THE EFFECTS OF A CAREER EDUCATION PROGRAM ON THE CAREER

CHOICES OF FIFTH-GRADE STUDENTS

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Dissertation Prepared for the Degree of

DOCTOR OF EDUCATION

UNIVERSITY OF NORTH TEXAS

December 2005

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The career development of students, demonstrated by students' career interest, is important for a more effective career education program. This study focused on the career choices of fifth grade students through the use of a career interest inventory before and after the use of a career education program. The design was experimental, and the purpose was to determine if there were differences in the career interest of fifth grade students who participated in a career education program compared with the career interest of fifth grade students who did not participate in a career education program.

The COPS-PIC Picture Inventory of Careers (COPS-PIC) was used as a pretest and posttest for fifth grade students to determine baseline career interests. The COPS-PIC career inventory results were incorporated into the career education program and served as a career planning guide for incorporating students' input into career choices and exploration of those choices for a better understanding of the process of finding out who they want to be and what type of careers exists.

The experimental group was provided instruction and career exploration opportunities for 4 weeks. The control group was not provided career education instruction and career exploration opportunities.

This study suggests that fifth grade students who participated in a career education program were able to make more concentrated career choices at higher levels of interest after participating in the career education program. Additional studies that include the use of career interest inventories and a career education program are needed before extensive generalizations can be made.
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ACKNOWLEDGEMENTS

How did I get this far? It was only by the grace of God. I could not have earned this degree without the footsteps in the sand. God carried me throughout the journey.

First, I want to thank my parents, Russell and Louise Barton, who instilled the love of learning and the importance of education in all of their children. I want to extend a very special thank you to my seven sisters and brother for being patient and understanding. I offer thanks and lots of love to my nieces Jennifer and Kayla. You provided extended support and assistance late into the night on numerous occasions to keep me going.

A heartfelt thank you is extended to some special friends. First, Dr. Linda Dulin, without you I would not have been able to perceive the magnitude of the challenge with an undaunted and sanguine spirit. You constantly stayed in touch and provided insight, support, friendship, and encouragement.

Dr. Addie Hare, Dr. Charles G. Andrews, Dr. Bridget Moore, Dr. H. B. Bell, and Rusty Freed: Your support and encouraging words helped to keep me focused and to stay the course while on this incredible journey. Committee members Dr. Jerry Wircenski, Dr. Kyle Roberts, Dr. Jeff Allen, Dr. Ron Wilhelm, Dr. Allen Sullivan, and Dr. Robin Henson: thank you. Your encouragement, patience, assistance and guidance enabled me to complete the dissertation. I appreciate you and am humbled by this experience and by your guidance and support. Last but not least, I want to thank the principals, teachers, parents, and students who unselfishly participated in this dissertation study.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapters</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background</td>
<td>1</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>2</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>6</td>
</tr>
<tr>
<td>Need for Study</td>
<td>9</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>12</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>12</td>
</tr>
<tr>
<td>Research Hypotheses</td>
<td>14</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
<td>15</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>16</td>
</tr>
<tr>
<td>Definitions of Terms</td>
<td>16</td>
</tr>
<tr>
<td>Summary</td>
<td>18</td>
</tr>
<tr>
<td>2. LITERATURE REVIEW</td>
<td>20</td>
</tr>
<tr>
<td>Career Education: A Historical Perspective</td>
<td>20</td>
</tr>
<tr>
<td>Career Awareness</td>
<td>24</td>
</tr>
<tr>
<td>Career Choice</td>
<td>28</td>
</tr>
<tr>
<td>Gender and Career Choice</td>
<td>32</td>
</tr>
<tr>
<td>Ethnicity and Career Choice</td>
<td>41</td>
</tr>
<tr>
<td>Effective Career Education Programs</td>
<td>46</td>
</tr>
<tr>
<td>Summary</td>
<td>49</td>
</tr>
<tr>
<td>3. RESEARCH METHODS AND PROCEDURES</td>
<td>50</td>
</tr>
<tr>
<td>Design</td>
<td>50</td>
</tr>
<tr>
<td>Population</td>
<td>51</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>C. PERMISSION TO USE THE DEVELOPMENTAL GUIDANCE</td>
<td>119</td>
</tr>
<tr>
<td>CLASSROOM ACTIVITIES AND THE COPS-PIC</td>
<td></td>
</tr>
<tr>
<td>D. LETTERS OF PERMISSION: PRINCIPALS, TEACHERS, PARENTS,</td>
<td>123</td>
</tr>
<tr>
<td>AND STUDENTS</td>
<td></td>
</tr>
<tr>
<td>E. SCRIPT OF FOLLOW-UP FOR PARTICIPATION IN STUDY</td>
<td>135</td>
</tr>
<tr>
<td>F. PICTURES OF STUDENTS TAKING THE COPS-PIC</td>
<td>137</td>
</tr>
<tr>
<td>G. TEACHER TRAINING</td>
<td>139</td>
</tr>
<tr>
<td>H. TEACHER SURVEY</td>
<td>142</td>
</tr>
<tr>
<td>I. PRINCIPAL OBSERVATION CHECKLIST</td>
<td>144</td>
</tr>
<tr>
<td>J. NUMBER OF STUDENTS BY SCHOOL AND BY TEACHER</td>
<td>146</td>
</tr>
<tr>
<td>K. DATA COLLECTION DEMOGRAPHICS</td>
<td>148</td>
</tr>
<tr>
<td>L. NUMBER OF POSSIBLE PARTICIPANTS AND ACTUAL PARTICIPANTS</td>
<td>150</td>
</tr>
<tr>
<td>REFERENCE LIST</td>
<td>152</td>
</tr>
<tr>
<td>Table Number</td>
<td>Table Title</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.</td>
<td>Gender Representation</td>
</tr>
<tr>
<td>2.</td>
<td>Ethnic Representation</td>
</tr>
<tr>
<td>3.</td>
<td>Experimental Group Descriptive Statistics</td>
</tr>
<tr>
<td>4.</td>
<td>Experimental Group Ethnic Descriptive Statistics</td>
</tr>
<tr>
<td>5.</td>
<td>Experimental Group Gender Descriptive Statistics</td>
</tr>
<tr>
<td>6.</td>
<td>Control Group Descriptive Statistics</td>
</tr>
<tr>
<td>7.</td>
<td>Control Group Ethnic Descriptive Statistics</td>
</tr>
<tr>
<td>8.</td>
<td>Control Group Gender Descriptive Statistics</td>
</tr>
<tr>
<td>9.</td>
<td>Experimental Group Dependent t Test</td>
</tr>
<tr>
<td>10.</td>
<td>Experimental Group Ethnic One-Way Analysis of Variance Posttest</td>
</tr>
<tr>
<td>11.</td>
<td>Levene’s Test for Equality of Variances</td>
</tr>
<tr>
<td>12.</td>
<td>Experimental Group Gender One-Way Analysis of Variance Posttest</td>
</tr>
<tr>
<td>13.</td>
<td>Control Group Paired Samples Dependent t Test</td>
</tr>
<tr>
<td>14.</td>
<td>Control Group Ethnic One-Way Analysis of Variance Posttest</td>
</tr>
<tr>
<td>15.</td>
<td>Control Group Gender One-Way Analysis of Variance Posttest</td>
</tr>
<tr>
<td>16.</td>
<td>Descriptive Statistics</td>
</tr>
<tr>
<td>17.</td>
<td>Levene’s Test for Equality of Variances</td>
</tr>
<tr>
<td>18.</td>
<td>Experimental and Control Group Independent t Test</td>
</tr>
<tr>
<td>19.</td>
<td>Descriptive Statistics Posttest</td>
</tr>
<tr>
<td>20.</td>
<td>Levene’s Test for Equality of Variances</td>
</tr>
<tr>
<td>21.</td>
<td>Experimental Group Independent t Test</td>
</tr>
<tr>
<td>22.</td>
<td>Gender Group Descriptive Statistics Posttest</td>
</tr>
<tr>
<td>23.</td>
<td>Analysis of Variance: Posttest Gender Analysis</td>
</tr>
</tbody>
</table>
24. Analysis of Variance: Posttest Analysis of Ethnicity .............................................. 93
25. Control Group Posttest Reliability .......................................................................... 94
26. Experimental Group Posttest Reliability ............................................................... 95
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Plot of all of the means for pretest and posttest</td>
<td>73</td>
</tr>
<tr>
<td>F2</td>
<td>A student looks at the COPS-PIC pictures</td>
<td>138</td>
</tr>
<tr>
<td>F3</td>
<td>Classroom students taking the COPS-PIC</td>
<td>138</td>
</tr>
<tr>
<td>F4</td>
<td>A girl and boy concentrate on the COPS-PIC</td>
<td>138</td>
</tr>
<tr>
<td>G1</td>
<td>A helper is compiling materials and making packets for teacher training</td>
<td>141</td>
</tr>
<tr>
<td>G2</td>
<td>Teachers are signing in for the training</td>
<td>141</td>
</tr>
<tr>
<td>G3</td>
<td>Principals and teachers participated in training</td>
<td>141</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

The purpose of this study was to determine whether there were statistically significant differences between the career choices of fifth grade students in a large, urban school district who were provided career education training and the career choices of fifth grade students who were not provided career education training. SPSS statistical analysis software was used for all statistical analyses, and an alpha-level criterion for rejection was set at the.05 statistically significant level.

Background

Hoyt (2001) contended, “After 30 years, career education is still the most widely demonstrated and best validated proposal for education reform” (p. 328). The information age has provided the impetus for closing the gap between "schooling" and "employment" (Hoyt, 2001, p. 328). The purpose of career education is to promote people change rather than program add-ons, to focus on work rather than jobs, and to provide people with employability skills rather than job skills required for a specific occupation (Hoyt, 1995). Wickwire (2002) affirmed,

The mission of career education is to advance and enhance the productivity and satisfaction of individuals through connections of career, education, and work throughout the life span. Desired results include improved career awareness, exploration, and decision making; increased employability, adaptability, and promotability skills; increased understanding of the relationships of education and work, and more informed choices; the inclusion of work as a meaningful portion of lifestyle; reduced stereotyping and increased freedom of choice; shared accountability of education and the private sector through partnerships and collaboration; and the reform of education through the infusion of
career education concepts and practices in the classroom and other parts of education. Realization of these goals leads to individual growth, and benefits the economy and the larger society. (p. 2)

Significance of the Study

Current public education is being criticized for not preparing students to enter the workforce, because most educational programs direct students into going to college; yet, Tinto (1987) reported that 41% of students do not complete college. Likewise, Gray (2004) reported that the percentage of students who go to college after high school has hovered around 65% for the last 15 years, and about one third of graduating high school students are not interested in attending college. Zunker (1998) contended that learning about occupations and about the people involved in occupations allows younger students to build an awareness of differences among people and occupations and to start thinking about how their skills and interests eventually will affect their career decisions.

Getting younger students to focus on careers of interest can begin with the use of a career choice instrument. Research indicated that students generally find using career choice instruments helpful (Holland, 1985; Jones, 1983). The effect of career guidance instruments on students’ career exploration has been the subject of a number of studies (Cooper, 1976; Jones, 1983, 1993; Prediger & Noeth, 1979; Zytowski, 1977). Those studies suggested two variables, students’ educational aspirations and career choice, might interact with the career guidance instruments’ outcomes. The studies indicated that students with college-level educational aspirations were more likely to be influenced in their search for career information by career guidance instruments than were students who had lower educational aspirations. The importance of making a career
choice also affected the students’ career exploration. If a career choice were unimportant to students, they were less motivated to seek out information (Greenhaus & Sklarew, 1981).

Students can be motivated to seek out information about careers by helping them identify careers and untapped interests in careers, through the use of an interest inventory. Hogan (1995) reported using interest inventories to help students learn how to relate their interest to information on occupations helps them select new experiences and explore unknown areas. Providing opportunities to explore occupations in terms of their likes and dislikes can help students make better career choices.

Knapp, Knapp, and Knapp-Lee (1985) reported on the Career Occupational Preference System (COPS) Interest Inventory (Knapp & Knapp, 1984), which reflects a two-way classification of occupations by group and levels. Classification by groups is based primarily on the focus of the activity performed in specific occupations; classification by level of function is based on degrees of responsibility, training, and skill required (Knapp et al., 1985). Measurement is broken down into two levels, professional and skilled. Professional occupation levels generally require college training and often advanced degrees. Skilled occupation levels usually require specialized training that may be obtained in trade or vocational school or through on-the-job training (Knapp et al., 1985).

Results of a follow-up study of the COPS Interest Inventory using data from 4,097 high school participants in Grades 10, 11, and 12 indicated that 60% of high school students who had taken the COPS Interest Inventory found jobs or
educational programs consistent with one of their top three measured areas of interest, based on a lapse of time 1–7 years after high school graduation (Knapp et al., 1985). According to the researchers, a major decision facing the high school student is the selection of a curriculum appropriate to preparation for college or training.

The 1991 report of the Secretary's Commission on Achieving Necessary Skills (SCANS) indicated more than half of America's youth leave school without the knowledge or foundation required to find and hold a good job. Basically, the report asserted the educational system must do a more effective job of producing students who can put knowledge to work, who are creative, and who are responsible problem solvers. The general criticism is that schools are not preparing youth with higher level skills and knowledge and that there are substantial mismatches between the skills that people have and the skills they need in the workforce; simply providing any kind of experience will not suffice (Engles, 1994; Harkins, 2000). Schools have the responsibility for preparing students for the 21st century, and raising achievement standards alone is unlikely to assure success on the part of the student as learner (L. Johnson, 2000).

SCANS mandated school settings to combine knowledge acquisition and application. SCANS (1991) urged schools to incorporate into the curriculum the competencies and skills necessary in the 21st-century workplace that are related to understanding resources and systems, the ability to use information, interpersonal competencies, and the use of technology (L. Johnson, 2000).
It is imperative that schools incorporate the SCANS in the curriculum and begin at the elementary school level to prepare students with the skills that people need in the workforce and to make career choices. There are limited studies on the career choices of elementary school students before and after career education instruction (Beal & Nugent, 1996; O. Collins, 1980).


To address the differences between the career choices of elementary school students before and after career education instruction, the present study examined the career choices of fifth grade students in a large, urban school district before and after career education instruction. The study methodology included a career education program and a career assessment instrument to determine the career choices of elementary school students before and after the use of a career education program.
Theoretical Framework

The following is a summary of theories that served as the foundation for this study. The theories address career awareness and career choice development.

Career Awareness

Career awareness addresses the question, “What jobs exist out there?” The concept establishes the foundation for all further career education and involves a general introduction to the world of work (Razeghi, 1983). Students learn that many different types of jobs are available. Academic skills such as reading, writing, spelling, and computing are strengthened by the integration of career concepts, and all subject matter is related to careers, career fields, lifestyle preferences, and work adjustment concepts (C. Johnson, 1979). Career awareness experiences enable students to accommodate and assimilate accurate information about themselves and other people into their thinking. Elementary school-age children become increasingly interested in what adults do and how people acquire the goods and services they use (Magnuson & Starr, 2000).

Career Choice Development

A number of developmental theories or life-span theories can shed light on the career thinking of children. The most widely known life-span theory is Super's theory of vocational choice (Stitt-Gohdes, 1997). Development can be guided as the individual moves towards a satisfying occupational choice (Magnuson & Starr, 2000).
Career choice theory indicated that the formation of a career goal is viewed as evolving over time and as part of one's career life. It is also thought to progress through stages, including growth (childhood), exploration (adolescence), establishment (young adulthood), maintenance (middle age), and decline (retirement age) (Gothard, 1998).

In terms of career developmental, Super (1990) conceptualized that in the growth stage children move from a substage of fantasy to interests at about the age of 7. "'Fantasy' means 'needs are dominant; role playing in fantasy is important,' and 'interests' mean that 'likes are the major determinant of aspirations and activities'" (p.197).

Gottfredson (1981) contended that the socially valued occupations become more important as children move from the second stage to the third stage of career development. Children become aware of the social values around them and realize that occupations have different social values. At this stage children can express their occupational aspirations as consistent with the values of the occupation they desire.

Brott (1993) reported that Gottfredson's (1981) theory looked at career development in terms of *circumscription and compromise*, as a developmental theory of occupational aspirations. He contended that the theory deals with the process by which occupational aspirations develop from preschool through college years and the process by which occupational aspirations are sacrificed when they cannot be implemented. *Circumscription* is used to describe career exploration as a process of eliminating and retaining occupational choices. The
theory also suggests that individuals only will consider occupations within an area bounded by their acceptable levels of prestige and sex type, which is referred to as the zone of acceptable alternatives. Brott explained,

Circumscription is related to the developmental scheme within the theory through four stages. Children experience the career development stages as young as 3 years of age. In Stage 1 children are about 3 to 5 years of age, and their orientation is to size and power where occupations are perceived as adult roles. Stage 2 theory is called orientation to sex roles (ages 6–8). In stage 2 children are aware of gender differences and see gender differences in terms of roles. This stage is characterized by an orientation to sex roles, with occupations that are not consistent with ones’ sex-role preference being eliminated. At this stage, children grasp the concept of a set of behaviors belonging to each sex, which leads to sex typing with regard to occupations and their choices. They are aware that one gender or the other dominates many occupations. Stage 3 theory (ages 9–13) focus on orientation to social valuation, where an awareness of social class results in the elimination of occupations that are lower than one’s tolerable level, prestige boundary, or higher than ones’ tolerable effort prestige boundary. Stage 3 is based on perceptions of social class and intelligence. (p. 4)

According to Blackhurst, Auger, and Wahl (2003), in the social value stage a child’s self-concept is related to social class and ability level and becomes an important determinant of social behavior, including occupational aspirations. As a result, the child begins to rule out occupations of unacceptably low prestige as well as those occupations requiring too much effort to obtain in light of the child’s perceived ability level. Once rejected as incompatible with a child's ability level and perceptions of reasonable effort, an occupation is no longer included in the child's zone of acceptable alternatives (Gottfredson, 1981).

In Stage 4, which begins at about 14 years of age and continues into adulthood, internal factors such as interests, talents, and vocational needs become important in occupational selection, and they become predominant influences on occupational preference; individuals select occupations that are
congruent with self-concepts (Gottfredson, 1981). Gottfredson’s concept of compromise deals with the implementation, rather than the development, of aspirations in career choice. When compromise is needed, the field of interest is sacrificed first, followed by the prestige preference and sex type (Brott, 1993).

The research concerning career awareness and career choice development theories can provide direction when planning the career-awareness and career-choice development and skill-building strategies for fifth grade students in a large, urban school district. The interrelationship and integration of all factors will strengthen the effectiveness of career awareness and career choices of fifth grade students.

Need for Study

Children today are inundated with information about careers that tend to be glamorous, lucrative, or exciting rather than those that are practical, realistic, or attainable (Cutshall, 2001). Consequently, children often are sidetracked by careers that are popular and prominent in the media (Morton, Kryk, Awender, & Diubaldo, 1997).

Children may be educated for the wrong careers because the workplace of the future is an unknown (Harkins, 2000). One third of all college graduates will not find employment to match their particular degrees. Seventy percent of the desirable jobs in the future economy do not require a 4-year college degree but may require some postsecondary training. Service, craft, or technical industries will provide most of the new jobs in the 21st century (Gordon, 2000).
Hogan suggested, “The more students know about themselves and the world of work, the more likely they will be to make satisfying decisions about their future” (p. 30). Yet, the roots of career choices are linked, in part, to the childhood milieu: elementary school experiences, home, personality, and media (Morton et. al., 1997).

Students need the opportunity to become aware of a large variety of potential job opportunities. Career education looks at a wide range of possibilities and a wide range of basic skills that include (a) a sense of self-esteem and competency, (b) growth of work habits and values, and (c) acquisition of basic communication, organization, and people skills (Bachay & Rigby, 1997). Career education or career exploration enables attainment of knowledge and skills. Career exploration involves finding, evaluating, and using information about the world of work, thinking about the future, increasing awareness of career opportunities, setting goals, and making career choices (Hogan, 1995).

Morton et al. (1997) reported that the rationale for pursuing the question of career interests of young children is that career education and exploration pertaining to children and preadolescents receive relatively little attention. Research on career choice (Albert & Luzzo, 1999; Brantlinger, 1992; Helwig, 2001; Lent, Brown, & Hackett, 2000; Morton et al., 1997; Thompson, 1985) is typically more concerned with secondary school and adolescence, when career choices are seriously considered. The role of the elementary school has been one of expanding career awareness within the suggested clusters of occupations that encompass known vocations (Marland, 1974).
Fifth grade children have developed the conceptual framework for understanding career preparation requirements but are highly inaccurate in their application of the framework for specific occupations (Blackhurst et al., 2003). When career awareness and career choice activities are integrated into the daily curriculum, children have the opportunity to practice academic, communication, and social skills while enhancing self-esteem, self-knowledge, and problem-solving skills (Angel & Mooney, 1996; Cuves, 2001).

Most of the research has focused on high school students (Albert & Luzzo, 1999; Helwig, 2001; Lent et al., 2000; Morton et al., 1997) who are most likely to be engaged in the career decision-making process and whose personal, academic, and demographic characteristics are assumed to be the most significant predictors of eventual educational attainment (Dai, 1996; Mau & Helm Bikos, 2000). Few studies have focused on the educational aspirations of younger students, although existing research suggests that important decisions about educational attainment may be formed in middle school or even earlier.

Urban school districts are considered central to the nation's prospects because inner-city communities depend on urban schools to provide access to improved economic opportunity and because government and corporate policymakers see education as the key to America's economic well-being and competitiveness (Lytle, 1992). Preparing students for (a) a changing workplace, (b) global competition, and (c) meeting the employment needs of the 21st century is seen as a challenge for all educators (Abbott, 1995; Olsen 1997). In the new economy, workers will be required to be flexible thinkers with good
communication skills and transferable problem-solving competence (Pritchett, 1996). Workers also will need to be able to analyze data, deal with ambiguity, learn rapidly, participate in decision-making, cooperate in project-based teams, and interact with technology and "smart machines" (Glover & Marshall, 1993; Hunt, 1995; Zuboff, 1989).

Beal and Nugent (2000) concurred, citing a need to provide elementary school students with career exploration activities that will assist them in thinking about possible career interest and the interrelatedness of the world of work. It is important for educators to recognize that if they give children learning experiences and opportunities for developing the subskills necessary for effective life career planning, they will empower children to become all that they are capable of becoming throughout their lives and in all areas of their lives (Magnuson & Starr, 2000).

Purpose of the Study

The purpose of this study was to determine whether there were statistically significant differences between the career choices of fifth grade students in a large, urban school district who were provided career education training and the career choices of fifth grade students who were not provided career education training.

Statement of the Problem

The occupational aspirations of children have been of interest for many years, and various studies have investigated them. Most of the studies have examined the aspirations for cross-sectional samples of children in the early and
middle grades (Hageman & Gladding, 1983; Looft, 1971; Trice, Hughes, Odom, Woods, & McClellan, 1995). Researchers have given increasing attention to career education in secondary schools and in higher education but less emphasis at the primary level (Gothard, 1998; McMahon & Patton, 1997; Morton et al., 1997; Phipps, 1995). Much of the emphasis has focused on self-concept in terms of career awareness (Bandura, 1997; Betz & Hackett, 1997; B. Brown, 1999; Seligman, Weinstock, & Heflin, 1991), the counselor’s role in teaching career awareness (Beal & Nugent, 2000; Herr & Cramer, 1992; Schultheiss, 2003), gender and ethnicity (Boldizar, 1991; Hagerman & Gladding, 1983; Leong, 1995; Looft, 1971; Sellers et al., 1999), career day activities, and visits to worksites (Beal & Nugent, 1996; Duvall, 1995; Woal, 1995). To date, career choice studies at the elementary level are basically detached from using formal career-choice assessment instruments, workforce standards, knowledge and skills presented in the career development standards in the National Career Development Guidelines (NCDG) (America’s Career Resources Network, 1989) and SCANS (1991).

There is a need to provide elementary school students with career exploration activities that will assist them in thinking about possible career interests and the interrelatedness of the world of work (Beal & Nugent, 1996). A goal of the State Board of Education, the Texas Education Agency, and the national education focus, in conjunction with the No Child Left Behind Act of 2001 (2002), was to provide all students with equal access to instruction for developing...
career awareness and career choices. The results of this study should provide insight into fifth grade students' career choices.

Recommendations are offered for the future use of a career assessment instrument in determining the career choices of fifth grade students, the use of a career education program and potential differences between career choices by gender and ethnicity. The results of the study should provide educators with the ability to design career education programs for elementary school children and to extend the use of a formal assessment instrument to the elementary school level.

Research Hypotheses

Hypothesis 1: There are no statistically significant differences between the mean standard deviation (MSD) on the COPS Picture Inventory of Careers (COPS-PIC) career population index of fifth grade students (experimental group) before their participation in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (experimental group) after they participated in a career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

Hypothesis 2: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program before the experimental group participated in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (control group) after the experimental group participated in a career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.
Hypothesis 3: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (experimental group) before their participation in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program. Further analysis of the data for gender and ethnic career choice differences were reviewed.

Hypothesis 4: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (experimental group) after their participation in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

Delimitations of the Study

Restrictions imposed on the study by the researcher include the following:

1. The participants for this study were from the same school district.
2. One of the groups who participated received the treatment.
3. Data collection was accomplished within a 4-week time span, when possible.
4. Intact groups consisted of fifth grade students in a large, urban school district.
Limitations of the Study

Restrictions outside the control of the researcher include the following:

1. The students varied in terms of their academic achievement, intelligence, attitudes, age, language, socioeconomic status, family structure, culture, knowledge, and skills.

2. Participation in the study was voluntary.

3. Teacher implementation of the career education program varied in terms of instructional skills and teacher fidelity.

4. Participants included fifth grade students in a large, urban school district.

Definitions of Terms

The following definitions are provided to identify the terms used in this study:

African American (Black) “is of or relating to Americans of African ancestry or to their history or culture” (Webster’s II, 1996, p. 14).

Anglo (White) “an English speaking person, especially a White North American who is not of Latin descent” (Webster’s II, 1996, p. 28); White is defined as “of or belonging to a racial group having light skin coloration, esp. one of European origin” (Webster’s II, 1996, p. 773).

Asian American is “a U.S. citizen or resident of Asian descent” (Webster’s II, 1996, p. 42).

Native American is “an American Indian (Webster’s II, 1996, p. 458); an American Indian is “a member of any of the aboriginal peoples of North America
(except the Eskimo, South America, and the West Indies)” (Webster’s II, 1996, p. 24).

Career is the sum total of work undertaken by an individual during his or her lifetime, including leisure-time activities (Hoyt, 1973).

Career awareness is learning to respect, understand, and appreciate all work and workers as well as identification of career clusters (Wickwire, 1994).

Career choice is the degree of tradition, prestige, and science-relatedness of the chosen career (Fassinger, 1990).

Career clusters are the organization of careers by similar characteristics and skills (College Occupation Information Network [COIN], 1994).

Career development standards is a set of 12 goals that assist students to see the relationship between what they study and its application in the world of work (Pruitt, 1997).

Career education is a program that empowers students to experience many of the conditions of work by giving them opportunities to apply abstract knowledge to practical problems (Yatvin, 1995).

Career Occupational Preference System Picture Inventory of Careers (COPS-PIC) is a carefully and systematically developed instrument yielding job activity interest scores based on occupational clusters. It is designed to assist individuals in the career decision-making process (Knapp-Lee, 1993).

Hispanic American is “a U.S. citizen, or resident of Hispanic descent. Hispanic relating to or derived from the people, speech, or culture of Spain or of Spain and Portugal; often: Latin-America (of or relating to Spain or Spanish-
speaking Latin America” (Webster’s II, 1996, p. 328). According to Rivera (1996), the terms Hispanic and Latino refer to a group of Americans who share common cultural origins and language and come from diverse nations and backgrounds with distinctive histories and distinctive socioeconomic and political experiences.

National Career Development Guidelines (NCDG) were established to represent the knowledge, skills, competencies, and abilities students need to be successful in life (National Occupational Information Coordinating Committee [NOICC], 1989).

Self-assessment is “a student’s identification of the interrelationship of personal interests to broad occupational areas” (COIN, 1994, p. 4).

Standards describe how and at what level an indicator will be achieved (NOICC, 1989).

Summary

The role of the teacher in career education is viewed as selecting and implementing resources to aid students in understanding the nature of work, interests, and attitudes of the worker in making career choices (Yawkey & Aronin, 2001). Chapter 1 provided a general overview of the study. The chapter discussed the background for the study, presented the importance of a career education program in the elementary school, provided a brief theoretical framework for career awareness and career choice, and discussed the use of a career assessment instrument. The chapter also presented the significance of the study, the purpose of the study, and the need for the study. The problem was
outlined, and the research hypotheses were presented. Chapter 2 provides the literature review that served as the theoretical foundation for this study.
CHAPTER 2
LITERATURE REVIEW

The literature review first examines historical foundations for career education in the early 1970s and 1980s and the pivotal changes that occurred up to the current status of career education. The next sections cover research literature on career awareness, career choices, and the impact of gender and ethnicity on career choice. The review examines research on effective career education programs and concludes with a summary.

Career Education: A Historical Perspective

Career education addresses the question, “What jobs exist out there?” It establishes the foundation for all further career education and involves a general introduction to the world of work (Razeghi, 1983). Commissioner of the U.S. Office of Education Sidney P. Marland, Jr., promoted the concept of career education in 1971 during a speech to the National Association of Secondary School Principals.

According to Terry and Hargis (1992), Marland promoted career education to enable all students to understand the connection between their subjects in school and the competencies required for success in the workplace. Mangum (1992) confirmed “that Marland believed successful employment preparation was the responsibility of the educational system and that ‘all education is career education’” (p. 31).

In 1981 the Career Education Incentive Act was repealed and the Career Education Office became non-existent. Career education was diminished due to
changing federal priorities, the termination of the Office of Career Education, and an economic recession (Terry & Hargis, 1992). Additionally, in 1983 the National Commission on Excellence in Education published *A Nation at Risk*, which warned that American students as a whole were achieving lower skill levels than students in other industrialized nations and summoned a nationwide quest to strengthen public education (L. Johnson, 2000).

The NCDG initiative was launched in 1987 with the National Occupational Information Coordinating Committee (NOICC) to support the expansion of state-level career-development capacity and comprehensive, competency-based career-guidance programs in various local program settings (J. Miller, 1992). The NCDG initiative focuses on three major areas of student development: (a) self-knowledge, (b) educational and occupational exploration, and (c) career planning. The guidelines include the types of functional life competencies each student must attain in order to learn, achieve academic success, and prepare for a satisfying and productive career (Rogala, Lambert, & Verhage, 1991–1992).

Career education progressed into the 1990s, becoming the core of economic and workforce development programs (Terry & Hargis, 1992). The legislation of the 1990s concentrated on educational standards correlating to the world of work (Pruitt, 1997). Johnston and Packer’s (1987) report, *Workforce 2000*, noted the shortage of skilled workers and determined that U. S. employers were pursuing a low-wage economic development strategy.

In 1991 the Secretary’s Commission on Achieving Necessary Skills (SCANS) proposed that U.S. schools must become high-performance
organizations. The commissioners proposed a new educational system with performance standards required for all students by age 16. SCANS identified skills and competencies to be achieved by all students. L. Johnson (2000) reported that SCANS urged schools to incorporate into the curriculum the competencies and skills necessary in the 21st-century workplace that are related to understanding resources and systems, the ability to use information, interpersonal competencies, and the use of technology. He contended that schools have the responsibility for preparing students for the 21st century and that raising achievement standards alone is unlikely to assure success on the part of the student as learner.

The U. S. Congress passed the School-to-Work Opportunities Act of 1994, which originated as a response to the publication of *A Nation at Risk* presented by the National Commission on Excellence in Education in 1983. The intent of this legislation was to provide seed money to states and local collaborative endeavors for the development of school-to-work systems (Guest, 2000a). The legislation grew out of research demonstrating an absence of systems connecting school and work (George Lucas Education Foundation, 2001). The main focus of the legislation was to help students to transition from school to work. Students learned the relationship between academic subjects and the world of work; they also learned that career education is a lifelong, continuous process consisting of three basic stages: (a) awareness, (b) exploration, and (c) participation (Guest, 2000a).
One of the outcomes of the School-to-Work Opportunity Act of 1994 was the SCANS skill and competencies set. The SCANS (1991) report indicated more than half of America’s youth leave school without the knowledge or foundation required to find and hold a good job. "Skill Standards," as defined by the National Skill Standards Board in 1995, are "performance specifications that identify the knowledge, skills, and abilities an individual needs to succeed in the workplace" within an occupational cluster or across an industry sector (p. iii). SCANS purported that schools must begin to help students see the relationships between what they study and its application in real-world contexts (Engles, 1994; Guest, 2000b).

In 2002 President George W. Bush signed the historic bipartisan legislation The No Child Left Behind Act, which promised a higher quality of education for every child in America. This legislation promoted measuring academic success by student performance and results as opposed to the amount of dollars spent per pupil. Local school districts are to be held accountable for student progress and are offered the flexibility to develop curricula needed to prepare students for future learning and a career (West, 2002).

The need for connecting what is learned in school to the world of work is paramount when looking ahead to the world that students will enter after their formal education is completed. According to the Workforce 2000 report on forecast changes, schools are urged to prepare students for a highly automated, decentralized workplace (Johnston & Packer, 1987). The Workforce 2000 report contended that the American educational system has to reconceptualize the way
teaching and learning are being approached in schools if students are to be prepared for the new economy (Reich, 1990).

In summary, the above studies recommend that career education be committed to enabling all students to understand the connection between their subjects in school and the competencies required for success in the workplace. Understanding the workplace also requires education in career awareness.

Career Awareness

Students learn that many different types of jobs are available and that career awareness not only helps students become aware of career clusters or groups of occupations, but also helps them understand the role of work. After successful experiences in career awareness, students are ready for career exploration (Arrington, 2000).

In a 1985 Gallup survey, adults ranked “to develop an understanding about different kinds of jobs and careers, including their requirements and rewards” third among the 25 goals of education (Jones, 1993, p. 327). Likewise, Catlett (1992) contended most urban elementary and early secondary school students are occupationally illiterate. Few elementary students know the meaning of work and jobs, the integral relationship of employment to the economics of society, the impact that the choice of work has on lives, and the rewards of work as well as the preparation needed to compete with the frustrations of work.

McGee and Stockard (1991) reported fourth grade children were less accurate in their estimates of career preparation requirements than in their estimates of occupational earnings. In a Gallup poll commissioned by Kapow
Grand Met, 907 students in Grades 4–6 were surveyed about the work their mothers and fathers performed. Only 48% could explain what their father did at work, and 57% knew what their mothers did at work (Deutschman, 1992). In a similar study conducted by the Foundation for Advancements in Science and Education (cited by Skolnik, 1995), 934 children in Grades 3–6 were asked to name five jobs. Their responses were limited and unimaginative. The top five answers were teacher, principal, doctor, nurse, and lawyer. Fifty-one children had no answers at all. Only 16% of the respondents could name the jobs of family members (Skolnik).

Arrington (2000) reported eighth grade students make statements about wanting to be a lawyer, a doctor, or a marine biologist but do not want to go to school after high school. They do not like being around sick people, do not like science, and do not want to move to a location that has a natural habitat for marine biology work. In order for students to be able to think about their career plans with any kind of depth, they must have a foundation of career awareness and career exploration experiences.

Walls (2000) reported the accuracy of students’ assessment of the preparation time required for 20 well-known occupations did not increase significantly between Grades 6 and 12. Although students in Grade 12 were generally more accurate than students in Grades 3, 6, and 9 in their assessment of the six occupational dimensions studied, their knowledge of career preparation time was significantly lower than their knowledge of occupational earnings and status (Walls).
In a 10-year longitudinal study of the career development of students, the focus was on occupational aspirations and occupational expectations (Helwig, 2004). The study began in 1987 with a sample of 208-second graders attending four elementary schools serving a contiguous area in a suburban location near Denver, Colorado, and concluded when the students were in the 12th grade. The sample included 110 boys and 98 girls and was predominately White (86%), with the remaining students primarily Hispanic Americans (Helwig, 2004). Findings indicated that students' occupational aspirations reflected the social cognitive theory in that second- and fourth grade boys and girls (7 and 9 years of age) selected careers traditionally related to their own gender. Sixth graders had the highest annual salary expectations ($1 million), which was probably due to the 36% of boys who expected to be professional athletes and play football. Students named occupational aspirations that were new to them and began moving away from fantasy and high social value occupations by their senior year in high school. Fifty-six percent of the aspirations named by students as seniors had never been named by them at any time during the previous 10 years, which demonstrated increasing self-awareness and maturity (Helwig, 2004).

Blackhurst et al. (2003) investigated 119 fifth grade students’ understanding of vocational preparation requirements for 15 well-known jobs. Results indicated that by fifth grade, children had developed the conceptual framework for understanding vocational preparation requirements but were highly inaccurate in their application of the framework to specific occupations. The participants underestimated the need for college as well as their own likelihood of
attending college. The researchers stated implications that late elementary school is a particularly opportune time to provide career education. Additionally, by fifth grade students have developed the conceptual framework necessary to understand vocational preparation requirements and appear poised to adjust their educational and occupational aspirations based on perceptions of requirements that mesh with their own educational and occupational aspirations (Blackhurst et al.).

Fifth graders at Thornton Creek Elementary School in the Northville Public School District were among the winners of the 2003 Governor’s Excellence in Practice Award (Michigan Center for Career & Technical Education, 2003). The students participated in the career awareness and exploration program in partnership with the Society of Automotive Engineers and Alcoa Automotive, called “A World in Motion.” Curriculum integration was based on the Michigan Curriculum Framework. Fifth graders interviewed and job-shadowed engineers at Alcoa to find out how they became engineers and how they incorporated math, science, and teamwork into their daily jobs. The students used teamwork, math, science, and technology to build a high-quality Jet Toy. The employer, the Society of Automotive Engineers, parents, and teachers reported that a strong partnership was developed (Michigan Center for Career & Technical Education).

Wessel, Christian, and Hoff (2003) reported on the results of an intervention of a career management plan, the Career Success Club, to enhance undergraduates’ career development. The goal was to help freshman students who are academically undecided to become more connected to their majors by
focusing more on academic and career matters. The Career Success Plan indicated that the Career Success Club may be an effective tool in helping students become more career aware. The authors contended that Career Centers provide interventions to encourage undergraduates to become more career developed. The centers also more directly market the expectation that freshmen become more career focused during the freshmen year (Wessel et al.).

In summary, previous studies suggest that career awareness in the elementary school establishes the foundation for all further career education by incorporating career and work activities into the everyday curricula. Furthermore, elementary students need to know the meaning of work and jobs, with a focus on career and work awareness. Such awareness can help students make educated choices later in their academic and work careers.

Career Choice

This section presents information on students developing realistic plans for reaching their occupational goals and their perceptions of career preparation requirements. A child's positive vision of the future is the most powerful predictor of success (Auman, 1995). Therefore, students must be made aware of the careers available to them and the work involved in achieving those possibilities (Angel & Mooney, 1996).

Pyne, Berns, Magnusson, and Poulsen (2002) reported that needs assessment is often used in career-education program creation; however, adolescents' needs are often inferred by adults rather than by the adolescents for whom the programs are designed. The authors contended that before
implementing a program, planners should have a perspective on the level of
each student’s career understanding. Evidence on soliciting and considering
student input with career planning and programs results in a more effective
program design (Pyne et al.). There is increasing evidence that soliciting and
considering student input results in more effective program design (S. Collins,
1998; Couture, 2000; Gordon, 2000; Hiebert, Collins, & Robinson, 1998;
Lehmanowsky, 1991; Pyne et al., 2002; Robinson, 1999). Hiebert, Collins, and
Robinson (2001) contended, “Student perceptions of their own needs must be
the starting point for program planning” (p. 15).

Career guidance programs that contain a career assessment component
have been found to be of use to students (K. Hughey, Lapan, & Gysbers, 1993).
Jones (1993) reported,

One method used by school counselors to assist students with identifying
their career choices is a career interest inventory followed by an
opportunity for students to learn more about the occupations suggested by
the instrument. The purpose of this guidance is to help students (a) clarify
their career interests, (b) relate the interests to compatible occupations, (c)
learn about occupations of interest, and (d) do further career exploration.
(Introduction sec., ¶1)

Morton et al. (1997) reported on a study in southwestern Ontario, Canada,
on the career interest of 56 (28 male and 28 female) elementary school students.
The authors used two instruments: (a) a questionnaire to obtain demographic
information and record each student’s three primary career choices, which were
ranked as first, second, and third choices, and (b) a 30-item occupational choices
instrument adapted from Holland’s (1973, 1985) Vocational Preference Inventory.
On the first instrument, on occupational interest, students revealed a total of 48
career items, with the majority having one or two children interested. The closer a
score was to 1, the more interested an individual would be in that category. On the second instrument, yes or no responses were given to indicate interest in the occupation Categories containing five or more selections included engineer, athlete, truck driver, doctor, illustrator, dentist, veterinarian, entertainer, nurse, teacher, lawyer, police officer, and fire fighter. The high-profile, nonprofessional category received very high ratings, along with the visual category, whereas the heavy metal and service categories received low ratings.

Findings indicated that male students are drawn more to the high-profile, nonprofessional careers and the careers that could be characterized by excitement, whereas female students showed the more mature career aspirations and selected careers in areas such as lawyer, teacher, and business executive more frequently than male students. A commonality of career aspirations at the elementary school level appeared, regardless of age (Morton et al., 1997).

Morton et al. (1997) concluded that the socialization process has not accomplished an “equalization” of career aspirations. They recommended research on career paths and the development of curriculum materials that (a) include the nature and aspirations of males and females and (b) require students to examine critically media effect with respect to career plans at the elementary and secondary school levels. Recommendations included the need for more research on early influences on career aspirations and the dissemination of information on career aspirations to high school teachers as well as to elementary school personnel.
In a study of vocational/technical and non-college-bound students, Thompson (1985) used an interest inventory to determine whether there was a difference in career interest between the two groups. Findings indicated that the vocational/technical students were more interested in doing work with their hands, whereas those in the non-college-bound sample with no technical training were more interested in the social occupations. Thompson recommended that college-bound students have more counseling to help them identify ways to obtain skills to qualify for an entry-level job.

Lent, Brown, and Hackett (1994) conducted an occupational aspirations longitudinal study using Gottfredson’s theory of career development and social learning theory. They found that the proportion of children who selected professional, technical, and managerial occupational aspirations increased from .62 to .93 from the second to eighth grade, which indicated a trend consistent with Stage 3 of Gottfredson’s theory (Helwig, 2001). The theory holds the social value of occupations become more important as children move from the second stage to the third stage of career development, and from about 9 years of age to about 13–14, the traditional gender of the occupation has less value in occupational selection. Results also demonstrated that by the time the students were seniors, many of the typical fantasy occupations (ballerina, Wonder Woman, cowgirl, princess, Spiderman, model, and professional football player) were much less fantasy. The influence of subjects, after-school activities, school sports team participation, hobbies, lessons taken out of school, and interests
leads secondary students to many of the occupations for realistic rather than for fantasy reasons (Helwig, 2001).

Regardless of the age level studied, a consistent theme in the existing research is the connection between occupational aspirations and educational aspirations (Cook, Church, Ajanaku, Shadish, Kim, & Cohen, 1996; Ramos & Sanchez, 1995). Research has indicated that early educational and occupational aspirations are likely influenced by inaccurate perceptions of career preparation requirements, and the accuracy of perceptions does not appear to change markedly as children mature. Research has demonstrated that children’s early aspirations are relatively stable (Gottfredson, 1981; Trice, 1991; Trice & King, 1991; Trice & McClellan, 1993, 1994), yet some students reach middle school and high school without developing realistic plans for reaching their occupational goals (Solorzano, 1992). That research may also explain why high school students who said they had no intention of attending college reported aspiring to careers requiring a college education (Brantlinger, 1992). Students' occupational and educational aspirations and perceptions can change with guidance in realistic planning for reaching occupational goals and career choices as they mature.

Gender and Career Choice

Gender role is defined as the degree to which individuals consider themselves to be androgynous, masculine, or feminine (Boldizar, 1991). Gender-role stereotyping is the attribution of certain traits or behaviors as male or female specific; it functions on assumptions made by individuals about appropriate
attitudes, behaviors, and personality characteristics for males and females (Sellers et al., 1999). Children acquire a gender-role identity via family, peer group, and school experiences (Havighurst, 1983). Children learn to consider themselves to be at some degree as either masculine or feminine through experiences (Havighurst), which also may foster gender-role stereotyping (Feingold, 1988; McKenna & Ferrero, 1991; M. Miller & Stanford, 1987).

Gender roles are perceived and learned by children at an early age, and children between the ages of 9 and 13 are influenced by social value in choosing careers (Gottfredson, 1981). Barriers in the larger, societal context may include perceptions of economic conditions, job availability, and gender and racial discrimination (Lent et al., 2000). Fantasy occupations for boys remain primary through the sixth grade, yet girls have many fewer fantasy occupations. In the eighth grade, fantasy occupations reach their peak for boys and then diminish through the 12th grade (Helwig, 1998). A decrease in choice of fantasy occupations, especially by boys, may be due to an increasing recognition of barriers that become more obvious in the high school years (Albert & Luzzo, 1999; Helwig, 2001; Lent et al., 2000).

In a study of the occupational aspirations of children, gender, gender role, and socioeconomic status, findings indicated that significant gender differences existed in occupational aspirations (Sellers et al., 1999). Findings also indicated male students selected traditionally male occupations at a higher rate than expected, and female students selected traditionally female occupations. The majority of the children classified gender role as androgynous. No significant
difference was found in how children of differing socioeconomic status selected occupations that were traditionally male or female. Findings suggested that socioeconomic status may not play as substantial a role in occupational choices among children as previous research suggested, and workers of the future will need to be prepared to consider careers without gender bias (Sellers et al., 1999).

In a study of fifth graders, 30 classes were surveyed to determine any complex gender differences in how fifth graders are motivated, how they perceive classroom events, their criteria for success (motivational orientations), their beliefs about the causes of success, and their perceptions of teachers’ expectations (Thorkildsen & Nicholls, 1998). Results revealed that fifth graders distinguish their own motivational orientations from the values promoted in their educational environment. Boys had more limited perceptions of classroom expectations than did girls, and girls had more limited perceptions of their motivational identities than did boys (Thorkildsen & Nicholls).

In another study (Stroeher, 1994), kindergartners from higher and lower socioeconomic status levels were interviewed regarding their beliefs about career roles and aspirations. Responses indicated that children from lower socioeconomic status families hold more traditional views about careers than do their counterparts from higher socioeconomic status families (Stroeher).

Both occupational aspirations and educational attainment are conceived as being influenced by social class, rather than directly mediated by parental aspirations (predicting teenage aspirations) and material conditions (predicting
educational attainment). Growing up in inner cities is an additional burden for men, whereas among women, lack of parental interest plays a similar role (Silbereisen, 2002). Inner-city living among males distracts from experiences that would increase employability, as does early motherhood for females, which results from a lack of supervision. Silbereisen also found gender differences evident in young adulthood, with a very strong disadvantage observed for young women at age 21.

Silva (1990) studied the difference in career knowledge and attitudes between participants in a "hands-on" career awareness program. The participants in the study included a treatment group and a control group of males and females in intermediate grades (fifth and sixth) in an urban community. The treatment group had the opportunity to work at 18 workstations available in a career awareness center, and the control group did not use the 18 workstations. The workstations were designed to provide the participants the opportunity to learn about various occupations through a hands-on approach. The results of Silva’s study indicated no statistically significant difference for the experimental and the control groups.

To determine the career awareness and sources of job information used by sixth grade students, Corso (1989) examined the relationship between career awareness, sex, and ethnicity. A descriptive survey consisting of 17 questions was used in two separate schools from a medium-sized school district in San Gabriel Valley, California. Data were collected from 89 sixth grade students: 24 Latino boys, 20 Anglo boys, 28 Latino girls, and 17 Anglo girls. Corso’s results
revealed no statistically significant differences among gender, ethnicity, and career awareness variables.  

Kloosterman (1994) designed a practicum to provide a program for a small group of Hispanic girls in fifth and sixth grades to develop their awareness of nontraditional career options, gender role stereotyping, and decision-making skills. The program was used in an elementary school located in the suburbs of a major southwestern city. Self-esteem, assertiveness, and decision-making skills were introduced as means of supporting choices made independently of traditional female roles. The program consisted of a variety of weekly lessons that included lecture and discussion, paper-and-pencil activities, role-plays and student interaction, books and videos, activities and games, and guest speakers. An analysis of pre- and posttest results revealed an increase in career awareness, gender role stereotyping awareness, self-esteem, and assertiveness for a majority of the girls. The results support the need for career awareness programs at the fifth and sixth grade levels (Kloosterman).

In a study of 221 students in the 11th grade in a high school in the suburb of Durham, North Carolina, participants used the career decision-making system (Jones, 1993). The treatment consisted of students’ indicating their preferred occupations and school subjects, educational plans, important values, abilities, and interests. Two of six career interest areas were identified with 3 of 18 career clusters of jobs for further exploration. The students worked through the career guidance instrument and explored career reference materials. The control group completed the Career Decision Profile. Three weeks later the treatment and
control groups completed the Vocational Information Exploration Scale. Results indicated that students found the career decision profile instrument to be helpful, with mean ratings ranging from 3.56 to 3.90 on a 5-point scale (Jones, 1993).

Eighty-eight female high school students from a small private Catholic academy in an urban setting in the mid-Atlantic United States participated in a study on the influence of peer relationships on the achievement concerns of female adolescents (Novi & Meinster, 2000). Students were predominantly Caucasian (94%), with the remainder Asian (4%), African American (1%), and Hispanic (1%); the mean age was 17.1 years. The instrument was picture cards associated with themes that portrayed achievement and affiliation. Results indicated that the girls in high-cohesion peer groups tended to receive validation for their achievement strivings from their peers. Novi and Meinster concluded, as Gottfredson (1981) suggested, gender self-concept is the most highly protected aspect of self and will continue to influence achievement-related choices in spite of changing cultural views of women’s work. The authors contended that counseling interventions need to raise awareness about the lives of women who have made the choices that other women anticipate making; additionally, peer groups could be paired with a mentor to amplify the impact of the intervention.

Results of Selkow’s (1984) investigation on the effects of maternal employment on young children’s career aspirations suggested that children of working mothers choose a greater number of occupations and more masculine-oriented occupations than do children of mothers who do not work. The results
also indicated that girls and boys whose mothers are employed in nontraditional fields tend to aspire toward less sex-traditional careers.

Looft (1971) reported results from responses in a study of 64 first and second graders (31 boys and 33 girls) to the question "What do you want to be when you grow up?" Nine boys chose football player, and 4 chose policeman. Less frequent choices included doctor, dentist, priest, pilot, and astronaut. Of the girls, responses revealed 14 chose nurse and 11 chose teacher. The occupations less frequently selected by girls included mother, stewardess, and salesgirl. One girl selected doctor.

To determine whether the women's movement had overcome some of the influences of sexist books and television, Biehler (1982) repeated Looft's (1971) survey, extending it through sixth grade. The vocational choices of the 318 sixth grade participants seemed to be more traditional than nontraditional. Biehler reported that stereotyped ideas regarding sex-role typing seemed to have lessened. The popular choices among the sixth grade girls were still nurses and teachers, although a wider variety of choices were evident (e.g., nuclear scientist). Biehler concluded that many of the same general trends reported by Looft still prevailed in 1982. Cook and Simbayi (1998) contended, "It is imperative that occupational stereotypes among children be attenuated or eliminated completely by providing relevant career information so that the children will be able to make informed career choices" (p. 275).

Both ethnicity and gender affected college students’ perceptions regarding career barriers, educational barriers, and career self-efficacy. Ethnic minority
students perceived greater career and educational barriers than did their European American counterparts and reported less self-efficacy regarding their abilities to cope with the career barriers. Women perceived significantly greater career barriers than men did. Ethnic minorities perceived barriers related to finances and childcare, whereas ethnic minorities and women both expected to receive negative comments and discrimination because of their ethnicity and/or gender (Luzzo & McWhirter, 2001).

Perrone, Sedlacek, and Alexander (2001) explored ethnic and gender differences regarding perceived career barriers and examined career choice goals and perceived career facilitators. They found both ethnic and gender differences in career choice goals and perceived career barriers but only ethnic differences in relation to perceived abilities in career facilitation. African Americans experienced the least career facilitation, because they indicated low academic resilience and low likelihood to exhibit help-seeking behaviors.

To determine whether career choices of male and female Anglo, African American, and Hispanic elementary school children had changed over the past 2 decades 1,611 first through sixth graders from a northwestern Texas school district with 40 elementary schools, and an enrollment of 14,949 students, listed a total of 98 careers, with boys and girls listing approximately the same number of careers. The 151 different career choices listed by the children might be attributed to the greater versatility in children’s experiences through broader exposure to various careers, both real and vicarious, such as watching television where men and women are seen in more nontraditional roles than ever before.
(Bobo et al., 1998). Results supported the findings of Malone and Shope (1978), who suggested that children's career choices are influenced by their own experiences. Children are choosing a wider variety of career options, and stereotyping of careers appears to be less evident (Bobo et al., ¶ 29).

In a study of 81 African American girls and 81 African American boys in the eighth grade in the same school in a large metropolitan community with a population of greater than 2 million, school profiles indicated that approximately 50% of the students lived at or below the poverty level and approximately 50% lived at middle-income level; less than half of the participants were predicted to graduate from high school on time. Findings suggested that when girls receive their parents' emotional support, they perceive that they will be able to make effective career choices and that their career decisions will yield positive consequences (Alliman-Brissett, Turner, & Skovholt, 2004). For African American boys, positive career decision-making expectations were predicted by their parents' career-related modeling, and parents' career-related modeling was either the only or the primary predictor of African American boys' efficacy and outcome expectations. Overall, findings suggested that African American girls are more responsive to their parents' emotional support and boys are more responsive to their parents' career-related modeling (Alliman-Brissett et al., 2004).

Additionally, gender differences are apparent in the Asian American community. The traditional Chinese male-dominated, extremely focused system dictates a past orientation, including honoring and maintaining tradition and
authority. Chinese American women may face cultural or social isolation if they show interest in traditional areas or in changing the balance of family responsibilities (Yang, 1991).

Ethnicity and Career Choice

Some people are not granted the opportunity to make career choices under optimal conditions. Economic needs, educational limitations, lack of familial support, or various other considerations (e.g., gender and ethnic discrimination) may inhibit the pursuit of primary interests or preferred career goals. Barriers or impediments may arise due to conceptual processes of differential opportunities for skill development, self-beliefs, standards, and outcome expectations that may become internalized. Thus, individuals prematurely may turn away from potentially rewarding careers because the environment has offered few confidence-building opportunities or because a lack of ethnic minority representation in that career has led to a lack of self-confidence or lowered occupational expectations, which can make any given career option seem unattainable (Albert & Luzzo, 1999).

Leung (1995) contended socioeconomic barriers have "an adverse effect on the career development of ethnic minorities" (p. 553). Herr and Cramer (1992) observed that due to the advantages inherent in higher socioeconomic status families and the careers of their parents or significant others who may provide career options, Anglo children may acquire more opportunities and a broader range of experiences in career awareness information and guidance unknown to
children from families of lower socioeconomic status, which often include minorities.

African Americans

Changing patterns in careers for African Americans may be attributed to change agents such as the ruling of *Brown v. Topeka*, which led to the desegregation of schools and encouraged African Americans to pursue various career options (Leung, 1995) and the civil rights movement of the 1960s. The civil rights movement became the change agent for many ethnic minorities and women to move from traditional service occupations to careers that required varying types of education (Bobo et al., 1998).

Various theories have been proposed in an effort to understand the reasons that many African Americans are still undereducated and underemployed. For example, the expectancy value theory (Feather & Newton, 1982) proposed that because of the current social and economic conditions of many African American communities, African American adolescents may tend to devalue school and occupational achievement.

Teng, Morgan, and Anderson (2001) reported that the career preparation activities of ethnic minority community college students showed that Black students and older students were less likely to attend career-related lectures than were White students. Differences regarding career goals indicated that security, opportunities for performance, good starting income, freedom to make decisions, and an important and interesting job were more important to Black students; having training benefits was more important to White students (Teng et al.).
African Americans continue to experience lower high school graduation rates than rates in the overall population: 56% for African Americans compared to 71% overall (P. Kaufman, Kwon, & Klein, 2000). In 2002 a lower percentage of African Americans had earned at least a high school diploma (79%) compared to non-Hispanic Whites (89%), according to the U.S. Census Bureau (2002).

Racial differences in college students’ perceptions of and preferences for several business careers revealed that African American students tended to rate the appeal, starting salary, and required education level of the various business careers higher than did Caucasian students. Caucasian students rated autonomy as being more important to them than did African American students (Delvecchio et al., 2001).

African Americans also face barriers related to lower socioeconomic status (Herr & Cramer, 1992). In 2001, of 74.3 million families, of which 8.8 million were African American and 53.6 million were non-Hispanic White, 33% of all African American families and 57% of all non-Hispanic White families had incomes of $50,000 or more (Bernstein, 2003). In 2002, 6.8 million African American men and 51.8 million non-Hispanic White men, aged 16 and older were employed (Bernstein, 2003), and 68% of African American men participated in the labor force as compared with 73% non-Hispanic White men (McKinnon, 2003).

**Hispanic Americans**

The U.S. Census Bureau (2002) reported that the Hispanic population aged 25 and older was less likely to have graduated from high school than non-
Hispanic Whites (57% and 88.7%, respectively). Additionally, more than one quarter of Hispanics had less than a ninth grade education (27%) compared with only 4% of non-Hispanic Whites (U.S. Census Bureau).

Bullington and Arbona (2001) reported on an interview-based study that explored 4 academically successful Mexican American public high school students in a residential summer academic and social enrichment program. A large, urban university in the Southwest sponsored the program, which involved participants in understanding the role that ethnicity played in career-related behaviors. Results indicated that education and planning for future careers were salient for all 4 participants, and the students did not view their ethnic status as incongruent with high educational and vocational aspirations and responsibility for future success or failures.

Similarly, Chung (2002) reported on a study that targeted a southern university sample in order to examine possible differences due to various cultural atmospheres and ethnic compositions in the South. The study supported career commitment as being important to a person’s career development because it affects future decisions, actions, and performance.

Valdivieso and Davis (1988) reported as a group, Hispanics are one of the fastest growing minority groups, as well as the nation’s youngest subpopulation. Hispanics will constitute a growing share of U.S. schoolchildren and young job seekers. Arbona (1995) observed the career development of Hispanics as a salient issue in the social sciences literature and reported it is believed that the
quality of the future U.S. labor market will depend, to a great extent, on this group’s education and job skills.

*Asian Americans*

Hardin, Leong, and Osipow (2001) reported significant ethnic differences in college student career development. Specifically, they found that Asian American students reported career attitudes that were less mature in terms of planfulness or time perspective, exploration, information, decision making, and reality orientation (Herr, 1997) than the attitudes of their European American counterparts. The differences were seen as probably being related to the degree of acculturation. Asian Americans who were highly acculturated and who had lower interdependent self-construal (a sign of Western acculturation) did not differ from European Americans in career choice attitudes. The results of the study indicated that as Asian Americans became more acculturated, they tended to lose their traditional collectivistic orientation and demonstrated career choice attitudes that were more mature (Hardin et al.).

Many Asian American ethnic groups place a high value on education and may have difficulty in the job market because of poor communications skills or because of social conditioning that inhibits behaviors that may be seen as aggressive. Zunker (1990) suggested that such difficulty may motivate Asian Americans to enter occupations that do not require a high level of interaction with others (e.g., engineering, computer science, and economics).

Additionally, Chinese and Korean American students tend to rely on their parents to choose their careers. Therefore, Evanoski and Tse (1989) devised a
career awareness program for Chinese and Korean American parents. The program consisted of 10 three-hour workshops for parents that focused on career choices, decision-making strategies, financial aid, and community college (Evanoski & Tse).

Effective Career Education Programs

Providing opportunities for students to learn about their skills, interests, and values is beneficial for career development and career education programs. One goal of career-development activities is to facilitate career decision making and help students learn the process of making career decisions (F. Hughey & Hughey, 1999).

The teacher has the greatest role in career education. The teacher's function is to select and implement resources to aid the child in understanding the nature of work, interests, and attitudes of the worker and the importance of school to the future role of the student as a worker (Yawkey & Aronin, 2001). Hoyt (2001) contended, "Until we begin to view students and teachers as workers and the classroom as a workplace, career education can never become a top priority for education reform" (p. 327). Hoyt argued, “Instead of employing special career education teachers, all current teachers should spend part of their time as teachers of career education” (p. 329).

A variety of strategies can be used to help students become aware of career opportunities through classroom guidance, career days, career courses, college days, career shadowing, and providing printed resources such as the Occupational Outlook Handbook and access to the Web. In addition, students
should be informed of the educational options available to them (F. Hughey & Hughey, 1999).

To protect the dreams of children and teens will require more than wishful thinking and individual striving; it will take an entire system of informed parents, educators, and business/industry members to create a coherent, developmental sequence of planned activities and experiences for young people. Such activities should engage students their learning, show them the relevance of schooling to their future, and give them essential knowledge and skills to succeed in the workplace (Jensen & Madison, 2003).

Effective programs are not about time; rather, they are about meeting identified student needs and demonstrating measurable impact on important student outcomes. Now is the only time there is. Jensen and Madison (2003) maintained that the way to maximize the use of time is to consider students with motivation problems and to consider approaches to meeting the needs of the following four types of students: (a) those with ability and motivation (can and will), (b) those with ability but no motivation (can but won’t), (c) those who lack skills but are motivated (can’t but will), and (d) those who lack both skills and motivation (can’t and won’t).

According to Jensen and Madison (2003), the alpha career guidance model can aid in the implementation of the K–12 career guidance programs that align with and support student preparation through five core conditions within the host school district. The alpha career guidance model is outcome driven, and the outcomes provide focus for the overall career guidance program, serve as
standards for evaluation, and should be fully integrated into the district’s overall mission and goals. The alpha career guidance model is built around three exit outcomes:

All students will exit high school competent in the academic and technical skills required for success in post-secondary education and the workplace. This outcome emphasizes the importance of guiding students toward greater intellectual achievement and skill development in light of the expectation from employers and post-secondary institutions, as well as highlighting the importance of addressing areas of deficit.

All students will exit high school in pursuit of a specific post-high school goal toward which their education experience has been aligned. This outcome emphasizes the importance of increasing awareness of career and education options, goal setting and education planning, establishing a purpose for learning, and pursuing education pathways in alignment with personal interests and ambitions.

All students will exit high school as responsible managers of their learning, planning, and preparation toward their educational and career ambitions. This outcome emphasizes the importance of student reflection on their learning, self-directedness, and ownership of preparation and life direction. (Jensen & Madison, 2003, p. 74, italics in original)

Effective career guidance programs make a positive difference in terms of student outcomes. According to Maddy-Bernstein and Dare (1997), students at all grade levels fare better when they

- Are exposed to career awareness and exploration before they make critical choices at the high school and postsecondary levels;
- Have continued assistance in identifying their strengths, interests, and aptitudes;
- Are helped to view career paths as a broad range of options available to them;
- Have a well-planned, structured school program to assist them in understanding the world of work;
- Have an opportunity to work/volunteer in business through secondary school programs;
- Find curriculum challenging and relevant to their interests; and
- Work with their parents, counselors, and teachers to select school courses and programs. (p. 2)

Through integrating and embedding materials in the curriculum, all students in a classroom or educational settings are provided with more equitable
opportunities to learn about careers of particular interest to them (Maddy-Bernstein & Dare, 1997). Many exemplary career guidance programs that promote and enhance student performance are effective because they integrate the community at large into the process of educating even young children. Such interactivity involves parents, peers, adults on the job site, and many others who are able to provide a comprehensive range of support services and information that enhance a student’s chances for success (Maddy-Bernstein & Dare).

Summary

The role of the teacher in career education involves the selection and implementation of resources to aid students in understanding the nature of work, interests, and attitudes of the worker in making career choice decisions. Chapter 2 consisted of a review of the literature. Included were several studies related to career education in the elementary school, with particular focus on current perceptions of providing opportunities for students to understand the relevance of schooling in relation to their future and the essential knowledge and skills needed to succeed in the workplace. Additionally, research related to career awareness and choice by gender and ethnicity was discussed. Chapter 3 contains a description of the methods used to collect and analyze data.
CHAPTER 3

RESEARCH METHODS AND PROCEDURES

This chapter presents the research design for this investigation, including the procedures that were used to identify and select the subjects. The purpose of this study was to determine whether there were statistically significant differences between the career choices of fifth grade students in a large, urban school district who were provided career education training and the career choices of fifth grade students who were not provided career education training. SPSS statistical analysis software was used for all statistical analyses, and an alpha-level criterion for rejection was set at the .05 statistically significant level.

This chapter addresses the research method used in conducting this investigation. The chapter covers research design, the population and sample, the variables, the data collection instrument, and content validity and reliability. Additionally, data collection and analysis procedures are presented, followed by a timeline.

Design

The design for this study was a quasi-experimental, nonequivalent control-group design; pretest and posttest data were collected from voluntary intact classrooms. The two groups were matched for gender and ethnic representation. Voluntary schools were randomly selected to participate in the experimental and the control groups. The student population for each school selected represented the ethnic and gender population of the school district composition to the extent possible. Results were completed using a mean standard deviation (MSD), and t-
test analysis. According to Leedy and Ormrod (2001), the nonrandomized control group pretest–posttest design involves two groups to which participants have not been randomly assigned.

Campbell and Stanley (1963) contended that a nonequivalent control group design involves an experimental group and a control group both given a pretest and a posttest, but in which the control group and the experimental group do not have pre-experimental sampling equivalence. Rather, the groups constitute naturally assembled collectives such as classrooms, as similar as availability permits but yet not so similar that one can dispense with the pretest. Leedy and Ormrod (2001) stated that the assignment of X to one group or the other is assumed to be random and under the experimenter’s control.

Population

Participants for this study consisted of fifth grade students selected from a large, urban school district in Texas. The large, urban school district served approximately 158,027 students in Grades K–12, representing a diverse population in which 70 different languages are spoken. The district has a total of 220 schools, encompasses an area of 351 square miles, and includes all or portions of 11 municipalities. Out of a total of 218 schools, 157 were elementary schools, with 135 housing fifth grade students. The student racial/ethnic representation for 2004–2005 contained 98,858 (63%) Hispanic; 47,901 (30%) African American (Black); 9,174 (6%) Anglo (White); 1,619 (1%) Asian American; and 507 (<1%) Native American (Texas Education Agency, 2005).
The total fifth grade population was composed of 11,845 students with the following ethnic and gender representation (Texas Education Agency, 2005): African American (Black), 3,558 (30%); Hispanic, 7,440 (63%); Anglo (White), 707 (6%); Native American, 19 (<1%); Asian American, 121 (1%); males, 6,081 (51%); and females, 5,764 (49%). The schools from which the participants in this study came contain a representative sample of the population demographics of the school district to the extent possible (Texas Education Agency, 2005).

Sample

Kerlinger (1986) reported that (a) the smaller the sample, the larger the error; (b) the larger the sample, the smaller the error; and (c) statistics calculated from large samples are more accurate. Gall, Borg, and Gall (1996) reported that the larger the sample, the smaller the difference, relationship, or effect needed to reject the hypothesis at the .05 level. McNamara (1994) reported that the larger the population, the smaller the percentage of the population needed in the sample and that the maximum sample size for any population is 384. Krejcie and Morgan (1970) stated that a sample size around 375 is adequate for a population of 15,000.

Selecting the Sample to Represent the School District

The criteria for inviting schools to participate included the following: (a) all schools had fifth grade classes; (b) all of the fifth grade classes had at least 20 students with a mixture of boys and girls; (c) all fifth grade classes at a school are involved in the same manner, that is, (d) as a participant in an experimental or
control group; and (e) elementary schools with populations ranging from 200 to 1,000 or more students.

The sample size for this study was based on the total number of schools with fifth grade classes responding favorably to participate in the study. Out of a total of 218 schools, 157 were elementary schools, with 135 of the elementary schools having fifth grade students. All 135 schools were invited to participate in the study. The fifth grade classes for the schools responding favorably to participate in the study totaled 31 from a total of 12 schools. The total number of participants in this study was 700. The fifth grade population ethnic composition for this study included 196 African American (28%), 414 (59%) Hispanic, 63 Anglo (10%), 8 Native American (1%), and 19 Asian American (2%). The gender population included 341 male students (49%) and 359 female students (51%).

Experimental and Control Groups Randomization Selection Process

The name of each participating school was written on a slip of paper and placed in a container for numbering. As each school was drawn, a number in sequential order (1–12) was assigned to that school. The numbers for the schools were drawn with a throw of the dice, alternating drawings, for participating in the experimental or the control group. Numbers were drawn until all schools were assigned to an experimental or a control group. The final selection included six schools for the experimental group and six schools for the control group.
Independent and Dependent Variables

The independent variable was career education training, which is assumed to have some effect on career-awareness and career choice. The dependent variable was the job activity interest score, based on occupational clusters, measured using the COPS Picture Inventory of Careers (COPS-PIC) instrument. The intervening variables were gender and ethnicity.

Permission to Conduct the Study

Permission was requested to do the career education study from the University of North Texas Institutional Review Board (IRB), the large school district's Office of Institutional Research, the principals, the teachers, the parents, and the students. A formal application was presented to the University of North Texas IRB (see Appendix A) and to the assistant superintendent for research for the large school district for approval of an investigation involving the use of human subjects.

Instruments

The data-gathering instruments were the COPS-PIC for Grades 4–12 and a student background survey (see Appendix B). The teachers administered the COPS-PIC to students as a pretest and as a posttest. The survey was administered at the beginning of the study. The student background survey and the COPS-PIC were coded for confidentiality purposes, and names were not used in the study (see Appendix B).

Knapp-Lee (1993) designed the COPS-PIC to assist individuals in the career decision-making process. The COPS-PIC was developed systematically
to yield job activity interest scores based on occupational clusters that may be used as a first step in the career exploration process. The COPS-PIC consists of eight interest clusters that encompass 168 job activity pictures, reflecting work performed in a wide variety of occupations. Instructions are printed on the front of the booklet.

Approximately 30–45 minutes is generally all that is required to respond to the items. The pictured items depict actual tasks performed in specific occupations. The examinees indicate their like or dislike for each activity pictured. Response alternatives allow the examinees to indicate their degree of like or dislike. The COPS-PIC is scored using a set of 14 overlay keys or a machine-scoring form. Three points are added for like very much (L), 2 points for like moderately (l), 1 point for dislike moderately (d), and no points for dislike very much (D). All of the items are added as they appear on the overlay sheet, and the total for each scale is recorded on the profile form. The profile is plotted in the columns labeled M for males and F (shaded column) for females. The scores on each of the 14 scales are connected with a straight line (Knapp-Lee, 1993). Profiles indicating two or three sharp peaks in a particular area identify the examinee’s highest areas of interest.

Teachers of participating classes received the COPS-PIC instrument at a training workshop. Students later completed the instrument with the teacher assisting them by reading the directions out loud and answering questions. The researcher collected the completed COPS-PIC instrument from the teachers (see
Appendix C for permission to use the Developmental Guidance Classroom Activities and the COPS-PIC).

Content Validity and Reliability

Content validity refers to the degree to which the scores yielded by a test adequately represent the content, or conceptual domain, that the scores purport to measure and the usefulness of specific inferences made from the scores (Gall et al., 1996). Content validity addresses whether or not the appropriate content is in the instrument and whether what is intended to be measured is also included in the instrument (Cox, 1996).

Evidence of validity is available for the COPS-PIC in several forms. Internal validation techniques concerned with the item content, stability, and factorial structure of the inventory define what the instrument measures. External validation techniques, including correlations with other instruments, provide further evidence of construct validity. Content validity for the COPS-PIC indicates that results are directly keyed to a career decision-making paradigm that greatly simplifies and clarifies the career exploration process. To confirm the COPS clusters pictorially, an item pool of 215 items was administered to 3,820 high school students. From 3,350 completed inventories (1,850 female and 1,500 male students), item analysis for 14 scales resulted in 10–12 items per scale. Each item loaded the scale at 0.50 or greater, and each of the 10–12 items had its highest loading on the scale for which it was hypothesized (Knapp-Lee, 1993). No item was included that did not have at least 10% endorsement of like very much or like moderately by each sex. Final items were administered to 3,697...
students, 1,872 male and 1,825 female students primarily from Texas, California, and Hawaii, to establish preliminary norms (Knapp-Lee).

Concurrent validity was established through 776 examinees who took the COPS-PIC and ranked their degree of like or dislike (L, l, d, or D) for the 14 career cluster titles (Knapp-Lee, 1993). Results indicated 89% for the highest three rankings of the 14 clusters. The correlation between corresponding scales revealed that the highest correlations in each instance (ranging from .66 to .82) support the validity of the COPS-PIC (Knapp-Lee).

Instrument Reliability

The reliability scores for the instrument (COPS-PIC) for this study were based on 335 cases for the posttest for the control and 365 cases for the posttest for the experimental group. Cronbach’s alpha reliability coefficient was 92% for the control group and 91% for the experimental group for the 14 categories in the COPS-PIC. Therefore, 92% of the control group and 91% of the experimental group’s scores were reproducible or consistently measured. There were no previously reported studies for the COPS-PIC that used an elementary sample and reported reliability coefficients.

According to Gall et al. (1996), the reliability of a test refers to how much measurement error is present in the scores yielded by the test. Reliability is a property of a test’s scores, not of the test itself. Reliability for COPS-PIC for a sample of 3,697 high school students indicated that the coefficients ranged from .84 to .92, with a median of .88 (Knapp-Lee, 1993).
Data Collection

After obtaining permission from the University of North Texas IRB and the large school district’s Office of Institutional Research to perform the research study, data collection procedures began with an introductory letter to all the principals of the school district, teachers, parents, and fifth grade students who were invited to participate in the study. Students whose parents agreed to permit them to participate in the study completed a brief background survey and the COPS-PIC instrument.

Soliciting Principal and School Participation

The principal of each of the 135 elementary schools containing a fifth grade class was mailed a letter and a principal reply card (see Appendix D) early during December 2004 in a self-addressed envelope and through an e-mail inviting them to participate in the study. The principal reply card requested the names of the fifth grade teachers and the number of students in each teacher’s classroom to be invited to participate in the study, to be returned with the principal’s letter of agreement for participating in the study. The introductory letters to principals, teachers, parents, and students explained the nature of the study and reiterated the school district and university IRB approval for the research study with an explanation of the study.

One week after the initial letter was sent to principals requesting their participation in the study, a “thank you” letter and an announcement for the training was sent to principals who had responded favorably to participate in the research study. Upon receipt of the principal reply cards and agreement to
participate in the research study, a letter was mailed to the teachers, parents, and students along with a teacher reply card, parent reply card, and student reply card (see Appendix D) in a self-addressed envelope. Teachers also were sent an e-mail inviting them to participate in the study.

After 5 days, follow-up phone calls; e-mails; and letters with stamped, self-addressed envelopes were sent to principals who had not responded to the initial letter inviting them to participate in the study. The script to request return of consent form second request was used (see Appendix E). As principals responded favorably to participate in the research study, the above procedures were followed for approximately 4 weeks, after which the selection process for the study ended.

Confidentiality Procedures

In order to ensure the confidentiality of participants each school was randomly assigned a number from 1 through 12. The number assignment alternated between the experimental group and the control group. Each participating teacher and student was assigned an experimental or a control group number and a sequential number. The schools were assigned a number placed in a container and drawn randomly. Number 1 was assigned to the first school drawn and the first teacher drawn for that school. When a school had more than one teacher, each teacher was randomly assigned sequential numbers for that school. All students in Teacher 1’s class were randomly assigned sequential numbers. All schools, teachers, and students were assigned numbers in the above manner.
The curriculum used was the Developmental Guidance Classroom Activities (Rogala et al., 1991–1992) and resources. The curriculum is designed to provide classroom activities that promote the NCDG competencies and indicators for developing and enhancing self-knowledge, educational and occupational exploration, and career planning (Rogala et al.). The NCDG are based on the premise that, as all children mature, they pass through various stages vital to their growth. During the stages, specific kinds of learning and development must occur to ensure optimal progress. The NCDG classroom activities address important aspects of a student’s growth. The competencies and indicators represent the knowledge, skills, and abilities students need to cope effectively with daily life, to make the transition to the next level of education, and to develop an educational plan to ensure academic growth and development (Rogala et al.).

The NCDG classroom activities includes a cross-reference matrix that aligns activities and subject areas (language arts/reading, math, health/science, social studies, art/music, and library skills), the NCDG competencies (self-knowledge, exploration, and career planning), and the NCDG corresponding student performance indicators. Lessons include an objective, materials, activity comments section, performance indicators, evaluation, and resources.

According to M. Mickelson (personal communication, December 6, 2004), educational materials developed at the Center on Education and Work are field tested and recommended by a team of outside educators before publication.
Developers strive for meaningful review during product development and use. The publication “The Developmental Guidance Classroom Activities” was cross-referenced to the competencies in the NCDG and includes strategies to evaluate the achievement of the competencies in each of the classroom activities. It was designed by grade level to integrate career development into the classroom. Possible effects of these materials on student learning and development may be enhanced through (a) self-knowledge through career exploration activities, (b) knowledge of various occupations and related education for career choice, and (c) tools for the development of an educational/career plan.

These materials were developed in 1991–1992, and last year alone they were acquired for use in 127 different school districts across the country. Educators continue to give us positive feedback about their usefulness, so we have just had them translated into Spanish for even wider classroom use. (M. Mickelson, personal communication, December 6, 2004).

**Study Implementation Process**

The experimental group participated in the treatment, the Developmental Guidance Classroom Activities (Rogala et al., 1991–1992). The control group did not participate in the treatment. The experimental teachers used the curriculum and resources with children for 4 weeks for at least 30 minutes each day (see Appendix F).

**Teacher Training Procedures**

**Experimental Group Training and Control Group Training**

The training on administration protocol for the COPS-PIC was for 1 day for 2 hours (see Appendix G). The first hour of the training was for the experimental and the control group teachers. The training included a presentation of the
purpose for the study, objectives for the study, review of the timeline, expectations for the study, using the COPS-PIC, and returning the assessment instrument to the researcher for scoring. The experimental group participated in training for another hour on the Developmental Guidance Activities and resources, the teacher survey on program use (see Appendix H), and the principals’ observation form (see Appendix I).

*Instructional Formats*

Instructional formats varied for implementing the career education program due to the instructional design for the schools. In several schools, academic content-specific formats (reading, language arts, science, mathematics, and social studies) were used in which teachers were assigned a specific content or subject to teach. In academic content-specific formats the students moved from classroom to classroom for instruction in a specific subject (reading, language arts, science, mathematics, and social studies) for 90 minutes.

In two of the content-specific classrooms, teachers taught social studies and provided career education instruction to all fifth grade students in the school during their scheduled social studies time. These teachers reported they scheduled and taught the career education program for at least 45 minutes each day during the career education study timeline for all of the fifth grade students in the school. In other content-specific classrooms, teachers reported that they provided career education instruction to all of the fifth grade students in the school and planned and coordinated the time with the other fifth grade teachers.
so that the career education curriculum would be taught on the same day at the same time.

**Teacher Fidelity and Principal Observation**

Teacher fidelity was assessed through the completion of a posttest survey (see Appendix H). The survey covered the number of lessons taught, the total number of days the lessons were taught, and the amount of time for the teaching of the career education program. The results of the survey indicated that the minimum number of lessons taught was 14, and the maximum number of lessons taught was 17. The average time spent on career education lessons was reported as 30 minutes per day. Two social studies content-area teachers reported they taught the career education lessons for 45 minutes each day. The principal completed a brief observation checklist for validating the use of the career education program (see Appendix I). The time reported by principals for observing the career education program ranged from a maximum of 45 minutes to a minimum of 30 minutes. The researcher was able to observe informally at least one career education class taught by each of the participating teachers for an average of 15 minutes.

**Data Analysis**

According to Hinkle, Wiersman, and Jurs (1994), the standard deviation ($SD$) of a set of data is a measure of variation that has the same unit of measurement as the original data. The measure of variation is the square root of the variance. When describing only the variability of a distribution of scores, both the variance and the $SD$ can be used. Additionally, Roberts (2002) contended
that \( SD \) is the average distance for a set of scores from the mean. For measuring variations of scores, \( SD \) is used. A given data set with more variance will have a larger \( SD \). For computing the \( SD \) the formula in Equation 1 was used:

\[
SD = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n - 1}}
\]  

(1)

\( SD \) is each person’s individual score subtracted from the mean and squared. Next, this sum of squared (SS) distances from the mean is divided by \( n - 1 \) (the number of people in the study minus 1). Finally, the square root of the result is calculated (Roberts, 2002).

For this study, a total raw score was computed to obtain a career population index for the 14 career groups on the COPS-PIC. Next, a \( SD \) was computed for each participant to obtain a \( MSD \). This \( MSD \) demonstrated the variability of each person’s responses on the COPS-PIC. Finally, a mean (\( M \)) of all of the \( MSDs \) was computed on the COPS-PIC to obtain a \( MSD \) for the experimental group and a \( MSD \) for the control group. The \( MSDs \) were an overall indicator of how focused or scattered the participants’ career choices were, on average.

A low career population index (raw scores) and a low \( MSD \) on the pretest and posttest indicated that the participants were not sure of what they wanted to be when they grew up (e.g., scores were spread out among all career groups). A high career population index (raw scores) and a high \( MSD \) on the pretest and posttest indicated that the participants were sure of what they wanted to be when they grew up (e.g., scores were more concentrated in one or more areas of
career interest). Further analysis of the data for gender and ethnic career choice differences was reviewed.

The higher the raw score in one career group area, the greater the interest in that occupational group. As the career population index raw scores increased, the MSD of scores increased, and the participants became more focused in a career area(s) of interests. This tendency might indicate that the career education program increased a student’s score on the career population index. The tendency also might indicate that the career education program had some effect on narrowing or focusing the participants’ career choices (the goal of the program).

**Hypothesis 1**

Hypothesis 1: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (experimental group) before their participation in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (experimental group) after they participated in a career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

A dependent samples t test was performed using SPSS 12.0 statistical analysis software (SPSS, Inc., Chicago, www.spss.com). The test determined whether a statistically significant difference existed between the MSD of fifth grade students’ scores on the COPS-PIC career population index before and after participating in a career education program. A change in MSD from low to
high indicated that the students began the program with little idea of a particular
career field or fields of interest and transitioned during the program to a higher
*MSD*, the goal of the career education program. Further analyses of the data for
gender and ethnic career choice differences were reviewed.

**Hypothesis 2**

Hypothesis 2: There are no statistically significant differences between the
*MSD* on the COPS-PIC career population index of fifth grade students (control
group) not participating in a career education program before the experimental
group participated in a career education program and the *MSD* on the COPS-PIC
career population index of fifth grade students (control group) after the
experimental group participated in a career education program. Further analyses
of the data for gender and ethnic career choice differences were reviewed.

A dependent samples *t* test was performed using SPSS 12.0 to determine
whether a statistically significant difference existed between the *MSD* on the
COPS-PIC career population index of fifth grade students (control group) not
participating in the career education program before students (experimental
group) participated in a career education program and the *MSD* on the COPS-
PIC career population index of the fifth grade students (control group) not
participating in a career education program after students (experimental group)
participated in a career education program. No change in career population index
*MSD* from pretest to posttest indicated that the students not participating in a
career education program (control group) could benefit from a career education
program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

Hypothesis 3

Hypothesis 3: There are no statistically significant differences between the \( MSD \) on the COPS-PIC career population index of fifth grade students (experimental group) before their participation in a career education program and the \( MSD \) on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

An independent samples \( t \) test was performed using SPSS 12.0 to determine whether a statistically significant difference existed between the career population index \( MSD \) of fifth grade students (experimental group) before participating in a career education program and the \( MSD \) of fifth grade students (control group) not participating in a career education program. A comparison of career population index \( MSD \) indicated whether the students (experimental group) participating in the career education program began the program with similar levels of career interest when compared to those students (control group) who did not participate in the career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

Hypothesis 4

Hypothesis 4: There are no statistically significant differences between the \( MSD \) on the COPS-PIC career population index of fifth grade students (experimental group) after their participation in a career education program and
the $MSD$ on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program. Further analyses of the data for gender and ethnic career choice differences were reviewed.

An independent samples $t$ test was performed using SPSS 12.0 to determine whether a statistically significant difference existed between the $MSD$ of fifth grade students' (experimental group) career population index scores on the COPS-PIC after participating in a career education program and the $MSD$ of fifth grade students' (control group) career population index scores on the COPS-PIC of students not participating in a career education program. A comparison of $MSD$ indicated whether the students (experimental group) participating in the career education program completed the program with similar levels of career interest when compared to those students (control group) who did not participate in the career education program. Further analyses of gender and ethnicity were reviewed.

Timeline

The timeline for the study was 4 weeks. The students took the pretest on Day 2 of the 1st week. Teachers began using the curriculum for the Developmental Guidance Classroom Activities and resource materials for the career education program with students on Day 2 of the 1st week for 30 minutes each day. Students took the posttest on the last day of the 4th week of the study.

Summary

Chapter 3 contained the design, population, and demographic profile for this study. The researcher explained sampling procedures, independent and
dependent variables, and the approach to acquiring permission to conduct the study. The data gathering instruments, data collection procedures, data analysis, and timeline were also presented.
CHAPTER 4
RESULTS

The purpose of this study was to determine whether there were differences between the career choices of fifth grade students in a large, urban school district who were provided career education training and the career choices of fifth grade students who were not provided career education training. SPSS statistical analysis software was used for all statistical analyses, and an alpha-level criterion for rejection was set at the 0.05 statistically significant level.

Career Education Program Participants

The participants for the study included a total of 12 schools, 31 teachers, 700 students, and 12 principals who participated in the career education research study. Six schools participated in the experimental group, and six schools participated in the control group. Each of the schools was from one of the four geographical areas of the large school district and was representative of the population. Teacher allocation for the participating schools was as follows: One school had 5 teachers, four schools had 1 teacher, three schools had 2 teachers, three schools had 3 teachers, and one school had 7 teachers. The experimental group consisted of 14 teachers, and the control group consisted of 17 teachers. The average number of student participants in a classroom was 21 or more students. The least number of student participants in a classroom was 8, and the largest number of student participants in a classroom was 39 (see Appendix J).
The schools participating in the study had an overall population total of 1,060 students who were possible participants. Of that number of possible participants, 813 students returned letters and took the pretest. Of returned tests, 112 students dropped out between the pretest and the posttest, so 701 students’ pretest and posttest were scored; 700 students’ pretest and posttests were complete, and raw scores were generated. One student’s test was incomplete and no scores were generated, therefore, that test was not used. From 35 teachers who were given the opportunity to participate in the study, 31 teachers returned letters and participated (see Appendix L).

The student population for each school selected represented the gender and ethnic population of the school district composition to the extent possible in the following manner. The fifth grade population ethnic composition for this study included 196 African American (28%), 414 (59%) Hispanic, 63 Anglo (10%), 8 Native American (.0054 = <1%), and 19 Asian American (2%). The gender population included 341 male students (49%) and 359 female students (51%). A comprehensive display of ethnic distribution by school and teacher is presented in Appendix J.

Table 1 shows the gender distribution in the experimental and control groups. The two groups are similar in the following manner: Male students comprised 50.5% of the experimental group and 47.0% of the control group. Female students comprised 49.5% of the experimental group and 53.0% of the control group. A comprehensive display of gender distribution by school and teacher is presented in Appendix J.
Table 1

*Gender Representation*

<table>
<thead>
<tr>
<th>Group</th>
<th>Male</th>
<th>Female</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Experimental</td>
<td>184</td>
<td>50.5%</td>
<td>181</td>
</tr>
<tr>
<td>Control</td>
<td>157</td>
<td>47%</td>
<td>178</td>
</tr>
</tbody>
</table>

Table 2 shows the ethnic distribution in the experimental and control groups. The experimental group was represented by 27% African Americans, 63% Hispanics, 8% Anglo, less than .5% (.0054) Native Americans, and 1.5% Asian Americans. The control group was represented by 30% African Americans, 55% Hispanics, 10% Anglo, 1% Native Americans, and 4% Asian Americans. A comprehensive display of ethnic distribution by school and teacher is presented in Appendix J.

Table 2

*Ethnic Representation*

<table>
<thead>
<tr>
<th>Group</th>
<th>AA</th>
<th>H</th>
<th>A</th>
<th>NA</th>
<th>ASI</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Experimental</td>
<td>97</td>
<td>27%</td>
<td>230</td>
<td>63%</td>
<td>30</td>
<td>8%</td>
</tr>
<tr>
<td>Control</td>
<td>99</td>
<td>30%</td>
<td>184</td>
<td>55%</td>
<td>33</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Note.* AA = African American; H = Hispanic; A = Anglo; NA = Native American; ASI = Asian American.
The COPS Picture Inventory of Careers (COPS-PIC) career inventory was administered to the experimental group and the control group as a pretest prior to the career education training. After 4 weeks the COPS-PIC was administered as a posttest to the experimental group and the control group. Figure 1 shows the different mean standard deviations (MSDs) found from the COPS-PIC and used to test the research hypotheses for this study. The pretest MSD was lower (experimental group 8.91 and control group 9.82) than the posttest MSD (experimental group 16.8 and control group 11.83).

![Graph showing pretest to posttest mean standard deviations](image)

**Figure 1.** Experimental versus control group pretest to posttest.

Table 3 shows the descriptive statistics for the experimental group before and after the treatment. The experimental group’s pretest MSD was 8.91 before participation in the career education program and was lower than the posttest MSD of 16.86 after participation in the career education program. The
experimental group’s pretest and posttest results are normally distributed as indicated by the skewed statistics (.30) for the pretest and (-.59) for the posttest. The kurtosis statistics indicated that the overall distribution is within the acceptable limits of a normal distribution.

Table 3

*Experimental Group Descriptive Statistics*

<table>
<thead>
<tr>
<th></th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>N</td>
<td>MSD</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Pretest</td>
<td>361</td>
<td>8.91</td>
</tr>
<tr>
<td>Posttest</td>
<td>365</td>
<td>16.86</td>
</tr>
</tbody>
</table>

*Note.* Four students had missing pretest MSD values.

Table 4 shows further analysis of the data for the posttest descriptive statistics for the experimental group’s participants by ethnicity. Table 4 shows that the Anglo ethnic group of 30 participants had a higher MSD (18.35) at the end of the study than all of the other ethnic groups represented.

Table 5 shows further analysis of the data for the posttest descriptive statistics for the experimental group’s participants by gender. Table 5 shows that the 181 female participants had a higher mean SD (17.21) at the end of the study than the male participants (16.51).
Table 4

*Experimental Group Ethnic Descriptive Statistics*

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>MSD</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>97</td>
<td>16.70</td>
<td>5.53</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>230</td>
<td>16.72</td>
<td>5.58</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>30</td>
<td>18.35</td>
<td>5.97</td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>2</td>
<td>16.00</td>
<td>2.47</td>
<td></td>
</tr>
<tr>
<td>Asian American</td>
<td>6</td>
<td>17.56</td>
<td>6.59</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>365</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5

*Experimental Group Gender Descriptive Statistics*

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>MSD</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>184</td>
<td>16.51</td>
<td>5.67</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>181</td>
<td>17.21</td>
<td>5.52</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>365</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 shows the descriptive statistics for the control group before and after the treatment was administered to the experimental group. The control group’s pretest *MSD* (9.82) before the experimental group’s participation in the career education program was lower than the posttest *MSD* (11.83) after the experimental group’s participation in the career education program.

Table 6 shows that the control group’s pretest and posttest results were normally distributed, as indicated by the skewed statistics (.09) for the pretest
and (.32) for the posttest. The kurtosis statistics indicated that the overall
distribution was within the acceptable limits of a normal distribution.

Table 6

*Control Group Descriptive Statistics*

<table>
<thead>
<tr>
<th>Test</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>MSD</td>
</tr>
<tr>
<td>Pretest</td>
<td>331</td>
<td>9.82</td>
</tr>
<tr>
<td>Posttest</td>
<td>335</td>
<td>11.83</td>
</tr>
</tbody>
</table>

*Note.* Four students had missing pretest *MSD* values.

Table 7 shows further analysis of the data for the posttest descriptive
statistics for the control group ethnic participants. Table 7 shows that the Anglo
ethnic group of 33 participants had a higher *MSD* (12.41) than all of the other
ethnic groups represented.

Table 8 shows further analysis of the data for the posttest descriptive
statistics for the control group’s participants by gender. Table 8 shows that the
female participants had a higher *MSD* (12.28) than the male participants (11.33).
Table 7

_Control Group Ethnic Descriptive Statistics_

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>99</td>
<td>11.21</td>
<td>5.86</td>
</tr>
<tr>
<td>Hispanic</td>
<td>184</td>
<td>12.05</td>
<td>5.37</td>
</tr>
<tr>
<td>White</td>
<td>33</td>
<td>12.41</td>
<td>5.38</td>
</tr>
<tr>
<td>Native American</td>
<td>6</td>
<td>11.50</td>
<td>6.31</td>
</tr>
<tr>
<td>Asian American</td>
<td>13</td>
<td>12.18</td>
<td>6.94</td>
</tr>
<tr>
<td>Total</td>
<td>335</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8

_Control Group Gender Descriptive Statistics_

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>157</td>
<td>11.33</td>
<td>5.84</td>
</tr>
<tr>
<td>Female</td>
<td>178</td>
<td>12.28</td>
<td>5.41</td>
</tr>
<tr>
<td>Total</td>
<td>335</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis 1

Hypothesis 1 was the following: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (experimental group) before their participation in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (experimental group) after they participated in a career
education program. Further analysis of the data for gender and ethnicity career choices was reviewed.

A paired samples t test was performed using SPSS 12.0 to determine whether a statistically significant difference existed between the MSD of fifth grade students (experimental group) on the COPS-PIC career population index before and after participating in a career education program.

Table 9 indicated that the paired sample $t = 24.91$ with $p < .001$ was greater than the critical value at the .05 level of significance. The null hypothesis was rejected. There was a statistically significant difference between the pretest and the posttest MSD on the COPS-PIC career population index of fifth grade students (experimental group) before and after their participation in a career education program. Further analysis of the data revealed no statistically significant career choice differences for gender and ethnic groups for the experimental group. Eta-squared indicated that only 1% of the dependent variable variance was explained by ethnicity. The 181 female participants had a higher MSD (17.21) at the end of the study than the male participants' MSD (16.51), and the Anglo ethnic group of 30 participants had a higher MSD (18.35) at the end of the study than all of the other ethnic groups represented.

A change in career population index MSD from low to high indicated that the students began the program with little idea of a particular career field or fields of interest. During the program, they transitioned to a higher MSD, representing increased awareness of career fields, and the goal of the career education program. The statistically significant results had an effect size of 1.64. According
to Cohen (1988), an effect size from .80 is considered large. The formula shown in Equation 2 was used to compute Cohen’s $d$:

$$\text{Cohen's } d = \frac{\bar{X}_{\text{post}} - \bar{X}_{\text{pre}}}{SD_{\text{pre}}} = \frac{16.88 - 8.91}{4.86} = \frac{7.97}{4.86} = 1.64 \quad (2)$$

Table 9

*Experimental Group Dependent t Test*

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>Mean difference</th>
<th>SE mean difference</th>
<th>t</th>
<th>$p$ (2-tailed)</th>
<th>$d^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest/Posttest</td>
<td>360</td>
<td>7.98</td>
<td>.32</td>
<td>24.91</td>
<td>&lt;.001*</td>
<td>1.64</td>
</tr>
</tbody>
</table>

* $p < .05$ level of significance.

$^a$Effect size computed using Cohen’s $d$.

*Note. df = 361 - 1 =360. Four students had missing pretest MSD.*

Table 10 presents results for a one-way analysis of variance for the experimental group by ethnicity. Table 10 shows that the $p$ value of .65 was greater than the .05 level of significance. Further analysis of the data revealed no statistically significant career choice differences between ethnic groups for the experimental group. Eta-squared indicated that only 1% of the dependent variable variance was explained by ethnicity. The Anglo ethnic group of 30 participants had a higher MSD (18.35) than all of the other ethnic groups represented. Sample sizes varied greatly from Native American = 2 to Hispanics = 230 (see Table 4). The implication for the small sample size (2) for Native Americans is inconclusive.
Table 10

*Experimental Group Ethnic One-Way Analysis of Variance Posttest*

<table>
<thead>
<tr>
<th>Experimental group</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>(\eta^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>78.25</td>
<td>4</td>
<td>19.56</td>
<td>.62</td>
<td>.65*</td>
<td>.10</td>
</tr>
<tr>
<td>Within groups</td>
<td>11349.49</td>
<td>360</td>
<td>31.53</td>
<td>.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11427.74</td>
<td>364</td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* \(p < .05 \) level of significance.

\(\eta^2\) Effect size using \(\eta^2\).

Table 11 shows that the Levene’s test for equality of variances resulted in

\(F = .31, p = .87\). Equal variance for the two groups was met.

Table 11

*Levene’s Test for Equality of Variances*

<table>
<thead>
<tr>
<th>Pretest</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>.31</td>
<td>.87*</td>
</tr>
</tbody>
</table>

* \(p < .05 \) level of significance.

Table 12 presents further analysis of the data for the experimental group gender participants. Table 12 shows a \(p\) value of .23. There were no statistically significant career choice differences between gender participants in the experimental group. The 181 female participants had a higher MSD (17.21) at the end of the study than the male participants (16.51), and eta-squared indicated that only 1% of the dependent variable variance was explained by gender.
Table 12

Experimental Group Gender One-Way Analysis of Variance Posttest

<table>
<thead>
<tr>
<th>Experimental group</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>45.75</td>
<td>1</td>
<td>45.75</td>
<td>1.46</td>
<td>.23*</td>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
<td>11381.99</td>
<td>363</td>
<td>31.36</td>
<td></td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11427.74</td>
<td>364</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05 level of significance.

\( \eta^2 \) Effect size using \( \eta^2 \).

Hypothesis 2

Hypothesis 2 was the following: There are no statistically significant differences between the \( MSD \) on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program before the experimental group participated in a career education program and the \( MSD \) on the COPS-PIC career population index of fifth grade students (control group) after the experimental group participated in a career education program. Further analysis of the data for gender and ethnicity career choice differences was reviewed.

Table 13 shows that a paired samples dependent \( t \) test was performed using SPSS 12.0 to determine whether a statistically significant difference existed between the \( MSD \) on the COPS-PIC career population index for the control group before the experimental group participated in a career education program and the \( MSD \) for the control group after the experimental group participated in a career education program. A change in \( MSD \) from pretest to
posttest was examined to determine if the students not participating in a career education program (control group) had a statistically significant change in career field or fields of interest as measured by the *MSD*.

Table 13 presents a paired *t* = 2.09, *p* < .001. The null hypothesis was rejected. There was a statistically significant difference between the *MSD* on the COPS-PIC career population index of the fifth grade students (control group) before and after the experimental group participated in a career education program. Further analysis of the data revealed no statistically significant career choice differences for gender and ethnic groups for the control group. However, the 178 female participants had a higher *MSD* (12.28) than the male participants (11.33), and the 33 White ethnic group participants had a higher *MSD* (12.41) than all of the other ethnic groups represented.

Table 13

*Control Group Paired Samples Dependent t Test*

<table>
<thead>
<tr>
<th>df</th>
<th>MSD</th>
<th>SE mean</th>
<th><em>t</em></th>
<th><em>p</em> (2-tailed)</th>
<th><em>d</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>333</td>
<td>-1.55119</td>
<td>0.24596</td>
<td>6.307</td>
<td>&lt;.001*</td>
<td>0.44</td>
</tr>
</tbody>
</table>

* *p* < .05 level of significance

The students transitioned to a more focused area of interest, which was a representation of their *MSD* in the responses and how much they expressed interest in some areas as compared to other areas (high variability) at the end of the career education study. Table 13 shows the resulting effect size, *d* = .44. According to Cohen (1988), this effect size is considered average. The control
group’s change in \( MS D \) from low to high can be considered average. The formula shown in Equation 3 was used to compute Cohen’s \( d \):

\[
\text{Cohen's } d = \frac{\bar{X}_{\text{post}} - \bar{X}_{\text{pre}}}{SD_{\text{pre}}} = \frac{11.91 - 9.82}{4.79} = \frac{2.09}{4.79} = .44 
\]

Equation 3

Table 14 shows further analysis of the data for the control group’s participants by ethnicity. Table 14 shows \( F = .48, p = .75 \). There were no statistically significant career choice differences between the control group’s participants by ethnicity. Eta-squared indicated that only 1\% of the dependent variable variance was explained by ethnicity.

Table 14

<table>
<thead>
<tr>
<th>Control Group Ethnic One-Way Analysis of Variance Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
</tr>
<tr>
<td>SS</td>
</tr>
<tr>
<td>df</td>
</tr>
<tr>
<td>MS</td>
</tr>
<tr>
<td>( F )</td>
</tr>
<tr>
<td>( p )</td>
</tr>
<tr>
<td>( \eta^2 )</td>
</tr>
<tr>
<td>Between groups</td>
</tr>
<tr>
<td>60.88</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>15.22</td>
</tr>
<tr>
<td>.48</td>
</tr>
<tr>
<td>.75</td>
</tr>
<tr>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
</tr>
<tr>
<td>10507.08</td>
</tr>
<tr>
<td>330</td>
</tr>
<tr>
<td>31.84</td>
</tr>
<tr>
<td>.99</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>10567.96</td>
</tr>
<tr>
<td>333</td>
</tr>
<tr>
<td>1.00</td>
</tr>
</tbody>
</table>

\( ^* \) \( p < .05 \) level of significance.  
\( ^a \) Effect size using \( \eta^2 \).

Table 15 shows further analysis of the data for the control group’s participants by gender. Table 15 shows \( F = 2.41, p = .12 \). There were no statistically significant differences between the control group participants by gender. Eta-squared indicated that only 1\% of the dependent variable variance was explained by gender.
Table 15

Control Group Gender One-Way Analysis of Variance Posttest

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>75.96</td>
<td>1</td>
<td>75.96</td>
<td>2.41</td>
<td>.12*</td>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
<td>10491.99</td>
<td>33</td>
<td>31.51</td>
<td></td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10567.96</td>
<td>334</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$ level of significance

$\eta^2$ Effect size using $\eta^2$.

Hypothesis 3

Hypothesis 3 was the following: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (experimental group) before their participation in a career education program and the MSD on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education. Further analysis of the data for gender and ethnicity career choices was reviewed.

An independent samples $t$ test was performed using SPSS 12.0 to determine whether a statistically significant difference existed between the career population index MSD of fifth grade students’ (experimental group) before participating in a career education program and the MSD of the fifth grade students’ (control group) not participating in a career education program. A comparison of MSD indicated whether the students (experimental group) who participated in the career education program began the program with similar
levels of career interest of students (control group) who did not participate in the career education program.

Table 16 shows the descriptive statistics for the experimental group and the control group before the treatment. Table 16 shows that the pretest MSD of scores (8.91) for the experimental group before participation in the career education program was lower than the pretest MSD (9.82) for the control group before the experimental group participated in the career education program. The experimental group’s pretest skewness statistics (.30) and the control group’s pretest skewness statistics (.09) indicated that the two groups were normally distributed. The kurtosis statistics indicated that the overall distribution was within the acceptable limits of a normal distribution.

Table 16

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean MSD</th>
<th>SD MSD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group pretest</td>
<td>361</td>
<td>8.91</td>
<td>4.86</td>
<td>.30</td>
<td>-.63</td>
</tr>
<tr>
<td>Control group pretest</td>
<td>331</td>
<td>9.82</td>
<td>4.79</td>
<td>.09</td>
<td>-.85</td>
</tr>
</tbody>
</table>

Table 17 shows that the Levene’s test for equality of variances resulted in $F = .35$, $p = .55$. Equal variance for the two groups was met.
Table 17

Levene’s Test for Equality of Variances

<table>
<thead>
<tr>
<th>Pretest</th>
<th>F</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>.35</td>
<td>.55*</td>
</tr>
</tbody>
</table>

*p < .05 level of significance.

Table 18 shows \( t = -2.47, p = .01 \). The null hypothesis was rejected. There was a statistically significant difference between the MSD on the COPS-PIC career population index of the experimental group of fifth grade students before their participation in a career education program and the MSD on the COPS-PIC career population index of the control-group fifth grade students not participating in a career education program. Further analysis of the data revealed no statistically significant career choice differences for gender and ethnic groups for the experimental group and the control group. Eta-squared indicated that only 1% of the dependent variable variance was explained by gender and ethnicity.

Table 18

Experimental and Control Group Independent t Test

<table>
<thead>
<tr>
<th>t</th>
<th>df</th>
<th>p (2-tailed)</th>
<th>Mean MSD Difference</th>
<th>MSD SE difference</th>
<th>( d^a )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>-2.47</td>
<td>690</td>
<td>.01*</td>
<td>-.91</td>
<td>.37</td>
</tr>
</tbody>
</table>

*p < .05 level of significance.

\( d^a \) Effect size computed using Cohen’s \( d \).
These results indicated that the experimental group did not begin the career education program with similar levels of career interest MSD when compared to the MSD of those students (control group) who did not participate in the career education program. The findings of students’ not starting at the same level of career interest may be attributed to experiences, maturity, television, parents’ careers or other factors. A small effect size was reported (Cohen’s $d = .09$). The formula shown in Equation 4 was used to compute Cohen’s $d$:

$$\text{Cohen’s } d = \frac{t}{\sqrt{n}} = \frac{-2.47}{\sqrt{700}} = \frac{-2.47}{26.46} = .09$$

(4)

Hypothesis 4

Hypothesis 4 was the following: There are no statistically significant differences between the MSD on the COPS-PIC career population index of fifth grade students (experimental group) after their participation in a career education program and the MSD of scores on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program. Further analysis of the data for gender and ethnicity career choice differences was reviewed.

The COPS-PIC was administered at the end of the study to students who participated in the career education program (experimental group) and to students who did not participate (control group) in the career education program. An independent samples $t$ test was performed using SPSS 12.0 to determine whether a statistically significant difference existed between the MSD of fifth grade students’ (experimental group) scores on the COPS-PIC career population
index and the MSD of fifth grade students (control group) who did not participate in a career education program, after the experimental group participated in the career education program.

Table 19 shows the posttest descriptive statistics for the experimental group and the control group. Table 19 shows that the posttest MSD scores (16.86) for the experimental group after participation in the career education program was higher than the posttest MSD scores (11.83) for the control group after the experimental group participated in the career education program.

Table 19

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>MSD</th>
<th>Skewness Statistic</th>
<th>SE</th>
<th>Kurtosis Statistic</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>365</td>
<td>16.86</td>
<td>5.60</td>
<td>.13</td>
<td>.22</td>
<td>.26</td>
</tr>
<tr>
<td>Control group</td>
<td>335</td>
<td>11.83</td>
<td>.32</td>
<td>.13</td>
<td>-.09</td>
<td>.27</td>
</tr>
</tbody>
</table>

These results indicated that the experimental group completed the career education program at a higher level of career interest than the control group. The experimental group’s pretest skewness statistics (-.59) and the control group’s pretest skewness statistics (.32) indicated that the two groups were normally distributed. The kurtosis statistics indicated that the overall distribution was within the acceptable limits of a normal distribution.

Table 20 shows that the significance for the Levene’s test for equality of variances resulted in $F = .59, p = .44$. Equal variance for the groups was met.
**Table 20**

*Levene’s Test for Equality of Variances*

<table>
<thead>
<tr>
<th>Posttest</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>.59</td>
<td>.44</td>
</tr>
</tbody>
</table>

Table 21 indicates $t = 11.83$, $p < .001$. The null hypothesis was rejected.

Further analysis of the data revealed no statistically significant career choice differences for gender and ethnic groups for the experimental group and the control group. Eta-squared indicated that only 1% of the dependent variable variance was explained by ethnicity and gender.

**Table 21**

*Experimental Group Independent t Test*

<table>
<thead>
<tr>
<th>t</th>
<th>df</th>
<th>$p$ (2-tailed)</th>
<th>MSD</th>
<th>SE difference</th>
<th>d&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttest</td>
<td>11.83</td>
<td>698</td>
<td>$&lt;.001^*$</td>
<td>5.02</td>
<td>42</td>
</tr>
</tbody>
</table>

*p < .05 level of significance.

<sup>a</sup>Effect size computed using Cohen’s d.

There was a statistically significant difference between the MSD on the COPS-PIC career population index for the experimental group after their participation in a career education program and the MSD on the COPS-PIC career population index for the control group after the experimental group participated in a career education program. A difference in career population index MSD posttest between the experimental and control group students indicates that the career education program was effective. Cohen’s $d$ indicated an average effect size (Cohen’s $d = .45$).
Further analysis of the data revealed no statistically significant career choice differences for gender and ethnic groups for the experimental group and the control group. The female students in the experimental group had a higher posttest MSD (17.21) than the experimental group’s male students (16.51), the control group’s male students (11.33), and the control group’s female students (12.28) and the experimental group’s male students had a higher MSD (16.51) than the control group’s male and female students. Eta-squared indicated that only 1% of the dependent variable variance was explained.

The students transitioned to a more focused area of interest as measured by the mean standard deviation (MSD), which is a representation of their variability in the responses and how much they were interested in some areas as compared to other areas at the end of the career education study. The transition during the career education program to a higher mean standard deviation (MSD) demonstrated increased focus in areas of interest, which was the goal of the career education program. The formula shown in Equation 5 was used to compute Cohen’s $d$:

$$
Cohen's \ d = \frac{t}{\sqrt{n}} = \frac{11.83}{\sqrt{700}} = .45
$$

(5)

Table 22 shows that the female students in the experimental group had a higher posttest MSD (17.21) than the experimental group’s male students (16.51), the control group’s male students (11.33), and the control group’s female students (12.28). The experimental group’s male students had a higher MSD (16.51) than the control group’s male and female students.
Table 22

*Gender Group Descriptive Statistics Posttest*

<table>
<thead>
<tr>
<th>Group/Gender</th>
<th>N</th>
<th>MSD</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>157</td>
<td>11.33</td>
<td>5.84</td>
</tr>
<tr>
<td>Female</td>
<td>178</td>
<td>12.28</td>
<td>5.41</td>
</tr>
<tr>
<td><strong>Experimental group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>184</td>
<td>16.51</td>
<td>5.67</td>
</tr>
<tr>
<td>Female</td>
<td>181</td>
<td>17.21</td>
<td>5.52</td>
</tr>
</tbody>
</table>

Table 23 indicates a summary of the analysis of variance (ANOVA) posttest analysis by gender. There were no statistically significant differences between groups by gender.

Table 24 indicates a summary of the ANOVA posttest analysis by ethnicity. There were no statistically significant differences between ethnic groups.
<table>
<thead>
<tr>
<th>Group</th>
<th>SS</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>75.96</td>
<td>1</td>
<td>75.96</td>
<td>2.41</td>
<td>.12*</td>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
<td>10491.99</td>
<td>333</td>
<td>31.51</td>
<td>.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0567.95</td>
<td>334</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>45.75</td>
<td>1</td>
<td>45.75</td>
<td>1.46</td>
<td>.23*</td>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
<td>11381.99</td>
<td>363</td>
<td>31.36</td>
<td>.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>427.74</td>
<td>64</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05 level of significance.
Effect size computed using $\eta^2$. 

Table 23: Analysis of Variance: Posttest Gender Analysis
Table 24

Analysis of Variance: Posttest Analysis of Ethnicity

<table>
<thead>
<tr>
<th>Group</th>
<th>SS</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>60.88</td>
<td>60</td>
<td>15.22</td>
<td>.48</td>
<td>.75*</td>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
<td>0507.08</td>
<td>330</td>
<td>31.84</td>
<td>.99</td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10567.96</td>
<td>334</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>78.25</td>
<td>4</td>
<td>19.56</td>
<td>.62</td>
<td>.65*</td>
<td>.01</td>
</tr>
<tr>
<td>Within groups</td>
<td>1349.49</td>
<td>360</td>
<td>31.53</td>
<td></td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11427.74</td>
<td>364</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05 level of significance.
Effect size computed using $\eta^2$

Content Validity for This Instrument

Content validity for this instrument indicated that results from the COPS-PIC were directly keyed to a career decision-making paradigm that greatly simplifies and clarifies the career exploration process. The participants in the control group and the experimental group were able to follow the directions and complete the instrument as prescribed. The content in the instrument was appropriate for the grade level, and the instrument effectively measured what it was designed to measure (career choices). The COPS-PIC’s 168 job activity pictures reflect work performed in a wide variety of occupations with a free choice format. The instrument was administered to 700 fifth grade students (341 male and 359 female students).
EdITS (1991) reported on the validity of the COPS with 1,577 students in Grade 12 enrolled in vocational education classes. Results indicated that each vocational group had a peak in its own cluster and that all ANOVAs were significant at the .01 level. The students’ performance indicated that they had higher interest scores in the cluster to which they belonged according to their class selection. The COPS interpretation stipulated that students consider occupations in their three highest interest areas.

**Instrument Reliability**

Table 25 shows the reliability scores for the posttest for the control group for this study. There were a total of 335 cases for the control group’s posttest internal consistency reliability coefficient. One case was excluded, which left a remaining total of 334 cases for the control group’s posttest reliability coefficient. The control group’s Cronbach’s alpha reliability coefficient was .92 for the 14 categories in the COPS-PIC posttest. Therefore, 92% of a student’s score was reproducible or consistently measured.

**Table 25**

*Control Group Posttest Reliability*

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>Cronbach’s alpha</th>
<th>Number of categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>334</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excluded</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>335</td>
<td>.92</td>
<td>14</td>
</tr>
</tbody>
</table>

*Note. Scale statistics: mean = 165.84, standard deviation = 78.81*
Table 26 shows the reliability scores for the posttest for the experimental group for this study. There were a total of 365 cases for the experimental group’s posttest internal consistency reliability; no cases were excluded. The experimental group’s Cronbach’s alpha reliability coefficient was .91 for the 14 categories in the COPS-PIC posttest. Therefore, 91% of a student’s score was reproducible or consistently measured. COPS-PIC reported reliability coefficients ranging from .84 to .92 (Knapp-Lee, 1993). In addition, there were no previously reported studies that used an elementary sample and reported reliability coefficients.

Table 26

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>Cronbach’s alpha</th>
<th>Number of categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>365</td>
<td>.91</td>
<td>14</td>
</tr>
<tr>
<td>Excluded</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>365</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary

Chapter 4 presented the results of the effects of a career education program on the career choices of fifth grade students, as measured by responses to the COPS-PIC career inventory. The overall results indicated that the experimental group’s MSD showed a statistically significant increase from the pretest to the posttest. A discussion of the results is provided in chapter 5.
CHAPTER 5

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Summary

The goal of this study was to determine whether there were statistically significant differences between the career choices of fifth grade students in a large, urban school district who were provided career education training and the career choices of fifth grade students who were not provided career education training. SPSS statistical analysis software was used for all statistical analyses, and an alpha-level criterion for rejection was set at the .05 level.

A review of the literature revealed a trend to investigate the effects of career education on the career choices of students and the use of a career inventory instrument. It also revealed a trend toward studying differences among ethnic groups and male and female students’ career choices. The trend suggests that school districts may wish to revisit studies previously conducted to enlighten constituents with up-to-date methods for career education and career choice information.

Twelve schools participated in this study. The schools represented the fifth grade student population in a large, urban school district in Texas. The sample was divided by ethnicity—African American (196), Hispanic (414), Anglo (63), Native American (8), and Asian American (19)—and by gender—male (341) and female (359).
Discussion

Hypothesis 1

Results suggested that the first null hypothesis be rejected \((t = 24.91, p < .001)\). Hypotheses 1 predicted that there would be no statistically significant difference between the mean standard deviation \((MSD)\) on the COPS Picture Inventory of Careers (COPS-PIC) of fifth grade students before and after their participation in a career education program. The findings also indicated that there were no statistically significant difference for gender and ethnicity (experimental group: gender \(F = 1.46, p = .23\); ethnicity \(F = .62, p = .65\)). Eta-squared indicated that only 1% of the dependent variable variance was explained by ethnicity and gender.

The female participants had a higher \(MSD\) (12.28) than the male participants \((MSD = 11.33)\). These results may indicate that girls are increasing the variety of careers that they choose because women have moved into more nontraditional careers and the range of role models have increased for them. Further research is needed in this area.

The Anglo participants (30 students) had a higher \(MSD\) (18.35) than all of the other ethnic group participants. These findings may be due to the higher socioeconomic status of the Anglo students’ families and the careers of their parents or guardians who may provide them with more examples of careers, opportunities, and experiences to explore careers, whereas families of lower socioeconomic status, which often include the minority students, may be unable to provide them with career information and experiences. This study did not look
at the impact of families and socioeconomic status on the career choices of elementary school children. Further research is needed in these areas. These results support those of Dillard and Perrin (1980), who contended that the middle to high socioeconomic status of Anglo children provided a wider range of experiences, due to the advantages inherent in higher socioeconomic status. The results are also in agreement with Malone and Shope (1978), who reported that children’s career choices are influenced by their own experiences and may be attributed to the greater versatility in experiences where men and women are seen in more nontraditional roles.

The researcher concluded from the study findings that fifth grade students who participated in a career education program transitioned to a more focused area of career interest. The researcher was interested in investigating whether a career education program would have a statistically significant effect on the career choices of fifth grade students.

The null hypothesis was rejected, and the data supported the assumption that the career education program would make a statistically significant difference between the pretest scores, prior to career education training, and posttest scores, after career education training. Findings suggested that the career education program had a positive impact on the career choices of fifth grade students (Cohend’s $d = 1.64$). These findings are important and provide support for a career education program for elementary children to begin reflecting on the world of work and careers in a meaningful manner.
Hypothesis 2

The findings indicated that null Hypothesis 2 was rejected \( (t = 8.33, p < .001) \). Hypothesis 2 stated that there would be no statistically significant difference between the MSD on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program before and after the experimental group participated in a career education program. The findings also indicated that there were no statistically significant difference for gender and ethnicity (control group: gender \( F = 2.41, p = .12 \); ethnicity \( F = .48, p = .75 \)). Eta-squared indicated that only 1% of the dependent variable variance was explained by ethnicity and gender.

The researcher was interested in investigating whether fifth grade students (control group) who did not participate in a career education program would not have a statistically significant difference in career choices after the experimental group participated in a career education program. The results indicated that the control-group fifth grade students who did not participate in a career education program transitioned to a more focused area of career interest after the experimental group participated in a career education program.

The control group’s change in MSD after the experimental group participated in a career education program was statistically significant and had an average effect size, according to Cohen (1988). The change from pretest to posttest was small and could be due to chance (MSD difference was only 2.00). The small gap from pretest to posttest indicated that the participants' level of career interests from low to high also might be due to exposure to the pretest.
The findings further indicated that the experimental group changed more pretest to posttest (mean \( MSD = 7.98 \)) than the control group (mean \( MSD = 2.09 \)). Therefore, the control group could obtain information to explore careers of interest to guide them in making informed decisions in selecting careers at a higher level of interests through a career education program.

This study supports the gap analysis perspective and promotes a curriculum framework that aligns with the child’s career interests. The control group participants would be able to increase their knowledge and skills about careers and make more informed choices after participation in a career education program. These results support Kaufman and Herman (1991), who contended that a needs assessment is a “gap analysis” of the existing level of pupil performance compared with the desired level of pupil performance. This study is also in agreement with Pyne et al. (2002), who contended that before implementing a program, it would be useful to have a perspective on the level of each student’s career understanding.

**Hypothesis 3**

Results suggested that null Hypothesis 3 be rejected (\( t = -2.47, p = .01 \)). Hypothesis 3 stated that there would be no statistically significant difference between the \( MSD \) on the COPS-PIC career population index of fifth grade students (experimental group) before their participation in a career education program and the \( MSD \) on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education. Further analysis of the data revealed no statistically significant career choice differences for
gender and ethnic groups for the experimental group and the control group. Eta-
squared indicated that only 1% of the dependent variable variance was explained
by gender and ethnicity.

The researcher concluded from this study that fifth grade students (control
group) who did not participate in a career education program began the study
with higher career interests than the fifth grade students (experimental group)
who participated in a career education program. The researcher was interested
in investigating whether the experimental and control groups would begin the
career education study with similar levels of career interest.

The null hypothesis was rejected; the data did not support the assumption
that the experimental and the control groups began the career education study
with similar levels of career interest. The control-group fifth grade students had a
higher MSD of scores on the COPS-PIC career population index than the
experimental-group fifth grade students, before the experimental group
participated in a career education program. The results indicated that the control
group began the career education study with a higher level of career interests
than the experimental group. However, the differences between the control group
and the experimental group’s pretest results were small (experimental pretest
MSD of 8.91 vs. the control group’s pretest MSD of 9.82, a -.91 difference).

The dissimilarity of results for the experimental and control groups at the
beginning of the career education study may be due to nonrandomization of the
groups. These results support Leedy and Ormrod’s (2001) assertion that there is
no guarantee that prior to the experimental treatment the two groups are similar
in every respect. Any differences between the two groups may be due entirely to chance.

According to Leedy and Ormrod, the two student groups’ not beginning at the same level of career interest may be due to (a) motivation; (b) the interpersonal dynamics in the classrooms; (c) outside opportunities; (d) awareness that they were involved in a research study, which might have changed their behavior (known as reactivity or the Hawthorne effect); (e) maturity; (f) parents’ employment; and (g) experiences and other unforeseen variables.

The small differences in pretest results for the control group can be interpreted as the control group’s need for knowledge and skills in making informed career choices. These results support the need for providing students with information on careers and for developing career interests in such a way that career awareness and career exploration knowledge and skills are enhanced.

This study supports Arrington’s (2000) views that, in order for students to be able to think about their career plans with any kind of depth, they must have a foundation of career awareness and career exploration experiences. This study also supports results of a similar study by Skolnik (1995), in which 934 children in Grades 3–6 were asked to name five jobs and provided responses that were limited and unimaginative.

The small differences between the control group and the experimental group’s pretest results and the significant posttest difference provides evidence that the control group and the experimental group can benefit from a career
education program in order to make career choices with higher levels of career interests.

**Hypothesis 4**

The results suggested that the null Hypothesis 4 be rejected ($t = 11.83, p < .001$). Hypothesis 4 stated that there would be no statistically significant difference between the *MSD* on the COPS-PIC career population index of fifth grade students (experimental group) after their participation in a career education program and the *MSD* on the COPS-PIC career population index of fifth grade students (control group) not participating in a career education program. Further analysis of the data revealed no statistically significant career choice differences for gender and ethnic groups for the experimental group and the control group. Eta-squared indicated that only 1% of the dependent variable variance was explained by ethnicity.

The female students in the experimental group had a higher posttest *MSD* (17.21) than the experimental group’s male students (16.51), the control group’s male students (11.33), and the control group’s female students (12.28). The experimental group’s male students had a higher *MSD* (16.51) than the control group’s male and female students.

The results of this study revealed that fifth grade students (experimental group) showed a statistically significant difference in career interests and transitioned to a higher *MSD*, which indicated more concentrated career choices, after they participated in the career education program. The researcher was interested in investigating whether the experimental group completed the career
education program at a higher level of career interest when compared with the control group.

The hypothesis was rejected and the data supported the assumption that the experimental group completed the career education program at a higher level of career interest. The experimental group’s change on the COPS-PIC MSD after participation in a career education program was statistically significant and had an average effect size (Cohen’s $d = .44$), according to Cohen (1988). The control group’s change in MSD after the experimental group participated in a career education program was statistically significant and had a small effect size (Cohen’s $d = .09$), according to Cohen. The experimental group’s higher level of MSD in career interests at the end of the program could be attributed to the career education program, indicating increased career awareness and focus, which was the goal of this study.

This study provided students the opportunity to give input into their career choices and to explore those choices for a better understanding of the process of finding out who they want to be and what types of careers exist in order to determine what they want to do when they leave high school. The results of this study support the need for fifth grade students to use a career interest inventory to get baseline information on careers that might interest them.

The participants in the experimental group were able to explore “who” they are going to be and can use the knowledge and skills learned through the program to continue their exploration as they progress in their education and career pursuits. Allowing fifth grade students to participate in activities and a
career education program gives them opportunities to explore careers that interest them.

This study supports Erikson’s (1965) theory that fifth grade students are ready to study and begin exploring “who” they are going to be. Erikson contended that at ages 6–10, children have developed a sense of autonomy and are ready to explore the question of who they are going to be. This study provided focus and connectivity through the use of baseline data and a career education program with activities that guided students in making informed career choices.

This study supports the literature citing increasing evidence that soliciting and considering student input with career planning results in a more effective program design (S. Collins, 1998; Couture, 2000; Gordon, 2000; Hiebert et al., 1998; Lehmanowsky, 1991; Robinson, 1999, Pyne et al., 2002). The results of this study support the need for program planning and for providing students with information on careers and for developing career interests in order to enhance career awareness and career exploration knowledge and skills. The results of this study are in agreement with Hiebert et al. (2001), who contended, “Student perceptions of their own needs must be the starting point for program planning” (p. 15).

Career Choice Differences by Gender

In observing career choice differences by ethnicity, the researcher made further analyses from the data and anticipated statistically significant differences in the career choices of fifth grade students. The results indicated that the
participants selected careers of interest without considering stereotypes for
gender. These results do not support Gottfredson’s (1981) circumscription
theory, which contended that individuals will only consider occupations within an
area bounded by their acceptable levels of prestige and sex type, called the zone
of acceptable alternatives. The results indicated that gender participants had
similar career interests, and gender differences did not influence their choices.
The results are in agreement with Sellers et al. (1999), who contended that
workers of the future need to be prepared to consider careers without gender
bias. More studies are needed in the elementary school on gender and career
choices.

Career Choice Differences by Ethnicity

The researcher made further analyses from the data and anticipated
statistically significant differences in the career choices of students by ethnic
group (African American, Hispanic, Anglo, Native American, and Asian
American). Further analyses of the data revealed that there were no statistically
significant differences between the control group pretest to posttest results for
fifth grade student groups by ethnicity ($F = .48$, $p = .75$). Results indicate that the
Anglo participants in the experimental and control groups had higher posttest
$MSDs$ than all of the other ethnic participants. These differences were not
considered statistically significant, however, due to the small number of Anglo
participants in the study. Experimental group posttest $MSD$ sores were also not
statistically significant by ethnicity ($F = .62$, $p = .65$).
The results indicate that the participants selected careers of interest without considering ethnic barriers. Students made career choices based on knowledge and skills obtained from the career education program and activities. These results are in agreement with Bobo et al. (1998), who contended that different career choices listed by children might be attributed to the greater versatility in children’s experiences through broader exposure to various careers, both real and vicarious; for instance, men and women are seen in more nontraditional roles on television than ever before.

The results of this study support findings of no statistically significant differences among gender, ethnicity, and career choice variables reported by Corso (1989) and Cook and Simbayi (1998), who contended, “It is imperative that occupational stereotypes among children be attenuated or eliminated completely by providing relevant career information so that the children will be able to make informed career choices” (p. 275).

Career Education Implementation Observations

The results from this study indicate that the fifth grade participants acquired knowledge and skills with the instructional assistance provided by the teacher. These results support the importance of the teacher’s role in making a difference in student progress in learning the knowledge and skills necessary for making informed career choices. According to the teacher implementation survey and the principal observation survey, the career education program was taught through the use of the Development Guidance Classroom Activities and resources for at least 30 minutes a day for 4 weeks.
The findings of this study support Yawkey and Aronin (2001), who reported that the teacher has an important role in career education. The authors maintained that the teacher’s function is to select and implement resources to aid the child in understanding the nature of work, interests, and attitudes of the workers and stressed the importance of school to the future role of the student as a worker.

These findings are also in agreement with Magnuson and Starr (2000), who maintained that it is important for educators to recognize that giving children learning experiences and opportunities for developing the subskills necessary for effective career planning will empower children to reach their potential throughout their lives and in all areas. Similarly, Beal and Nugent (2000) argued for a need to provide elementary school students with career exploration activities that will assist them in thinking about possible career interest and the interrelatedness of the world of work. Teachers and principals empowered study participants with information and strategies that can be used for future career planning throughout their life span.

The findings of this study support the career awareness theory, addressing the question, “What jobs exist out there?” According to Razeghi (1983), this question establishes the foundation for all further career education and involves a general introduction to the world of work. This study supports the career awareness and career choice theories and serves as a springboard for offering students opportunities to explore careers using a career education program, a career inventory instrument, and resources that are aligned in such a
way as to facilitate baseline career exploration based on students’ career interests.

Recommendations

Because the study was limited to fifth grade students in a large, urban school district, the ability to generalize may be limited. The researcher hopes that others will want to refine and expand this investigation on career choices to other grade levels such as K–6, Grades 7–8, and Grades 9–12. Suggestions for further research are offered:

1. The researcher is unaware of similar studies that investigated the pretest and posttest use of the COPS-PIC career inventory and providing career education training to fifth grade students. To address the gap between the career choices of elementary school students before and after career awareness instruction, this study examined the career choices of fifth grade students in a large, urban school district before and after career awareness instruction. The study methodology included a career education program and a career assessment instrument to determine the career choices of elementary school students before and after the use of a career education program. Further research is needed on the use of students’ career interest and a career education program.

2. This study provides a foundation for elementary school students to explore careers based on results from a career interest inventory before and after the use of a career education program. One goal of career development activities is to facilitate career decision making and help students learn the process of
making career decisions. It is recommended that frequent career interest assessments are provided to students throughout the elementary, middle, and high school experience through a career education program that provides continued exploration and career awareness activities. Further research is needed on the process for making career decisions in Grades K–12.

3. For ease and more accuracy in career interest assessment in the elementary grades, for bilingual and special needs students, it recommended that school districts, principals, teachers, and parents use pictured career inventory instruments to more accurately assist students in focusing on what they like or do not like in determining their career interests, rather than their ability to read. Further research is needed on the use of a pictured career inventory instrument in the elementary school.

4. With the large influx of ethnic groups in large, urban school districts throughout the United States, it is imperative that children are taught to make career choices based on societal and individual needs and interests. Many ethnic groups and minority children (African American, Hispanic, Native American, and Asian American) are unaware of the opportunities that are available in the world of work and therefore end up in unsatisfying jobs. It is recommended that school districts provide career education programs that are reflective of the various cultures and ethnic groups in the community so that children can have role models from their culture and other cultures. Further research is needed on the career choices of ethnic groups in the elementary grades.
5. It is recommended that school districts include a career education component in their school improvement plans for students in Grades K–12 with disaggregated career interest data each school year. Further research is needed on school district and school use of a career education program in the elementary grades.

6. A goal of the State Board of Education, the Texas Education Agency, and the national education focus, in conjunction with the No Child Left Behind Act of 2001 (2002), was to provide all students with equal access to instruction for developing career awareness and career choices. In keeping with this goal, it is recommended that school districts, universities, colleges, and publishers develop an integrated, contextual, career education curriculum for Grades K–6. Further research is needed on career education curriculum for Grades K–6.

7. Many parents and students do not have the knowledge, skills, and resources to obtain information for pursuing and making career and job-related decisions. It is recommended that schools and school districts provide alternative programs for students and parents in Grades 3, 4, 5, and 6 to learn about careers, career assessment and the world of work with regular meetings, symposiums, training opportunities, and excursions to businesses, technical schools, colleges, and universities. Further research is needed on how parents and students access information on careers.

8. An investigation is needed on the attitudes of parents, business and community representatives, elementary and secondary teachers, and principals
regarding career education in the public schools and the use of a career interest inventory.

9. It is recommended that school districts and schools include personnel for operating, managing, training, and teaching career education in the elementary schools. More research is needed in this area.

10. The success of any program depends on the quality of the training of its users. Career education training for teachers was not the focus of this study, but it is always needed and therefore is recommended for further study.

11. Gottfredson’s (1981) Stage 3 theory (ages 9–13) is reflected in the results of this study through the attenuation of the participants’ career interests and choices as reflected in their occupational aspirations and the values of the occupation they desired (liked). This study can serve as a springboard for more studies that provide career choice opportunities to students with the use of a career interest inventory instrument and a career education program. Such studies should invite students to explore their career interests before and after the use of a career education program.
APPENDIX A

UNIVERSITY OF NORTH TEXAS INSTITUTIONAL REVIEW BOARD APPROVAL, HUMAN PARTICIPANT PROTECTIONS CERTIFICATE, AND SCHOOL DISTRICT APPROVAL
December 14, 2004

Florence Cox  
Department of Technology and Cognition  
University of North Texas  

Re: Human Subjects Application No. 04-387  

Dear Ms. Cox,  

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled “the Effects of a Career Education Program on the Career Choices of Fifth-grade Students.” The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol and informed consent form are hereby approved for the use of human subjects in this study. Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only.

Enclosed is the consent document with stamped IRB approval. Please copy and use this form only for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.

Please contact Shelia Bourns, Compliance Administrator, at ext. 3940 or Boyd Herndon, Assistant Director for Compliance, if you wish to make changes or need additional information.

Sincerely,

Scott Simpkins, Ph.D.  
Chair  
Institutional Review Board
Completion Certificate

This is to certify that

Florence Cox

has completed the Human Participants Protection Education for Research Teams online course, sponsored by the National Institutes of Health (NIH), on 12/08/2004.

This course included the following:

- key historical events and current issues that impact guidelines and legislation on human participant protection in research.
- ethical principles and guidelines that should assist in resolving the ethical issues inherent in the conduct of research with human participants.
- the use of key ethical principles and federal regulations to protect human participants at various stages in the research process.
- a description of guidelines for the protection of special populations in research.
- a definition of informed consent and components necessary for a valid consent.
- a description of the role of the IRB in the research process.
- the roles, responsibilities, and interactions of federal agencies, institutions, and researchers in conducting research with human participants.

National Institutes of Health
http://www.nih.gov

October 13, 2004

Florence Cox
University of North Texas
P. O. Box 311337

:: Approval to conduct The Effects of Career Education Career Awareness of Fifth-Grade Students study (# 05-0004) at

Dear Ms. Cox:

The Research Review Committee of the Independent School District has reviewed and approved your proposal to conduct the above-referenced study. Based on the information you provided, the Committee concluded that the study served a worthwhile purpose and would be beneficial to the district.

It is our understanding that you have read and agreed to the terms described in Procedures and Policies for Conducting Extra-District Research in the Independent School District. Please note that all school and district information, wherever applicable, should remain confidential within the limits of the law. In addition, any data collected from ISD should be used solely for the purpose of the proposed study.

Approval by this committee provides no guarantee that ISD’s departments, schools or personnel must comply with data requests for the proposed study. Per your request, Dr. from the Office of Student Development, was designated as the district’s contact person for your study. Please follow his directives at all times.

Please make sure that the Office of Institutional Research receives a copy of your report upon 30 days of the stated completion date. In all future communications, please use the study’s reference number (05-0004). Best wishes on your study.

Sincerely,

[Signature]

Director of Accountability and Training
Office of Institutional Research
APPENDIX B

STUDENT SURVEY
STUDENT SURVEY

PLEASE PRINT

Name:__________________________ School:_______________________

1. Gender? (Check one)
   a. _____ Male
   b. _____ Female

2. Race/Ethnicity? (Check one)
   a. _____ African American/Black American
   b. _____ Hispanic American (Puerto Rican, Mexican, Latin, etc.)
   c. _____ White
   d. _____ Other (Please specify) __________________________
      (Example: Native American, Asian, Chinese, Vietnamese, Cambodian, Laotian, Hmong, East Indian, etc.)
APPENDIX C

PERMISSION TO USE THE DEVELOPMENTAL GUIDANCE CLASSROOM
ACTIVITIES AND THE COPS-PIC
To: Florence Cox  
ftrenzc@netscape.net  
5734 Emrose Terrace  
Dallas, Texas 75227

From: Michele Burr Mickelson, Ph.D.  
Assistant Director  
mmickelson@education.wisc.edu

Date: December 6, 2004

Thank you for inquiring about the use of the Developmental Guidance Classroom Activities published by the Center. As you will recall, on August 18, 2004 I gave you permission to use these materials in your research. Please mark any pages you copy as a SAMPLE, so they are not duplicated further.

Regarding the development of educational materials here at the Center, they are all developed by credentialed educators. This publication, as are all of our publications, was field tested and recommended by a team of outside educators before publication. We strive to have meaningful reviews during product development and use.

This publication was cross-referenced to the competencies in the National Career Development Guidelines and includes strategies to evaluate the achievement of the competencies in each of the classroom activities. It was designed by grade level to integrate career development into the classroom.

Possible effects of these materials on student learning and development might be enhanced:  
1) self-knowledge through career exploration activities;  
2) knowledge of various occupations and related education for career choice; and  
3) tools for the development of an educational/career plan.

These materials were developed in 1991-92, and last year alone they were acquired for use in 127 different school districts across the country. Educators continue to give us positive feedback about their usefulness, so we have just had them translated into Spanish for even wider classroom use.

We trust you will share the outcomes of your study with us so that we can continue to enhance the usefulness of these publications.

Please accept my best regards on your research. We are always pleased to learn of another educator who is advancing the field of career development. We look forward to discussing other career development resources as you move forward.

E-Mail: cewmail@education.wisc.edu  
cewconf@education.wisc.edu  
World Wide Web Site: http://www.cew.wisc.edu

Fax: 608-262-3063  
U.S.: 800-446-0399
Florence Cox  
5734 Emerose Terrace  
Dallas, TX 75227

July 13, 2004

Dear Ms. Cox:

This letter grants you permission to reproduce the following pages from the Picture Inventory of Careers (COPS-PIC): the cover page, page one of response section, and pages two and four from the COPS-PIC Profile and Guide. Your credit line should read as follows: Reproduced by permission. COPS-PIC© 1993 ERAS Publishers. You may also provide one sample copy of the COPS-PIC instrument to your review board at the University of North Texas, Denton. ERAS also agrees to provide scoring services and a data disk at no charge conditional on minimum purchase of 500 COPS-PIC inventories.

Please consider this an official response. If you have any further questions please contact me at 1-800-416-1666 or via email at customerservice@edits.net.

Sincerely,

Ellen Philips  
Permissions Dept.

E-mail: customerservice@edits.net • Web site: www.edits.net
**COPS-PIC**

By Lisa Mapp-Low

**Directions**

In this activity, you will review pictures of people doing many different kinds of jobs. You will record if you would like to do the activity yourself. You may not be too sure how you would feel about some jobs you will work in, which you may not have left high school yet. By doing this activity, you will determine your feelings toward the activity. Disregard considerations of salary, status among other factors when answering the questions for each activity. Disregard the physical appearance of any of the people on the pictures. You should imagine yourself doing each activity. For each task, decide the degree of your interest or disinterest in the activity and mark your number according to the following scale:

- **1**: Little Interest
- **2**: Interests
- **3**: Very Interested
- **4**: Extremely Interested
- **5**: Absolutely interested

**Scale:**

[Scale image]

- **A:** Like very much
- **B:** Like moderately
- **C:** Like a little
- **D:** Like very little
- **E:** Absolutely do not like

Use a Number 2 pencil and fill in completely the answer based on your interest. If you wish to change your answer, erase your first mark completely. There is no time limit. Be sure to answer every item.

Before you begin the inventory, be sure to enter your name, your age, your grade and class, and the other information called for in the spaces in the right.

**Date**

[Date]

**Teacher's Signature**

[Signature]

**Teacher's Instructions**

[Instructions]
APPENDIX D

LETTERS OF PERMISSION: PRINCIPALS, TEACHERS, PARENTS, AND STUDENTS
Dear Principal,

My name is Florence Cox and I am conducting a research study on the “Effects of a Career Education Program on the Career Choices of Fifth-Grade Students” and I am requesting permission to conduct the study at your school. I have acquired permission from [the school district’s] Institutional Research Board and the University of North Texas Institutional Research Board (UNT IRB) to do the study.

Teachers will participate in training for one day for the study, administer a brief background survey and a career assessment instrument to students, and provide career education instruction to students for 30 minutes a day for four weeks using an organized national career development curriculum. Principals will be invited to attend the teacher training. You will be requested to complete a brief informal observation form on the use of the program. Teachers, students, and the school will not be included in any written report about the study. There is no foreseeable risk involved with the study. Please be advised that all participants will remain anonymous and the names of teachers and students will not be included in the written study.

Teachers and students will benefit from the study by learning more about what students can do to learn about careers and the world of work. Teachers will receive new knowledge and skills about career education at the fifth grade level.
and receive free materials to keep and use at their discretion. Students will benefit by becoming more aware about what they want to be when they grow up, learn what the world of work expects of workers, and learn how to investigate careers that interest them in order to make informed choices.

I will provide a demographics survey, career assessment instrument for teachers to administer to students and a career education curriculum for identified teachers to use with students for the experimental group. The remaining participants will not receive the experimental curriculum to use with the participants in the study. However, the curriculum will be made available to all interested teachers upon the completion of the study. Reports on your school will be available and provided upon request.

If you have any questions, please do not hesitate to contact me at the above address, at work at [telephone number] from 7:30 a.m. to 4:30 p.m. or e-mail me at [e-mail address]. You may also contact Dr. Jerry Wircenski, the faculty advisor, in the Program of Applied Technology Training and Development at [phone number]. This study has been approved by the University of North Texas Institutional Review Board (IRB). If you have any questions regarding your rights as a research participant, you may contact the UNT IRB at [phone number] or [e-mail address].
PRINCIPAL REPLY CARD

Directions: Please complete the reply card and return it in the self-addressed envelope.

Section I

I understand the purpose of this study and my rights as a research participant. I voluntarily consent to participate in the research study “The Effects of a Career Education Program on the Career Choices of Fifth-Grade Students.”

Signature of Participant __________________________   Date______________

Name of School: ____________________________________

Section II Directions: Please list the last name of each of your 5th grade teachers and the number of students in each teacher’s classroom. Return in the stamped addressed envelope.

<table>
<thead>
<tr>
<th>Teacher</th>
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<td>8. _______</td>
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</table>

As the principal Investigator: I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

Signature of Principal Investigator _________________
Dear Teacher,

My name is Florence Cox and I am conducting a research study on the “Effects of a Career Education Program on the Career Choice of Fifth-Grade Students” and I am requesting your assistance in this research study because we are trying to learn more about how children learn best about careers in school.

If you agree to participate in this study you will participate in a one day training, administer a brief background survey and a career assessment instrument to students before and after the study, provide career awareness instruction to students for 30 minutes a day, for four weeks using a career development curriculum, and complete a user’s checklist as you use the program. You will collect and return the student and parent permission forms in the enclosed self-addressed envelope. Students will not be included in any written report about the study. There is no foreseeable risk involved with the study. Please be advised that all participants will remain anonymous and the name of teachers, students and the institution will not be included in the written study.

You will benefit from the study by learning more about what students can do to learn about careers and the world of work. You will receive new knowledge and skills about career education at the fifth grade level. A Career Education Curriculum will be provided for identified teachers to use with students for the experimental group. The remaining participants will not receive the experimental
curriculum to use with the participants in the study. However, the curriculum will be made available to all interested teachers upon the completion of the study. Students will benefit from the study by becoming more aware of the world of work and what they want to be when they grow up.

If you have any questions, please do not hesitate to contact me at the above address, at work at [phone number] from 7:30 a.m. to 4:30 p.m. or at home after 5:00 p.m. or e-mail me at [e-mail address]. You may also contact Dr. Jerry Wircenski, the faculty advisor, in the Program of Applied Technology Training and Development at [phone number]. This study has been approved by the University Of North Texas Institutional Review Board (IRB). If you have any questions regarding your rights as a research participant, you may contact the UNT IRB at [phone number] or [e-mail address].

Thank You.
TEACHER REPLY CARD

Directions: Please complete the reply card and return it in the self-addressed envelope.

Section I
I understand the purpose of this study and my rights as a research participant. I voluntarily consent to participate in the research study “The Effects of a Career Education Program on the Career Choices of Fifth-Grade Students.”

Signature of Participant ________________________   Date______________

Name of School: ____________________________________

As the principal Investigator: I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

Signature of Principal Investigator _________________   Date____________
Dear Parents,

My name is Florence Cox and I am conducting a research study on the “Effects of a Career Education Program on the Career Choice of Fifth-Grade Students.” I am requesting your permission to have your child participate in the study. I have acquired permission from [the school district’s] Institutional Research Board and the University of North Texas Institutional Research Board to do the study. If you have any questions, please do not hesitate to contact me at the above address, at work at [phone number] from 7:30 a.m. to 4:30 p.m. or at home after 5:00 p.m. or e-mail me at [e-mail address]. You may also contact Dr. Jerry Wircenski, the faculty advisor, in the Program of Applied Technology Training and Development at [phone number]. If you have any questions regarding your child’s rights as a research participant, you many contact the UNT IRB at [phone number] or [e-mail address].

If your child participates in the study he/she will be asked to complete a brief survey, take a test on careers, learn about careers and the world of work and learn about what he/she wants to be when he/she grows up. Your child will benefit from this study by learning about different types of jobs that he/she may be interested in. The teacher will give your child directions on how to complete the survey, give your child the test on careers, and teach your child about different types of jobs for 30 minutes a day for four weeks to help him/her learn
how to decide what he/she wants to be when he/she grows up. The name of your
child will not be included in any written report about the study.

If you agree to have your child participate in this study, it is on a voluntary
basis and you may refuse to have your child participate or withdraw him/her at
any time, without consequence or prejudice. You will need to complete the form
below and sign that you want your child to participate in the study. A copy of this
consent will be provided to you. Please sign below keep one copy for your
records. Sign and return the signed form in the enclosed envelope and return the
letter to your child’s teacher.

Thank you.
PARENT REPLY CARD

Directions: Please complete the reply card and return it to your child’s teacher in the self-addressed envelope.

I understand the purpose of this study and the rights of a research participant and give permission for my child _____________________________ to participate in the research study “The Effects of a Career Education Program on the Career Choices of Fifth-Grade Students.”

Parent’s Signature ___________________________ Date ________________

Name of School: ____________________________________

As the principal Investigator: I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

Signature of Principal Investigator ___________________________ Date ________________
Dear Student,

My name is Florence Cox and I will be conducting a research study on the “Effects of a Career Education Program on the Career Choice of Fifth-Grade Students.” There will be no harm to you if you participate in this study. I am asking you to take part in this study because we are trying to learn more about how children learn best about careers in school.

If you participate in this study, you will be asked to complete a brief survey, take a test on careers, learn about careers and learn about what you want to be when you grow up. You will benefit from this study by learning about different types of work and jobs that you may want to do when you grow up. Your teacher will give you directions on how to complete the survey, give you the test on careers (the test will not be graded), and teach you about careers for 30 minutes a day for four weeks to help you decide what you want to be when you grow up.

If you agree to participate in this study, it is on a voluntary basis and you may refuse to participate or withdraw, at any time, without consequence or prejudice. You will need to get your parent(s) permission to participate in the study. You will need to sign the enclosed letter stating that you want to participate in the study and have your parents to sign the letter giving you permission to participate in the study.

Thank You.
STUDENT REPLY CARD

Directions: Please complete the reply card and return it to your teacher in the self-addressed envelope.

I understand the purpose of this study and my rights as a research participant. I voluntarily consent to participate in the research study “The Effects of a Career Education Program on the Career Choices of Fifth-Grade Students.”

Signature of Participant: ___________________________

Date________________

Name of Teacher: ________________________________

Name of School: ________________________________

As the principal Investigator: I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

Signature of Principal Investigator ____________________ Date ____________
APPENDIX E

SCRIPT OF FOLLOW-UP FOR PARTICIPATION IN STUDY
SCRIPT TO REQUEST RETURN OF CONSENT FORM: SECOND REQUEST

Via: phone call, e-mail, and/or regular mail.

(Date)

Dear _______________________:

Approximately two weeks ago a form requesting your consent to participate in the study “The Effects of a Career Education Program on the Career Choices of Fifth-Grade Students” was sent to you. At this time, your response has not been received.

Because of your vital role in the elementary schools, your participation is very significant to this research. For your convenience, another form and a stamped envelope are being sent to you. In the event you have completed and returned this form within the last few days, please disregard this request.

Your cooperation will make it possible to meet a two-week deadline. I appreciate your help and time with this important study.

Thank you.

Sincerely,

Florence Cox
APPENDIX F

PICTURES OF STUDENTS TAKING THE COPS-PIC
Figure F1. A student looks at the COPS-PIC pictures.

Figure F2. Classroom students are taking the COPS-PIC.

Figure F3. A girl and boy concentrate on the COPS-PIC.
Experimental and Control Group Participants

I. Welcome and Sign-In

II. Activity: Getting to Know You

III. Purpose of the study: To provide opportunities for fifth grade students to make career choices.

IV. Objectives:

A. Review background literature

B. Present participants duties and responsibilities

C. Present expectations for the study

D. Administration of the COPS-PIC Career Inventory Instrument and Student Survey procedures and expectations

E. Present timeline for the study

F. Present procedures for returning assessment materials to the researcher

BREAK 10:30 a.m.-11:00 a.m.

Experimental Group Presentation

11:00 a.m. – 12:00 p.m.

V. Review the curriculum: The Developmental Guidance Activities and resources

VI. Review the principal and teacher surveys on program use.
Figure G1. A helper is compiling materials and making packets for teacher training.

Figure G2. Teachers are signing in for the training.

Figure G3. Principals and teachers participated in training.
APPENDIX H

TEACHER SURVEY
TEACHER CURRICULUM USE SURVEY

PLEASE PRINT

Name: ________________________ School: _______________________

Directions: Answer each of the questions regarding your use of the Career Education Program.

1. How many lessons did you do with students? _________________

2. How many days did you use the career education program? _________________

3. How much total time would you estimate you spent using the career education program? _________________

Thank you for taking the time to complete the observation form. Please return it in the enclosed self-addressed envelope.
APPENDIX I

PRINCIPAL OBSERVATION CHECKLIST
PRINCIPAL OBSERVATION CHECKLIST

PLEASE PRINT

Name: __________________________  School: _______________________

Directions: Answer each of the questions regarding your observation of the use of the Career Education Program.

1. How many lessons did you see teachers and students doing?
   ________________

2. How many days did you observe the career education program?
   ________________

3. How much total time would you estimate you spent observing the career education program? ____________

Thank you for taking the time to complete the observation form. Please return it in the enclosed self-addressed envelope.
APPENDIX J

NUMBER OF STUDENTS BY SCHOOL AND BY TEACHER
### NUMBER OF STUDENTS BY SCHOOL AND BY TEACHER

#### EXPERIMENTAL GROUP

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*Note.* AA = African American; H = Hispanic; A = Anglo; NA = Native American; ASI = Asian.
APPENDIX K

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DATA COLLECTION DEMOGRAPHICS

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*Note. AA = African American; H = Hispanic; A = Anglo; NA = Native American; ASI = Asian.*
APPENDIX L

NUMBER OF POSSIBLE PARTICIPANTS AND ACTUAL PARTICIPANTS
### NUMBER OF POSSIBLE PARTICIPANTS AND ACTUAL PARTICIPANTS

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151
REFERENCE LIST


