeared to have a different pattern in this range than the control group. The treatment group had a somewhat more bimodal distribution than the control group. Chapter 3 gives a further description of the settings.

A fourth limitation, the experimental design of this investigation, manifested procedural limitations which might have been eliminated through the inclusion of a Soloman Four Group Design. The design selected precluded analyzing the on-going program in the treatment group.

**Organization of the Remainder of the Study**

Chapter I has included an introduction, statement of the problem, significance of the study, definition of terms, and the limitations
of the study. Chapter II provides a selected orientation into the literature related to the evaluation of career education programs.

Chapter III provides a description of the research methodology and procedures used in this study. The discussion includes the instrumentations, the procedures for the collection of the data, the tabulation of the data, and the demographic and situational factors associated with this study.

Chapter IV contains a presentation of the data as they relate to the acceptance or rejection of each of the null hypotheses. Chapter V contains a summary, conclusions drawn from the study, and recommendations for further research.
CHAPTER II

REVIEW OF LITERATURE

This chapter provides a review of the literature and research related to evaluation and elementary career education programming. The following sections provide the major categories for the presentation and analysis of the literature: antecedents of career education; elementary career education defined; elementary career education program evaluation, formative and summative; and, a review of elementary career education research studies, academic achievement and career knowledge and attitude.

Antecedents of Career Education

The antecedents to career education can be traced to the origin of mankind as nomadic wanderers. Bailey and Stadt report that the initial thrust of vocational education, a forerunner to the career education movement, was the process of unconscious imitation. As individuals learned to control natural resources, instruction advanced to the level of conscious imitation. Indentured and informal apprenticeships were introduced in ancient Egypt and remained the principle method of vocational instruction for many centuries (Bailey and Stadt, 1973, pp. 169-174).
The history of formal education is replete with attempts to foster vocational education. The French philosopher Jean Rousseau revealed four developments in France which advocated the adoption of this educational paradigm:

1) a rather widespread concern for the practical education for working men and their children;

2) a relatively continuous development of content and methodology for manual training and other forms of handwork for the schools;

3) a developing controversy between those who would teach meaningful skills for the general education of all and those who would teach for vocations; and,

4) the development of the fore-runners of public day schools, public evening schools, church-related vocational schools, private vocational and technical schools, and corporate and factory schools (Bailey and Stadt, p. 172).

Until the latter half of the nineteenth century, schooling about and for vocations in the United States was largely transplanted from Europe. During the last half of the nineteenth century, and prior to 1906, vocational education was fostered by individuals and trade associations. Many private and industrial schools were founded by large cities, universities and technical institutes, such as, Polytechnic School of Washington University and Massachusetts Institute of Technology (Butts, 1955).

At this juncture in the evolution of the career education movement, two significant events occurred in 1906: 1) the report of the Massachusetts Commission was released, and 2) through the influence of two men, Dr. James P. Haney and Charles R. Richards, the National
Society for the Promotion of Industrial Education was formed (Bennett, 1937, pp. 513-517). The purpose of this organization was to issue descriptive bulletins, secure the support of labor leaders, and deal with matters such as management-labor differences, the reticence of public school leaders, apprenticeship patterns, trade education for girls, and state and federal legislation (Bennett, pp. 542-543).

The two recommendations of the Massachusetts Commission were in concern with contemporary nomenclature and conditions of career education. The first recommendation stipulated that elementary education would include classroom instruction in the elements of productive industry (agricultural, mechanical, and domestic arts) and that instruction in other subjects show relevancy to industrial life. The second recommendation was that high schools offer elective courses in agricultural, mechanical, and domestic arts, with instruction in mathematics, science, and drawing showing application and use (Bennett, pp. 514-515).

In 1909, Frank Parsons, director of the first vocational guidance center in the United States, provided the framework for the first theory of occupational choice. Parsons advocated a scientific approach to vocational counseling vis-a-vis the study and understanding of the self; the study of the requirements of occupations; and "true reasoning" about the relationships of the facts obtained (Parsons, 1909, p. 5).
Hawkins, Prosser, and Wright report that several acts and their amendments through 1962, including the Congressional creation of a Commission on National Aid to Vocational Education in 1914, the Smith-Hughes Act of 1917, the George-Deen Act of 1936, and the George Barden Act of 1946 increased appropriations needed for the extension of vocational educational programs throughout the United States (Hawkins, Prosser, and Wright, 1966, pp. 25-93).

In more recent literature, *Career Education: What It Is and How to Do It*, Hoyt identifies several precursors to career education. Numerous experimental projects have explored and developed concepts and components which are presently recognizable as integral parts of career education (Hoyt, 1974, pp. 85-88). Several of these noteworthy programs and sponsors are cited below:

1) the Ford Foundation during the 1960's funded numerous projects which experimented with important elements of the existing career education program;

2) the "Technology for Children" project sponsored by the New Jersey State Department of Education was a direct outcome of Jerome Bruner's recommendations at the Woods Hole Conference. In essence, this project encouraged elementary school students and teachers to experiment with and manipulate tools, materials and processes in the areas of mathematics and science (Hoyt, pp. 85-88);

3) the Nova Schools in Florida introduced children in grades one through six to a wide range of employment related experiences utilizing tools, mechanical devices, and games. In grades seven through eight the students were exposed to fundamental concepts of technology in which specialization was increased during nine through twelve (Hoyt, pp. 85-88); and,
4) the "American Industries" project sponsored by Stout State University in Wisconsin began in the eighth grade exposing the students to the concepts of economics, finance, and marketing (Hoyt, pp. 85-88).

Herr reports that the introduction of the term "career education" is credited to Sidney P. Marland in 1971 and subsequent developments in the career education movement during the early 1970's can be attributed to Marland's efforts to bring the attention of career education to legislators and the general public (Herr, 1975, p. 48).

As a result of the emphasis that Marland, Hoyt, and James E. Allen, United States Commissioner of Education in 1970, placed on this program, the Educational Amendment Act of 1972 became the first federal legislation to mention "career education", whereas, the Education Act of 1974 defined and encouraged the establishment of career education programs nationally (Herr, pp. 7-11). The Hathaway Amendments established the Career Education Office in the Bureau of Adult Education (Herr, pp. 7-11).

The career education program, under the auspices of the Ohio Department of Education, was initiated in components and emerged developmentally. Preliminary efforts began at the junior high or middle school level and were entitled "Career Orientation." It was soon perceived that efforts were also needed at the elementary and senior high levels. Thus, in 1971, kindergarten through grade six and grades nine/ten components were included, however, not always in the same school district. In 1972, as an initial attempt to bring
articulation to the program, twelve school districts in Ohio implemented K-6, 7-8, and 9-10 programs.

Subsequently, in 1973, total articulation was achieved. Twenty-six high school attendance areas and twenty-four school systems provided career motivation programs for K-6 students, career orientation programs for grades 7-8 students, and career exploration programs for students in grades 9-10, thus comprising Ohio's K-10 Career Education Program.

State administration of the career education program originated in the Department of Vocational Education. The Division's Special Needs Service gave leadership to this functional entity. Throughout 1971, supervisors in the agriculture, business and office, and home economics service areas spearheaded the development. In 1973, a full-time Career Development Supervisor was added to the Vocational Education staff. During 1974, the Career Development Service was established within the Vocational Education Division, with three administrative positions provided through the aid of Vocational Education Part C funds. Plans were to expand this unit to four professional staff in 1976. This documentation illustrates the change that took place, moving career education from a pilot effort to a separate, full-functioning component of the Ohio Department of Education (Ohio Department of Education, 1980, pp. 4-8).
The experimental school district identified the need for career education in the early 1970's. During the first year of the program, 1973-1974, one staff member was appointed to become familiar with current local, state, and national career education efforts. Several additional charges were given to this staff member, including the responsibility to make program recommendations; reinforce current career education-oriented activities; initiate pilot activities; and, develop contacts in the community. Furthermore, this staff member conducted orientation activities in career education concepts, and provided the link between the school system and state, local and national activities. Throughout this period, the staff of one junior high school was oriented to basic career education concepts. Selected career education activities were piloted and infused.

The administrative team was familiarized with career education. Supportive resources from business, industry, community, and university were sought. Additionally, community, business, industry, and university personnel were familiarized with school activities in career education. As a result of this innovative thrust, a group of teachers undertook graduate independent study activities on a volunteer basis.

The 1973-1974 estimated budget total was nine thousand five hundred dollars. Of this amount, two thousand four hundred dollars was an actual budget line item for career education allocated by the school system. An effective plan for cost-sharing was shown to be feasible and placed into operation.
The second year of the program, 1974-1975, found the same trained career education specialist being assigned to continue these efforts. A Task Force was appointed by the Superintendent to examine career education efforts, to propose continuation efforts, to become familiar with state and national programs, and to develop a framework for career education programming. Planning sessions were held to orient the staff, make commitments for each building, and set guidelines for further programming. During this period, the Ohio Model for Career Education Programming and national drafts of policy statements were adopted.

The 1974-1975 school year showed the appointment of subcommittees to detail activities at the elementary, junior high and high school levels. An activities inventory was piloted; guidelines were established for a career information system and for career exploration activities; and alternatives were suggested for infusing career education into the ongoing competency-based high school program.

A proposal was written for a comprehensive career education program and submitted to the State Department Career Development Office. It was rated highly in evaluation, but could not be funded because the experimental school district shared the same Vocational Planning District with another funded program.

By the end of the second year, informally planned activities could be identified in accord with the interface of the Objectives Development Schema [(Figure 2), Grant Application, March 1977, p. 14]. As a result of these efforts grew an awareness of the need for an
operational plan for comprehensive career education programming which formed the basis for the operational plan in a proposal submitted to the United States Office of Education.

The budget allocation for career education during the second year was two thousand five hundred dollars. Supplementary career education related activities were conducted on either a cost-sharing or redistribution basis for a total program investment of approximately twenty thousand dollars.

During the first half of the third year a full-time career education coordinator was appointed for the purpose of continuing activities; developing and initiating a coordinated career education program in three pilot schools -- one elementary, one junior high, and the high school; and, identifying outside program support resources.

A summary of the activities of the Career Education Coordinator conducted in connection with continuing program development during this period included the following:

- Initiated an informational library
- Utilized Career Education Office Staff --
  Dr. Kenneth Hoyt
  - Addressed the Board of Education
  - Conducted visitations to U.S. Office
  - Attended Mini-Conference
- Sponsored teacher field trips
- Utilized U.S.O.E. and NIE materials
- Served as a consultant
- Adopted State of Ohio Career Education Program Model
- Attended in-service sessions for directors and coordinators of state-funded programs
OBJECTIVES DEVELOPMENT SCHEMA

Figure 2
. Visited career education program in Akron, Toledo, Scioto Darby, Mad River Green, Warren and Delaware, Ohio
. Brought State Department guidance personnel to work with teacher
. Attended the project funded conferences on Career Education in Teacher Education, Funding Sources
. Established exploratory experiences for junior high and high school students on a pilot basis
. Presented informational highlights at meetings of the Rotary Club and Kiwanis Club
. Arranged for student involvement with Nationwide Insurance Company, Ohio Bell Telephone Company, AT&T, and the Center of Science and Industry
. Conducted a survey of occupations represented by senior citizens in the community.

Throughout the career education program's first three years at the local level, the experimental school district demonstrated a cost-effective model for program development. For an expenditure of approximately fifth thousand dollars over a three-year period, more than one hundred twenty thousand dollars worth of special career education activities were procured.

From 1976 through 1983, the Board of Education has maintained its strong commitment to the career education concept and invested operating funds in the program. After one year of federal funding, a teacher education career coordinator position was assumed by local funding. The career education coordinator position (Project Director) was employed by the school system as well. Additionally, in-service and program monies were appropriated. Furthermore, the school district entered into a contract with Columbus City Schools to share in the construction of four career centers (Grant Application, March 1977, p. 3).
Recently, the experimental school district has received a federal contract which will support a project to demonstrate and validate a comprehensive elementary/secondary career education project in a local suburban setting. It is this task that the remainder of this research is organized around.

**Elementary Career Education Defined**

Elementary educators have many responsibilities to the children with whom they have daily contact. Some of the most important are to engender young children with the basic skills, understandings and concepts that will enable them to function and adapt to an ever-changing world. "The Fourth Annual Gallup Poll of Public Attitudes Toward Education" highlighted the quintessential programs which were necessary for reaching these educational goals. Below are the top five ratings of educational programming deemed most important by public opinion:

1) Teaching students the skills of reading, writing and arithmetic.
2) Teaching students how to solve problems and think for themselves.
3) Teaching students to respect law and authority.
4) Teaching students how to get along with others.
5) Teaching the students the skills of speaking and listening (Gallup, 1972, p. 25).

These results suggest that rudimentary understandings taught at the elementary school provide an essential foundation for individuals as they begin to develop for their respective career roles in society.

Career education curriculum for elementary education is an evolving phenomenon that addresses the concerns outlined by Gallup. It is the
sine qua non of contemporary academic efforts directed toward producing programs that meet the career development needs of elementary school pupils. However, throughout the early years of career education program formulation, efforts to bring the great potential of career education into perspective waxed and waned because it lacked a clear definition. Peterson (1974) states that the lack of a definitive conciseness of career education did not hinder the establishment of guidelines but, in fact, actually promoted useful strategies in program development in the absence of any federal mandates. She states that "the pioneers in the elementary school career education movement did not stand back and wait for blueprints. They developed programs that they believed were correct, and for that they should be lauded" (p. 27).

Such unrelenting attempts to design career education programs were built upon the thought that "the greatest potential for career education emerges from traditional subject matter. (This is important because) to prepare a child for the future may be some vague goal of education, but it is not a meaningful goal to the child. Relatively, the child lives in the present. His future is now" (Sills, 1978, p. 244). Many early attempts to the eventual activity of writing career education objectives and developing curricula for school applications were predicated upon the infusion of such efforts to existing traditional education programs. Arterbury (1976) states that "in order to be better prepared to cope with change, young people need not only become cognizant of the effects of technology on peoples' occupations and
lifestyles, but they must develop also a strong foundation in basic skills" (p. 37).

Legacy and others (1975) concentrated these blossoming opportunities for children on five main instructional objectives:

1) to develop a positive attitude toward self through an awareness of developing values, talents, and interests as they relate to work roles;
2) to develop the student's awareness of occupational areas in terms of work roles, related life style, and potential satisfactions and dissatisfactions;
3) to develop interpersonal skills required in work roles;
4) to develop decision-making skills and an awareness of the results of actions and decisions that give one a sense of destiny control;
5) to give students an opportunity to acquire respect for workers and the place of work in society (p. 313).

In addition to the basic skills inherent in these objectives, Kleve (1974) holds schools responsible also for the emphasis of "skills in the logical processes of search, analysis, evaluation and problem-solving, in critical thinking, and in the use of symbolism" (p. 9).

These elements are not foreign to career education directions.

What is career education? In 1971, United States Commissioner of Education, Sidney Marland, believed that a definition should not be developed at the federal level. He stated that career education

...must be defined within general parameters jointly developed by the teachers, counselors, board of education members, college faculties, superintendents, and deans, and the constituencies of parents and students whom we serve. (1973, p. ix)

Since that time, numerous definitions have appeared in the professional literature. Hoyt (1974) has defined career education as

...the total effort of public education and the community aimed at helping all individuals become familiar with the values of a work-oriented society, to integrate these values
into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful and satisfying to each individual (p. 15).

Bailey and Stadt (1973) define it as

...educational programs and curriculums at many different developmental levels, and provided by several types of delivery systems, which provide experiences designed to help individuals become oriented to, select, prepare for, enter, become established, and advance in an individually satisfying and productive career. Basic to the concept of career education is the recognition that the preparation for a career role must begin in early childhood if the individual is to develop the concepts, attitudes, and skills which insure freedom of choice and expand career options. Career education eliminates artificial distinctions between "general" and "vocational" education by fusing the two in a manner which enables the student to better solve personal, social, and career related problems (pp. 346-347).

Stevenson (1973) describes career education as "a process by which all of the developmental experiences of an individual are systematically organized in an attempt to enhance individual growth and to enable a person to achieve self-fulfillment" (p. 47).

Herr and Cramer (1979) cite the Education Amendments of 1974 (created the Office of Career Education, the National Advisory Committee on Career Education, and authorized demonstration and validation funds for career education) as a source describing career education as a process designed to do the following:

1) increase the relationship between schools and society as a whole.
2) relate the curricula of schools to the needs of persons to function in society.
3) provide opportunities for counseling, guidance, and career development for all children.
4) extend the concept of the education process into the area of employment and the community.
5) foster flexibility in attitudes, skills, and knowledge in order to enable persons to cope with accelerating change and obsolescence.

6) eliminate any distination between education for vocational purposes and general or academic education (pp. 36-37).

It was not until 1974, that the United States Office of Education adopted policy statements relative to career education which included the following definition written by Kenneth B. Hoyt:

Career education is the totality of experiences through which one learns about and prepares to engage in work as part of her or his way of living (Herr and Cramer, 1979, p. 37).

This definition and its policy statement on career education were revised by the USOE in 1978. In its current statement, career education is defined as "an effort aimed at refocusing American education and the actions of the broader community in ways that will help individuals acquire and utilize the knowledge, skills, and attitudes necessary for each to make work a meaningful, productive, and satisfying part of his or her way of living" (Hoyt, 1978, p. 5).

For reasons of space, it is not practical to cite all the uniquely different definitions of career education developed at the state and local levels. Some resemble the federal definition while others reflect the characteristics and needs of regional communities. Another potentiality noted by Herr (1977) is that...

...it seems fair to suggest that career education is a composite term not easily captured in a single definition. Operationally, career education has tended to elevate such processes as self-awareness, career awareness, decision-making, and planning as well as the acquisition of employability skills to central positions in education. In addition, these processes are seen as having their own substance and technologies;
important to all children, youth, and adults; and, appropriately housed in educational settings at all levels and in community settings (p. 8).

In tandem with the search for a distinct definition of career education is the notion of fostering relevance and expressing a rationale for career development in the elementary schools. Yawkey and Aronin (1974) discuss career education as it enhances the elementary school program. They stipulate that this is achieved by examining three premises underlying career education with children:

1) There is a great need for relevancy of school experience to the world of work;
2) Career activity and maturity results from developmentally unfolding characteristics beginning with the early years; and
3) The elementary school and career education have mutual objectives and areas of concern so the elementary school should have mutual objectives and areas of concern so the elementary school should have a major part in carrying out career development objectives.(p. 44).

Havighurst (1953) defined a developmental task as being:

A task which arises at or about a certain period in the life of an individual, successful achievement of which leads to happiness and success with later tasks, while failure leads to unhappiness in the individual, disapproval by society, and difficulty with later tasks (p. 2).

Within this context, Havighurst (1953) describes several important developmental tasks which are characteristic of children of elementary age. These developmental tasks are:

1) The acquisition of basic habits of industry;
2) learning to organize time and energy to get work done; and
3) learning to put work ahead of play in appropriate situations (Yawkey and Aronin, 1974, p. 46).

Educators have used these tasks to build career education curriculum and other school programs.
Curriculum planners have labored industriously to develop significant principles which facilitate the incorporation of career development convictions into elementary school education. Halverson (1974) has recorded seven principles as a rationale for career development in the elementary schools. The primary concern of these principles is the systematic examination of curriculum development to include the following factors: goals and objectives that have application to pupils; the intertwining of career education goals with the goals of the elementary school; curriculum planning should be dominated by preparation for entering the job force as eighty percent of the young people in the United States do not obtain a bachelor's degree; past experience, gained knowledge, and the level of intellectual, social, emotional maturity must be measured prior to individual goalsetting for students; experiential orientation must precede from the concrete to the abstract; planned sequential learning experiences must be in place to insure an effective curriculum; and, interrelationship of learning experiences to other learning sequences should be evident.

This differentiation in curricular orientation could be further documented upon the work of Hoyt (1976). While Hoyt did provide extensive review of content, this pragmatic specialization of perceived student benefits of career education, as reported by the teachers at each of two grade levels (Kindergarten - 3 and 4 - 6) is presented below:
Grade Level K-3

1. Pupils learn how important school work is and why it is important.
2. They become aware of positive societal benefits from a wide variety of occupations.
3. They learn economic awareness.
5. Career education improves pupil self-concept by giving the pupil a sense of accomplishment -- of success -- of being important.

Grade Level 4-6

1. Pupils learn WHY they should study various subjects by seeing how adults use such subject matter to be successful in their jobs.
2. Pupils learn to respect all jobs and appreciate their societal contributions.
3. Pupils learn to respect work -- it's a way to break the welfare cycle.
4. Pupil self-concept improves -- being important THROUGH being successful.
5. Pupils respect and appreciate the talents of all -- rather than the intellectually able.
6. Career education is a way of clarifying values for pupils.
7. Career education helps pupils develop their problem solving skills.
8. Career education helps pupils gain respect for their parents through the respect they gain for the work parents do.
9. Career education increases pupil knowledge of career beyond those they learn from their parents.
10. Career education develops leadership abilities in students (p. 26).

Preli (1978) offered the following summation based upon her professional commitment to career education:

...students need a well-rounded curriculum which addresses the total development of the student: academic, aesthetic, social, moral, and physical, as well as preparation for the world of work.
In these changing times, education is asked to do a variety of things for students. It is not necessary to emphasize or select one basic goal over another if we plan from a total
program perspective. This allows for the attention to be focused on all the basic goals of education -- keeping in mind individual needs and modalities of learning -- while at the same time making it possible to be accountable for efforts in this particular area. As education strives to meet the many individual needs of the students, it is necessary to keep in mind that such endeavors are shared with the home, family, and community (p. 5).

Career education consists of activities and services designed to prepare individuals for working and living in society. It is an intentionally broad concept, using "career" to include a person's work activities throughout the lifespan and using "work" to include both paid and unpaid tasks that are purposeful and productive. A person's career may include schooling and training, occupations, home and family life, civic and community activities, and certain other leisure pursuits. Accordingly, preparing each person for these endeavors calls for a wide range of educational techniques and experiences.

Within the context of this study career education will be construed to mean a comprehensive educational program designed to provide students with the necessary information and developmental experiences to prepare them for living and working in society. It combines the efforts of home, school, and community, and reaches from pre-school through adulthood.

Career education requires a collaborative relationship among the home, school and community that prepares youth for successful entry into the world of work. Ohio's career education continuum consists
of the following phases related to the elementary level:

Family Life -- A program within the school curriculum with special emphasis on home involvement. Its major goal is to help improve the care and motivation of pre-school children and assure a more positive impact of the home on the needs of school-age youth.

Career Motivation (Elementary School) -- Career motivation develops positive attitudes toward task completion, pride in accomplishment, varied interests, dignity of work and self worth.

The goals of this component are to help the students develop an awareness of themselves, the world of work, an appreciation for all work and motivation toward task completion. Work at this level is defined as accepting responsibility for the completion of a task at home or in school.

The general outcomes of career education will provide activities that will enable the students to become aware of, accept, and affirm: interests, abilities, feelings, attitudes and values; roles in relation to home, school, community and work; roles of consumer, producer and citizen; scope and nature of work and occupations; importance of job seeking and job keeping skills; importance of the rational process of decision-making; and, that certain behaviors are expected and required for certain jobs and that these behaviors can be acquired.
Elementary Career Education Program Evaluation

The positive direction of the career education movement and the supportive commitment of its proponents necessitates, with some degree of urgency, attempts be made to empirically test and critically evaluate its programatic perserverance. Evaluation provides one of the most important bases for decisions affecting the nature, scope, and operations of the career education program because it tells what has happened in the past as a basis for planning and future action (Young and Schub, 1975). Walberg (1974) in his comprehensive review of evaluating educational performance said that "...education should be a unique theoretical discipline and profession with a core of ideals, concepts, and tested methods. Evaluation can help attain this goal, make the practice of education more effective, and raise it out of its quasi-professional status" (p. 1).

Denotatively evaluation is expressed as the "process of ascertaining or judging the value or amount of something by use of a standard of appraisal; includes judgments in terms of internal evidence and external criteria" (Good, 1973, p. 220). The critical understanding within this statement is the endorsed inclusion of the concept of judgment as an integral mainstay of evaluation efforts. Popham (1971) supports the notion of judgment being unequivacably essential within the evaluating process through the following advancement:
...most educators have conceived of educational evaluation as an operation in which the quality of an educational enterprise is judged. In other words, for most educators the term 'evaluation' meant appraising the worth of an educational undertaking such as a curriculum, a course of studies, or a particular instructional procedure. Generally such evaluations are undertaken with a view to making decisions...should a course of studies be organized in one way or another, should a new instructional scheme be [maintained]...evaluation is...the act of assessing merit by judgmentally comparing (1) the observed result (performance data) of some educational enterprise with (2) a desired standard or criterion of acceptability (preference data). Schematically, we can represent this conception of evaluation as follows (p. 2):

Performance Data
Preference Data

Comparative
Judgment

Evaluation

Evaluation Paradigm

FIGURE 3

Perceptually, Popham (1971) articulates a relational position as performance data impacts evaluation. He states:

An important distinction must now be made concerning the kind of performance data which should be of primary concern in an educational evaluation. It is learner performance data in which we are most interested.... It should also be noted that the learner performance data with which we are chiefly concerned is that which is based on post-instruction learner behavior, not 'during instruction' behavior (pp. 3-4).

Another posture to educational evaluation defines it as a systematic process of determining the extent to which program objectives are achieved (Gronlund, 1965). The particular manner in which the evaluation process approaches the realization of any measurement could be interpreted through a reference to the phenomenon of change (learner behavior), as previously discussed.
The width and breadth of definitions related to evaluation is vast. Several noteworthy attempts to define program evaluation and its salient characteristics comprise the next portion of this review. Gronlund (1965) refers to evaluation as a "systematic process of determining the extent to which educational objectives are achieved by pupils" (p. 6). Within this thought are two important aspects: first, evaluation implies a systematic process which tends to rule out "casual uncontrolled observation of pupils"; and, second, prior identification of educational objectives is assumed. The understanding that evaluation emphasizes the extent to which educational goals are achieved is noted by Gronlund (1976). He expresses that "evaluation includes both qualitative and quantitative descriptions of pupil behavior plus value judgments concerning the desirability of that behavior" (p. 6). Cronbach (1970) supports the inclusiveness of quantitative and qualitative data in evaluation as he defines it as "...a systematic procedure for observing a person's behavior and describing with the aid of a numerical scale or a category-system" (p. 26).

Contrary to the definitions which allow for qualitative and quantitative data to be used interchangably, Stufflebeam et al. (1971) use the following broader definition of evaluation which is presently in vogue: evaluation is "...the process of delineating, obtaining and providing useful information for judging decision alternatives"
This encompasses, and goes beyond, the distinctions made among tests, measurements, and evaluation. Another popular concept of evaluation interprets it as "the determination of the congruence between performance and objectives...[while] other definitions simply categorize evaluation as professional judgment or as a process that allows me to make a judgment about the desirability or value of a measure" (Mehrens and Lehmann, 1973, p. 6).

Bloom (1975) attributes the development of evaluation procedures to a systematically sequential process that includes the specifications of content and objectives, instrument development, procedural sampling techniques, research design and the analysis of data in terms of these specifications. He states that due to this attribution, organized processed evaluation has reached the stage of what might be termed technology.

Addressing the needs for evaluation of the educational process versus the process of schooling, Bloom states "that during the past half-decade we have begun to recognize some of the disparities between home and school...education is not confined to the school system [there are]...very complex educational and other relations found between the school as a subsystem and the other subsystems within a society" (pp. 14-16). Within this convention the fundamental understanding of evaluating career education program efforts can be perceived; efforts which bridge the interstice between school and societal educational experiences.
"Educational Evaluation: Some Questions and Answers" (Stufflebeam, 1976) alludes to the fact that many definitions of evaluation are narrow, thus do not have the capacity to evaluate the scope of dynamic programs, such as, career education. Stufflebeam argues that:

What is needed is a basic definition of evaluation that promotes investigation related to the full range of questions concerning merit. The needed definition should also utilize all potentially relevant methods. The essential definition of evaluation that I propose is the act of examining and judging, concerning the worth, quality, significance, amount, degree or condition of something. In short, evaluation is the ascertainment of merit. This definition meets the conditions of considering all questions related to worth and is not restricted to the use of any particular methodology (p. 3).

Stufflebeam defends this definition for "its breadth in covering all important questions of merit and its flexibility in considering all relevant methods" (1976, p. 14). He recognizes the limitation of this definition in its generalizability and thus developed the operational definition, aforesaid by Stufflebeam, provides a conceptual framework for organizing and conducting evaluation investigations of career education programs.

According to Scrives (1967) evaluation is an observed ratio compared to some standard. This thought supports Gronlund's definition (1976) as evaluation pertains to the whole constellation of values held for a program, and as it pertains to the complex expectations and criteria that different people have for a given program.
In an effort to bring evaluation perceptions into focus and provide a cohesive base for the direction of this experimental investigation on career education variables of student achievement and career knowledge and attitude, Stake (1975) mentions there are many definitions of evaluation and different ways of evaluating educational programs. He states:

No one is the right way. Some highly recommended evaluation procedures do not yield a full description nor a view of the merit and shortcoming of the program being evaluated. Some procedures ignore the pervasive questions that should be raised whenever educational programs are evaluated:
- Do all students benefit or only a special few?
- Does the program adopt to instructors with unusual qualifications?
- Are opportunities for aesthetic experience realized?
Some evaluation procedures are insensitive to the uniqueness of the local conditions. Some are insensitive to the quality of the learning climate provided. Each way of evaluating leaves some things de-emphasized (p. 9).

All in all, Stake expects evaluation of program designs to perform a service of support for or redesign of educational efforts. Also, it is important to point out that one never measures or evaluates people. One measures or evaluates characteristics or properties of people as they relate to the program goals under observation. In the recent past the major distinction being made by methodologists related to program evaluation is that between formative and summative evaluation.

Figure 4 provides "an overview of the entire [dynamic] process of evaluating career education in the context of a local school system" (Young and Schuh, 1975, p. 17). Careful scrutiny of this paradigm identifies inherent evidence of formative and summative evaluation.
Overview of Steps in Evaluation Process

FIGURE 4
processes. Since it is in keeping with the design of this experimental research study to utilize both formative and summative approaches, the remainder of this section will dedicate itself to exploring the meanings and distinguishing features of these two evaluative roles.

Formative Evaluation

The purpose of evaluation is to provide information for decision-making. Simplistic as this statement might appear, contained within it is the need to know what types of decisions are to be served. Stufflebeam (1970) asserts that there are two decisions required for operationalizing and executing a project design. One is referred to as implementing decisions, and the other, recycling decisions. These concern the judgment of and reaction to project results. Corollary evaluation modes associated with these two decision classes are process and product evaluation. "Process evaluation (formative) serves implementing decisions by monitoring project operations [while] product evaluation (summative) serves recycling decisions by determining the degree to which objectives have been achieved and by determining the cause of the obtained results" (Stufflebeam, 1970, p. 2). Each renders important utility related to the validation of comprehensive career education programs.

Anderson et al. (1975) reports that "formative evaluation essentially is concerned with helping the developer of programs through
the use of empirical research methodology" (p. 175). Formative evaluation is systematic in nature and involves the collection of appropriate evidence during the construction and trying out of a new program. Formative evaluation as defined by Good (1973) is "a method of evaluation by monitoring an activity's potential procedural barriers and remaining alert to unanticipated ones; its objective is to identify or predict defects in the procedural design or its implementation and to maintain a record of procedural events and activities; in relation to the decision-making process, employed for implementing and refining the program design and procedure, that is, for effecting process control" (p. 221).

Morris and Fitz-Gibbon (1978) interpret formative evaluation through role definition of the evaluator:

The formative evaluator is essentially a member of the program-planning-and-revision team who is in charge of collecting information about quality of implementation, attitudes and achievement at various sites so that a program can be improved as it develops... Whatever their situation, formative evaluators do share a set of common goals. Their major aim...is to ensure that the program be implemented as effectively as possible. The formative evaluator watches over the program, alert both for problems and for good ideas that can be shared. The goal of bringing about modifications for a program's improvement carries with it four subgoals:

1. to determine, in company with program planners and staff, what sorts of information about the program will be collected and shared and what decisions will be based on this information;
2. to assure that the program's goals and objectives, and the major characteristics of its implementation, have been well thought out and carefully recorded;
3. to collect data at program sites about what the program looks like in operation and about the program's effects on attitudes and achievement; and,
4. to report this information clearly and to help the staff plan related program modifications (p. 24).
In defining the role of the formative evaluator, Morris and Fitzgibbon provide activities of the evaluator aimed toward accomplishing four agendas (and tasks subnamed under each agenda) corresponding to these major goals. These agendas and corresponding tasks appear below:

Agenda A: Set the Boundaries of the Evaluation
1. initial contacts
2. encourage cooperation
3. elicit information from the staff
4. outline for the staff the services you can provide
5. arrive at a contract
6. identify the linking agent role in formative evaluation

Agenda B: Prepare a Program Statement
1. make sure that goals are well stated
2. record the program's rationale

Agenda C: Monitor Program Implementation and the Achievement of Program Objectives
1. formative data collection plans
2. periodic program monitoring
3. unit testing
4. pilot and feasibility studies

Agenda D: Report and Confer with Planners and Staff (pp. 24-34)

Bloom (1971) in a review of summative and formative evaluation in his first printing of Handbook of Formative and Summative Evaluation of Student Learning described these two evaluation processes as follows:

Too often in the past, evaluation has been entirely summative in nature, taking place only at the end of a unit, chapter, course, semester, or [program] when it is too late to modify either process... However, if evaluation is to aid both the teaching and learning processes, it must take place not only at the termination of these processes but while they are still fluid and susceptible to modification. Formative evaluation...intervenes during the formation of the student/[program], not when the process is thought to be
completed. It points to areas of needed remediation so that immediately subsequent [program efforts] can be made more pertinent and beneficial. Formative evaluation impinges on smaller, comparatively independent units of the [program] (p. 20).

Through these discussions, the reader can assume that evaluation is a multi-faceted process with unlimited and complex dimensions. Continuous evaluation during the formative stages of program development brings the goals and objectives of the program into sharper focus. Additionally, evaluating programs in this manner creates an awareness and greater sensitiveness for effective program planning, implementation, decision-making, and product evaluation.

Summative Evaluation

Summative evaluation has as its primary goals judging the effectiveness of an instructional program. In Evaluation to Improve Learning (1981) Bloom described summative evaluation as being "directed toward a much more general assessment of the degree to which the larger outcomes have been attained over the entire [program], or some substantial part of it" (p. 71).

The distinction between summative and formative evaluation, according to Bloom, can be made based on three distinguishing characteristics: purposes (expected uses), portion of [program] covered (time), and level of generalization of [program] goals. The main purpose of summative evaluation has been espoused in the preceding paragraph. It may serve a variety of functions: assessment of program goals/ objectives; initiation point for subsequent program development;
feedback to program designers; and, validation of program philosophies and psychologies. The second characteristic of summative evaluation, portion of [program] covered (time), looks at the attainment of program goals at the end of its cyclic parameter. Finally, the level of generalization differentiates summative and formative evaluation more sharply. This characteristic illuminates the great degree of generalizability and transferability of product data obtained through summative evaluation.

Good (1973) recognizes the difference between these two evaluative processes by defining summative evaluation as:

...a method of evaluation which defines operationally and measures criteria associated with the objectives, by comparing these measurements with predetermined standards or comparative bases, and by interpreting the outcome in terms of recorded input and process information; its objective is to relate outcome information to objectives and to context, input, and process information; in relation to the decision-making process, employed as a means for deciding whether to continue, terminate, modify, or refocus a change activity and for linking the activity to other major phases of the change process, that is, for evolving change activities (p. 221).

In short, summative evaluation concentrates on the total impact of a program. Morris and Fitz-Gibbon (1978) report that "...it differs from formative valuation in its timing and audience, and in the evaluator's relation to the program. When a program has passed its developmental stage and is functioning as intended, it is ready to be summarily described and perhaps judged" (p. 9).

The following five phases, each with corresponding tasks to be completed, provides a general guide to summative evaluation as
suggested by Morris and Fitz-Gibbon (1978):

Phase A: Focus the Evaluation - that is, decide what needs to be known, and by whom
Phase B: Select Appropriate Measures
Phase C: Collect Data
Phase D: Analyze Data
Phase E: Prepare an Evaluation Report (p. 69)

Formative and summative evaluation are two essential ingredients in the documentation and validation of career education program efforts. Formative evaluation holds central to its function the notion of process orientation, whereas, summative evaluation is closely associated with product evaluation. In an attempt to succinctly compare these two evaluation processes, Table 1 has been included to illustrate the contrasts between reports for formative and summative evaluation (Morris and Fitz-Gibbon, 1978, p. 33).

**Review of Research**

The purpose of this section is to summarize the results of this review. It should be noted that the research included for review is limited to the studies that are known or available to the investigator. Very few studies identified through library and mechanical information searches were found to be directly related to the area of study. Several of these discovered studies are primary discussions or application studies without any supporting empirical data.

Arterbury (1974) presented two studies of reading and mathematics achievement of fifth grade students in Texas whose teachers had and had
<table>
<thead>
<tr>
<th>Formative Report</th>
<th>Summative Report</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Documents the program's implementation either at the conclusion of a developmental period or when it has had sufficient time to undergo refinement and work smoothly.</td>
</tr>
<tr>
<td>Shows the results of monitoring the program's implementation or of pilot tests conducted during the course of the program's installation. Intended to help change something going on in the program that is not working as well as it might, or to expand a practice or special activity that shows promise.</td>
<td>Intended to put the program on record, to describe it as a finished work.</td>
</tr>
<tr>
<td><strong>Tone</strong></td>
<td>Usually formal</td>
</tr>
<tr>
<td>Informal</td>
<td><strong>Form</strong></td>
</tr>
<tr>
<td>Can be written or audiovisual; can be delivered to a group as a speech, or take the form of informal conversations with the project director or staff, etc.</td>
<td>Nearly always written, although some formal, verbal presentation might be made to supplement or explain the report's conclusions.</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Variable, but sufficiently condensed or summarized that it can be used to help planners or decision makers who have little time to spend reading at a highly detailed level.</td>
</tr>
<tr>
<td><strong>Level of specificity</strong></td>
<td></td>
</tr>
<tr>
<td>High; focusing on particular activities or materials used by particular people, or on what happened with particular students and at a certain place or point in time.</td>
<td>Usually more moderate, attempting to document general program characteristics common to many sites so that summary statements and general, overall decisions can be made.</td>
</tr>
</tbody>
</table>

Contrasts Between Reports for Formative and Summative Evaluation

Table 1
not participated in career education staff development sessions. The
students whose teachers had received information relative to career
education scored significantly higher on a language arts comprehen-
sive test than those students whose teachers had not been subjected
to the career education treatment. In the area of mathematics,
no significant difference was measured between the groups' understand-
ing of concepts, however, a significant difference did exist when the
students were asked to apply that knowledge. The results favored
those students whose teachers participated in the workshop sessions.

A study conducted by Rapley (1975) in the Jefferson County
(Kentucky) Career Education Program suggested 1) that career education
programs can influence a wide variety of outcomes in addition to
basic skills and 2) that the programs can be effective at all grade
levels. After four years of controlled evaluation in rural and
urban areas (Arizona), Ruff (1977) concluded that career education is
working, particularly for those who participate in high intensity
programs. Among the differences that Ruff found between students in
grades 3 - 12 who had a high exposure to career education and those
with limited exposure were: 1) a greater knowledge of the range of
available occupations; 2) awareness of educational requirements for
various careers; 3) understanding of specific skills and abilities
required for careers, and 4) a sense of what is needed for success in
business and industry. Ruff also reports that career education helped
the students understand the economic and life-consequences of their
career choice.
A three year study conducted in Dade County, Florida showed that students participating in a career education program (K-12) made measurable gains in the areas of career awareness and basic skills at the elementary level. In comparison with other Dade County schools and the state as a whole, the career exploration junior high schools surpassed the other schools in reading, mathematics, and occupational information (Spieth, 1973-76). A follow-up evaluation to the elementary findings was conducted in 1975-76. That evaluation was directed primarily at the elementary students who were tested during 1974-75. It was found that their gains in career awareness during the elementary years had been maintained, and, in fact, increased with respect to national norms for the career awareness test used (Dade County Public Schools, 1976).

Olson (1979) implemented a career education program in Lincoln County, West Virginia as a vehicle to assist in achieving competence in basic academic skills and other educational goals. One phase related to Career Awareness for students in grades 1-6. A pretest score was determined utilizing the Occupational Awareness Test, as well as, Mathematics and Language Achievement tests for the sample of eighty students (40 experimental and 40 control) from each grade level (1-6). Olson found that there was a significant difference between the two groups for language achievement \((F=7.32, p<.01)\); significant at the .01 level for mathematics \((F=14.30)\); and, the analysis of covariance on occupational awareness reveals that a significant difference exists between the experimental and control groups \((F=14.84, \text{ significant at the .01 levels})\).
The Northwest Tri-County Intermediate Unit of Edinboro, Pennsylvania (1977) studied the impact of career education programming on students' academic and career development needs. Progress toward this [K-6] Career Education Project objective was determined after reviewing the field testing results of students (using control and experimental groups in a pretest and posttest design), interviews, and data analysis. The findings of this evaluation show significant differences between the groups observed for reading achievement only at the fifth grade level. In the area of mathematics achievement significant difference was recorded at the kindergarten, fourth, and the fifth grade levels; in kindergarten the control group showed a higher achievement level while the experimental groups excelled in the fourth and fifth grades. Significant gains were cited for the experimental group in grades kindergarten through four on the variable career knowledge. No significant difference was determined on career knowledge performance for grade five.

Smith (1974) conducted an evaluation on cognitive achievement of students in grades 1-9 in seven Minnesota school districts. Students who had career education (experimental group) and those who had not had career education (control group) were administered tests designed to assess the impact of career education on their cognitive achievements. Small achievement differences were found between the experimental and control groups and among the seven experimental projects. The relative impact of career education instruction on cognitive achievement of students was not educationally significant.
Behavioral Research Associates (1975) assessed outcome comparisons of experimental and control groups in career education for kindergarten through grade twelve students. This summary evaluation took place in Pima and Cochise Counties of Southern Arizona. The career education activities involved were speakers, films, field trips, exploration kits, in-class work experiences, career education games, and career education fairs. The results reported by Behavioral Research Associates were as follows:

1. Students exposed to career education had more knowledge of the nine career clusters dealing with occupations in Arizona. This held true for both primary and secondary students.

2. The experimental group students were better able to recognize and list interpersonal factors and personal characteristics related to jobs, recognize decision-making abilities, and comprehend the free enterprise system than were control group students.

3. Students exposed to career education had more self-confidence that their goals were realistic and obtainable.

In contrast to this study, the results reported in a multiple component career education program for persons in rural areas were somewhat different. An unspecified experimental/control group design measured the impact of the following objectives on students of grades three, six, nine, and twelve: employment preparation, upgrade capabilities for those employed, self-evaluation assistance, encourage education related to employment, and leadership skills. The findings were:

Self-Awareness (self-acceptance, self-security, social maturity, peer affiliation, achievement motivation) -- Grade 3: no significant difference found; Grade 6: one variable approached significance (p .06).
Career Awareness (identification recognition, multiple discrimination) -- Grade 3: no significant differences found; Grade 6: significant difference in favor of treatment group ( .05)(Center for Studies in Vocational and Technical Education, 1975).

Evaluation data were obtained from a kindergarten through grade twelve career education program in the Weatherford Independent School District, Texas (1975). Students were divided into experimental and control groups up through sixth grade. Within the K-6 group range the program goals included: good work attitudes, self-awareness, and positive attitudes toward the world of work. The composition of each group is unclear but the total sample involved in the evaluation included: 915 in grades kindergarten through three, and 929 in grades four through six. The results relative to elementary school-aged children were:

1. at both third and sixth grade, understanding of major duties, abilities, working conditions, and life styles associated with different occupations improved with increased exposure to career education materials.

2. at the sixth grade level, no significant difference on the Career Education Questionnaire between experimental and control group was found.

Holder et al. (1973) emphasized several positive outcomes of career education programming on elementary students. Results were obtained in part, by using a pre/post questionnaire format in Syracuse, New York. The following findings were included for students exposed to career education: high student motivation; gains in awareness of
world of work were identified for fifth grade students; parental involvement increased; and, sixth grade students' awareness of career concepts, career ladders, career areas, and necessary skills all showed some increase.

The multicomponent school-based program of Cashmere Consolidated School District in Washington State (1974) used a nonspecified experimental/control group design to obtain the following results related to students in kindergarten through sixth grade: Kindergarten Through Third Grade: significant differences were found for the experimental group on the variable "more aware of occupations" than were the control group students. Fourth Grade: no conclusions. Fifth Grade: positive program impact was noted but not significant. Sixth Grade: due to the lack of construct validity of the career questionnaire no results could be obtained.

Perkins (1973) reported the comprehensive evaluation of a multi-component career education program in Orange County, Florida. He found no significant differences at the elementary level on knowledge of careers, positive work values, or attendance. These findings were based on a pre/post test experimental/control group design with an equivalent sample of 240 per group.

Herr (1977) reported on the findings of Ciavarella et al. of its four demonstration projects in the state of Pennsylvania. The following passage is his report of the findings by individual project:

The Ebenburg Project involves high school students participating in a highly individualized program of job skills and career-oriented activities. Three instruments were used:
the Career Inventory, School Morale Scale, and the Career Decision Questionnaire. The results reported were as follows:

1. The Career Maturity Inventory -- Without specifying numbers of students involved or design elements, it is indicated that the project has allowed the students to achieve at a level of career maturity beyond what their academic abilities would warrant. On three of six subscales, students obtained scores above the national grade-wise average.

2. School Morale Scale -- Indicated that students were more satisfied with the school environment.

3. Career Decision Questionnaire -- Found that career decisions are influenced more by students' families than by teachers or counselors.

The Crawford County Project involves students in grades kindergarten to six. For purposes of this evaluation, students were assigned to experimental and control groups at each level: kindergarten to second, third to fourth, and fifth to sixth. Using the Career Awareness Inventory, it was found that experimental students were higher at all three levels than control students ($p<.05$). On the AWAKE Questionnaire it was found that the program is generally viewed favorably and teachers are seen as innovative and providing for student needs. Teachers' reports also indicate that students are increasing self-concept.

The Cook Junior High School Project in Philadelphia was evaluated using an experimental group of 133 students and a control group of 121. The evaluators reported that the experimental group showed a more marked increase on the Career Maturity Inventory attitude scale than did the control. This finding was not expressed in statistical terms, however.

The McKeesport Area School District, a kindergarten to twelve project, reported several different findings. Again an experimental/control structure was used to assess pre/post differences on several behavioral indicators. The results included:

1. Third Graders. Experimental group was able to list more occupations than the control group ($p<.10$) but no differences were found in inferred self-concept and attitudes toward school.
2. Fifth graders. No significant differences in occupations listed but self-concept and attitude toward school were significantly different in favor of the experimental group. Overall, a significant decline was noted in the elementary school in nonproductive behavior.

3. Junior high school students

<table>
<thead>
<tr>
<th>Variable</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept attitude toward school</td>
<td>$&lt;.05$</td>
</tr>
<tr>
<td>Career Maturity Inventory, attitude scale</td>
<td>NS</td>
</tr>
<tr>
<td>Career Maturity Inventory, self-appraisal</td>
<td>$&lt;.01$</td>
</tr>
<tr>
<td>Career Maturity Inventory, occupational information</td>
<td>$&lt;.01$</td>
</tr>
<tr>
<td>Career Maturity Inventory, goal selection</td>
<td>$&lt;.05$</td>
</tr>
<tr>
<td>Career Maturity Inventory, career planning</td>
<td>$&lt;.05$</td>
</tr>
<tr>
<td>Career Maturity Inventory, problem solving</td>
<td>$&lt;.01$</td>
</tr>
</tbody>
</table>

These findings were all in favor of the experimental group.

Robinson (1975) evaluated a career education project using a formative pre/post test design with comparative analysis of the data with predetermined standards. The results reported on the elementary school component showed significant gains of students on the variables awareness of and knowledge about work, and self-awareness.

The impact of infused career education programs in five school systems in North Central Texas was studied by Bryant (1975). Seventeen fifth grade classes were sampled (N=348) and assigned to one of the multi-factor designs. Analysis of Covariance was the statistical procedure employed to determine the significance of the results obtained from The Comprehensive Tests of Basic Skills (Forms Q and R). The findings favored the experimental group, as determined by statistical analysis, and was found to be statistically significant on total achievement ($p<.001$), and vocabulary ($p<.001$). No significant gains in the area of arithmetic occurred between experimental and control groups because career education materials were not infused within the arithmetic curriculum.
The Ohio Department of Education (1980) devoted efforts toward assessing the impact of Ohio's career education program on K-10 students. Several of the results found by this study follow: students are able to formulate possible career choices sooner and more realistically; students are better prepared to make decisions affecting their careers; teachers have gained awareness of the world of work from a new perspective; individuals in government, industry, labor, business, and professional fields have gained increased awareness of the needs of youth; and, career education has bridged the gap between business and education and created a general awareness of the shared responsibility of both segments working together to implement career goals and opportunities for today's youth.

Summary

This chapter has provided a review of literature. Chapter 3 describes the procedures used in the study.
CHAPTER III

METHODOLOGY

The purpose of this study was to establish whether a significant relationship exists between career education programming and the variables of achievement and career knowledge and attitude. A summary overview of the evolution of career education, a discussion of program evaluation, elaborations related to formative and summative evaluation, and related research studies concerned with career education have been cited. This was done in order to provide a rationale and focus for this study.

This chapter provides a discussion of the methods and procedures used in this investigation.

Setting

The experimental group community, a city of 42,000 residents is located to the west and northwest of the city of Columbus with the corporation limits of the two cities contiguous to each other. The experimental community has a city manager form of government and maintains its own municipal fire, police, recreation and education services.

The experimental community has the second highest income per family in Ohio for cities of more than 25,000 persons. The mean mean

61
family income is estimated at $31,688, or $9,320 per person. This, incidentally, is double that of Columbus. White collar workers comprise 84.7 percent of the city's work force, the highest percentage in the state for a city of its size, with 64 percent of the women in the community being employed outside the home as well. The median of school years completed is fourteen -- also the highest in the state proportional to size of city.

In excess of 600 businesses, retail stores and offices are located in the city. Within thirty minutes drive of the city there are six colleges and universities and two technical training institutions. In addition, there are countless multi-cultural experiences available as well as the contrasting rural, urban and suburban environments which are represented in the demographic area in which the city is located.

Slightly under 6,400 students are enrolled in grades K-12 which have been fully accredited by the North Central Association. Beginning with the 1983-84 school year, the present grade organization of K-6, 7-9, 10-12 will change to K-5, 6-8, 9-12. Standardized tests of the city's school children indicate that students in grades four and six are working one-and-one-half to two years above the national norm. Traditionally, high school students score far above average on scholarship and college entrance examinations. Eighty-five percent or more of the high school graduates attend colleges or universities and an additional five to six percent continue their
formal education with vocational or technical training. Special education services, programming for gifted students, career education programming, federally funded Title I projects, and emphasis of staff development help support the instructional program. At the elementary level and junior high levels, there is an informal classroom program as an alternative to the regular classroom program. The informal classes are located at three elementary schools and one junior high school.

The experimental school district presently has seven elementary schools, two junior high schools, and one high school. The experimental district's Board of Education employs approximately 430 instructional and administrative staff members. Each school has a full-time principal and librarian. School nurses, art, physical education and music teachers are assigned to the schools in addition to the regular teaching staff. School psychologists, learning and behavioral disabilities teachers and tutors are employed to access students in all grades. At each elementary building, the staff member is assigned to help teachers to individualize instruction. At the secondary level, released-time is provided for subject area coordinators. Each junior high school is staffed by a full-time assistant principal and three guidance counselors. The high school has three assistant principals, a director of student activities, an athletics director, and a guidance team of seven counselors.

The high school's Learning Center is a two-story, 37,900 square foot facility designed to help teachers individualize instruction
and to give students every opportunity to use the latest in electronic media to further their educational development. The Center houses a library with open stack storage for 45,000 books, individual carrels for slide and film viewing, darkrooms for student and faculty use, a television studio, seminar rooms, and modern staff media preparation areas. A computer has been installed near the Learning Center for student and staff use.

Teacher participation in developing instructional guidelines is solicited through a Curriculum Council which works with subject area coordinators to keep the developing K-12 instructional program attuned to changing student needs. This teacher involvement in a formal Curriculum Council provides a direct means for infusing career education activities throughout the entire school program.

Prior to the 1976-77 project year, the Board of Education demonstrated a monetary commitment to the Career Education concept and invested operating funds in the program. After one year of Federal funding, a Teacher Education Career Coordinator position was assumed by local funds. The Career Education Coordinator (Project Director) was employed by the school system as well. Inservice and program monies have been appropriated. The school district has entered into a contract with Columbus City Schools to share in the construction of four career centers. These centers are available to up to 120 students, the tuition for each student to be paid by the Board of Education. Travel and participation in state and national
career education activities is supported by local funds. Released teacher time is used for career education involvement. Expenditures for program development and curriculum material are made annually. Parent, community and business and industry involvement are built into each school's academic program emphasizing career education. The close contact with The Ohio State University career education personnel provides ongoing consultative assistance. A strong pilot program for teacher career development has been conducted.

Thus, it was substantiated as part of this study that the Board of Education is committed to the investment of funds in career education activities for its students. This allocation of funds reflects a needs assessment as conducted by administrators and School Board members.

A recognition of the needs of the students for preparation for the world of work was substantiated through time, materials, and funds by business, industry, professional and community groups. Their voluntary contributions of time, materials, funds, training facilities and student exploration assistance have been significant.

The control group community, a city located north of and contiguous to Columbus, classifies as a suburban community falling into a small city category, with a population range of 10,000 to 50,000, with current population figures slightly under 50,000. The control group community maintains its own municipal fire, police, recreation and education services.
Nearly three fourths of the parents of school children indicate they occupy professional or managerial positions in their work. Close to 90 percent report annual family income of more than $15,000. Three fourths of the parents of school children report fourteen years or more of schooling.

Small businesses, retail stores, offices and industries are located within the city limits. Within thirty minutes drive of the city there are six colleges and universities and two technical training institutions. In addition, there are countless multi-cultural experiences available as well as contrasting rural, urban and suburban environments which are represented in the demographic area in which the city is located.

The control school district has seven elementary school (K-6), two middle schools (7-8) and one high school (9-12) which incorporates an Alternative Program, separately housed. Enrollment in the elementary schools ranges from 350 students to 700 students. The two middle schools have approximately 600 students and the high school houses approximately 2,300 students on three campuses. Total enrollment for the district is 6,800 students.

Nurses, speech and hearing therapists, and school psychologists serve all schools in the district. In addition, guidance counselors work with students at the middle schools and high school. About ten percent of the control school district students receive help through special education services, including speech and hearing therapy,
learning disability tutoring and classes, slow learner classes, tutoring for hearing impaired, and behavioral handicapped classes.

The control school district prides itself on having a highly skilled and dedicated staff of teachers. Approximately 45 percent of the instructional staff holds master's degrees or beyond. Average classroom teaching experience is 10.05 years. Teachers are committed to provide an individualized approach to teaching which enables students to learn at their own pace, level and style.

The fundamental goal of the control group schools is to provide a meaningful and individualized curriculum for all students. A commitment to basic skills pervades all areas of the instructional program from kindergarten through twelfth grade. The elementary schools lay the foundations for the higher levels of learning and diversification found at the middle schools and high school. But at all levels is a commitment to provide an individualized approach to teaching which enables students to learn according to their own style.

The elementary school program is intended to give children a foundation in basic skills and to help them think creatively and develop the self-esteem necessary for continued growth. The middle school provides a smooth transition between the elementary school and high school levels. It gives students an opportunity to become increasingly aware of their abilities and interests and explore further directions. The control group high school, fully accredited by
the North Central Association, offers a wide variety of educational opportunities with the requirements for a solid academic background. Approximately two-thirds of the high school graduates continue their education, most attending four-year colleges and universities. Control school district students consistently rank above state and national averages in ACT and SAT scores.

The opening 1980-81 year statement to the staff, by the Superintendent, identifies eleven objectives of the school system for helping each child develop potential:

1. To maintain a strong academic program with emphasis on the basics.

2. To develop materials and programs which will accommodate the specific ways in which students learn.

3. To improve the administration, reporting and application of the standardized testing program.

4. To develop a comprehensive staff development program based on student and staff needs.

5. To develop a planned, district-wide program to meet the needs of academically talented students, based upon a clear district philosophy.

6. To complete the study of the high school curriculum.

7. To develop an effective and efficient management team.

8. To provide appropriate educational opportunities for all handicapped students.

9. To provide students with skills to cope with mental and emotional health problems.

10. To develop a comprehensive program, including policies, enforcement standards, curriculum development and community involvement, to reduce drug/alcohol abuse among students.
To recognize the contribution that each member of the educational team makes to the growth and development of the students.

To date, the control school district has no formal career education program. During the 1977-78 school year, a limited elementary career education project with a focus on industrial arts activities was implemented in selected schools. Career guidance activities are currently conducted by counselors. A complete academic and vocational program is offered to include work experience programs. Some classroom work, related to the career development of students, is conducted as a part of the academic program. No formal effort has been made to integrate career education and no specific funds have been budgeted locally for a career education program at this time.

While career development activities are implied in several of the school system objectives for the year, no objective focuses specifically on career education. There has been no intent, at this time, to develop a career education program for the 1980-81 school year or the 1981-82 school year.

The control group has been identified from a community comparable to the experimental group community in size, socio-economic status, educational goals and objectives, and other student characteristics.

Sampling

It was a fundamental intention of this investigation to provide an operational replicative study involving responses of third and fifth grade students attending schools in the state of Ohio. This original
intention to utilize a large, randomly selected sample from the total Ohio population was discarded early in the study due to logistical and/or administrative dysfunctions.

In order to control for the geographic and demographic differentiation in Ohio the investigator sought to include students in the sample from similar suburban areas in a large metropolitan region. Only the non-targeted population had to be identified for this study because a Request for Funding proposal submitted by the experimental school district to the United States Office of Education was approved and funded at the federal level. Included within this proposal was the identification of the experimental group school district.

The experimental school population was selected due to the exemplary career education program ongoing in the district. The control school population was selected due to its equivalent demographic criteria and logistical position to the experimental site. The control school district was matched on the basis of nine criteria. These were as follows: size of school enrollment; socioeconomic level of the community; student academic achievement; prevalence of teacher inservice education; perceived level of teacher motivation; level of parent involvement; identified staff training and experience; student graduation rate; and, student post-high school education. With the exception of the career education program in the experimental school district, both the city and school systems were considered comparable for the purposes of the research design.
Following the identification of the target populations, grade levels of the participants were subsequently pared from total elementary (K-6) to include grades three and five. Third and fifth grade levels were selected as the target groups because of the following: (1) the experimental school district's philosophy toward standardized testing; (2) fourth and sixth grade students were required already to participate in standardized testing activities as part of curricular policy; and, (3) the researcher believed the developmental characteristics of third and fifth grade students to have large representativeness to all elementary-aged school children. These students were drawn from a total universe of fourteen elementary school (seven treatment schools, seven control schools).

Using a table of random numbers (Huntsberger, 1961, pp. 260-263) the investigator then randomly selected participants for this project. A total sample of 460 students was selected as participants for this study. Intact groups (treatment and control) were readily available to the researcher, therefore, random assignment techniques for the subjects were not utilized.

Table 2 contains the demographic and/or situational data associated with the student sample.

Research Design

Kennedy (1980) stated that research is the conscious systematic application of the scientific method for the purpose of generating new knowledge. In experimental research different things are done to
<table>
<thead>
<tr>
<th>GROUP</th>
<th>TOTAL NUMBER</th>
<th>TOTAL PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Total Sample</td>
<td>N=460</td>
<td>100%</td>
</tr>
<tr>
<td>A. Third Grade Students</td>
<td>203</td>
<td>44%</td>
</tr>
<tr>
<td>B. Fifth Grade Students</td>
<td>257</td>
<td>56%</td>
</tr>
<tr>
<td>II. Total Primary Students (Grades 3)</td>
<td>N=203</td>
<td>44%</td>
</tr>
<tr>
<td>A. Experimental Group</td>
<td>110</td>
<td>54%</td>
</tr>
<tr>
<td>B. Control Group</td>
<td>93</td>
<td>46%</td>
</tr>
<tr>
<td>III. Total Intermediate Students (Grades 5)</td>
<td>N=257</td>
<td>56%</td>
</tr>
<tr>
<td>A. Experimental Group</td>
<td>134</td>
<td>52%</td>
</tr>
<tr>
<td>B. Control Group</td>
<td>123</td>
<td>48%</td>
</tr>
<tr>
<td>IV. Demographic Analysis</td>
<td>N=460</td>
<td>100%</td>
</tr>
<tr>
<td>A. Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Total males</td>
<td>236</td>
<td>51%</td>
</tr>
<tr>
<td>2. Total females</td>
<td>224</td>
<td>49%</td>
</tr>
<tr>
<td>B. Sex (Primary Experimental Group)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Total males</td>
<td>65</td>
<td>59%</td>
</tr>
<tr>
<td>2. Total females</td>
<td>45</td>
<td>41%</td>
</tr>
<tr>
<td>C. Sex (Primary Control Group)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Total males</td>
<td>49</td>
<td>53%</td>
</tr>
<tr>
<td>2. Total females</td>
<td>44</td>
<td>47%</td>
</tr>
<tr>
<td>D. Sex (Intermediate Experimental Group)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Total males</td>
<td>54</td>
<td>40%</td>
</tr>
<tr>
<td>2. Total females</td>
<td>80</td>
<td>60%</td>
</tr>
<tr>
<td>E. Sex (Intermediate Control Group)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Total males</td>
<td>68</td>
<td>55%</td>
</tr>
<tr>
<td>2. Total females</td>
<td>55</td>
<td>45%</td>
</tr>
</tbody>
</table>
different groups of subjects to see if it produces differential effects within and between the groups. Therefore, the experiment has a treatment component and the researcher sees how the manipulation affects the subjects.

Kerlinger (1979) identifies two essential characteristics of experiments: (1) there exists a manipulation of the independent variable(s), and (2) the concept of randomization is practiced. Full control and equality of groups through random assignment is indicative of a true experiment as opposed to a quasi-experiment which lacks full control and the use of random assignment.

Research designs used to assess the impact of innovative programs should control for extraneous variables and thus protect the internal and external validity of the experiment (Kennedy, 1978). Kennedy identifies four potential contaminants of an evaluation study that the researcher must control: 1) pretests, 2) events occurring between the pretesting and the posttesting, 3) unequal groups, and 4) random or chance factors.

The ideal design to use for this study is the classical pretest-posttest control group design. Kerlinger (1973) identifies two stipulations that must exist to structure this design -- two distinct groups must be assembled: 1) the group that experiences the innovative program (the experimental group), and 2) a group from whom the innovation is withheld (the control group). In theory, if the comparison group is equivalent to the treatment group in every respect (except for receiving the innovation), we have available to us the
most rigorous vehicle for proving the innovation, and not something else, was responsible for observed terminal differences (Kennedy, 1980).

Since this investigation does not completely satisfy the requirements for a true experimental design, the research design used in this study has been treated as a non-equivalent control group model. The assessment would follow a quasi-experimental design. This approach has been adopted with recognition given to the following design limitation: lack of control over when students are exposed to the program or which students are exposed to it, including the inability to assign students at random to experimental and control groups. The lack of randomization causes more threats to the internal validity of the conclusion. Campbell and Stanley (1966) conclude that results from such a design usually are open to a variety of conflicting interpretations; the equivalence cannot be assured by matching or related procedures; analysis of covariance and regression techniques do not necessarily provide the proper adjustment for those variables on which the experimental and control groups differ. However, this design was considered preferable to other research designs.

Procedures

Prior to implementing procedures for data collection two phases for the career education validation project were identified and project scheduling established. The time line for project activities
was cast in the form of Milestone Schedules. These detailed time-task procedural schedules for 1980-81 and 1981-82 were adhered to throughout the duration of the project.

Phase I of the project concerned itself with the planning for implementation of the deliverable services/activities provided through career education efforts. The second phase consisted of the testing and monitoring components as outlined in the Milestone Schedules, as well as, the overall report on the assessment of effectiveness of the "complete career education treatment."

**Analyses of Data**

The purpose of the study was to determine if significant difference existed between participants given the career education treatment and those subjects from which the treatment was withheld. The study concerned itself with the variables of academic achievement and career knowledge and attitude. In order to conduct the statistical analyses of the data the research questions were changed into null hypotheses. The following null hypotheses provided the framework for the subsequent analyses of the data:

**Major null-hypothesis 1**

There is no significant difference in the basic academic skills achievement (mathematics, reading, language) mean scores of third and fifth grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students.
Minor null-hypotheses

The development of the null-hypothesis was completed in order to guide the research analyses of the subgroupings within each variable (academic achievement and career knowledge) and each group of students: third and fifth grade.

Minor null-hypothesis 1.1

There is no significant difference in basic academic skills achievement mean scores of third grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students.

Minor null-hypothesis 1.2

There is no significant difference in basic academic skills achievement mean scores of fifth grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students.

Major null-hypothesis 2

There is no significant difference in the career knowledge and attitude (work habits; work value; decision-making; awareness of and knowledge about work; awareness of means available for continuing and recurrent education, to include economics concepts; educational and job placement; productive use of leisure time; and, reduction of bias) mean scores of third and fifth grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students.

Minor null-hypothesis 2.1

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Work Habits.
**Minor null-hypothesis 2.2**

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Work Habits.

**Minor null-hypothesis 2.3**

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Work Values.

**Minor null-hypothesis 2.4**

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Work Values.

**Minor null-hypothesis 2.5**

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Decision-Making.

**Minor null-hypothesis 2.6**

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Decision-Making.

**Minor null-hypothesis 2.7**

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Career Awareness.
Minor null-hypothesis 2.8

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Career Awareness.

Minor null-hypothesis 2.9

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Education Awareness.

Minor null-hypothesis 2.10

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Education Awareness.

Minor null-hypothesis 2.11

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Job Seeking.

Minor null-hypothesis 2.12

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Job Seeking.

Minor null-hypothesis 2.13

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Leisure Time.
Minor null-hypothesis 2.14

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Leisure Time.

Minor null-hypothesis 2.15

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Reduction of Bias.

Minor null-hypothesis 2.16

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Reduction of Bias.

Instrumentation

Data on the subjects were gathered using the research objectives listed below specified for the Nine Learner Outcome areas. Each objective is followed by the specific instrument used to measure the mean scores of the related subscale for both the treatment and comparison groups.

(1) Basic Academic Skills -- Students in the experimental group at grades three and five will show gains appropriate for grade level achievement for the period of the evaluation in Reading, Math and Language as measured by the California Achievement Tests.

(2) Work Habits -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Work Habits subscale of the Ohio Career Education Inventory (OCEI).

(3) Work Values -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Work Values subscale of the OCEI.
(4) Decision Making -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Decision Making subscale of the OCEI.

(5) Awareness of and Knowledge about Work -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Career Awareness subscale of the OCEI.

(6) Awareness of Means Available for Continuing and Recurrent Education, to include Economic Concepts -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Education Awareness subscale of the OCEI.

(7) Educational and Job Placement -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Job Seeking subscale of the OCEI.

(8) Productive Use of Leisure Time -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Leisure Time subscale of the OCEI.

(9) Reduction of Bias -- Students in the experimental group at grades three and five will show significantly higher pre/post scores on the Reduction of Bias subscale of the OCEI.

California Achievement Test (CAT), 1979 Edition, Form C. Form C was selected and used for the pretest/posttest to measure achievement in the areas of mathematics, language, and reading. The CAT combines the uses of norm-referenced tests with the objectives-based information of criterion-referenced tests. For the purposes of this investigation attention was paid specifically to the norm-referenced aspects of this test instrument. "Norm-referenced tests are used to determine how well students are performing in relation to other students of a similar age and background" (California Achievement Tests: Class Management Guide, 1978, p. 1). Since CAT C was standardized at two different periods of the year using the same students, realistic normative data can be provided.
CAT C is a series of test batteries designed to measure the achievement of students from the beginning of kindergarten through grade twelve. Level 13 of Form C was employed to measure academic achievement for third grade students. This level was determined to be appropriate because it included grade ranges from 2.6 through 3.9. Form C, Level 15 was selected to measure fifth grade students' academic achievement because it encompassed a range of 4.6 to 5.9.


Item Tryout and Selection

For the tryout edition, many more items were written than could be used for the final edition in order to give a better selection. All items were reviewed to make sure that the items accurately measured skills in a specified objective. Revisions were made when necessary.

All approved items were published in the tryout edition. Each item was tested in at least three adjacent grade levels to provide information on growth, item difficulty, and appropriate grade level. All teachers who administered the tryout edition were asked to fill out a questionnaire concerning the contents of the test and the instructions. Their comments were an important guide in revising material for the standardization edition.
Bias Reviews

All items in the tryout were also reviewed for racial, ethnic, and sex bias. Women and men who hold responsible positions in the educational community and belong to various ethnic groups reviewed the items and noted any apparent content bias in language, subject matter, and the overall representation of people. In addition, CTB/McGraw-Hill conducted statistical research to identify any items that appeared to have racial bias and eliminated or revised the items as necessary.

Standardization Issue

Data from the tryout edition were analyzed and items were selected for the standardization edition. Items from the tryout formed a pool for both Form C and Form D. Items selected were required to:

- give good coverage of an objective (A minimum of four items are included for each objective tested at any given level.);
- provide a wide range of difficulty;
- meet the requirements for reducing bias;
- cover a variety of topic areas (As much as possible, materials used within levels are of different types and reflect different subject matter.); and
- demonstrate growth (Items were placed in the grade level that appeared most appropriate based on student performance and improvement from one grade to the next.).
To provide a measure of the subscale—academic achievement, the content areas of reading, language, and mathematics were assessed. Drawing from the Technical Bulletin (1979) the following descriptions are reported for each of these content areas.

Reading

The CAT C and D Reading tests measure skills in the following areas related to this study:

Phonic Analysis (Levels 11-13): Grade 3
Structural Analysis (Levels 12-13): Grade 3
Reading Vocabulary (Levels 11-19): Grades 3 and 5
Reading Comprehension (Levels 11-19): Grades 3 and 5

The Phonic Analysis and Structural Analysis tests measured decoding skills. The Reading Vocabulary tests measured word categories, words with the same meaning, words with opposite meanings, and multimeaning words and their definitions. The Reading Comprehension tests measured skills in literal, interpretive, and critical comprehension.

The Phonic Analysis tests of CAT C and D measured a student's ability to relate the sounds (phonemes) of oral language to the graphic symbols (graphemes) of written language. These skills are measured in Levels 11, 12, and 13 since phonic decoding skills are most heavily emphasized at the early grades (Grades 1 to 3). Basic phonic skills are measured in Level 11, while more advanced skills are tested in Levels 12 and 13.
The Structural Analysis tests of CAT C and D measured a student's ability to identify structural clues. These skills are tested at Levels 12 and 13 only. CAT C and D measured vocabulary skills in three general areas: words with the same or a similar meaning, words with opposite meanings, and multimeaning words.

Reading comprehension in CAT C and D has been divided into literal, interpretive, and critical comprehension. Each type of comprehension was measured by a variety of reading passages.

Language

The Language Mechanics tests covered the areas of capitalization and punctuation. The Language Expression test was concerned with students' abilities to apply their knowledge of language in their written work. Although students were not required to write in this test, all items were carefully designed to measure students' understanding of skills closely related to effective written expression. A variety of items were included to test word usage and understanding of sentence structure and paragraph organization. None of the items in this test required the student to define terms or to explain rules.

Mathematics

CAT C and D contained a sampling of computation skills commonly taught and understood at each grade level. Depending on the level of the test, there were items covering addition, subtraction, multiplication, and division of whole numbers, fractions, mixed numbers,
decimals, and algebraic expressions. The Concepts and Applications
tests included a sampling from a wide range of mathematics skills.
The emphasis in these tests was on concepts rather than on isolated
facts.
Validity of the CAT/C

The basic principle concerning the validity of a test was that
the test must be developed in accordance with valid processes of
test development. No statistical manipulation would make a test
valid if it was not constructed to ensure that it measured what it
purported to measure and measured it reliably. The Technical
Bulletin further stated that the final evaluation of a test's validity
for a particular school district must be based on that district's
own objectives and curriculum. Throughout the evolvement of the
California Achievement Test careful attention was paid to the
rationale and content, test development, and item tryout and selection.
Each of these procedures was mentioned in the preceding paragraphs.
Statistical Data related to Validity

The Technical Bulletin noted that the validity of CAT/C was
established during the process of test development and did not depend
upon correlation with any other test. However, intercorrelational
derivations of the Short Form Test of Academic Aptitude, CAT-70, and
CAT/C were established.
Reliability of the CAT/C

A reliable measure provided consistent and stable indications
of the characteristic being investigated under similar conditions.
The reliability of CAT/C was described by several kinds of data: internal consistency, repeated administrations: short interval; and, repeated administrations: six-month intervals.

Internal Consistency

The Kuder-Richardson formula 20 (KR 20) was used to estimate the consistency of performance from item to item within CAT, Form C. KR-20 was a frequently used measure of internal consistency, which provided a coefficient based on a single administration of a test.

Repeated Administration: Short Interval

Correlations that described the stability of CAT/C scores over repeated administrations after a short interval represented the retest reliability coefficients and related data for CAT/C from two administrations at an interval of two to three weeks for grades three and five.

Repeated Administrations: Six-Month Interval

Correlations between Fall, 1976 and Spring, 1977 administrations of CAT/C indicated various aspects of score variance from one testing to another after an interval of six months.

Ohio Career Education Inventory (OCEI) -- The OCEI was a computerized test development system containing several hundred test items in each of four grades: three, six, eight, and ten. Items were catalogued into one of fourteen categories: seven career developmental areas in two domains (cognitive and affective). It was developed to measure career knowledge and attitudes.
The form of the OCEI used for this study included 64 items -- eight each across eight learner outcome areas: Decision-Making, Work Habits, Work Values, Career Awareness, Educational Awareness, Reduction of Bias, Leisure Time, and Job Seeking.

An overview sheet for this instrument stated that score reports include a Raw Score Summary and an Item Response Summary for each participating class, building and school district. Criterion-referenced comparisons of class, building or district averages were ascertained from the Raw Score Summary. The Item Response Summary identified the number and per cent of students who choose each possible response for each class, building, and district.

The content validity of the OCEI was established on the basis of instructional objectives identified by field-based observations or curriculum review of career education programs in the state of Ohio as defined by the Seven Developmental Areas.

Construct validity was determined through a comparison-of-known groups techniques whereby items were tried out in at least two sites, both with students who had been exposed to a career education program and those who had not. Items which showed negative discrimination were discarded. Those which showed positive discrimination were retained. Career Education coordinators were asked to validate the categorization of items with respect to content and grade level, to validate the keyed response to determine the importance of the
career education instructional objective measured by each item. Items with highest discrimination values were selected for use in this study.

One pronounced limitation of the OCEI as it applied to this study was the absence of a test designed for fifth grade students. However, the researcher believed the negative aspect of this fact to have had minimal effect on the results due to an above-average reading level of the fifth grade students sampled.

The OCEI had a further limitation in that there was no reliability coefficient for the instrument. To compensate for this void, a reliability coefficient was determined using the Kuder-Richardson Formula 20 (KR-20) and Kuder-Richardson Formula 21 (KR-21). The KR-20 is an index of the internal consistency of the test and is the function of the number of items on the test (64), the variability of the scores, and the proportion passing and failing each item. KR-21 is also estimated internal consistency or reliability and is computed as the KR-20 except the mean score of the group is used instead of the proportion passing and failing each item.

The KR-20 and KR-21 were conducted for both the pretest and posttest using the third and fifth grade subjects of the treatment and comparison groups. Findings indicated the internal consistency of the OCEI to be at an acceptable level, therefore, determined to be a reliable test of measurement. The reliability estimates which were determined for the OCEI are presented in Table 3.


**TABLE 3**

RELIABILITY ESTIMATES FOR THE OCEI

<table>
<thead>
<tr>
<th>GROUP</th>
<th>KR-20</th>
<th></th>
<th>KR-21</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRETEST</td>
<td>POSTTEST</td>
<td>PRETEST</td>
<td>POSTTEST</td>
</tr>
<tr>
<td>I. Experimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Third Grade</td>
<td>0.809</td>
<td>0.779</td>
<td>0.760</td>
<td>0.715</td>
</tr>
<tr>
<td>B. Fifth Grade</td>
<td>0.825</td>
<td>0.856</td>
<td>0.781</td>
<td>0.828</td>
</tr>
<tr>
<td>II. Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Third Grade</td>
<td>0.798</td>
<td>0.825</td>
<td>0.756</td>
<td>0.784</td>
</tr>
<tr>
<td>B. Fifth Grade</td>
<td>0.752</td>
<td>0.838</td>
<td>0.693</td>
<td>0.801</td>
</tr>
</tbody>
</table>
**The Statistical Treatment**

The multivariate analysis of covariance (Manocov) is the multivariate analogue of the analysis of covariance. It was used because the experimenter wished to test whether certain independent variables were useful in prediction of the dependent variables. Manocov also was used since two non-independent tests (pretest/posttest) of the difference between means within two independent groups (experimental/comparison) were made in the analysis of each null hypothesis. Since the pretest/posttest are non-independent, committing a Type I error is more likely. The Manocov eliminated the possibility of committing a Type I error. In all cases the values for the Manocov were tested against the critical value of .05 after the computation of an F value.

The t test was used mainly to test hypotheses about the difference between two means. It was used because the researcher wished to test whether the experimental program was better than a control program. This goal was accomplished by subjecting the pretest scores of the experimental group and control group to t test analysis, then comparing the obtained t value to the critical t value for statistical significance.

Program monitoring is critical investigation of events, developments, and experiences of the past which was employed to identify qualitative outcomes of this study. It was used because of its emphasis on primary and secondary sources. Primary sources rely upon
the original repository of historical data, such as eyewitness accounts, photographs, minutes of a meeting, and original records. A secondary source is an account or source of information one or more steps removed from the original source, for example, a newspaper article about an event.

Program monitoring was used specifically to measure Major Question III: "To what extent do students in a career education demonstrate the following skills related to career maturity at grades three and five: resume writing, job interview skills, parent involvement, and community contacts through service learning activities?" Examination of qualitative outcomes also were explored and discussed.

The analyses of data were conducted by applying an integrated system of computer programs. This system was the Statistical Package for the Social Sciences (SPSS). It offered the researcher a large number of statistical routines including t test and analysis of covariance.

Summary

This chapter presented procedures used in the study. Chapter IV presents the analysis of the findings.
CHAPTER IV

PRESENTATION AND ANALYSIS OF THE FINDINGS

The intent of this chapter was to present and examine those data collected in this research investigation. The chapter was organized into sections, each one containing data and analysis which were relevant to the individual hypothesis under consideration.

The primary aim of this study was to determine whether significant difference existed between participants exposed to the career education treatment and those subjects from which the treatment was withheld. The study concerned itself with the variables of academic achievement and career knowledge and attitude. The data was obtained from the administration of the California Achievement Test and the Ohio Career Education Inventory. Following the administrations of the pretests and posttests, mean gains were carefully examined and scrutinized for significance using the multivariate analysis of covariance. This information was used for the analyses discussed in this chapter.

**Major Null Hypothesis 1**

There is no significant difference in the basic academic skills achievement (mathematics, reading, language) mean scores of third and fifth grade students receiving the comprehensive career education
treatment when compared with non-comprehensive career education students. Third grade: **Fail to reject**. For students of the third grade the multivariate analysis of covariance F value for the total score on the California Achievement Test was 0.126 with \( p = 0.723 \), which was not significant at the .05 level of confidence. On the three variables measured by the California Achievement Test, the third grade experimental group achieved greater gains between the pretest measure and posttest measure as assessed by the total mean score for each. The third grade experimental group total pretest mean was 69.582 and total posttest mean equalled 76.936. Table 4 included the total control group pretest/posttest mean scores for third grade students which were 78.710 and 80.602, respectively. The treatment did not make a significant difference upon academic achievement of third grade students.

Fifth grade: **Reject**. The multivariate analysis of covariance was calculated on the California Achievement Test total scores for fifth grade students and yielded an F value of 6.489, which was significant at the .05 level of confidence (\( p = 0.011 \)). These data supported the observation that significant difference existed in basic academic skills achievement for students of grade five receiving the comprehensive career education treatment. Table 5 included the following pretest/posttest scores for the experimental and control groups: **Experimental group -- Pretest: 71.556; Posttest: 74.113. Control group -- Pretest: 71.382; Posttest: 79.805.** Individual F-tests were computed upon the variances for the mean index scores with
TABLE 4
THIRD GRADE TOTAL PRETEST-POSTTEST MEAN SCORES FOR EXPERIMENTAL AND CONTROL SCHOOL DISTRICTS FOR THREE CAT VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>F</th>
<th>Main Effects x Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
<td>Time x Treatment</td>
</tr>
<tr>
<td>Reading</td>
<td>Pre 70.782</td>
<td>78.172</td>
<td>58.702*</td>
</tr>
<tr>
<td></td>
<td>Post 76.364</td>
<td>79.226</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Pre 62.364</td>
<td>78.398</td>
<td>30.355*</td>
</tr>
<tr>
<td></td>
<td>Post 71.909</td>
<td>81.968</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>Pre 69.009</td>
<td>75.419</td>
<td>70.989*</td>
</tr>
<tr>
<td></td>
<td>Post 76.418</td>
<td>76.645</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Pre 69.582</td>
<td>78.710</td>
<td>78.143*</td>
</tr>
<tr>
<td></td>
<td>Post 76.936</td>
<td>80.602</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

TABLE 5
FIFTH GRADE TOTAL PRETEST-POSTTEST MEAN SCORES FOR EXPERIMENTAL AND CONTROL SCHOOL DISTRICTS FOR THREE CAT VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>F</th>
<th>Main Effects x Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
<td>Time x Treatment</td>
</tr>
<tr>
<td>Reading</td>
<td>Pre 76.398</td>
<td>71.276</td>
<td>66.081*</td>
</tr>
<tr>
<td></td>
<td>Post 76.827</td>
<td>79.626</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Pre 71.241</td>
<td>72.268</td>
<td>62.668*</td>
</tr>
<tr>
<td></td>
<td>Post 74.233</td>
<td>79.854</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>Pre 63.902</td>
<td>67.179</td>
<td>91.688*</td>
</tr>
<tr>
<td></td>
<td>Post 69.278</td>
<td>75.301</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Pre 71.556</td>
<td>71.382</td>
<td>77.247*</td>
</tr>
<tr>
<td></td>
<td>Post 74.113</td>
<td>79.805</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05
two of the three subtests found to be significant at the .05 level of confidence. The treatment made a significant difference upon academic achievement of fifth grade students.

Major Null Hypothesis 1: Minor Null Hypothesis 1.1

There is no significant difference in basic academic skills achievement mean scores of third grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students. Fail to reject. The mean pretest score for the treatment group on the California Achievement Test total scores subgroup was 69.582 and the pretest score for the control group on the same variable was 78.710. The experimental group posttest mean score was 76.364 and the control group posttest mean score was 79.226. Variances of mean scores on the totals of the California Achievement Test were tested for significance using the multivariate analysis of covariance techniques. Table 7 provided data indicating that the F test for equality of the groups, F = 0.126, did not show any significant difference between the two groups at the .05 level of confidence (p = 0.723). The results and critical values of the calculated measures of central tendency and multivariate analysis of covariance were presented in Table 6 and 7. Means and standard deviations for performance by treatment groups on the variables of reading, language, and mathematics for third grade students appeared in Tables 8, 10, and 12. Tables 9, 11, and 13 contained the summary of multivariate analyses of covariance for pretest/posttest scores on the same subtests.
### TABLE 6
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE TOTAL SCORE OF THE CALIFORNIA ACHIEVEMENT TEST FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>S.D.</th>
<th>Posttest Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>110</td>
<td>69.582</td>
<td>21.476</td>
<td>76.936</td>
<td>20.591</td>
</tr>
<tr>
<td>Control</td>
<td>93</td>
<td>78.710</td>
<td>22.526</td>
<td>80.602</td>
<td>20.895</td>
</tr>
</tbody>
</table>

### TABLE 7
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR PRETEST/POSTTEST SCORES ON THE TOTAL SCORE OF THE CALIFORNIA ACHIEVEMENT TEST FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>24267.758</td>
<td>78.143</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td></td>
<td>39.205</td>
<td>0.126</td>
<td>0.723</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>24944.953</td>
<td>12472.477</td>
<td>40.162</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>200</td>
<td>62110.922</td>
<td>310.554</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>202</td>
<td>87055.875</td>
<td>430.969</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P<.05
### TABLE 8

Means and Standard Deviations for Performance by Treatment Groups on the Reading Section of the California Achievement Test for Third Grade Students

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>110</td>
<td>70.782</td>
<td>21.098</td>
<td>76.364</td>
<td>21.019</td>
</tr>
<tr>
<td>Control</td>
<td>93</td>
<td>78.172</td>
<td>23.027</td>
<td>79.226</td>
<td>22.534</td>
</tr>
</tbody>
</table>

### TABLE 9

Summary of Multivariate Analysis of Covariance for Posttest Scores on the Reading Section of the California Achievement Test for Third Grade Students

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>21527.211</td>
<td>21527.211</td>
<td>58.702</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>18.477</td>
<td>18.477</td>
<td>0.050</td>
<td>0.823</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>21940.063</td>
<td>10970.031</td>
<td>29.914</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>200</td>
<td>73344.063</td>
<td>366.720</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>202</td>
<td>95284.125</td>
<td>471.703</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
### TABLE 10

**Means and Standard Deviations for Performance by Treatment Groups on the Language Section of the California Achievement Test for Third Grade Students**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Prettest Mean</th>
<th>Prettest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>110</td>
<td>62.364</td>
<td>21.665</td>
<td>71.909</td>
<td>21.500</td>
</tr>
<tr>
<td>Control</td>
<td>93</td>
<td>78.398</td>
<td>23.209</td>
<td>81.968</td>
<td>21.425</td>
</tr>
</tbody>
</table>

### TABLE 11

**Summary of Multivariate Analysis of Covariance for Posttest Scores on the Language Section of the California Achievement Test for Third Grade Students**

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>12203.730</td>
<td>30.355</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>895.028</td>
<td>2.226</td>
<td>0.137</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>17302.438</td>
<td>8651.219</td>
<td>21.519</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>200</td>
<td>80405.875</td>
<td>402.029</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>202</td>
<td>97708.313</td>
<td>483.704</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P < .05
### TABLE 12
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE
BY TREATMENT GROUPS ON THE MATHEMATICS SECTION OF THE
CALIFORNIA ACHIEVEMENT TEST FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>110</td>
<td>69.009</td>
<td>22.406</td>
<td>76.418</td>
<td>20.698</td>
</tr>
<tr>
<td>Control</td>
<td>93</td>
<td>75.419</td>
<td>23.337</td>
<td>76.645</td>
<td>21.864</td>
</tr>
</tbody>
</table>

### TABLE 13
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR
POSTTEST SCORES ON THE MATHEMATICS SECTION OF THE
CALIFORNIA ACHIEVEMENT TEST FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>23572.688</td>
<td>70.989</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>394.218</td>
<td>1.178</td>
<td>0.279</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>23755.313</td>
<td>11877.656</td>
<td>35.499</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>200</td>
<td>66918.938</td>
<td>344.594</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>202</td>
<td>90674.250</td>
<td>448.882</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
Major Null Hypothesis 1: Minor Null Hypothesis 1.2

There is no significant difference in basic academic skills total achievement mean scores of fifth grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students. Reject. The multivariate analysis of covariance F value was 6.489, with \( p < .05 \), which indicated significant difference in basic academic skills achievement (\( p = 0.011 \)). Tables 14, 16, 18, and 20 contained the means and standard deviations for performance by treatment groups on the variables total score, reading, language, and mathematics, respectively. The summary of multivariate analyses of covariance on the identical variables was reported in Tables 15, 17, 19, and 21. The total scores subscales for fifth grade students on the California Achievement Test showed an experimental group pretest mean score of 71.556 followed by a posttest mean score of 74.113. The control group pretest mean score was 71.382 and the posttest mean score was 79.805. On the California Achievement Test total score variable for fifth grade students, there was evidence of significant difference in favor of the treatment group.

Major Null Hypothesis 2

There is no significant difference in the career knowledge and attitude (work habits; work value; decision-making; awareness of and knowledge about work; awareness of means available for continuing and recurrent education, to include economics concepts; educational and
job placement; productive use of leisure time; and, reduction of bias) mean scores of third and fifth grade students receiving the comprehensive career education treatment when compared with non-comprehensive career education students. Third grade: Rejection. For students of the third grade the multivariate analysis of covariance F value for the total score on the Ohio Career Education Inventory was 12.578 with p = 0.001, which was significant at the .05 level of confidence. On the eight variables measured by the Ohio Career Education Inventory the third grade experimental group achieved greater gains between the pretest measure and posttest measure as assessed by the total mean score for each. The third grade experimental group total pretest mean was 39.670 and total posttest mean equaled 40.523. Table 22 included the total control group pretest/posttest mean scores for third grade students which were 31.465 and 41.377, respectively. Tables 24 and 25 provided means and standard deviations for performance and the summary of multivariate analysis of covariance for third grade students on total scores. The treatment made a significant difference upon career knowledge and attitudes of third grade students.

Fifth grade: Fail to reject. The multivariate analysis of covariance was calculated on the California Achievement Test total scores for fifth grade students and yielded an F value of 1.997, which was not significant at the .05 level of confidence (p = 0.159). These data supported the observation that no significant differences existed in career knowledge and attitudes for students of grade five.
receiving the comprehensive career education treatment. Table 23 included the following pretest/posttest scores for the experimental and control groups: Experimental group -- Pretest: 42.032; Posttest: 43.937. Control group -- Pretest: 43.439; Posttest: 43.455. Individual F tests were computed upon the variances for the mean index scores with one of the eight subtests found to be significant at the .05 level of confidence. Tables 26 and 27 recorded the means and standard deviations for performance and the summary of the multivariate analysis of covariance for fifth grade students on total scores. The treatment made no significant difference upon career knowledge and attitude of fifth grade students.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.1**

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Work Habits. Reject. The mean pretest score for the treatment group on the Ohio Career Education Inventory Work Habits subscale was 5.844 and the mean pretest score for the control group on the same variable was 4.561. The experimental group posttest mean score was 5.908 and the control group posttest mean score was 6.167. Variances on the mean scores of the Work Habits subscale of the Ohio Career Education Inventory were tested for significance using the multivariate analysis of covariance technique. Table 29 provided data indicating that the F test for equality of the groups, F = 5.197, showed a significant difference between the two
### TABLE 14

**MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE TOTAL SCORE OF THE CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>S.D.</th>
<th>Posttest Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>133</td>
<td>71.556</td>
<td>22.265</td>
<td>74.113</td>
<td>20.216</td>
</tr>
<tr>
<td>Control</td>
<td>123</td>
<td>71.382</td>
<td>28.447</td>
<td>79.805</td>
<td>21.035</td>
</tr>
</tbody>
</table>

### TABLE 15

**SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE TOTAL SCORE OF THE CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS**

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>25244.090</td>
<td>77.247</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>2120.425</td>
<td>6.489</td>
<td>0.011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>27314.563</td>
<td>13657.281</td>
<td>41.792</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>253</td>
<td>82679.125</td>
<td>326.795</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>255</td>
<td><strong>109993.688</strong></td>
<td>431.348</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
### TABLE 16
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE READING SECTION OF THE CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>133</td>
<td>76.398</td>
<td>20.943</td>
<td>76.827</td>
<td>20.462</td>
</tr>
<tr>
<td>Control</td>
<td>123</td>
<td>71.276</td>
<td>28.118</td>
<td>79.626</td>
<td>20.850</td>
</tr>
</tbody>
</table>

### TABLE 17
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE READING SECTION OF THE CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>22428.859</td>
<td>66.081</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>1427.216</td>
<td>4.205</td>
<td>0.041</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>22929.500</td>
<td>11464.750</td>
<td>33.778</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>253</td>
<td>85872.000</td>
<td>339.415</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>255</td>
<td>108801.500</td>
<td>426.672</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p < 0.05
### TABLE 18
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE LANGUAGE SECTION OF THE CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>S.D.</th>
<th>Posttest Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>133</td>
<td>71.241</td>
<td>23.203</td>
<td>74.233</td>
<td>18.046</td>
</tr>
<tr>
<td>Control</td>
<td>123</td>
<td>72.268</td>
<td>28.990</td>
<td>79.854</td>
<td>20.873</td>
</tr>
</tbody>
</table>

### TABLE 19
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE LANGUAGE SECTION OF THE CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>19085.340</td>
<td>62.668</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>1780.678</td>
<td>5.847</td>
<td>0.016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>21104.125</td>
<td>10552.063</td>
<td>34.648</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>253</td>
<td>77050.188</td>
<td>304.546</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>255</td>
<td>98154.313</td>
<td>384.919</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
TABLE 20
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE
BY TREATMENT GROUPS ON THE MATHEMATICS SECTIONS OF THE
CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>133</td>
<td>63.902</td>
<td>23.464</td>
<td>69.278</td>
<td>22.117</td>
</tr>
<tr>
<td>Control</td>
<td>123</td>
<td>67.179</td>
<td>28.846</td>
<td>75.301</td>
<td>23.112</td>
</tr>
</tbody>
</table>

TABLE 21
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR
POSTTEST SCORES ON THE MATHEMATICS SECTION OF THE
CALIFORNIA ACHIEVEMENT TEST FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>34507.930</td>
<td>91.688</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>1325.981</td>
<td>3.523</td>
<td>0.062</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>36825.813</td>
<td>18412.906</td>
<td>48.923</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>253</td>
<td>95220.063</td>
<td>376.364</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>255</td>
<td>132045.875</td>
<td>517.827</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
TABLE 22
THIRD GRADE PRETEST-POSTTEST MEAN SCORES FOR EXPERIMENTAL
AND CONTROL SCHOOL DISTRICTS FOR EIGHT OCEI VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
</tr>
<tr>
<td>Work Habits</td>
<td>Pre 5.844</td>
<td>4.561</td>
</tr>
<tr>
<td></td>
<td>Post 5.908</td>
<td>6.167</td>
</tr>
<tr>
<td>Work Values</td>
<td>Pre 4.468</td>
<td>2.904</td>
</tr>
<tr>
<td></td>
<td>Post 4.688</td>
<td>4.342</td>
</tr>
<tr>
<td>Decision Making</td>
<td>Pre 5.440</td>
<td>4.614</td>
</tr>
<tr>
<td></td>
<td>Post 5.505</td>
<td>5.386</td>
</tr>
<tr>
<td>Career Awareness</td>
<td>Pre 4.917</td>
<td>4.263</td>
</tr>
<tr>
<td></td>
<td>Post 4.954</td>
<td>5.579</td>
</tr>
<tr>
<td>Educational</td>
<td>Pre 4.119</td>
<td>3.351</td>
</tr>
<tr>
<td>Awareness</td>
<td>Post 4.394</td>
<td>4.193</td>
</tr>
<tr>
<td>Job Seeking Skills</td>
<td>Pre 4.817</td>
<td>3.465</td>
</tr>
<tr>
<td></td>
<td>Post 4.881</td>
<td>5.053</td>
</tr>
<tr>
<td>Leisure Time</td>
<td>Pre 5.202</td>
<td>4.035</td>
</tr>
<tr>
<td></td>
<td>Post 5.128</td>
<td>5.404</td>
</tr>
<tr>
<td>Reduction of Bias</td>
<td>Pre 4.862</td>
<td>4.272</td>
</tr>
<tr>
<td></td>
<td>Post 5.064</td>
<td>5.254</td>
</tr>
<tr>
<td>Total</td>
<td>Pre 39.670</td>
<td>31.456</td>
</tr>
<tr>
<td></td>
<td>Post 40.523</td>
<td>41.377</td>
</tr>
</tbody>
</table>

* p<.05
Table 23
Fifth grade pretest-posttest mean scores for experimental and control school districts for eight OCEI variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th></th>
<th>F</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
<td>Time x Treatment</td>
<td>Main Effects x Treatment</td>
</tr>
<tr>
<td>Work Habits Pre</td>
<td>5.905</td>
<td>5.947</td>
<td>13.832*</td>
<td>3.841*</td>
</tr>
<tr>
<td>Work Habits Post</td>
<td>6.105</td>
<td>5.742</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Values Pre</td>
<td>5.253</td>
<td>5.280</td>
<td>52.266*</td>
<td>1.793</td>
</tr>
<tr>
<td>Work Values Post</td>
<td>5.211</td>
<td>4.955</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision Making Pre</td>
<td>5.274</td>
<td>5.455</td>
<td>10.979*</td>
<td>0.029</td>
</tr>
<tr>
<td>Decision Making Post</td>
<td>5.495</td>
<td>5.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career Awareness Pre</td>
<td>5.284</td>
<td>5.606</td>
<td>38.354*</td>
<td>0.019</td>
</tr>
<tr>
<td>Career Awareness Post</td>
<td>5.589</td>
<td>5.697</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Awareness Pre</td>
<td>4.263</td>
<td>4.394</td>
<td>8.800*</td>
<td>0.609</td>
</tr>
<tr>
<td>Educational Awareness Post</td>
<td>4.600</td>
<td>4.765</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Seeking Skills Pre</td>
<td>5.105</td>
<td>5.348</td>
<td>30.831*</td>
<td>1.220</td>
</tr>
<tr>
<td>Job Seeking Skills Post</td>
<td>5.389</td>
<td>5.258</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure Time Pre</td>
<td>5.695</td>
<td>5.955</td>
<td>24.755*</td>
<td>0.159</td>
</tr>
<tr>
<td>Leisure Time Post</td>
<td>6.032</td>
<td>6.045</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of Bias Pre</td>
<td>5.253</td>
<td>5.455</td>
<td>55.190*</td>
<td>0.301</td>
</tr>
<tr>
<td>Reduction of Bias Post</td>
<td>5.516</td>
<td>5.492</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Pre</td>
<td>42.032</td>
<td>43.439</td>
<td>90.860*</td>
<td>1.997</td>
</tr>
<tr>
<td>Total Post</td>
<td>43.937</td>
<td>43.455</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p<.05
### TABLE 24
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE TOTAL SCORE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>39.670</td>
<td>7.789</td>
<td>40.523</td>
<td>7.878</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>31.465</td>
<td>7.583</td>
<td>41.377</td>
<td>7.452</td>
</tr>
</tbody>
</table>

### TABLE 25
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE TOTAL SCORE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>1742.505</td>
<td>34.121</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>642.325</td>
<td>12.578</td>
<td>0.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>1783.172</td>
<td>891.586</td>
<td>17.458</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>11235.172</td>
<td>51.069</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>13018.344</td>
<td>58.641</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
TABLE 26
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE TOTAL SCORE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>42.032</td>
<td>8.028</td>
<td>43.937</td>
<td>8.683</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>43.439</td>
<td>6.577</td>
<td>43.455</td>
<td>8.372</td>
</tr>
</tbody>
</table>

TABLE 27
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE TOTAL SCORE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>S</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>4695.078</td>
<td>90.860</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>103.199</td>
<td>1.997</td>
<td>0.159</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>4707.930</td>
<td>2353.965</td>
<td>45.554</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>11574.941</td>
<td>51.674</td>
<td>72.048</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>16282.871</td>
<td></td>
<td></td>
<td>p&lt;.05</td>
</tr>
</tbody>
</table>
### TABLE 28

MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE WORK HABITS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>5.844</td>
<td>1.523</td>
<td>5.908</td>
<td>1.561</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>4.561</td>
<td>1.678</td>
<td>6.167</td>
<td>1.469</td>
</tr>
</tbody>
</table>

### TABLE 29

SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE WORK HABITS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>18.582</td>
<td>8.372</td>
<td>0.004</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>11.536</td>
<td>5.197</td>
<td>0.024</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>22.303</td>
<td>11.152</td>
<td>5.024</td>
<td>0.007</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>488.320</td>
<td>2.220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>510.624</td>
<td>2.300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p < .05
groups at the .05 level of confidence (p = 0.024) in favor of the treatment. The results of the calculated measures of central tendency and multivariate analysis of covariance were presented in Tables 28 and 29. Means and standard deviations for performances by treatment groups on the Work Habits subscale for third grade students appeared in Table 28. The summary of multivariate analysis of covariance for pretest/posttest scores on the same subscale was contained in Table 29.

Major Null Hypothesis 2: Minor Null Hypothesis 2.2

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Work Habits. Reject. The multivariate analysis of covariance F value was 3.841, with p .05, which indicated significant differences in Work Habits (p = 0.051). Table 30 contained the means and standard deviations for performance by treatment groups on the variable Work Habits. The summary of the multivariate analysis of covariance on the identical variable was reported in Table 31. The Work Habits subscale for fifth grade students on the Ohio Career Education Inventory showed an experimental group pretest mean score of 5.905 followed by a posttest mean score of 6.105. The control group pretest mean score was 5.947 and the posttest mean score was 5.500. On the Ohio Career Education Inventory Work Habits subscale for fifth grade students, there existed evidence of significant difference in favor of the treatment group.
### TABLE 30
**Means and Standard Deviations for Performance by Treatment Groups on the Work Habits Subscale of the Ohio Career Education Inventory for Fifth Grade Students**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean S.D.</td>
<td>Mean S.D.</td>
</tr>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td>Experimental</td>
<td>5.905 1.230</td>
<td>6.105 1.410</td>
</tr>
<tr>
<td>Control</td>
<td>5.947 1.107</td>
<td>5.742 1.501</td>
</tr>
</tbody>
</table>

### TABLE 31
**Summary of Multivariate Analysis of Covariance for Posttest Scores on the Work Habits Subscale of the Ohio Career Education Inventory for Fifth Grade Students**

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>28.042</td>
<td>13.832</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>7.788</td>
<td>3.841</td>
<td>0.051</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>35.315</td>
<td>17.657</td>
<td>8.710</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>454.133</td>
<td>1.999</td>
<td>2.027</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>489.448</td>
<td>2.166</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$p<.05$
Major Null Hypothesis 2: Minor Null Hypothesis 2.3

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Work Values. *Fail to reject.*

The mean pretest score for the experimental group on the Work Values subscale was 4.468 and the mean pretest score for the control group was 2.904. Posttest mean scores were determined to be 4.688 for the experimental group and 4.342 for the control group at the third grade level. Mean posttest scores on the Work Values subscale of the Ohio Career Education Inventory were tested for significance using the multivariate analysis of covariance technique. The results of these statistical calculations were presented in Tables 32 and 33. Table 33 provided data indicating that the F test for equality of the groups, \( F = 0.006 \), did not show any significant difference between the two groups at the .05 level of confidence. Therefore, the evidence failed to reject the null hypothesis. On the Work Values subscale for third grade students, there was no evidence of significant difference between the two groups.

Major Null Hypothesis 2: Minor Null Hypothesis 2.4

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Work Values. *Fail to reject.*

The mean pretest scores for the experimental group on the Work Values
### TABLE 32
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE WORK VALUES SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>4.468</td>
<td>1.398</td>
<td>4.688</td>
<td>1.412</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>2.904</td>
<td>1.551</td>
<td>4.342</td>
<td>1.438</td>
</tr>
</tbody>
</table>

### TABLE 33
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE WORK VALUES SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>25.815</td>
<td>13.419</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.011</td>
<td>0.006</td>
<td>0.941</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>32.485</td>
<td>16.242</td>
<td>8.443</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>423.224</td>
<td>1.924</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>455.709</td>
<td>2.053</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
subscale was 5.253 and mean pretest scores for the control group was 5.280. Posttest mean scores were determined to be 5.211 for the experimental group and 4.955 for the control group at the fifth grade level. Mean posttest scores on the Work Values variable of the Ohio Career Education Inventory were tested for significance using the multivariate analysis of covariance technique. The results of these statistical calculations were presented in Tables 34 and 35. Table 35 provided data indicating that the F test for equality of the groups, F = 1.793, did not show any significant difference between the two groups at the .05 level of confidence. Therefore, the evidence failed to reject the null hypothesis. On the Work Values subscale for fifth grade students, there was no evidence of significant difference between the two groups.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.5**

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Decision-Making. **Fail to reject.** Pretest and posttest mean scores were calculated for the Decision-Making construct for third grade students and produced the following results on the Career Education Inventory: Experimental group -- Pretest: 5.440; Posttest: 5.505. Control groups -- Pretest: 4.614; Posttest: 5.386. The posttest scores between the two groups on the Decision-Making subscale of the Ohio Career Education Inventory were compared using the multivariate analysis of covariance technique. The
TABLE 34
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE WORK VALUES SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>S.D.</th>
<th>Posttest Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>5.253</td>
<td>1.304</td>
<td>5.211</td>
<td>1.557</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>5.280</td>
<td>1.474</td>
<td>4.955</td>
<td>1.734</td>
</tr>
</tbody>
</table>

TABLE 35
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE WORK VALUES SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>117.581</td>
<td>52.266</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>4.033</td>
<td>1.793</td>
<td>0.182</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>121.200</td>
<td>60.600</td>
<td>26.938</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>503.920</td>
<td>2.250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>625.120</td>
<td>2.766</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
results of the means and standard deviations calculations and multivariate analysis of covariance are presented in Tables 36 and 37.

Table 37 provided data indicating that the F test for equality of the groups, $F = 0.133$, did not show any significant difference between the two groups at the .05 level of confidence. Therefore, this evidence failed to reject the null hypothesis. On the Decision-Making subscale, there was no evidence of significant difference between the groups.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.6**

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Decision-Making. Fail to reject.

Pretest and posttest mean scores were calculated for the Decision-Making construct for fifth grade students and produced the following results: Experimental group -- Pretest: 5.274; Posttest: 5.495.

Control group -- Pretest: 5.455; Posttest: 5.500. The posttest scores between the two groups on the Decision-Making subscale of the Ohio Career Education Inventory were compared using the multivariate analysis of covariance technique. The results of the means and standard deviations calculations and multivariate analysis of covariance are presented in Tables 38 and 39. Table 39 provided data indicating that the F test for equality of the groups, $F = 0.029$, did not show any significant difference between the two groups at the .05 level of confidence. Therefore, this evidence failed to reject the null hypothesis. On the Decision-Making subscale, there was no evidence of significant difference between the groups.
### TABLE 36
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE
BY TREATMENT GROUPS ON THE DECISION-MAKING SUBSCALE OF THE
OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>5.440</td>
<td>1.417</td>
<td>5.505</td>
<td>1.653</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>4.614</td>
<td>1.537</td>
<td>5.386</td>
<td>1.399</td>
</tr>
</tbody>
</table>

### TABLE 37
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR
POSTTEST SCORES ON THE DECISION-MAKING SUBSCALE OF THE
OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>26.746</td>
<td>12.020</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.296</td>
<td>0.133</td>
<td>0.716</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>27.530</td>
<td>13.765</td>
<td>6.186</td>
<td>0.002</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>489.508</td>
<td>2.225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>517.038</td>
<td>2.329</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
### TABLE 38

MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE DECISION-MAKING SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>5.274</td>
<td>1.519</td>
<td>5.495</td>
<td>1.744</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>5.455</td>
<td>1.495</td>
<td>5.500</td>
<td>1.438</td>
</tr>
</tbody>
</table>

### TABLE 39

SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE DECISION-MAKING SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>26.013</td>
<td>10.979</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.070</td>
<td>0.029</td>
<td>0.864</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>26.015</td>
<td>13.007</td>
<td>5.490</td>
<td>0.005</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>530.720</td>
<td>2.369</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>556.735</td>
<td>2.463</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
Major Null Hypothesis 2: Minor Null Hypothesis 2.7

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Career Awareness. Reject. Table 40 provided the pretest/posttest mean scores disclosing that the mean scores for the treatment group were: Pre: 4.917/Post: 4.954 and for the control group were: Pre: 4.263/Post: 5.579, respectively. The mean scores on the posttest were compared using the multivariate analysis of covariance technique. The calculation of the mean and standard deviations and the results of the multivariate analysis of covariance are presented in Tables 40 and 41. Table 41 provided data indicating that the F test for equality of the groups, F = 16.536, showed significant difference between the two groups at the .05 level of confidence (p = 0.001). Therefore, this evidence rejected the null hypothesis. On the Career Awareness subscale for third grade students, there was evidence of a significant difference between the groups in favor of the treatment on the Ohio Career Education Inventory.

Major Null Hypothesis 2: Minor Null Hypothesis 2.8

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Career Awareness. Fail to reject. Table 42 provided the pretest/posttest mean scores disclosing that the mean scores for the treatment group were: Pre: 5.284/Post: 5.589 and for the control group were: Pre: 5.606/Post: 5.697,
### TABLE 40
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE CAREER AWARENESS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>4.917</td>
<td>1.673</td>
<td>4.954</td>
<td>1.723</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>4.263</td>
<td>1.765</td>
<td>5.579</td>
<td>1.794</td>
</tr>
</tbody>
</table>

### TABLE 41
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE CAREER AWARENESS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>111.586</td>
<td></td>
<td>42.846</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>43.065</td>
<td></td>
<td>16.536</td>
<td>0.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>133.340</td>
<td>66.670</td>
<td>25.600</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>572.957</td>
<td></td>
<td>2.604</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>706.297</td>
<td></td>
<td>3.182</td>
<td></td>
</tr>
</tbody>
</table>

*p* < .05
TABLE 42
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE 
BY TREATMENT GROUPS ON THE CAREER AWARENESS SUBSCALE OF THE 
OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>5.284</td>
<td>1.373</td>
<td>5.589</td>
<td>1.653</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>5.606</td>
<td>1.407</td>
<td>5.697</td>
<td>1.403</td>
</tr>
</tbody>
</table>

TABLE 43
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR 
POSTTEST SCORES ON THE CAREER AWARENESS SUBSCALE OF THE 
OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>75.267</td>
<td>38.354</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.037</td>
<td>0.019</td>
<td>0.891</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>75.906</td>
<td>37.953</td>
<td>19.340</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>439.588</td>
<td>1.962</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>515.494</td>
<td>2.281</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
respectively. The mean scores on the posttest were compared using the multivariate analysis of covariance technique. The calculation of the means and standard deviations and the results of the multivariate analysis of covariance were presented in Tables 42 and 43. Table 43 provided data indicating that the $F$ test for equality of the groups, $F = 0.019$, did not show any significant difference between the two groups. Therefore, this evidence failed to reject the null hypothesis. On the Career Awareness subscale for fifth grade students, there was no evidence of a significant difference between the groups on the Ohio Career Education Inventory.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.9**

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Educational Awareness. **Fail to reject.** The mean pretest score for the treatment group on the Ohio Career Education Inventory Educational Awareness subscale was 4.119 and the mean pretest score for the control group on the same variable was 3.351. The experimental group posttest mean score was 4.349 and the control group posttest mean score was 4.193. Variances on the mean scores of the Educational Awareness subscale for the Ohio Career Education Inventory were tested for significance using the multivariate analysis of covariance technique. Table 45 provided data indicating that the $F$ test for equality of the groups, $F = 0.113$, showed no significant difference between the two groups at the .05 level of confidence ($p = 0.737$). The results of the calculated measures of
central tendency and multivariate analysis of covariance were presented in Table 44 and 45. Means and standard deviations for performance by treatment groups on the Educational Awareness subscale for third grade students appeared in Table 44. The summary of multivariate analysis of covariance for pretest/posttest scores on the same subscale was contained in Table 45.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.10**

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Educational Awareness. Fail to reject. The multivariate analysis of covariance F value was 0.609, with p .05, which indicated no significant difference (p = 0.436) on the Educational Awareness subscale for fifth grade students. Table 46 contained the means and standard deviations for performance by treatment groups on the Educational Awareness variable. The summary of the multivariate analysis of covariance on the identical variable was reported in Table 47. The Educational Awareness subscale for fifth grade students on the Ohio Career Education Inventory showed an experimental group pretest mean score of 4.263 followed by a posttest mean score of 4.600. The control group pretest mean score was 4.394 and the posttest mean score was 4.765. On the Ohio Career Education Inventory Educational Awareness subscale, there existed no evidence of significant difference in favor of the treatment group.
### TABLE 44

Means and Standard Deviations for Performance by Treatment Groups on the Educational Awareness Subscale of the Ohio Career Education Inventory for Third Grade Students

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Prettest Mean</th>
<th>Prettest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>4.119</td>
<td>1.289</td>
<td>4.394</td>
<td>1.054</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>3.351</td>
<td>1.113</td>
<td>4.193</td>
<td>1.088</td>
</tr>
</tbody>
</table>

### TABLE 45

Summary of Multivariate Analysis of Covariance for Posttest Scores on the Educational Awareness Subscale of the Ohio Career Education Inventory for Third Grade Students

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>12.486</td>
<td>11.383</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.124</td>
<td>0.113</td>
<td>0.737</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>14.748</td>
<td>7.374</td>
<td>6.723</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>241.304</td>
<td>1.097</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>256.052</td>
<td>1.153</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
### TABLE 46
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE EDUCATIONAL AWARENESS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>S.D.</th>
<th>Posttest Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>4.263</td>
<td>1.169</td>
<td>4.600</td>
<td>1.462</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>4.394</td>
<td>1.358</td>
<td>4.765</td>
<td>1.247</td>
</tr>
</tbody>
</table>

### TABLE 47
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE EDUCATIONAL AWARENESS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>15.291</td>
<td>8.800</td>
<td>0.003</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>1.058</td>
<td>0.609</td>
<td>0.436</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>16.798</td>
<td>8.399</td>
<td>4.834</td>
<td>0.009</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>389.219</td>
<td>1.738</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>406.017</td>
<td>1.797</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
Major Null Hypothesis 2: Minor Null Hypothesis 2.11

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Job Seeking. \textit{Reject}. The mean pretest score for the experimental group on the Job Seeking subscale was 4.817 and the mean pretest score for the control group was 3.465. Posttest mean scores were determined to be 4.881 for the experimental group and 5.053 for the control group at the third grade level. Mean posttest scores on the Job Seeking subscale of the Ohio Career Education Inventory were tested for significance using the multivariate analysis of covariance technique. The results of these statistical calculations were presented in Tables 48 and 49. Table 49 provided data indicating that the F test for equality of the groups, $F = 4.015$, showed significant difference between the two groups at the .05 level of confidence ($p = 0.046$). Therefore, the evidence rejected the null hypothesis. On the Job Seeking subscale for third grade students, there was evidence of significant difference between the two groups in favor of the treatment.

Major Null Hypothesis 2: Minor Null Hypothesis 2.12

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Job Seeking. \textit{Fail to reject}. The mean pretest scores for the experimental group on the Job Seeking subscale was 5.101 and mean pretest scores for the control group was
### TABLE 48

**Means and Standard Deviations for Performance by Treatment Groups on the Job Seeking Subscale of the Ohio Career Education Inventory for Third Grade Students**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean (S.D.)</th>
<th>Posttest Mean (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>4.817 (1.479)</td>
<td>4.881 (1.470)</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>3.465 (1.746)</td>
<td>5.053 (1.539)</td>
</tr>
</tbody>
</table>

### TABLE 49

**Summary of Multivariate Analysis of Covariance for Posttest Scores on the Job Seeking Subscale of the Ohio Career Education Inventory for Third Grade Students**

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>21.151</td>
<td>9.695</td>
<td>0.002</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>8.760</td>
<td>4.015</td>
<td>0.046</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>22.798</td>
<td>11.399</td>
<td>5.225</td>
<td>0.006</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>279.968</td>
<td>2.182</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>502.766</td>
<td>2.265</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p < .05
Posttest mean scores were determined to be 5.389 for the experimental group and 5.258 for the control group at the fifth grade level. Mean posttest scores on the Job Seeking subscale of the Ohio Career Education Inventory were tested for significance using the multivariate analysis of covariance technique. The results of these statistical calculations were presented in Tables 50 and 51. Table 51 provided data indicating that the F test for equality of the groups, \( F = 1.220 \), did not show any significant difference between the two groups at the .05 level of confidence. Therefore, the evidence failed to reject the null hypothesis. On the Job Seeking subscale for fifth grade students, there was no evidence of significant difference between the two groups.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.13**

There was no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Leisure Time. **Reject.** Pretest and posttest mean scores were determined for the Leisure Time subscale for third grade students and produced the following results on the Ohio Career Education Inventory: Experimental groups -- pretest: 5.202; Posttest: 5.128. Control group -- Pretest: 4.035; Posttest: 5.404. The posttest scores between the two groups on the Leisure Time subscale of the Ohio Career Education Inventory were compared using the multivariate analysis of covariance technique. The results of the means and standard deviations calculations and multivariate analysis of
TABLE 50
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE
BY TREATMENT GROUPS ON THE JOB SEEKING SUBSCALE OF THE
OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>5.105</td>
<td>1.660</td>
<td>5.389</td>
<td>1.504</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>5.348</td>
<td>1.467</td>
<td>5.258</td>
<td>1.571</td>
</tr>
</tbody>
</table>

TABLE 51
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR
POSTTEST SCORES ON THE JOB SEEKING SUBSCALE OF THE
OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>64.826</td>
<td>30.831</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>2.564</td>
<td>1.220</td>
<td>0.271</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>65.787</td>
<td>32.894</td>
<td>15.644</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>470.990</td>
<td>2.103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>536.777</td>
<td>2.375</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
covariance are presented in Tables 56 and 57. Table 57 provided data indicating that the F test for equality of the groups, F = 7.844, showed significant difference between the two groups at the .05 level of confidence (p = 0.006). Therefore, this evidence rejected the null hypothesis. On the Leisure Time subscale, there was evidence of significant difference between the groups in favor of the treatment.

**Major Null Hypothesis 2: Minor Null Hypothesis 2.14**

There is no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Leisure Time. **Fail to reject.**

Pretest and posttest mean scores were calculated for the Leisure Time construct for fifth grade students and produced the following results:

- Experimental group -- Pretest: 5.695; Posttest: 6.032.
- Control group -- Pretest: 5.955; Posttest: 6.045.

The posttest scores between the two groups on the Leisure Time subscale of the Ohio Career Education Inventory were compared using the multivariate analysis of covariance technique. The results of the means and standard deviations calculations and multivariate analysis of covariance are presented in Tables 58 and 59. Table 59 provided data indicating that the F test for equality of the groups, F = 0.159, did not show any significant difference between the two groups at the .05 level of confidence. Therefore, this evidence failed to reject the null hypothesis. On the Leisure Time subscale, there was no evidence of significant difference between the groups.
### TABLE 52
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE REDUCTION OF BIAS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>4.862</td>
<td>1.542</td>
<td>5.064</td>
<td>1.448</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>4.272</td>
<td>1.441</td>
<td>5.254</td>
<td>1.419</td>
</tr>
</tbody>
</table>

### TABLE 53
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE REDUCTION OF BIAS SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>19.972</td>
<td>10.120</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>5.124</td>
<td>2.597</td>
<td>0.109</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>21.987</td>
<td>10.994</td>
<td>5.570</td>
<td>0.004</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>434.189</td>
<td>1.974</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>456.176</td>
<td>2.055</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
### TABLE 54

**Means and Standard Deviations for Performance by Treatment Groups on the Reduction of Bias Subscale of the Ohio Career Education Inventory for Fifth Grade Students**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>5.253</td>
<td>1.827</td>
<td>5.516</td>
<td>1.786</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>5.455</td>
<td>1.540</td>
<td>5.492</td>
<td>1.932</td>
</tr>
</tbody>
</table>

### TABLE 55

**Summary of Multivariate Analysis of Covariance for Posttest Scores on the Reduction of Bias Subscale of the Ohio Career Education Inventory for Fifth Grade Students**

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>155.908</td>
<td>55.190</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.850</td>
<td>0.301</td>
<td>0.584</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>155.939</td>
<td>77.969</td>
<td>27.600</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>632.790</td>
<td>2.825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>788.729</td>
<td>3.490</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
Major Null Hypothesis 2: Minor Null Hypothesis 2.15

There is no significant difference in the mean scores of third grade students in the treatment group when compared to those students in the control group on the subscale of Reduction of Bias. Fail to reject. Table 52 provided the posttest scores disclosing that the mean scores for the treatment group were: Pre: 4.862/Post: 5.064 and for the control group were: Pre: 4.272/Post: 5.254, respectively. The mean scores on the posttest were compared using the multivariate analysis of covariance technique. The calculation of the mean and standard deviations and the results of the multivariate analysis of covariance are presented in Tables 52 and 53. Table 53 provided data indicating that the F test for equality of the groups, F = 2.597, did not show any significant difference between the two groups at the .05 level of confidence (p = 0.109). Therefore, this evidence failed to reject the null hypothesis. On the Reduction of Bias subscale for third grade students, there was no evidence of a significant difference between the groups as measured by the Ohio Career Education Inventory.

Major Null Hypothesis 2: Minor Null Hypothesis 2.16

There was no significant difference in the mean scores of fifth grade students in the treatment group when compared to those students in the control group on the subscale of Reduction of Bias. Fail to reject. Table 54 provided the pretest/posttest mean scores disclosing that the mean scores for the treatment group were: Pre: 5.253/Post: 5.516 and for the control group were: Pre: 5.455/Post: 5.492,
### TABLE 56
MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE LEISURE TIME SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>109</td>
<td>5.202</td>
<td>1.704</td>
<td>5.128</td>
<td>1.656</td>
</tr>
<tr>
<td>Control</td>
<td>114</td>
<td>4.035</td>
<td>1.672</td>
<td>5.404</td>
<td>1.589</td>
</tr>
</tbody>
</table>

### TABLE 57
SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE LEISURE TIME SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR THIRD GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>53.533</td>
<td>22.301</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>18.829</td>
<td>7.844</td>
<td>0.006</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>57.749</td>
<td>28.875</td>
<td>12.029</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>220</td>
<td>528.094</td>
<td>2.400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>222</td>
<td>585.843</td>
<td>2.639</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<.05
**TABLE 58**

MEANS AND STANDARD DEVIATIONS FOR PERFORMANCE BY TREATMENT GROUPS ON THE LEISURE TIME SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Students</th>
<th>Pretest Mean</th>
<th>Pretest S.D.</th>
<th>Posttest Mean</th>
<th>Posttest S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>95</td>
<td>5.695</td>
<td>1.578</td>
<td>6.032</td>
<td>1.634</td>
</tr>
<tr>
<td>Control</td>
<td>132</td>
<td>5.955</td>
<td>1.178</td>
<td>6.045</td>
<td>1.461</td>
</tr>
</tbody>
</table>

**TABLE 59**

SUMMARY OF MULTIVARIATE ANALYSIS OF COVARIANCE FOR POSTTEST SCORES ON THE LEISURE TIME SUBSCALE OF THE OHIO CAREER EDUCATION INVENTORY FOR FIFTH GRADE STUDENTS

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time x Treatment</td>
<td>1</td>
<td>52.804</td>
<td>24.755</td>
<td>0.001</td>
</tr>
<tr>
<td>Main Effects x Treatment</td>
<td>1</td>
<td>0.339</td>
<td>0.159</td>
<td>0.690</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>2</td>
<td>52.815</td>
<td>26.408</td>
<td>12.380</td>
<td>0.001</td>
</tr>
<tr>
<td>Residual</td>
<td>224</td>
<td>477.815</td>
<td>2.133</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>226</td>
<td>530.630</td>
<td>2.348</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P<.05
respectively. The mean scores on the posttest were compared using the multivariable analysis of covariance technique. The calculation of the means and standard deviations and the results of the multivariate analysis of covariance are presented in Tables 54 and 55. Table 55 provided data indicating that the F test for equality of the groups, \( F = 0.301 \), did not show any significant difference between the two groups. Therefore, this evidence failed to reject the null hypothesis.

On the Reduction of Bias subscale for fifth grade students, there was no evidence of a significant difference between the groups as measured by the Ohio Career Education Inventory.

Qualitative Data

Significant career education dimensions do not solely lend themselves to quantitative examination. Program effectiveness for this research study transcended statistical analysis and included scrutiny of career education activities to which all children at grades K-6 were exposed. Hoyt (1973) identified important academic learning opportunities for children that went beyond traditional education curricular definition. Hoyt provided the following rationale to substantiate this developmental thought on academic learning through career awareness and exploration:

The basic rationale behind this component of career education is a dual objective: that the substantive content of career education and the basic educative skills which form the heart of elementary education that can both be made most meaningful to pupils if they are taught together...it rejects the notion that the substance of career education should be thought of as another subject to be added to the already overcrowded elementary school curriculum (p. 29).
Hoyt (1973) continued:

Career education is expected to occur in many ways and at many times in the lives of individuals. Its success, at any level and in any setting, is dependent upon the extent to which we can give priority to the individual as our primary concern. Leaders in the career education movement have emphasized repeatedly the necessity for its beginnings during the elementary school years. Most persons making such pronouncements have no clear understanding of what is being asked of the elementary teacher or the extent to which elementary school practices are being requested to change (p. 24).

In this study, clarity was established in relation to the positive and productive unanticipated outcomes that benefitted children through exposure to career education programming. Those qualitative outcomes that formatively evolved included: school - community - labor market linkage; home and family involvements; preservice and inservice training; relevancy of subject areas to life's work; positive reinforcement for positive attitude toward self; use of community resources for materials, sites, and service learning; good work habits; cognitive-experiential activities; experiential choice making activities; reduction of bias; productive use of leisure time; meaningful work values; and, economic education, free enterprise and organized labor.

Many of these differentiations have been identified as qualitative outcomes and provided all students in grades kindergarten through six opportunities to increase their skill level through exposure to career education activities. Educational opportunities that these students received as a direct result of the career education treatment were recorded on the monitoring form (Appendix E). Table 60 depicted
career education elements which contained students' activities delivered by teachers and parents.

Activities were monitored for each teacher. These activities were identified in the following nine program areas as described in the Career Education Opportunity Guide for Parents and Students:

1. **PRODUCTION** by producing things, ideas, or services through work effort.

2. **COOPERATION** by participating as part of a group working together.

3. **SKILLS** by applying themselves to tasks which go beyond play.

4. **USE OF TOOLS** by using and operating tools as extensions of themselves.

5. **DIVISION OF LABOR** by performing parts of a total work task and seeing how their parts contribute to the whole.

6. **SELF-DISCIPLINE** by sticking with projects to completion and tolerating some boredom at points along the way.

7. **ROLE MODELING** by engaging in cooperative work efforts with adult role models.

8. **MASTERY** by working to achieve realistic goals.

9. **SELF-ESTEEM** by feeling a personal sense of accomplishment and self-respect from what they have done.

To help meet elementary children's needs, the experimental school district Career Education efforts provided career motivation activities. It was verified that each teacher conducted two to five activities in each area for a total of forty-one activities per teacher. Across the district the students were exposed to a total of 738 activities.
Table 60
Career Education Treatment Elements

1. Improving Academic Achievement. Seeking to improve academic achievement through using a career emphasis to relate subject matter to its use in life's work. (5 activities)
   * Parent Involvement:
   Career Implications of Homework Assignments. Helping their children understand and appreciate the career implications of mater represented by homework they have been assigned.

2. Positive Reinforcement. Seeking to improve academic achievement through using a career emphasis to provide positive reinforcement for students' accomplishments. (5 activities)

3. Community Resources. Seeking to improve academic achievement through using a career emphasis in making use of the broader community in the teaching/learning process. (Field trips; classroom speakers; telexplorer; 5 activities)
   * Parent Involvement:
   Significance of work. Helping the children understand the nature and positive social significance of the work done by parents (paid and unpaid).

4. Good Work Habits. Consciously and conscientiously rewarding students for such basic work habits as: a) completing assignments, b) coming to work (school) on time, c) doing the best they can, and d) cooperating with fellow workers (students). (2 activities)
   * Parent Involvement:
   Work in the Home/Family Structure. Providing opportunities within the home/family structure for their children to experience work as a family member, in ways that help the child understand his/her worth and his/her own contributions to the well-being of the family as a social unit.

5. Cognitive-experiential Approach. Combining a cognitive-experiential approach in the teaching/learning process through emphasizing the dual desirability of "doing to learn" and "learning to do." (Hands-on activities; 5 activities)
   * Parent Involvement:
   Parent Involvement in Career Awareness. Helping their child find and engage in career awareness experiences within family activities.

6. Decision Making Skills. Helping students acquire decision-making skills through using a project activity approach in the teaching/learning process that allows students to actually engage in the decision-making process. (2 activities)

7. Reduction of Bias. Systematically attempting to reduce biases students may have with respect to race, sex, or handicapping conditions in ways that will maximize freedom of choice for all (5 activities)
   * Parent Involvement:
   Reduction of Bias. Helping their children develop attitudes devoid of bias with respect to race, sex, physical or mental handicaps as deterrents to full freedom of educational/occupation choice for all.

(continued)
8. Productive Use of Leisure Time. Helping student discover ways in which the subject matter being learned can be valuable to student in the productive use of leisure time. (3 activities)

* Parent Involvement:

Productive Use of Leisure Time. Helping their children discover and use ways of making productive use of leisure time.

9. Meaningful Work Values. Helping students discover and develop a personally meaningful set of work values through allowing them to observe, study, and discuss work values present among persons employed in various occupations. (Work in the home, school, and community; 4 activities)

* Parent Involvement:

Significance of Work. Helping their children understand the nature and positive social significance of the work done by parents (paid and unpaid).

10. Economic Education/Free Enterprise/Organized Labor. Helping students become more knowledgeable regarding the free enterprise system, including understandings of both economic education and organized labor. (Infusion in social studies, math, English; 3 activities)
While all students engaged in the activities, teachers were asked to identify students who successfully completed those activities toward the following outcomes:

- positive self-concept
- valuing and choice making skills
- economic awareness
- community awareness (achieved through field trips, guest speakers, and other reality-based activities)
- technological awareness
- environmental awareness
- awareness of work roles
- good work habits
- group cooperation
- fulfillment of responsibilities
- development of basic skills for future success
- service to others, structured for learning value
- interaction with varied workers
- simulations of real life situations
- parent involvement
- non-stereotypic attitudes and goals.

No attempt was made as a part of this study to quantify these outcomes on dependent measures. However, the data are available which indicate the degree of success of students in achieving these qualitative outcomes. Recommendation was made for instrumentation and design which quantifies these data.

A second major area of the qualitative dimension of the study emphasized the belief that parent involvement with the educational growth and development of their children was considered to be of
critical importance at the elementary level. Parents assisted with elementary level career development by:

1. Pointing out examples of workers providing services and making products in the community. Make an effort to (1) identify both men and women in varied occupations; (2) identify occupations at various skill levels; and (3) identify different functions, tasks, life styles, and decisions faced by workers.

2. Learning alongside children in such activities as parent-child music lessons or scouting, and helping children adjust to periods of boredom and/or frustration.

3. Reinforcing that work tasks at home should be performed to completion within a certain time frame, and in an effective way. Help children approach work tasks and assignments in a positive manner, and try not to assign these tasks by sex. Express recognition and appreciation for jobs well done.

4. Allowing both boys and girls to face different situations which will challenge them to make decisions.

5. Introducing children early to a wide range of sports and hobbies, so that they may develop several interests and avenues to accomplishment. Encourage girls as well as boys to participate in team sports if they are interested.

6. Listening for whether children classify certain activities and work as primarily masculine or feminine. Broaden their perspectives by providing non-stereotypic examples and experiences. For example, a young girl's statement that her main career interests are teaching and nursing may reflect narrow exposures and options.

7. Avoiding labels such as "sissy" or "tomboy" in discussing children's behavior. Examine your own expectations for sons and daughters. Do they truly foster equal aspirations and options.

9. Helping children select leisure reading material which depicts different sexes, races, and ethnic backgrounds in a variety of work and social roles... Talk to librarians and/or teachers about book selections.

10. Participating in the school's career education effort as a guest speaker, activity leader, or field trip sponsor.

11. Expressing interest in children's school work... To them it is real work (Erlanger and Dallman, pp. 12-13).

Parent, student, and teacher questionnaires were distributed, completed, and returned for compilation and interpretation. Opportunity and involvement levels were two areas given critical evaluation. These questionnaires were located in Appendices F-H. Approximately ninety activities were conducted involving parents.

In summary, the qualitative dimension of this study described those activities which students were assessed to have successfully completed and achieved the intended outcomes as measured by teacher observation and documentation. Since only those students who did achieve those outcomes were identified, it would be possible if criterion measures were further refined to have conducted this aspect of the study as a part of the experimental design. In view of the need for this type of evaluation, a recommendation was made for such research.
CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

This chapter presents a summary of the study including the purpose, procedures and findings; conclusions drawn from the findings; and, recommendations related to comprehensive career education programming and related research.

This research effort was based on the assumption that a comprehensive career education program should be infused into the curriculum of the school. As such, this study measured the achievement of career education goals in terms of Nine Learner Outcomes through the implementation of structured career education program defined in terms of fifty-four treatment elements. The study focused on career development competencies as conducted by the total staff of the schools identified by the Eight Actor Groups.

Hoyt's categorization of the learner outcomes, treatment elements, and actor groups of a comprehensive career education program were used in order to provide a framework for the study. These Nine Learner Outcomes included: Academic Skills; Work Habits; Work Values; Decision-Making Skills; Career Awareness; Educational Awareness;
Reduction of Bias; Leisure Time; and, Job Seeking Skills. The fifty-four Treatment Elements of the comprehensive career education program were defined in terms of the Eight Actor Groups of Teaching Faculty; School Board Members; Educational Administrators and Supervisors; Guidance Counseling Personnel; Business/Industry/Professional/Government Community; Community Organizations with Education/Work Goals; Parents; and, Career Education Coordinator.

The main purpose of this exploratory investigation was to determine the effectiveness of a comprehensive career education program at the third and fifth grade level, as expressed by selected students in an experimental group and a control group. Specifically, this study attempted to determine whether significant differences in academic achievement, career knowledge and attitude existed between an experimental group which received the career education program treatment and a control group which did not.

Two types of data were examined. The first included standardized, group administered tests which emphasized the learner outcomes in terms of quantitative data. The second included qualitative data in the form of successfully completed activities which were conducted, observed, and documented by teachers as the activities related to the Treatment Elements. Examples of these activity areas are positive self-concept, choice making skills, economic awareness, community awareness, and parent involvement.
The settings for this study were two suburban school districts adjacent to a large midwestern city. The experimental school district and a control school district were matched on the basis of nine criteria: size of school enrollment; socioeconomic level of the community; student academic achievement; prevalence of teacher inservice education; perceived level of teacher motivation; level of parent involvement; identified staff training and experiences; student graduation rate; and, student post-high school education.

Third and fifth grades were selected as the target population for both the experimental and control school districts. The subjects were randomly selected and assigned to the treatment group or comparison group. These students were selected individually from complete class rolls.

Both testing administrations, pre and post, for the experimental group and control group were conducted by individuals other than classroom teachers -- district substitute teachers were hired for that purpose, or counselors. Testing took place during the mornings on Tuesday, Wednesday, and Thursday only, and occurred during the first and last months of the 1981-82 school year. Pretesting was conducted in September, 1981, for students at grades three and five in both the experimental and control school districts. Posttest administration occurred in May, 1982 for grades three and five. Again, the schedule remained constant for both experimental and control students. All test administrators received a half-day training session prior to both pretesting and posttesting.
The qualitative data were accumulated throughout the school year by outside monitors on a bi-monthly basis. These trained monitors met with the selected staff members in both the experimental and control groups and collected data based on the fifty-four treatment elements.

On the quantitative aspect of the study the administration of standardized achievement tests was performed in order to determine how the career education program under study impacted upon the students' learning in the basic skills. The California Achievement Tests were administered to third and fifth grade students pre and post for both the experimental and control groups. The KR-20 reliability coefficients for the CAT reading, language, mathematics, and total tests ranged from .91 to .98. The process for validating the content of the CAT included collecting curriculum guides from across the nation for the areas tested and identifying common objectives and skills to be measured.

The Ohio Career Education Inventory, in the form used for this study, included 64 items -- eight each across eight learner outcome areas -- Decision-Making, Work Habits, Work Values, Career Awareness, Educational Awareness, Reduction of Bias, Leisure Time, and Job Seeking. The content validity of the OCEI was established on the basis of instructional objectives identified by field-based observations or curriculum review of career education programs in the state of Ohio as defined by the Seven Developmental Areas. Construct
validity was determined through a comparison-of-known-groups technique whereby items were tried out in at least two sites, both with students who had been exposed to a career education program and those who had not. Items which showed negative discrimination were discarded. Those which showed positive discrimination were retained. Career Education coordinators were asked to validate the categorization of items with respect to content and grade level, to validate the keyed response to determine the importance of the career education instructional objective measured by each item. Items with the highest discrimination values were selected for use in this study.

Use was made of Multivariate analysis of covariance as the selected statistical technique since two non-independent tests (pretest/posttest) of the difference between means within two independent groups (experimental/control) were made in the analysis of each null hypothesis. In each case the F values for the Multivariate analysis of covariance were tested against the critical value of .05.

Furthermore, a t test was used to test the hypothesis that the career education treatment received by the experimental group subjects, and as measured by pretest scores on the nine variables, was statistically significant in comparison with the control group. The t values were also tested against a critical value of .05.

The addition of qualitative measures in this evaluation study was imperative in view of the high reading content of the standardized
measures and the high reading ability of the students tested --
treatment and control. Several skill aspects of a career program
and dimensions of community and parent involvement were used to
supplement the quantitative assessment.

Monthly data collection and bi-monthly reports were developed
to ascertain evidence of qualitative data. Review of these data were
conducted to assess the degree to which these career education
dimensions impacted on the subjects in the study.

A significantly higher number of experimental students at grades
three and five demonstrated skills in community awareness, environ-
mental awareness, work roles, good work habits, interaction with
varied workers, and non-stereotypic attitudes, as determined by
classroom teachers. A significantly larger number of community
contacts, both in and out of school, were evaluated as successful
in the treatment schools. These qualitative data proved an important
indicator of demonstrated student success in activities shown to be
highly related to career education at the motivational level.

Research questions were formulated in order to provide a frame-
work for this investigation. Minor research questions were posed
in order to guide the research efforts with respect to Major Question
I and II. As noted in Chapter I, the particular focus for each of
the minor research questions was predicated upon an initial review of
career education literature. This review was directed toward the
areas of academic achievement and career knowledge and attitude.
Pretest scores were analyzed by applying a t test to the collected data. The purpose for implementing this procedure was to determine the effectiveness of the career education treatment prior to application to the research design. Significant differences occurred at the third grade level in the areas of leisure time skills (p = 0.001), reduction of bias (p = 0.035), and total score (p = 0.018) in favor of the experimental group. In addition, educational awareness began to approach significance at the 0.062 level for third grade experimental students. Confidence level was established at .05.

Data were analyzed for fifth grade students with significance being found for the job seeking skills (p = 0.020) variable only. This significance was determined to be in the favor of the experimental group.

With regard to Major Null Hypothesis 1 no significant differences existed in the basic academic skills achievement in mathematics, reading, and language for third grade students. This result was determined by subjecting the students' responses on the California Achievement Test to statistical examination using the analysis of covariance. At the fifth grade level significant differences in basic academic skills achievement were found in reading, language, and total score in favor of the experimental group.

The development of the minor null hypotheses were completed in order to guide the research analyses of the subgroupings within
each group (experimental/control) as related to academic achievement: reading, language, and mathematics. At the third grade level none of three variables showed significant pre/posttest score differences. At the fifth grade level two of the three variables, reading and language, showed significant pre/posttest score differences in favor of the career education treatment.

The use of minor null hypotheses guided the data analysis of the eight variables of the career knowledge and attitude instrument for both the experimental and control groups. Third grade students showed significant pre/posttest score differences in four of the eight OCEI subgroups as a direct result of the comprehensive career education treatment, work habits, career awareness, job seeking skills, and leisure time. Significant pre/posttest score differences between the treatment and outcomes for fifth grade students was determined for only one of the eight variables, work habits, as measured by the OCEI in favor of the treatment group.

Conclusions

This section presents the major conclusions drawn from the data and based upon the findings of this study.

First, on basic academic skills, as measured by standardized achievement tests, the third grade treatment group students scored the same as the control group students on the variables of reading, language, mathematics, and composite score. Scores on basic academic skills for fifth grade students indicated a significantly greater
gain in favor of the treatment group on the variables of reading, language, and total score. Whereas, fifth grade students in both the experimental and control group scored the same in the area of mathematics. Therefore, given a comprehensive career education program, it is possible to conclude that students will achieve at the same or higher levels when compared with a district which has no career education program.

A second conclusion related to career knowledge and attitude gains of a comprehensive career education program can be drawn. Eight learner outcomes at each of two grade levels were examined for pre/post total scores and gains during the eight-month evaluation period. Experimental group subjects at the third grade level showed significantly higher gains on the OCEI variables of work habits, career awareness, job seeking skills, leisure time activities, and total score. In the other four subgroup areas the treatment group scores were equivalent to the scores of the control group. Fifth grade students in the treatment group showed significantly higher gains on the OCEI variable of work habits while attaining scores on the remaining OCEI variables which were commensurate with those of the control group. From these data, it would appear possible to conclude that with an ongoing comprehensive career education program, students will score at the same or higher levels when compared with a control school district without a comparable program. Similarly,
it is possible to conclude that students with high achievement will perform well on standardized career education instruments with a high relationship to reading skills.

Thirdly, OCEI pretest scores of the experimental and control groups were compared to determine the degree of difference that existed between a group previously exposed to the career education treatment and a group from which the treatment was withheld. Significant differences in favor of the experimental group were determined for the third grade subjects in the areas of work habits, work values, decision making, education awareness, job seeking, leisure time, and reduction of bias. No significant differences for fifth grade students on OCEI pretest scores were determined using t test measurements. All other pretest scores remained constant for the two groups. From these data, it would appear possible to conclude that with an on-going comprehensive career education program, students will generally score equal to or higher at the outset of an academic year when compared with a control school district without a program.

Finally, it is possible to conclude that students in a comprehensive career education program will demonstrate skills considered to be important to career maturity and career development to a greater degree than will students who do not have career education experiences. Parents and community will be involved to a greater extent in schools with career education programs and students will demonstrate greater
successful involvement with both of these groups. These career motivational skills will be accomplished while basic academic skills are maintained and specific career education objectives will be achieved.

Recommendations

A number of recommendations can be made for further research and study.

It is recommended that research be conducted using standardized tests which have a low reading achievement correlation. A limitation of the study was associated with the instruments, California Achievement Test (CAT) and the Ohio Career Education Inventory (OCEI). While the CAT was a highly accepted standardized test its limitation lied with the fact that control group subjects had been exposed to this type of instrument in previous years. The "practice effect" could have had a major impact upon the findings.

It is recommended that research be conducted to determine the degree to which qualitative variables had an effect upon the results of this study. This could best be attempted through the observation of various career education programs currently existing in different locations and by the employment of accurate qualitative record-keeping devices.

It is recommended that research be conducted which defines academic achievement, career knowledge and attitudes in specific
behavioral terms. This could foster the development of programs and activities which would enhance the attainment of desired levels of competency in these skill areas by those charged with teaching responsibilities.

It is recommended that research be conducted which focuses on the quantity and quality of parent/student interaction. This effort could be facilitated by employing an evaluator removed from the research project for the purpose of obtaining measures using rating scales assessing the activity level of parent/child involvement.

It is recommended that research be conducted which employs the Solomon Four Group research design. This research design would add two groups to the Pretest-Posttest Control Group Design. One of these groups would be exposed to the program but given the after measure only; thus, performance on the posttest could not be influenced by the pretest. The last group does not receive anything but the after measure. This will better account for the effects of the pretest on all of the variables involved.
APPENDIX A
1. TEACHING FACULTY

1.1 Improving Academic Achievement

Seeking to improve academic achievement through using a "careers emphasis" as a vehicle, to: (a) relate subject matter to its use in life's work, (b) use a positive approach with students to reward accomplishments, and (c) use the broader community in the teaching/learning process.

1.2 Good Work Habits

Consciously and conscientiously reward students with such basic good work habits as: (a) completing assignments, (b) coming to work (school) on time, (c) doing the best they can, and (d) cooperating with fellow workers (students).

1.3 Cognitive/Experiential Approach

Combining a cognitive and experiential approach in the teaching/learning process through emphasizing the dual desirability of "doing to learn" and "learning to do."

1.4 Decision-Making Skills

Helping students acquire decision-making skills through using a project activity approach in the teaching/learning process that allows students to actually engage in the decision-making process.

1.5 Reduction of Bias

Systematically attempting to reduce biases students may have with respect to race, sex, or handicapping conditions in ways that will maximize freedom of choice for all.

1.6 Productive Use of Leisure Time

Helping students discover ways in which the subject matter being learned can be valuable to students in the productive use of leisure time.
1.7 **Meaningful Work Values**

Helping students discover and develop a personally meaningful set of work values through allowing them to observe, study, and discuss work values present among persons employed in various occupations.

1.8 **Educational/Occupational Information**

Helping students become aware of and understand a variety of occupations while simultaneously helping students understand the educational requirements essential for success in them.

1.9 **Economic Education/Free Enterprise/Organized Labor**

Helping students become more knowledgeable regarding the free enterprise system, including understandings of both economic education and organized labor.

1.10 **Consideration of Career Alternatives**

Helping students think about and consider possible career choices that may be available to them and important to them.

2. **SCHOOL BOARD MEMBERS**

2.1 **Career Education as an Aid for Refocusing**

A policy endorsing career education as a vehicle for use in refocusing the educational system.

2.2 **Use of Community Resources**

A policy endorsing the need for and intent to utilize the personnel and physical resources of the broader community in improving the quality and variety of educational opportunities for students.

2.3 **Community Career Education Action Council**

A policy endorsing the establishment and operation of a Community Career Education Action Council with broad community representation that would be charged, in part, with making policy recommendations to the school board.
3. EDUCATIONAL ADMINISTRATORS AND SUPERVISORS

3.1 Time for In-Service Education

Provision of time for in-service education of education personnel in career education.

3.2 Career Education Coordinator Position

Provision of a position of "Career Education Coordinator" at the school system (K-12) level and filling of that position with a qualified person.

3.3 Educational Credit for Career-Related Activities

Provision of arrangements for students to receive elective educational credit for various career exploration and awareness experiences taking place outside school such as (a) credit for work experience (paid and unpaid) and (b) credit for participation in career exploration activities sponsored by community groups.

3.4 Career Exploration

Provision of arrangements for students to make maximum use of the institution's educational offerings for purposes of career exploration including, means by which college-bound students in the secondary school can use vocational education offerings as career exploration experiences.

3.5 Career Education as an Aid for Refocusing Education

Provision of professional leadership in supporting and encouraging career education as a vehicle for refocusing the educational system.

4. COUNSELING AND GUIDANCE PERSONNEL

4.1 Curriculum Infusion In-Service

Helping members of the teaching faculty understand and utilize the career development process as a basis for threading career education concepts and content into the learning process.
4.2 Cognitive/Experiential Approaches

Developing and using experiential education methods to help students develop increased self awareness, self understanding and understanding of educational/occupational opportunities.

4.3 Scope and Sequence of Career Education Activities

Coordinating career education activities at the building level in a scope and sequence pattern consistent with the basic principles of career development.

4.4 Community Resources

Developing/maintaining contact with the business/labor/industrial/professional community in terms of resources for career education at the building level.

4.5 Assisting Teachers/Parents with Career Guidance

Helping teaching faculty and parents with problems they face in providing career guidance to students.

4.6 Career Guidance for Students

Providing professional career guidance and counseling to students both individually and in small groups.

4.7 Placement Service - Follow-Up Study

Assisting students in the placement process (job placement and educational placement) that are in part committed to education as preparation for work.

4.8 Reduction of Bias

Developing/promoting a variety of educational and community activities aimed at reducing sex, race and physical/mental handicapping as deterrents to full freedom of educational and occupational choice for all persons.

5. BUSINESS/LABOR/PROFESSIONS/GOVERNMENT COMMUNITY

5.1 In-School Resources for Career Education

Serving as resource persons in the classroom to help students and teachers understand career implications of the subject matters.
5.2 **Career Education Field Trips**

Providing resources for field trips taken by students and/or educators to help them become aware of the world of paid employment.

5.3 **Free Enterprise, Economic Education, Organized Labor**

Serving as resource persons in the classroom (and inservice education efforts) to help students and teachers understand free enterprise system, economic education, and the role and functions of organized labor in American society.

5.4 **Career Exploration Opportunities**

Providing resources for work experience opportunities for students (paid or unpaid) whose primary purpose is career exploration.

5.5 **Community Career Education Action Council**

Serving as members of the "Community Career Education Action Council" to develop and recommend career education policies to various segments of the community.

5.6 **Career Placement Services**

Serving as active participants in the educational system's placement efforts.

5.7 **Employee Career Development Activities**

Devising and implementing ways of involving employees of the business/labor/industry/professional/government community in career education activities designed to contribute to the career development of such employees.

6. **COMMUNITY ORGANIZATIONS HAVING EDUCATION/WORK GOALS**

6.1 **Provision of Youth in Organized Activities**

Studying and making provisions for involvement and participation of maximum numbers of school age youth in their organized activities.
6.2 **Community Organization Cooperation**

Studying and providing for ways in which their activities and programs can be fitted into the total career education effort — rather than operating independent of or in competition with that effort.

6.3 **Total Use of Community Resources**

Studying and providing for ways in which the total resources of the community can be used and shared by all such organizations to maximize benefits for youth and make efficient use of community resources.

6.4 **Community Involvement in Career Awareness/Exploration**

Studying and providing for ways in which the efforts of each of these organizations can be made a supplementary, rather than competitive, resource for student use in career awareness and career exploration activities.

6.5 **Community Career Education Action Council**

Serving as members of a "Community Career Education Action Council."

7. **PARENTS**

7.1 **Significance of Work**

Helping their children understand the nature and positive social significance of the work done by parents (paid and unpaid).

7.2 **Work in the Home/Family Structure**

Providing opportunities within the home/family structure for their children to experience work as a family member, in ways that help the child understand his/her worth and his/her own contributions to the well-being of the family as a social unit.

7.3 **Parent Involvement in Career Awareness/Exploration**

Helping their children find and engage in career awareness and career exploration experiences within family activities.
7.4 **Parent Involvement in Career Decisions**

Helping their children think about and discuss career decisions -- regarding both educational and occupational choices.

7.5 **Career Implications of Homework Assignments**

Helping their children understand and appreciate the career implications of subject matter represented by homework they have been assigned.

7.6 **Productive Use of Leisure Time**

Helping their children discover and use ways of making productive use of leisure time.

7.7 **Work Values**

Helping their children think about and reflect on work values as a part of their total system of personal values.

7.8 **Reduction of Bias**

Helping their children develop attitudes devoid of bias with respect to race, sex, physical or mental handicaps as deterrents to full freedom of educational/occupational choice for all persons.

8. **CAREER EDUCATION COORDINATOR**

8.1 **Knowledgeable of Career Education**

Becoming and staying knowledgeable with respect to the career education literature and with national/state trends in the area.

8.2 **District Leadership for Infusing Career Education**

Providing systemwide leadership and expertise for promoting the application of career education to the teaching/learning process.

8.3 **District Leadership for Promoting Career Education by all "Actors"**
Providing systemwide leadership and expertise for promoting the kinds of career education activities called for on the part of all other career education "actors" identified in this paper.

8.4 **Collaboration Among All "Actors"**

Coordinating/strengthening the concept of collaboration in career education through effort aimed at helping and encouraging the various career education "actors" to work together.

8.5 **Communicating Career Education to all "Actors"**

Communicating career education concepts/philosophy to all career education "actors" and to the general public.

8.6 **Systematic Plan for Community Implementation**

Formulating/carrying out a systematic plan for implementing career education in the community on an orderly and systematic basis.

8.7 **Community Career Education Action Council**

Working closely with the "career education action council" in developing and gaining community acceptance for a conceptual view of career education consistent with the nature and needs of the community.

8.8 **Program Evaluation**

Providing expertise/leadership in carrying out and reporting results of system-wide continuing efforts to evaluate the effectiveness of career education.
LEARNER OUTCOMES FOR CAREER EDUCATION

Career education seeks to produce individuals who, when they leave school (at any age or at any level) are:

1. Competent in the basic academic skills required for adaptability in our rapidly changing society.
2. Equipped with good work habits.
3. Equipped with a personally meaningful set of work values that foster in them a desire to work.
4. Equipped with career decision-making skills, job-hunting skills, and job-getting skills.
5. Equipped with a degree of self-understanding and understanding of educational-vocational opportunities sufficient for making sound career decisions.
6. Aware of means available to them for continuing and recurrent education.
7. Either placed or actively seeking placement in a paid occupation, in further education, or in a vocation consistent with their current career decisions.
8. Actively seeking to find meaning and meaningfulness through work in productive use of leisure time.
9. Aware of means available to themselves for changing career options -- of societal and personal constraints impinging on career alternatives.
OHIO CAREER EDUCATION INVENTORY

Directions:

This inventory is divided into two parts. Read each question carefully and mark your answers on the special answer sheet. Do not make any marks on this booklet. Look at the example below:

Example: Which worker brings mail to people?

0. farm worker
1. factory worker
2. hospital worker
3. post office worker

What is the number beside the right answer? Yes, 3 is the number beside post office worker. Your answer sheet should look like this when you have marked the right answer:

1. [ ] [ ] [ ] [ ]

You will mark all your answers to Part 1 in this way: Decide which answer is right. In the row of circles numbered the same as the question, find the right circle and darken it.
1. Which of these is a job in the hospital that a teenager might have?
   0. Nurse
   1. X-ray technician
   2. Candy-striper
   3. Doctor

2. A third grade student who enjoys fishing would have
   0. A good sense of humor
   1. Patience
   2. Talent
   3. Pride

3. A child goes to a movie they didn't want to see because friends are going. This means that the child was
   0. Shy
   1. Competitive with friends
   2. Influenced by friends
   3. Lying

4. If you were a high school student, you could probably start working at McDonald's as a
   0. Manager
   1. Kitchen helper
   2. Owner
   3. Head cook

5. A third grader has an excellent memory: they would probably be good at
   0. Art
   1. Handwriting
   2. Spelling
   3. Baseball

6. The biggest difference between children in most other countries and children in the United States is that the other children
   0. Have fewer friends
   1. Speak another language
   2. Do not learn things
   3. Do not have toys

7. Most Eskimos fish because
   0. They don't eat meat
   1. They do not go to college
   2. They live near the water
   3. They don't have stores

8. Which of the following personal qualities is most different from person to person? The way you
   0. Talk
   1. Dress
   2. Think
   3. Walk

9. When you do something on your own, you are being
   0. Smart
   1. Friendly
   2. Cooperative
   3. Independent

10. Two people are dependent on each other when they
    0. Like each other
    1. Need each other
    2. Are related to each other
    3. Understand each other

11. What is the first thing a person needs when they get a job?
    0. An income tax form
    1. A social security number
    2. A raise
    3. A new car

Go on to the next page.
12. THE FORM YOU FILL OUT TO GET A JOB IS CALLED
0. A LETTER
1. A BILL
2. AN APPRECIATION
3. A REPORT

13. BEFORE YOU CAN DO A JOB YOU MUST
0. HAVE DONE IT BEFORE
1. KNOW SOMEONE WHO DID IT SUCCESSFULLY
2. HAVE THE TOOLS NEEDED TO DO IT WITH
3. GET SOMEONE TO TELL YOU WHAT TO DO

14. WHEN YOU ARE MAKING UP YOUR MIND ABOUT HOW TO SPEND MONEY, YOU ARE MAKING A
0. POLICY
1. VALUE
2. DECISION
3. CAREER

15. IF YOU ARE WORKING WITH A GROUP TO PLAN A PROJECT YOU WILL PROBABLY HAVE TO MAKE MANY
0. FRIENDS
1. DECISIONS
2. ENEMIES
3. DEMANDS

16. WHICH OF THE FOLLOWING IS SOMETHING A THIRD GRADER CAN DECIDE?
0. HOW TO SPEND FREE TIME
1. WHAT DAYS THERE SHOULD BE SCHOOL
2. WHERE TO LIVE
3. WHEN TO GO TO LUNCH

17. WHEN YOU HAVE MADE UP YOUR MIND TO DO SOMETHING, YOU HAVE MADE
0. AN IDEA
1. A TASK
2. AN ACTIVITY
3. A DECISION

18. WORKING TOGETHER WITH OTHER PEOPLE IS CALLED
0. CONFLICT
1. TEACHING
2. COOPERATION
3. COMPETITION

19. A GOOD WORKER IN A CLASS PROJECT MUST
0. BE FIRST TO FINISH
1. READ THE FASTEST
2. BE THE LEADER
3. GET ALONG WELL WITH OTHERS

20. GETTING ALONG WITH OTHER PEOPLE IS MOST IMPORTANT FOR WHICH OF THE JOBS BELOW?
0. WRITER
1. FARMER
2. TRUCK DRIVER
3. NURSE

21. GETTING TO SCHOOL ON TIME EVERY MORNING IS A GOOD PRACTICE TO LEARN FOR
0. HOLDING A JOB
1. MAKING FRIENDS
2. GETTING INTO COLLEGE
3. LEARNING A NEW SUBJECT

22. A STUDENT WHO IS ALWAYS LATE FOR SCHOOL IS
0. FRIENDLY
1. UNDEPENDABLE
2. PUNCTUAL
3. SHY

GO ON TO THE NEXT PAGE.
23. A child wants to build a model car. Which of the following is a bad work habit?
   0. Choosing the most attractive parts to begin with
   1. Clearing a large space to work in
   2. Reading the directions slowly
   3. Checking to see if all the pieces are there

24. A potter, a sculptor, and a painter are all
   0. men
   1. women
   2. artists
   3. musicians

25. A salary is the same as
   0. an insurance
   1. a wage
   2. a tax
   3. a bonus

26. Which of these is usually his or her own boss?
   0. farmer
   1. fire fighter
   2. flight attendant
   3. teacher

27. The person on a newspaper who checks the stories for mistakes is a
   0. reporter
   1. checker
   2. proofreader
   3. typesetter

28. What kind of workers are bus drivers, train engineers, and pilots?
   0. transportation
   1. medical
   2. communications
   3. business

29. A clerk in a department store is a
   0. manager
   1. janitor
   2. secretary
   3. salesperson

30. A publisher is someone who produces
   0. laws
   1. books
   2. movies
   3. musicals

31. When a state was founded, the person who measured the land was called
   0. a geologist
   1. a mathematician
   2. a surveyor
   3. a designer

32. Which of the following jobs is usually done on an assembly line in a factory?
   0. repairing shoes
   1. putting cookies in a box
   2. cutting people's hair
   3. painting houses

33. Which of these workers would you find working in a school?
   0. a fire fighter
   1. a tailor
   2. a custodian
   3. a florist

34. When is it most important for a third grader to be most cooperative with others? When he or she is
   0. writing a letter
   1. playing cards
   2. playing team sports
   3. studying homework

Go on to the next page.
PART 1, CONTINUED

35. FOR SOMEONE WHO WANTS TO BE A BANKER, WHAT IS THE MOST IMPORTANT THING TO BE GOOD IN?

0. SPELLING
1. READING
2. MATH
3. WRITING

36. BOTH SPELLING AND GRAMMAR ARE IMPORTANT WHEN YOU

0. CALL A FRIEND
1. WRITE A LETTER
2. BUY GROCERIES
3. MAKE A SPEECH

PART 2

Directions: Read each statement below. Decide whether you agree, don't agree, or are not sure. If you agree, mark the circle with a 0 inside; if you are not sure whether you agree, mark the circle with a 1 inside; if you disagree, mark the circle with a 2 inside. Look at the example below:

EXAMPLE:

1. Most parents never have to work.

Your answer sheet will look like this:

If you AGREE — 0 1 2 3 4
If you ARE NOT SURE — 0 1 2 3 4
whether you agree or don't agree
If you DON'T AGREE — 0 1 2 3 4

You will mark all of your answers in Part 2 this way. Now finish Part 2.

37. YOU SHOULD BE ABLE TO READ AND WRITE NO MATTER WHAT JOB YOU HAVE WHEN YOU GROW UP.

38. PEOPLE CANNOT REALLY LEARN ANYTHING WELL WITHOUT THE HELP OF A TEACHER.

39. ONLY ADULTS CAN DECIDE WHICH CAREERS THEY WANT.

40. A SCHOOL BOOK IS ALWAYS RIGHT.

41. BOYS AND GIRLS MAKE SOME DECISIONS EVERY DAY.

42. WOMEN CAN BECOME AIRLINE PILOTS.

43. A WOMAN WHO DOES PHYSICAL WORK, LIKE BUILDING ROADS, CAN'T BE FEMININE.

44. BOYS MAKE BETTER DOCTORS THAN GIRLS DO.

45. WORKERS WHO HAVE MANY RESPONSIBILITIES SHOULD GET PAID MORE THAN OTHER WORKERS.

46. WORKERS SHOULD BE PROUD OF THE WORK THEY DO.
47. IF YOU HAVE A LOT OF MONEY WHEN YOU GROW UP, YOU PROBABLY WON'T WANT TO WORK.

48. YOU ARE AN IMPORTANT WORKER IN YOUR SCHOOL.

49. IT IS BAD TO WANT TO MAKE A LOT OF MONEY WHEN YOU GROW UP.

50. MOST PEOPLE ONLY HAVE ONE JOB IN THEIR LIFETIME.

51. WHAT YOU LEARN IN SCHOOL WILL HELP YOU DO A JOB SOMEDAY.

52. YOU SHOULD CONSIDER HOW MUCH IT COSTS TO FEED A PET BEFORE YOU BUY ONE.

53. BEHAVING IN SCHOOL IS ONE WAY OF SHOWING THAT YOU WILL BE ABLE TO KEEP A JOB LATER ON.

54. IT IS O.K. TO BE PROUD THAT YOUR PAPER HAS BEEN PUT ON THE "GOOD WORK" BULLETIN BOARD.

55. ONLY MEN OR BOYS SHOULD BE CAR MECHANICS.

56. THIRD GRADERS KNOW MORE ABOUT THEMSELVES THAN ANYONE ELSE DOES.

57. IF YOU DO WORK AT HOME, YOU SHOULD FEEL IMPORTANT.

58. A GOOD WAY TO LEARN ABOUT WORK IS TO READ A STORY ABOUT THAT PERSON'S WORK.

59. THIRD GRADERS ARE TOO YOUNG TO HAVE A HOBBY.

60. CHILDREN CANNOT LEARN ANYTHING FROM PLAYING GAMES WITH EACH OTHER.

61. ALL ADULTS KNOW THE SAME THINGS ABOUT SCIENCE.

62. IT IS NOT IMPORTANT FOR A THIRD GRADER TO FIND OUT HOW MUCH EDUCATION A DOCTOR, NURSE, OR LAWYER NEEDS.

63. A GOOD MEMORY IS IMPORTANT FOR MANY JOBS.

64. IF A PERSON DOESN'T MAKE MUCH MONEY, THAT PERSON'S JOB CAN'T BE VERY IMPORTANT.
OHIO CAREER EDUCATION INVENTORY

Directions:

This inventory is divided into two parts. Read each question carefully and mark your answers on the special answer sheet. Do not make any marks on this booklet. Look at the example below:

Example: Which worker brings mail to people?

0. farm worker
1. factory worker
2. hospital worker
3. post office worker

What is the number beside the right answer? Yes, 3 is the number beside post office worker. Your answer sheet should look like this when you have marked the right answer:

1. ( ) ( ) ( ) ( )

You will mark all your answers to Part 1 in this way: Decide which answer is right. In the row of circles numbered the same as the question, find the right circle and darken it.
1. IN DECIDING WHETHER TO TAKE GENERAL MATH OR ALGEBRA, YOU DO NOT NEED TO CONSIDER
   0. WHAT ALL YOUR FRIENDS ARE TAKING
   1. YOUR KNOWLEDGE OF THE BASIC FORMULAS
   2. REQUIREMENTS FOR HIGH SCHOOL GRADUATION
   3. COLLEGE ENTRANCE REQUIREMENTS

2. IF SOMEONE WANTED TO GO INTO BUSINESS, HE OR SHE WOULD BE LIKELY TO STUDY
   0. SCIENCE
   1. ECONOMICS
   2. LITERATURE
   3. PHYSICS

3. WHICH OF THE FOLLOWING JOBS WOULD REQUIRE THE WORKER TO MAKE THE LEAST NUMBER OF DECISIONS?
   0. ASSEMBLY LINE WORKER
   1. POLICE OFFICER
   2. TEACHER
   3. BUS DRIVER

4. WHICH OF THE FOLLOWING IS NOT A PART OF DECISION MAKING?
   0. EXPECTED CONSEQUENCES
   1. GUESSING
   2. ALTERNATIVES
   3. VALUES

5. BEING "ADAPTABLE" MEANS BEING WILLING TO TRY NEW WAYS OF DOING THINGS. IF A PERSON WANTS TO BE ADAPTABLE, THEN IT IS MOST IMPORTANT THAT HE OR SHE BE
   0. OPEN MINDED
   1. WELL ORGANIZED
   2. FORCEFUL
   3. INTELLIGENT

6. SOMEONE WHO IS GOOD AT DRAWING AND CAN ALSO FIX BIKES, TOASTERS AND OTHER APPLIANCES COULD USE THESE SKILLS IN A CAREER AS
   0. A SALESPERSON
   1. A TEACHER
   2. A MACHINE DESIGNER
   3. A BAKER

7. WHICH OF THE FOLLOWING IS A JOB IN GOVERNMENT?
   0. VICE PRINCIPAL
   1. HAIR DRESSER
   2. SECRETARY OF DEFENSE
   3. LIBRARIAN

8. WHICH OF THE FOLLOWING IS A JOB THAT OFTEN REQUIRES AN EMPLOYEE TO WORK ON WEEK-ENDS AND HOLIDAYS?
   0. INSURANCE SALESPERSON
   1. REGISTERED NURSE
   2. GUIDANCE COUNSELOR
   3. BANK TELLER

9. SOMEONE WHO STUDIES ABOUT THE COMPOSITION OF THE EARTH IS CALLED A
   0. PHYSICIAN
   1. GEOGRAPHER
   2. BOTANIST
   3. GEOLOGIST

10. THE FACT THAT THE AMERICAN PEOPLE ARE CONSUMING MORE SUGAR TODAY THAN THEY DID 25 YEARS AGO WOULD BE OF MOST CONCERN TO WHICH OF THE FOLLOWING PROFESSIONALS?
    0. LAWYER
    1. NUTRITIONIST
    2. ACCOUNTANT
    3. ECOLOGIST

GO ON TO THE NEXT PAGE.
11. RIGS AND CITIZEN BAND RADIOS are terms used most often by
0. DISC JOCKEYS
1. TRUCK DRIVERS
2. CONSTRUCTION WORKERS
3. ELECTRONIC ENGINEERS

12. A STUDENT IS RESPONSIBLE FOR HAVING PENCILS AND PAPER AT SCHOOL JUST LIKE A PLUMBER IS RESPONSIBLE FOR HAVING
0. AN EDUCATION
1. AN ESTIMATE
2. A GOOD ATTITUDE
3. TOOLS

13. A STUDENT WHO IS ON THE SAFETY PATROL IS RESPONSIBLE FOR
0. BEING ON TIME
1. LIKING THE JOB
2. BUYING THE BADGE
3. KNOWING ALL THE STUDENTS' NAMES

14. ALMOST ALL JOBS REQUIRE THAT YOU
0. BE HIGHLY TRAINED
1. OWN YOUR OWN TOOLS
2. BE PROMPT AND DEPENDABLE
3. HAVE A COLLEGE DEGREE

15. WHICH OF THE FOLLOWING IS THE MOST IMPORTANT PERSONAL CHARACTERISTIC FOR SOMEONE WORKING IN A GROUP?
0. BEING CHEERFUL
1. BEING DEPENDABLE
2. BEING INDEPENDENT
3. BEING SMART

16. WHEN BUYING FOOD, A GOOD CONSUMER SHOULD
0. BUY ONLY NAME BRANDS
1. COMPARE THEN BUY
2. BUY THE CHEAPEST PRODUCT
3. BUY ONLY DURING SALES

17. A PERSON WHO IS LEARNING HOW TO DO A JOB WHILE WORKING WITH SOMEONE WHO KNOWS THE JOB IS WORKING AS
0. A STUDENT
1. A FOREMAN
2. AN APPRENTICE
3. A PROFESSIONAL

18. WHICH OF THE FOLLOWING HIGH SCHOOL PROGRAMS IS MOST LIKELY TO PREPARE YOU TO PURSUE A PROFESSION?
0. BUSINESS
1. VOCATIONAL
2. TECHNICAL
3. ACADEMIC

19. A LAWYER NEEDS ABOUT
0. 5 YEARS OF COLLEGE
1. 2 YEARS OF TRAINING AFTER COLLEGE
2. 3 OR 4 YEARS OF TRAINING AFTER COLLEGE
3. 8 YEARS OF TRAINING AFTER COLLEGE

20. THE INFORMATION YOU WRITE ON A JOB APPLICATION TELLS A POSSIBLE EMPLOYER
0. HOW WELL YOU WORK
1. WHY YOU WENT TO SCHOOL
2. IF YOU LIKE TO WORK
3. HOW WELL YOU ARE SUITED FOR A JOB

21. IN WHAT SECTION OF THE NEWSPAPER COULD YOU LOOK TO FIND OUT ABOUT DIFFERENT JOBS?
0. EDITORIAL
1. FINANCIAL
2. CLASSIFIED ADS
3. PUBLIC NOTICES
22. Before deciding on whether to accept a job, a person should be sure about all of the following except:

0. Salary
1. Location
2. Coffee breaks
3. Working hours

23. When a want ad reads "must be a high school graduate, in good physical health, and willing to work weekends," it is referring to:

0. Interests
1. Fringe benefits
2. Attitudes
3. Qualifications

24. Which of the following are usually self-employed?

0. Teachers
1. Judges
2. Beauty shop owners
3. Department store clerks

25. A student doctor in a hospital is called:

0. A candy striper
1. An orderly
2. A medic
3. An intern

26. A person who enjoys watching cloud formations might consider becoming a

0. Botanist
1. Meteorologist
2. Zoologist
3. Psychologist

27. Allan likes to repair shelves and chairs in his house. This is a job that would most likely lead to becoming:

0. A plumber
1. A carpenter
2. A TV repairman
3. A social worker

28. If a fifth grader plays often with an erector set, he or she is most likely to be interested in:

0. Geology
1. Farming
2. Engineering
3. Anthropology
PART 2
Directions: Read each statement below. Decide whether you agree, don't agree, or are not sure. If you agree, mark the circle with a 0 inside; if you are not sure whether you agree, mark the circle with a 1 inside; if you disagree, mark the circle with a 2 inside.

Look at the example below:

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You will mark all of your answers in Part 2 this way. Now finish Part 2.

29. IT'S IMPORTANT TO GET ALONG WELL WITH PEOPLE NO MATTER WHAT YOUR JOB IS.

30. A GOOD WORKER IS SOMEONE WHO STICKS TO A JOB EVEN IF IT IS HARD.

31. ONCE YOU LEARN HOW TO TYPE WELL, YOU DO NOT NEED TO PRACTICE REGULARLY TO KEEP YOUR SPEED UP.

32. SCHOOL SUBJECTS CAN HELP YOU TO DECIDE WHAT CAREER YOU SHOULD CHOOSE.

33. BEING ABLE TO WRITE AND TALK IN GOOD SENTENCES IS IMPORTANT ONLY FOR SOMEONE GOING TO COLLEGE.

34. EXPLAINING DIFFERENT JOBS WILL HELP YOU TO DECIDE WHAT COURSES YOU WILL WANT TO TAKE IN HIGH SCHOOL.

35. PEOPLE DO NOT NEED TO HAVE GOALS UNTIL THEY ARE OLDER.

36. MAKING DECISIONS ABOUT YOUR PERSONAL LIFE USUALLY INVOLVES MORE THAN JUST CHOOSING BETWEEN ONE GOOD AND ONE BAD ALTERNATIVE.

37. ONCE YOU DECIDE ON A CAREER, YOU SHOULD NEVER CHANGE THAT DECISION.

38. YOU ARE RESPONSIBLE FOR THE CONSEQUENCES OF YOUR ACTIONS.

39. THE BEST DECISIONS ARE THOSE WHICH ARE MADE EASILY.

40. PEOPLE OVER THIRTY ARE TOO OLD TO GO TO SCHOOL.

41. A FIFTH GRADER SHOULD NOT WORK AFTER SCHOOL TO RAISE MONEY FOR THINGS HE OR SHE WANTS.

GO ON TO THE NEXT PAGE.
42. In choosing a job, people always think that the kind of work they will be doing is more important than how much money they will make.

43. If you can manage to do something without the help of others, you should.

44. A person should look forward to holding a job and being independent.

45. Fifth graders should be responsible for their classroom jobs without being told to do them.

46. When you are deciding about a career, the salary possibilities are the most important consideration.

47. Working hard at a job is only important if you want to make a lot of money.

48. A fifth grader can learn a lot from interviewing people in his or her community.

49. Enjoying what you do in your free time is as important as enjoying your work.

50. The best reason for having a hobby is that it might help you earn money later on.

51. A person can learn a great deal from hobbies.

52. The kind of hobbies you have can help you to choose a career.

53. What you learn in English and social studies will help you in your future jobs.

54. In addition to knowing how to read and spell, knowing some basic arithmetic can be very helpful to a secretary.

55. You can learn something about careers in a mathematics class.

56. Men cannot become homemakers and nurses.

57. It is useful to have a social security number only if you have a job.

58. Some of the customs of other countries are different from those of the United States because they are based on different values.

59. Men can become nurses or secretaries.

60. Homemaking is an important profession.

61. The best jobs for women are secretarial, teaching, and nursing.

62. Knowing the customs of a foreign country can help fifth graders to understand other people.

63. There are many careers that women can choose.

64. Most jobs can be divided into "for men only" or "for women only" groups.
SEVEN DEVELOPMENTAL AREAS

1. SELF
This broad area of Self focuses on the individual as subject, emphasizing the person's feelings, attitudes and values. There is an internal rather than external orientation to activities for this area.

2. INDIVIDUAL AND ENVIRONMENT
The broad area of Individual and Environment focuses on (1) the concept of work, (2) the reasons for work as it relates to the physical and social environment of the individual, and (3) concepts of needs and wants as they relate to the environment.

3. ECONOMICS
The broad area of Economics focuses on consumption as it extends to include social and aesthetic satisfactions as well as buying function, the roles of consumer, producer and citizen. It emphasizes the family unit and extends to the neighborhood and social units which provide services and goods (church, clubs, government, stores).

4. WORLD OF WORK
The broad area of World of Work focuses on increasing an awareness of and an appreciation for the broad world of work, and orientation to jobs that represent this broad area, and interests and aptitudes utilized as work information in exploring the world of work.

5. EDUCATION AND TRAINING
The broad area of Education and Training is concerned with the student learning the behavior(s) expected in a specific occupation or job and in specific educational settings. It includes consideration for the relationship between education and work, acquiring an appreciation for the life relatedness of education and for educational experiences as training for career interests.

6. WORK ADJUSTMENT
This broad area focuses on becoming aware of interpersonal skills required in the work settings; functioning effectively in social and work settings; identifying current skills and adapting them to new situations; knowing job seeking skills; and knowing the characteristics of a good worker.
7. DECISION MAKING  The broad area of Decision Making Skills focuses on the development of skills in decision making, opportunities to participate in decision making situations and test the effects of the decision, and awareness that the decision making process is involved in choosing a career.

Objectives in these Seven Developmental Areas can be identified at three levels: KNOWLEDGE (or Cognitive level) where facts, concepts and information are used; ACCEPTANCE (or Affective level) where feelings, attitudes and values are attended to, and AFFIRMATION (or Psychomotor level) where overt behaviors are provided for.
<table>
<thead>
<tr>
<th>Activity</th>
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<th>Evidence Available</th>
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<td>1. Subject Areas Related to their Use in Life's Work (5)</td>
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<td>3. Use of Community Resources for Materials, Sites, Service (5)</td>
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<td>5. Cognitive-Experiential Activities (3)</td>
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<td>6. Experiential Choice Making Activities (?)</td>
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Teacher_________________________  TEACHING FACULTY ACTIVITIES CHECKLIST (Con'd)

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<td>7. Reduction of Bias (5) Race/Ethnic, Sex Role, Handicap</td>
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<td>9. Meaningful Work Values (4)</td>
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<td>10. Occupational/Educational Information (4) Grades 8 and 10 only</td>
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<td>11. Economic Education, Free Enterprise and Organized Labor (3)</td>
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<td>12. Career Alternatives (2) Grades 8 and 10 only</td>
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PARENT QUESTIONNAIRE

Please respond to each of the items 1-9 below by placing a check mark under (a), (b) or (c) to indicate your participation as follows:

(a) Yes, at least on one occasion.
(b) Yes, two or more times.
(c) No

1. I have helped my child(ren) to better understand my work and its contribution (through "shadowing," talking informally about my work at home, presenting for his/her class, other).

2. I have assigned work responsibilities to my child(ren) relative to their role in the family (cleaning his/her room, caring for brothers or sisters, caring for pets, other chores).

3. I have had at least one activity of career awareness with my child(ren). (Learning more about work in general, interdependence of workers, specific occupational information.)

4. I have discussed career/educational decisions with my child(ren). (Discussed educational planning related to scheduling courses, extra curricular activities, part-time or summer work, college choice.)

5. I have discussed with my child(ren) the relationship between their subject matter skills and their use at work. (How English, math, foreign language, science and others are used in work.)

6. I have participated in at least two activities involving productive use of leisure time with my child(ren). (Evening and weekend activities, summer plans.)

7. I have been involved with helping my child(ren) develop a personal set of work values. (Pride in a job well done, cooperation, completing a task, importance of work, knowing own set of work values or motivation.)
8. I have been involved with my child(ren) in reducing the effects of stereotyping in their educational and occupational choices (sex role, ethnic, race, physical and mental handicapping).

9. I have been involved with the guidance counselor in a career guidance orientation activity (classroom guidance, course planning, orientation to junior high or senior high, test interpretation.)

Yes No 10. I am aware that my child(ren) has the opportunity to earn elective credit toward graduation for:

   a. Career education courses offered at school (internships, independent study).

   b. Career education experiences out of school (work experience, career exploration projects).
STUDENT QUESTIONNAIRE (Part I)

Please respond to each of the items below by placing a check mark under (a), (b) or (c) to indicate your participation as follows:

(a) Yes, at least on one occasion.
(b) Yes, two or more times.
(c) No

(a) (b) (c)

1. I have participated in an experiential activity where I engaged directly in a work setting or at a job task.

2. I have participated in activities which have helped me in the following ways:
   a. Self awareness
   b. Understanding of educational opportunities
   c. Understanding of occupational opportunities

3. I have received services from a counselor for career guidance assistance (individual counseling, group counseling, Career Life Planning Folder, interest surveys, resume writing, job application and interview techniques, school leaving plans, placement and follow-up forms).
   I personally requested this assistance. Yes_No_

4. I participated in a classroom activity in which a community resource person was present to help relate careers to subject matter.

5. I participated in a field trip related to the use of community resources for learning.

6. I was given help to understand more about the following:
   a. The nature of the free enterprise system
   b. Economic education
   c. The role and function of organized labor in American society

7. I have participated in activities with representatives of local business/labor/industry/professional/government community for purposes of:
   a. Getting more occupational information
b. Being exposed to job tasks

c. Job interview experience

d. Shadowing

8. I am aware of community organizations with programs in which I can participate (Rotary, Boy Scouts, Kiwanis, Chamber of Commerce, Municipal Government, Red Cross, Parks and Recreation, Police, Mental Health, Junior Achievement, Fire Department, Other).

9. I have participated in the programs provided by any of these community groups.
STUDENT QUESTIONNAIRE (Part II)

Please respond to each of the items below by placing a check mark under (a), (b) or (c) to indicate your participation as follows:

(a) Yes, at least on one occasion
(b) Yes, two or more times
(c) No

(a) (b) (c)

1. I have been helped by my parent(s) to better understand their work and its contribution through "shadowing," talking informally about their work at home, presenting for my class).

2. I have been assigned work responsibilities by my parent(s) relative to my role in the family (cleaning my room, caring for brothers or sisters, caring for pets, other chores).

3. I have had at least one activity of career awareness with my parent(s). (Learning more about work in general, interdependence of workers, specific occupational information.)

4. I have discussed career decisions with my parent(s). (Discussed educational planning related to scheduling for courses, participating in extra curricular activities, part-time or summer work, or college choice.)

5. I have discussed with my parent(s) the relationship between my subject matter skills and their use at work. (How English, foreign language, math, science and others are used at work.)

6. I have participated in at least two activities involving productive use of leisure time with my parent(s). (Evening and weekend activities, summer plans.)

7. My parents have tried to help me develop a personal set of work values. (Pride in a job well done, cooperation, completing tasks, importance of work, knowing my own set of work values or motivation.)
8. I have discussed with my parents the importance of eliminating stereotyping in educational and career choices. (Sex bias, ethnic, race, physical and mental handicapping.)

Yes No 9. I am aware that I have the opportunity to earn elective credit toward graduation for:

   a. Career education courses offered at school (Internships, independent study).

   b. Career education experiences outside of school (Work experience, career exploration projects).
TEACHER QUESTIONNAIRE

A. Please respond to each of the items below by placing a check mark under (a), (b) or (c) to indicate your participation as follows:

(a) Yes, at least on one occasion
(b) Yes, two or more times
(c) No

(a) (b) (c)

1. I have used activities for decision-making skills in my classroom.

2. I have received assistance from a counselor at least once in understanding the career development process.

3. I have received assistance from a counselor at least once in the area of career guidance for students.

4. Community resource persons have participated in classroom activities to help me and my students understand and appreciate the career implications of subject matter.

5. I have been helped to understand the following:

a. The basic nature of the free enterprise system

b. Economic education concepts

c. The role and function of organized labor in American society

B. Please indicate your agreement or disagreement with the statements below using the following scale:

(1) Strongly Agree
(2) Agree
(3) Uncertain
(4) Disagree
(5) Strongly Disagree

6. The relationship between subject matter and life's work should be presented in schools.
7. Staff development plans should include career infusion methods.

8. Positive reinforcement methods should be used routinely in the classroom.

9. Community resources should be used routinely with career related activities both inside and outside of school.

10. Students should be rewarded in school for exhibiting good work habits.

11. Hands-on experiences should be included in career-related instruction.

12. Teachers should stress the importance of freedom of choice in the world of work without regard to race, sex or handicapping condition.

13. Teachers should stress the importance of using subject matter in making productive use of leisure time.

14. Teachers should stress the importance of good work habits.

15. Teachers should help students understand the nature of occupational and educational requirements.

16. Teachers should help students understand the free enterprise system.

17. Teachers should help students understand consumer economics and the economic system.

18. Teachers should help students understand the role and function of organized labor in American society.

19. It is important that students be helped to develop a wide range of career alternatives.

20. Career Education inservice should be included in the overall systemwide inservice plan.

21. Information sessions on the Career Education project are useful in helping the teaching staff work together.

22. Information sessions on the Career Education project are useful in helping teaching staff to understand the concepts and philosophy of Career Education.
SELECTED BIBLIOGRAPHY

BOOKS


UNPUBLISHED MATERIALS


PERIODICALS


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McQuigg, R. Bruce. "Profits or Prophets? To Whom Do We Listen?" _Viewpoints_, LIII (September, 1977), 7-11.


