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ABSTRACT

This document presents an evaluation of an exemplary project in career education limited to students in Grades 1 through 6 in the schools of Lincoln County, West Virginia. The project's objectives were to compare two groups of students on language achievement, mathematics achievement, and occupational awareness, an experimental group who had received learning experiences in these subjects and a control group who had not. Approximately 80 students from each grade were pretested and posttested and an analysis of covariance was performed on data obtained from the tests. The adjusted post-test means for the experimental group were 11 percent higher on language achievement, 24.5 percent higher on mathematics achievement, and 18 percent higher on occupational awareness than for the control group. Teaching strategies of field trips, resource role models, manipulative activities, simulation, and multimedia activities were incorporated into instructional resource units to provide the experimental group experiences. The conclusions suggested by the study are that elementary students who received planned career education experiences for two semesters were significantly higher in achievement on the areas tested than students who did not receive the experiences. (MF)

AN EVALUATION OF ELEMENTARY CAREER EDUCATION BASED ON LANGUAGE ACHIEVEMENT, MATHEMATICS ACHIEVEMENT, AND OCCUPATIONAL AWARENESS IN LINCOLN COUNTY, WEST VIRGINIA

by

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ABSTRACT

The Lincoln County Career Awareness Program (grades one through six) systematically provides meaningful career education experiences which are correlated with Fine Arts, Language Arts, Mathematics, Science, and Social Studies. Teaching strategies of Field Trips, Resource Role Models, Manipulative Activities, Simulation, and Multi-Media Activities are incorporated into instructional resource units.

Experimental Treatment students (n=214) and the Control Treatment students (n=205) were pretested in September 1971 and posttested in May 1972. The Experimental and Control Treatment students were randomly selected from intact classes. Approximately eighty students were selected from each grade.

An analysis of covariance (Multiple Regression Analysis) on data obtained with the California Language Achievement Test, California Mathematics Achievement Test, and Occupational Awareness Test indicated a significant difference (0.01 level) between the adjusted posttest means of the experimental students and the adjusted posttest means of the control treatment students. The analysis of data on the three test instruments yielded F ratios of 7.32, 14.30, and 14.84. The adjusted posttest means for the experimental group were 11 percent higher on language achievement, 24.5 percent higher on mathematics achievement, and 18 percent higher on occupational awareness than the adjusted posttest means for the control group.

This study provides evidence that the process of systematically receiving meaningful career education experiences produces a positive effect on language achievement, mathematics achievement, and occupational awareness. This study also provides credibility to the hypotheses upon which the Lincoln County project is based. These hypotheses are as follows:

1. Illustrating the value of academic skills in terms of their relationship to the career world provides an effective vehicle for achieving career education goals and academic subject goals.
2. An activity centered functional approach which illustrates abstract theory allows for a greater understanding of self, academics, and the career world.
3. Cooperative interaction with individuals significant to the student (parents, peers, teachers, counselors, administrators, and members of the community) provides meaning to the process of formal education.
4. Experienced teachers will systematically implement innovative programs when they are provided with meaningful inservice education which focuses on both process and task components.
5. Administrative leadership which directs its attention to meeting the needs of teachers facilitates effective implementation of innovative projects.

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THE PROBLEM

The general question in this study involves the acquisition of knowledge by students in grades one through six upon which future decisions can be based. The specific research question asked in this study is as follows: Will the student who has been provided with experiences in the Lincoln County Exemplary Program possess more knowledge about language, mathematics, and occupations than the student who has not been provided with these experiences?

SIGNIFICANCE OF THE PROBLEM

In the agrarian society of the American Nation in former years, adult roles were quite visible. Large extended familes provided uncles, aunts, and grandparents as well as parents for the young to imitate. Small factories and businesses were found in the home. The youth were surrounded by and involved in work activities which provided experiences that facilitated career decision-making.

It is a truism that the Nation has progressed from a relatively simple to an exceedingly complex society. Adult work roles have become more complex. Underemployment "exists while we measure the greatest critical shortage of technical manpower ever known in this country because of the increasing impact of technology."[1] The third edition

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[1]Grant Venn, "Occupational Education for Everyone," National Association of Secondary School Principals Bulletin, Volume 52, No. 332 (December, 1968), 115.

(1965) of the Dictionary of Occupational Titles contains 35,550 occupational titles defined.[2] This is an addition of 6,432 occupations new to the Dictionary since the second edition supplement in 1955.

Some of the new occupations require a high school diploma only and can be learned on the job. Some of these occupations are radiation monitor, reactor operator, hot-cell technician, accelerator operator, gamma-facilities operator, radiographer, radioisotope-production operator, scanner, and waste-treatment operator. Quite often, however, additional education beyond the high school level is required for entry into an occupation. Some of these occupations are key-punch operator, bookkeeping and tabulating machine operator, card-tape converter operator, coding clerk, data typist, high-speed-printer operator, tape librarian, radiological health sanitarian, cytotechnologist, and suicidologist.[3]

Many occupations are with large industrial corporations which are frequently found only in metropolitan areas. In 1969, 14,813,809[4] of approximately 80,000,000[5] people were employed by the 500 largest industrial corporations.

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[2]Dictionary of Occupational Titles, Volume 1 (3d ed.; Washington, D. C.: U. S. Department of Labor, Manpower Administration, 1965), pp. xiii-xiv.

[3]"New Jobs with a Big Future," Changing Times, Volume 21, No. 11 (November, 1967), 8-10.

[4]"The Fortune Directory of the 500 Largest Industrial Corporations," Fortune (May, 1970), 200.

[5]"Jobs in the 70's--Where They'll Be," Changing Times, Volume 23, No. 3 (March, 1969), 43.

Modern technology in business and industry now requires a vast number of trained and qualified people.[6] One example given by Changing Times in which demand for employees will be high in the 70's is:

> Engineering and Science Technicians. Very good opportunity for assistants to engineers and scientists in aeronautics, air-conditioning, heating and refrigeration, chemistry, civil engineering, electronics, etc. Strongest demand is for graduates of junior colleges and technical institutes. Currently employed: 645,000. Annual openings: 55,000.[7]

In the past, educated and literate employees were desired but by no means essential. Some of the greatest industries in the United States in the past were administered principally by men who could not speak English. The development of a highly sophisticated body of science and experience in its application, however, has resulted in rare occurrence of such phenomena.[8]

The place of employment has become far removed geographically from the home in most instances. Society has become highly mobile through technological advances. "The interconnectedness of modern life gives rise to conditions and needs that affect simultaneously and in similar ways the lives of people in all parts of the country."[9]

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[6]John Kenneth Galbraith, The Affluent Society (Boston: Houghton Mifflin Company, 1958), p. 213.

[7]"Jobs in the 70's," Changing Times, 44.

[8]Galbraith, p. 212.

[9]John H. Fischer, "Realities of Education in Our Time," The Educational Forum, Vol. XXXII: No. 2 (January, 1968), 140.

Changes in American society have virtually eliminated the traditional method of gaining experiences that facilitate the career decision-making process. If the students who comprise the emerging labor force are to be viable members of society, it is important that they begin making career decisions during their school years. Yet these future employees have little opportunity to gain experience relative to business, industrial, service, and creative institutions as a basis for making decisions.

Congress recognized the need for "new ways to create a bridge between school and earning a living for young people"[10] by including a section on Exemplary Programs and Projects in the Vocational Education Amendments of 1968. One method of carrying out the purposes of Part D., Section 142, is to establish innovative model programs "designed to familiarize elementary and secondary school students with the broad range of occupations for which special skills are required and the requisities for career in such occupations."[11]

Many have recognized the need for innovative educational programs in a period of massive technological change. Galbraith observed that youth has been excluded from the labor market partly because of the hardship of employment and partly to make way for educational opportunities. Yet, youth has not been provided with the education (at least in full and satisfactory measure) which the exemption from labor was designed to make possible.[12]

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[10]U. S., Congress, Vocational Education Amendments of 1968, Public Law 90-576, 90th Congress (1968), 17.

[11]U. S., Congress, 18.

[12]Galbraith, p. 262.

According to Ewing and Venn it is time for educators to ask business and industry what competencies they want beginning employees to possess. In turn, schools must develop in their students those skills and attitudes currently required for employment rather than developing skills which will be obsolete by the time the student leaves school.[13]

> We would not expect a business to prosper today unless it reflected in its operations the breadth of the social and economic world in which it lives and to which it must respond. Far from resisting the widening of that world, the corporation that thrives welcomes the chance and finds in it greater resources, more attractive incentives, and both the opportunity and the stimulus to continuous innovative and renovation.[14]

Historically, vocational guidance was based on a mechanistic viewpoint. The individual's strengths and weaknesses were assessed and the individual was then matched with the one occupation which best suited him. The occupation was thought of as a lifelong career. In recent years, however, career development was recognized as a process involving a series of planning approximations.[15] In light of current career development theories, programs have been developed to provide career education experiences upon which decisions can be made. One such program is the Lincoln County Exemplary Project in Career Education.

Coupled with the need for Exemplary Programs is the need to determine the effectiveness of these programs relative to their objectives.

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[13]Claude H. Ewing, "A Modern Vocational High School Program," Education, Volume 90, No. 4 (April-May, 1970), 280; and Venn, 115.

[14]Fischer, 140.

[15]Max F. Baer, and Edward C. Roeber, Occupational Information: The Dynamics of Its Nature and Use (Chicago: Science Research Associates, Inc., 1964), p. 454.

Thus data obtained in this study will be used to advise policy-making bodies, meet accountability requirements, provide feedback for modification and redirection, and permit articulation with other programs and states.

When it is ascertained that an exemplary program is not meeting its objectives, it should be modified. Those programs which receive favorable evaluation should be used as models for the formulation of policies about programs that broaden occupational knowledge, experiences, and opportunities.

LIMITATIONS

This study will be limited to students in grades one through six in the schools of Lincoln County, West Virginia.

RESEARCH OBJECTIVES

1. To compare the Experimental Treatment students with the Control Treatment students on language achievement.
2. To compare the Experimental Treatment students with the Control Treatment students on mathematics achievement.
3. To compare the Experimental Treatment students with the Control Treatment students on occupational awareness.

NULL HYPOTHESES

1. There will be no significant difference between the adjusted posttest language achievement scores of the Experimental Treatment students and the adjusted posttest language achievement scores of the Control Treatment students.

2. There will be no significant difference between the adjusted post-test mathematics achievement scores of the Experimental Treatment students and the adjusted posttest mathematics achievement scores of the Control Treatment students.
3. There will be no significant difference between the adjusted post-test occupational awareness scores of the Experimental Treatment students and the adjusted posttest occupational awareness scores of the Control Treatment students.

LINCOLN COUNTY EXEMPLARY PROGRAM

Career Education is a process of systematically providing elementary, secondary, post-secondary, and adult learners with meaningful experiences in academic, general, and vocational subjects. These experiences focus on helping learners become viable individuals who are capable of making accurate choices concerning future careers.[15]

The initial objective of the Lincoln County Exemplary Program was to develop in a rural school system located in an economically depressed area, a comprehensive program of Career Education serving the needs of youth in grades one through twelve. The program during the first year concerned itself with providing career awareness activities in grades one through six.

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[16]LeVone A. Olson, "Career Education Principles," Career Education Institutes - A Report on an EPDA Project Entitled: Strategies for Developing Career Education Programs, ed. LeVone A. Olson (Huntington, West Virginia: Marshall University, 1972).

The Objectives of the Career Awareness Program are as follows:

1. To provide students with occupational information to make them aware of the meaning of work and its importance to them and society.
2. To provide experiences in which the world of work is presented in a manner that is realistic and appropriate to the student's state of development.
3. To inform students about the multitude of occupational opportunities.
4. To present to students a realistic view of the world of work and encourage them to consider their abilities and limitations.
5. To provide students with basic information about major occupational fields.
6. To stress the dignity in work and the fact that every worker performs a useful function.[17]

Students in grades one through six are provided with career education experiences through the existing disciplines of social studies, mathematics, language arts, science, and fine arts. Through a process called curriculum correlation (relating course content to careers), the achievement of goals related to attitudes, understandings, and skills (psychomotor and others) occur initially in one discipline and continue in all other disciplines.

The teaching strategies or techniques used to provide students with cognitive, affective, and psychomotor experiences are (1) Field Trips to business, industrial, and governmental institutions,

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[17]Herbert R. Holstein, "The Lincoln County Exemplary Model," Career Education Institutes - A Report on an EPDA Project Entitled: Strategies for Developing Career Education Programs, ed. LeVene A. Olson (Huntington, West Virginia: Marshall University, 1972).

(2) Simulation activities including paper and pencil simulation, role playing, and practical hands-on simulation, (3) Manipulative activities such as painting, drawing, printing, sewing, sawing, hammering, sanding, etc., (4) Guest Speakers representing the family, community, business, industry, and government, and (5) Multi-media activities such as books, films, slides, visuals, audio tapes, video tapes, organizational publications, etc.[18] The teaching strategies or techniques utilized within the existing disciplines are illustrated in Figure 1.

The career awareness program for the first grade begins with occupations found in the immediate environment and gradually broadens to include other workers in the community. The child in the first grade is introduced to career awareness by investigating the work of members of his family. The second grade child continues to investigate a wider range of occupations found in his community.

The career awareness program for grades three through six is designed to increase the range of occupations from those occupations found in the immediate community to those occupations found in the larger community.

Comparing and contrasting occupations found in the immediate community to those found in the increasingly larger community provides the student with the opportunity to become aware of the numerous career options available in the world of work and the interrelationship and interdependence of occupations.

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[18]LeVone A. Olson, Career Development Components in Vocational Education: A Diagrammatic Model K-12, (Huntington, West Virginia: Marshall University, 1971), pp. 10-11.

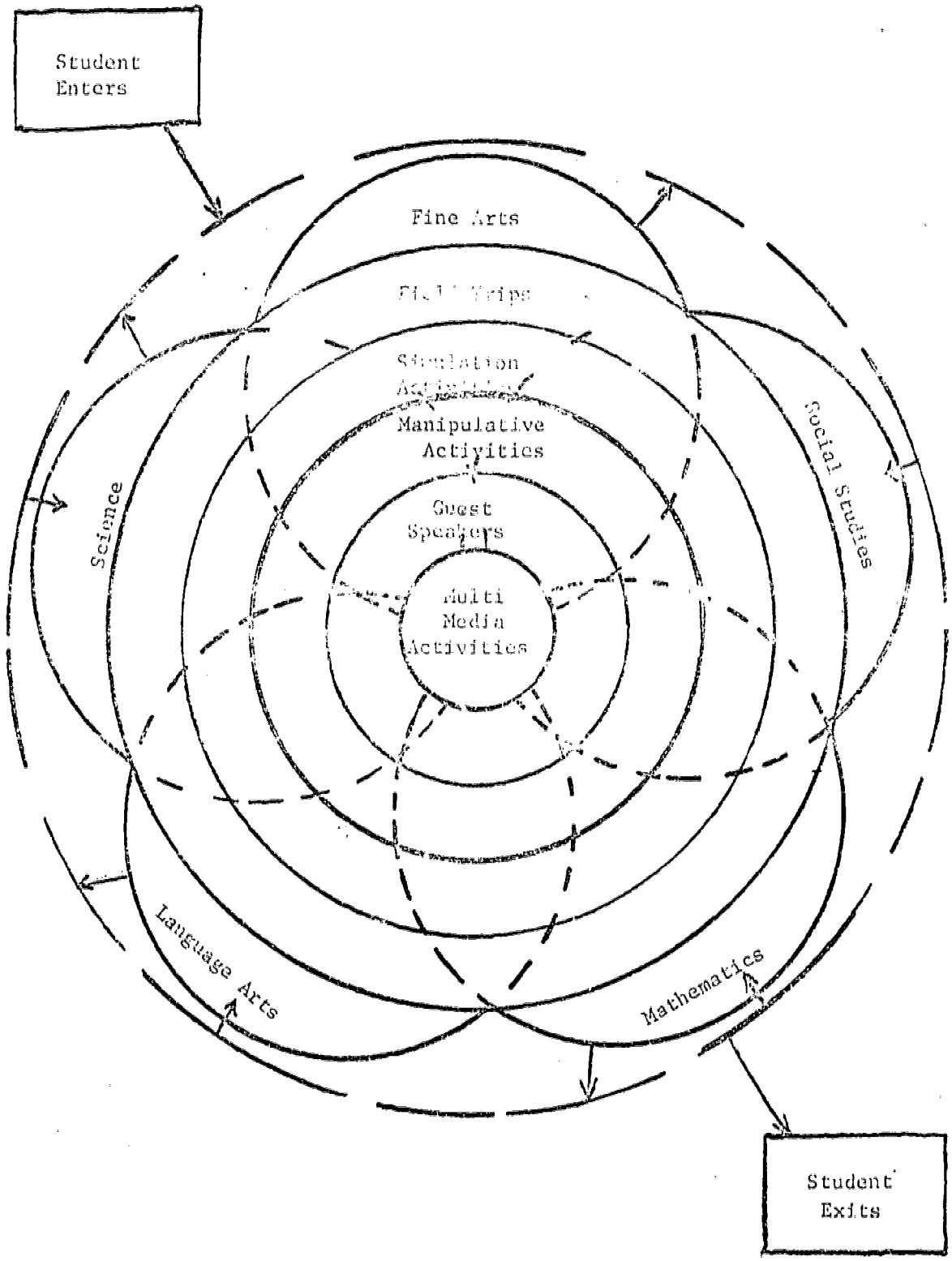

Figure 1. Career Awareness Model.

The model used upon which decisions concerning the selection of occupations to be investigated by students in grades three through six is as follows: (1) First grade, family, (2) Second grade, community, (3) Third grade, beyond the community, (4) Fourth grade, State, (5) Fifth grade, national, and (6) Sixth grade, world-wide.

The following are suggested techniques for introducing Career Awareness activities in the self-contained classroom in grades one through six.

When the occupational area is of such a highly complex character that it is difficult to acquire an understanding of the occupations involved, interest may be stimulated through a field trip. For example in the area of computer science, curriculum correlation in mathematics may spark an interest not only in computer science but also in the study of mathematics thus making mathematics more relevant to the student. Subsequently, other techniques should be used to complete the study of computer science in mathematics and other disciplines.

When the occupational area is of such a nature that the students possess knowledge of occupational roles (whether accurate or inaccurate), interest may be stimulated by role playing. The role playing may consist of acting-out occupational roles, completing a paper and pencil simulated exercise, or by being involved in a practical simulation experience (electrical wiring of a model home). The teacher and students can later compare the degree of accuracy in the first simulated exercise with knowledge gained through additional experiences. For example in the protective services, students will undoubtedly feel as though they understand the

role of the watchman, police officer, detective, and FBI agent. Curriculum correlation in social studies may be used with simulated exercises as the point of entry into the study of the protective services. Subsequently other techniques and other disciplines may be used.

Students need to begin developing manipulative skills such as painting, drawing, printing, sewing, sawing, hammering, sanding, etc. at an early age. Because students are generally interested in manipulative activities, these activities are often an excellent entry point. An example of how this technique might be used to begin a particular instructional unit is as follows. In studying occupations in construction, the teacher can interest the students in sawing, hammering, and painting through curriculum correlation in the discipline of fine arts. Additional occupational information can be provided through the other disciplines using manipulative activities and other techniques.

When the occupational area is of such a nature that a well known person is available as a resource role model, a group presentation may be used to stimulated interest. For example in the communications industry, curriculum correlation in language arts may provide the point of entry if a reporter, news announcer, etc. is available. Other techniques and disciplines can then be utilized to further develop an understanding of the occupational area being investigated.

A whole host of occupational information is available to students through books, occupational briefs, business and industry displays, slides, films, visuals, audio tapes, video tapes, etc. The multi-media technique may prove to be the most useful approach for the introduction of an occupational area in the five disciplines. For example in the

area of space technology, curriculum correlation through the subject of science using films, tapes, etc. and existing laboratory equipment may create a lasting interest (vocational or avocational) in space technology and make science more relevant. The other teaching techniques could subsequently be used in science and the other disciplines.[19]

Twenty six instructional resource units for grades one through six were developed by the staff of the Lincoln County Exemplary Project in Career Education prior to the involvement of the teachers and principals in the inservice workshop. These units were used by the teachers in the classroom and as models in developing additional units.

The format of each unit consists of a synopsis of the unit, objectives, teaching strategies, student activities, resources, evaluative techniques, and correlation of subjects. The focus of each unit is on a particular group of occupations which are appropriate to the developmental model used in the Career Awareness Program. Also included in each unit is a resource bibliography of materials available in Lincoln County.

A list of the teaching units and objectives for grades one through six are as follows:

Instructional Resource Units, level one.[20]

1. Wonderful World of Work	To recognize the many job clusters as they relate to the world of work in career awareness.

[19]LeVene A. Olson, Career Awareness Education: Introduction, Instructional Resource Units, and Annotated Bibliography, (Huntington, West Virginia: Marshall University, 1972), pp. 5-7.

[20]Billy J. Burton, Daryle G. Elkins, Herbert B. Holstein, and Thomas E. Woodall, Elementary School Project for Level One - Resource Unit (Hamlin, West Virginia: Lincoln County Exemplary Project in Career Education, 1971).

2.	Working at Home	To name the different kinds of activities that people perform within the family.
3.	Family Living	To identify the basic occupational skills used in the different activities within the family.
4.	Our Business Experience in the World of Work	To identify from first hand knowledge a basic awareness of an occupational area as it relates to the world of work.
5.	Contributions Toward My Education	To simulate occupations of other people whose careers have made it possible to attend school.
6.	Our Parents in the World of Work	To compile a knowledgeable bibliography of parental occupations as it relates to the world of work.

Instructional Resource Units, level two.[21]

1.	Away We Go	To acquire a knowledge of how important the airplane is in our everyday living.
2.	What Is a Farmers' Market	To acquire an intrinsic value of the agriculture movement through the practical application of farming methods.
3.	Clothes of Today	To develop a positive working experience toward the understanding of clothing.
4.	Our Home	To incorporate into career awareness a more in-depth understanding of a particular occupational task or product.

Instructional Resource Units, level three.[22]

1.	Choo Choo Train	To stimulate awareness of job services provided in community careers.
2.	Workers Within Our Community	To formulate a workable model of the various occupations within the community, correlating skilled and unskilled workers, emphasizing the importance of training and education.

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[21]Billy J. Burton, Daryle G. Elkins, Herbert B. Holstein, and Thomas E. Woodall, Elementary School Project for Level Two - Resource Unit (Hamlin, West Virginia: Lincoln County Exemplary Project in Career Education, 1971).

[22]Billy J. Burton, Daryle G. Elkins, Herbert B. Holstein, and Thomas E. Woodall, Elementary School Project for Level Three - Resource Unit (Hamlin, West Virginia: Lincoln County Exemplary Project in Career Education, 1971).

3.	The Staff of Life	To construct a workable model of an occupation using working activities of that occupation through role playing or dramatization.
4.	Supermarkets Serve People	To utilize knowledge in developing competent job interview techniques related to existing jobs within the community.

Instructional Resource Units, level four.[23]

1.	Opportunities in Our State	To name the many occupations and job skills that are available to the student within the state.
2.	Black Gold	To comprehend the vastness of our natural resources as related to the economic prosperity of the nation by focusing on the coal industry.
3.	Rainbow of Color	To become aware of the glass industry in developing an awareness of and an appreciation for the industry's vocational techniques as related to existing jobs within the state.
4.	Protective Services Provided by Our State	To do exploratory analysis of the many facets of protective services as provided by the state.

Instructional Resource Units, level five.[24]

1.	Individuality of Our Economic America	To examine major industries and services within the United States as they relate to different geographic regions.
2.	Wonderful World As Seen Through Television	To illustrate the many different types of skills and careers used through the multi-media of communication.
3.	Crafts of Appalachia	To recognize a pursuit of excellence in the arts and the preservation of our cultural heritage as it relates to Appalachia.
4.	Wonderful World of Money	To analyze the structure of the monetary system.

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[23]Billy J. Burton, Daryle G. Elkins, Herbert B. Holstein, and Thomas E. Woodall, Elementary School Project for Level Four - Resource Unit (Hamlin, West Virginia: Lincoln County Exemplary Project in Career Education, 1971).

[24]Billy J. Burton, Daryle G. Elkins, Herbert B. Holstein, and Thomas E. Woodall, Elementary School Project for Level Five- Resource Unit (Hamlin, West Virginia: Lincoln County Exemplary Project in Career Education, 1971).

Instructional Resource Units, level six.[25]

1.	Communicating Through Letters	To display knowledge of the different job roles as they pertain to a career in the postal services.
2.	Careers in Music	To utilize knowledge from world cultures as it relates to the social strata of our own country, state and community.
3.	Around the World on an Occupational Vacation and Vocational	To evaluate the many careers as they relate to an occupational vocation of the world in relationship to career awareness.
4.	Bussy Ants News	To synthesize the multi-news medium into a workable newspaper operation.

An inservice workshop[26] for teachers and principles who had volunteered to implement the career awareness program was provided prior to the beginning of the school year 1971-72. The workshop was task and process oriented to provide the most favorable environment for effective utilization of resources. The purpose of the process phase of the workshop was to overcome barriors to effective human relations. The initial activities were the four basic stages of team building which began with getting acquainted, trust building, development of helping relationships, and group collaboration on a common task. The task phase of the workshop concerned itself with experiential activities involved in developing and implementing a unit. The final afternoon session was utilized by the six school faculties to plan scheduling, correlation, resources, and materials.

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[25] Billy J. Burton, Daryle G. Elkins, Herbert B. Holstein, and Thomas E. Woodall, Elementary School Project for Level Six - Resource Unit (Hamlin, West Virginia: Lincoln County Exemplary Project in Career Education, 1971).

[26] Thomas E. Woodall and LeVene A. Olson, Education For Reality: Inservice Training Design for Teacher Orientation in Career Education, Huntington, West Virginia: Marshall University, 1972.

Chapter II

REVIEW OF LITERATURE

The rationale for this study is based on the need for evaluative data (1) to advise policies-making bodies, (2) to meet accountability requirements, (3) to provide feedback for modification and redirection, and (4) to permit articulation with other programs and states.

Various methods of conducting career education have been proposed. New materials are currently being developed to aid students in broadening their occupational repertoire in the period of cyberbation and automation. The research, however, is limited and there exists a need for further studies of career education.

Hansen suggests that present career education practices in the schools have not kept pace with theoretical developments. Traditional methods of providing career information (occupational information units, career days, etc.) need to be evaluated and possibly replaced by a sequential program, K-12. Hansen's suggestions are based on changes in vocational development theory, the nature of work and its meaning to the individual, and new information retrieval technology. The following are suggested examples of experiences that may be included in a career education program: (1) decision-making experiences, (2) industrial and education visits, (3) counseling, (4) career games, (5) simulated decision-making experiences, (One of the latest

references on simulation is the annotated bibliography on simulation compiled by the staff on the Simulation Systems Program Teaching Research.)[1] (6) periodic visits to career guidance centers, (7) periodic career conferences, (8) day-on-the-job, (9) reinforcement models, (10) staff career specialities, and (11) a student career log.[2]

In this chapter, information related to Career Education Instructional Materials, Research on Career Education Programs, and Other Innovative Career Education Programs is reported.

CAREER EDUCATION INSTRUCTIONAL MATERIALS

A survey and an evaluation of occupational information available to students in grades three through eight were undertaken in Atlanta, Georgia, recently. Nine libraries were randomly selected which represented various socio-economic levels. A preponderance of occupational information materials was available to students at the third grade reading level. The amount of materials tapered off in both directions from the third grade with relatively little material available to the upper elementary grades.

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[1]Paul A. Twelker, ed., Instructional Simulation Systems (Corvallis, Oregon: Continuing Education Publication, 1969), pp. 285.

[2]Lorraine S. Hansen, "Theory Into Practice: A Practitioner Looks at Career Guidance in the School Curriculum," The Vocational Guidance Quarterly, Volume 16, No. 2 (December, 1967), 97-103.

Goodson concluded that

> this suggests that the child approaching high school when certain curricular choices must be made on the basis of future career plans, has less information available at his reading level than he had at a younger age.[3]

Another important finding was that many occupations in which materials are available have been changed or eliminated and in many cases materials are inappropriate for youth of certain socio-economic levels.

Before a decision is made to utilize certain occupational information, five basic questions should be asked. (1) When was the information copyrighted? (2) Where is the information applicable? (Does it apply to small geographical region or to certain companies only?) (3) Who wrote the material? (What are the author's qualifications and biases?) (4) Why was the material developed? (Is it for entertainment or promotional purposes?) (5) How were the facts collected and presented? (Is the work a summary or ignorance or is it a scholarly collection of facts?)[4]

These questions should be asked because of the importance of occupational information to the student.

> Occupational information can enrich a junior high school pupil's general experience and arouse his awareness of the world around him. It can increase his motivation and influence his education plan. To serve these purposes, the

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[3]Sylvia Goodson, "Occupational Information Materials in Selected Elementary and Middle Schools," Vocational Guidance Quarterly, Volume 17 (December, 1968), 131.

[4]Robert Hoppock, Occupational Information, Where to Get It and How to Use It in Counseling and in Teaching (New York: McGraw-Hill Book Company, 1967), p. 45.

information must have personal meaning to him, helping him to get a clearer picture of himself and of his opportunities, here and now as well as in the future.[5]

The survey reported by Goodson consisted of materials available in libraries rather than materials on the market. This researcher's investigations reveal numerous sources and varieties of career education materials currently available or being developed. This section is concerned with career education material related to the following categories: Guidebooks and handbooks, films and videotapes, computer based materials, simulation and gaming, microfilm and microfiche, and resource guides.

The Oklahoma State Department of Education has developed career guides to be used by teachers, administrators, and counselors. Guides have been prepared for grades K-3, 4-6, 7-9, and 10-12. These guides include information about objectives, activities, information on occupational clusters, and resource materials.[6]

A career education course has been initiated in eighth, ninth, and tenth grade classes in three school systems in Ohio in which the following course content was identified and developed: the world of economics, the nature of work, decision-making and planning, the man-power market, occupations and employment trends, skills and

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[5]Blanche B. Paulson, "The Use of Occupational Information for the Junior High School Age Group," Vocational Guidance and Career Development, eds., H. J. Peters and J. C. Hansen (New York: The Macmillan Company, 1966). pp. 207-208.

[6]A Guide for Developmental Vocational Guidance, Grades K-12 (Oklahoma City: Oklahoma State Department of Education, 1968), 168 pp. (Eric: ED 026 532.)

economic value of education, and technology and change. A 316-page course guide entitled: Manpower and Economic Education: Opportunities in American Economic Life and a 140-page Teacher Manual were developed. These publications are now available through the Interestate Printers and Publishers, Inc., Danville, Illinois.[7]

Bear and Clary developed a teacher's guide to be used in an occupational education course. The guide provides an introduction to the course, and units on (1) characteristics, interests, aptitudes, and abilities, (2) manual and mechanical occupations, (3) clerical, sales, and service occupations, (4) professional, technical, and managerial occupations, and (5) evaluation and planning. Suggested activities, references, materials, and lists of films and filmstrips are provided. It is suggested that this unit be used at the lower high school level.[8]

A teacher's guide for a career education course, developed in New Jersey, includes suggestions for activities, reference materials, and films in the areas of self-understanding, economics, occupations, and self evaluation. This guide is intended for use with eighth and ninth grade students. Emphasis has been placed on activities which

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[7]R. L. Darcy, An Experimental Junior High School Course in Occupational Opportunities and Labor Market Processes (Athens, Ohio: Ohio University, 1968), 611 pp. (Eric: ED 022 056.)

[8]H. E. Beam and J. R. Clary, Introduction to Vocations (Moravia, New York: Chronicle Guidance Publishers, Inc., 1967), 124 pp.

provide students with an awareness of the numerous occupational possibilities available to those who have evaluated their potential.[9]

Three vocational guidance units were developed in 1968 by the Abington School District in Pennsylvania for the fifth, sixth, and seventh grades. These guides provide detailed information about activities related to making career decisions through the use of simulation, gaming, role-playing, and dramatics. The guides have been prepared for use with the language arts and social studies programs. Each guide is based on a different theme. The purpose of the fifth grade guide is to familiarize the students with the concept of interests and to learn and understand their individual interests. The sixth grade guide is based on the concept of change and how it affects students as they move into junior high school and adult life. The purpose of the seventh grade guide is to help students understand the role that values play in the decision-making process.[10]

In Project ABLE the following materials were developed: Grade Seven Student Vocational Plan, Grade Eight Student Vocational Plan, Grade Nine Student Vocational Plan, a Counselor Handbook, and a reference document entitled Occupational Analyses. The purpose in developing these materials was to facilitate student self-evaluation through the investigation of occupations and student credentials relative to

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[9]Teachers Guide for a Model Program on Introduction to Vocations (Trenton, New Jersey: State Department of Education, 1965), 138 pp.

[10]Career Development Activities: Grades 5, 6, 7 (Abington, Pennsylvania: Abington School District, 1968), pp. 3-4, 44-45, 87-88. (ERIC: 022 219.)

educational and occupational opportunities. Appended is an occupational information resource guide.[11]

Mullen developed a handbook for school administrators, teachers, and counselors consisting of suggested volunteer activities in a career education program. The handbook, not intended for student use, provides a record of information which students, parents, and community resource people are able to provide in the way of career enrichment.[12]

Information about specific occupations is presented in the booklets Occupations for You, Part One, and Occupations for You, Part Two. Although the first booklet was field tested in eighth and ninth grades in several states, the results are not provided. In these booklets the following information about each occupation is included: (1) duties, (2) training needed and other requirements, (3) salary and working conditions, (4) future employment outlook, and (5) resources for further information. Part One includes information on thirty occupations while Part Two contains twenty-two occupations.[13]

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[11] The Project ABLE, Student Vocational Play, Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational-Technical School (Pittsburgh: American Institute for Research), (n. d.), p. 32. (Eric: ED 030 720.)

[12] Margaret J. Mullen, A Vocational Program in Vocational Information and Career Guidance for Secondary Schools (Redwood, California: California State Department of Education, 1968), pp. 1-4. (Eric: ED 024 809.)

[13] D. L. DesRoches, Occupations for You, Part One (Washington, D. C.: George Washington University, 1965), 157 pp. (Eric: ED 017 704.); and Occupations for You, Part Two (Alexandra, Virginia: Allington Corporation, 1968), 114 pp. (Eric: ED 029 946.)

An innovative method of providing realistic career exploration experiences for junior high school students is being developed by NEWIST (Northeastern Wisconsin's Inschool Television) in the form of films.

> In each of the occupational films the NEWIST filming crews went into a plant or into the field with workers to photograph men and women doing their jobs. The employees candidly outline what they do, how they feel about their work, what they consider the satisfactions and disappointments and how they prepared for or obtained their positions.[14]

Commercial television is used to present an hour and a half of occupational material each school day.

Co-curricular materials have been developed to be used in the fine arts curriculum by the Occupational Materials Project in Atlanta under the direction of Dr. Helen E. Cook. This center developed the television series Countdown to the 70's (39 television programs) which is accompanied by scripts, study guides, job descriptions, and posters.[15]

Films of workers on their jobs have been made available by Laramore in the health field. High school students were utilized to interview personnel in the selected occupation. One of those individuals was then filmed. The magnetic sound track on these 8mm films can be erased and new job information added as it becomes available. The four-minute films on twenty occupations in the health field are available at a cost of $35 each.[16]

Basic media materials are currently being developed and tested in a project at Indiana State University, Harvard University Graduate School

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[14]Carolyn Stewart and Jim Kissinger, "Schools Use Television to Focus on Job Opportunities," Audiovisual Instruction, Volume 15, No. 4 (April, 1970), 60.

[15]Helen E. Cook, "Occupational Information and Fine Arts," Georgia Educator (September, 1970), 15-17.

[16]Carryl Lawamore, "Jobs on Film," Vocational Guidance Quarterly, Volume 17 (1968), 87-90.

of Education, the University of Pittsburgh, and two ETV stations. Student growth and change are the targets in this motivational approach to guidance materials and classroom procedures.

> The program consists of nine Slice of Life film presentations to be used at successive intervals and designed to motivate students to candidly discuss difficult problems in coping with self, education, work, family and community living; indentify and improve areas of personal behavior related to achievement and development; and increase self understanding through simulated problem-solving.[17]

These media materials, currently being tested in eight schools throughout the country, are followed by group discussions.

A host of information has been made available recently by individuals and commercial firms about computer-assisted instruction in the area of career education.

In project CAOG (Computer-Assisted Occupational Guidance), students are provided with the following information after they have requested information on a specific occupation: (1) Existing descrepancies between the student's ability-preference profile and requirements for the occupation are typed out, (2) a two minute taped interview with a worker is played, (3) a 150 - to 200 - word job description is typed out, and (4) a slide screen allows the student to see four typical tasks of the worker in the selected occupation. Appended is a resource guide for additional occupational information.[18]

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[17]A. M. Martin, "An Interactive Media for Student and Teacher Growth," Audiovisual Instruction, Volume 15, No. 4 (April, 1970), 54.

[18]Joseph T. Impellitteri, The Development and Evaluation of a Pilot Computer-Assisted Occupational Guidance Program (University Park Pennsylvania State University, 1968), pp. 6-11. (Eric: ED 029 095.)

The Educational Planning Associates, Inc., is currently providing a mail order computer service to interested students. A form is completed by the student about his interests, ability, scholastic records, and life goals. The information provided by the student is compared with 500 occupations in the data bank. A category of occupations is suggested for the student. He is provided with a list of pertinent and related occupations from which he can select the occupations which interest him most. The student is then furnished occupational briefs which provide information about job duties, working conditions, training and courses needed, and employment outlook.[19]

Even though simulation takes numerous approaches, it is a technique which can be utilized by counselors and teachers of career education courses.

Wigderson has provided the readers with advantages and objectives to simulation plus a list of 85 commercially produced games and a 48-item bibliography which covers many approaches to simulation.

> Advantages claimed for simulation (over the lecture/catechism techniques) are: (1) Students are placed in a continuing decision-making situation, helping them become self-motivated. (2) Students perceive themselves as involved in a real-world problem making high motivation possible. (3) Student decisions are based upon information gathered, with analysis of data a requirement; a pragmatic set of attitudes tend to be produced and the scientific problem-solving approach inculcated. (4) Extensive writing is required with emphasis upon clarity, brevity, and fluency; the student must communicate his ideas succinctly. (5) Self-discipline is outstanding; students set their own free will. (6) The games bridge school subject disciplines and give the student an integrated experience in the otherwise discipline separated curriculum.[20]

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[19] MATCH, Career Decision Making by Computer (Springfield, Illinois: Educational Planning Associates, Inc.), (n. d.). (Brochure.)

[20] Harry I. Wigderson, The Name of the Game--Simulation, Research Brief, No. 4 (Visalia, California: ADAPT, A PACE Supplementary Educational Center, 1968), p. 3. (Eric: ED 028 647.)

Occupational information on microfilm cards is being utilized by schools in California, Colorado, Kentucky, Tennessee, and Wisconsin.

Career information is being provided to students, grades 7-15, on VIEW Cards in Colorado. In Project VIEW (Vocational Information for Education and Work) information on 250 demand occupations in which training is available was gathered, synthesized, and placed on microfilm cards. Information such as the following is provided: job description, job requirements, restrictions, economic returns, prospects and opportunities, and job advancement. The two VIEW Cards on each occupation are revised at least every two years.[21]

Another method of using the VIEW Cards is described by Pierson, Hoover, and Whitfield in which the term VIEWscript is used. This version utilized four pages of information that can be converted into microfilm form. Photographs of local workers on the job and references for further information are provided.[22]

VIEW Cards have been utilized by selected high schools in Tennessee and Kentucky. The results of the evaluation are not provided; however, Childers notes that they were favorable. Based on the results of the evaluation, the VIEW Cards will be revised.[23] The first deck of VIEW

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[21] Innovations and Special Programs in Vocational Education (Columbus, Ohio: National Association of State Directors of Vocational Education and the Center for Research and Leadership Development in Vocational and Technical Education, August, 1968), p. 5. (Eric: ED 027 411.)

[22] G. N. Pierson, R. Hoover, and F. A. Whitfield, "A Regional Career Information Center; Development and Process," Vocational Guidance Quarterly, Volume 15 (1967), 162-169.

[23] Robert D. Childers, "A Microfilm Occupational Information System," Audiovisual Instruction, Volume 15, No. 4 (April, 1970), 57-58.

Cards produced by WISCO (Wisconsin Instant Information System for Students and Counselors) is available at a cost of $50 for the original deck and $50 per year for the updating service and newly developed cards.[24]

Numerous resource guides are available to those seeking occupational information. The standard guides used by counselors and career education teachers are as follows:

Career Index, Chronicle Guidance Publications, Inc., Moravia, New York.

Career Guidance Index, Careers, Largo, Florida.

Counselor's Information Service, B'nai B'rith Vocational Service, Washington, D. C.

Guidance Exchange, P. O. Box 1464, Grand Central Post Office, New York, New York.

Occupational Abstracts, Personnel Services, Inc., P. O. Box 306, Jaffrey, New Hampshire.

In addition, bibliographies of occupational information are provided in books such as Hoppock's Occupational Information.[25]

In the bibliography of 150 annotated references by Hopfengardner, sources are grouped as follows: (1) U. S. Government publications, (2) state publications, (3) armed forces publications, (4) commercial publications, and (5) professional publications. To be included in this bibliography, the reference was required to meet one or more of the following objectives: It must provide sources of occupational

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[24] WISCO, (Wisconsin Instant Information System for Students and Counselors), (Madison, Wisconsin: Wisconsin Department of Public Instruction), (n. d.). (Brochure.)

[25] Hoppock, 598 pp.

information, the information, or techniques for obtaining occupational information.[26]

The Occupational Information Materials Project has prepared A Selected Bibliography of Occupational Literature for Grades Three through Eight. This bibliography includes 234 books arranged in occupational categories. These books have been evaluated and rated on guidelines provided by the National Vocational Guidance Association. For each publication, the suggested grade level is provided.[27]

The Occupational Information Materials Staff has also compiled a list of filmstrips, motion pictures, songs, charts, and workbooks. Information about the grade level, publisher, and code number reference to the Dictionary of Occupational Titles, 1965 Edition, is provided for filmstrips and motion pictures listed. The filmstrips and motion pictures were evaluated on the bases of the National Vocational Guidance Association guidelines. Many of the obsolescent films which presented unrealistic occupational information were eliminated from these lists. For most of the references listed, a suggested grade level is provided.[28]

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[26]J. D. Hopfengardner, ed. Sources of Occupational Information (Columbus, Ohio: Ohio State Department of Education, 1966, (Eric: ED 020 398).

[27]A Selected Bibliography of Occupational Literature for Grades Three through Eight (Atlanta, Georgia: Occupational Information Materials Project, Atlanta Public Schools 1968), 17 pp.

[28]Occupational Information for Grades Three through Eight (Atlanta, Georgia: Occupational Information Materials Project, Atlanta Public Schools, 1968), 30 pp.

Cook reported the results of a survey of vocational guidance materials in the American Vocational Journal. The materials presented were selected because they met one or more of the following criteria:

> (1) Extensive utilization by professionals; (2) National recognition by leaders in the guidance field; (3) Innovative approach; (4) Representation of types of materials; (5) Recent publications; (6) Potential for charting the course for those who are collecting and developing materials or conducting research.[29]

A Resource Guide to Selected Materials for the Vocational Guidance of Slow Learners has been compiled recently. The guide provides lists of audiovisual materials, bibliographies, classroom materials, periodicals, professional materials, and research and demonstration projects.[30]

RESEARCH ON CAREER EDUCATION PROGRAMS

In career education programs which have been reported by various researchers recently, the results are often favorable even though they do conflict at times. Hoppock suggests that the success or failure of a program depends on factors such as the instructor, instructional materials, interest and ability of the students, and the instruments used to measure results.[31]

The results of selected programs which have been researched recently are reported below.

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[29]Helen E. Cook, "Vocational Guidance Materials A Survey for Teachers," American Vocational Journal, Volume 43 (1968), 25.

[30]Kenneth L. Tyson, Resource Guide to Selected Materials for the Slow Learners (Gettysburg, Pennsylvania: Adams County Public Schools, 1968), pp. 1-2. (Eric: ED 030 921.)

[31]Hoppock, p. 45.

In 1965, Detroit, Michigan, initiated career guidance programs for grades one through twelve in ten schools. The objectives of the Development Career Guidance in Action (DCGA) were as follows:

> (1) To broaden the perceptual field of inner city youth regarding occupations and opportunities, (2) To help them make realistic plans for their future, (3) To provide better role models with whom inner city youth can readily identify.[32]

The activities in this program involved individual and group counseling, dissemination of information through classes and other school activities, field trips to business and industry; role-model speakers in school; informing and advising parents; coordination of school and community activities; consultation services for students, school staff, parents, community, and industry; and articulation.

Results of the Developmental Career Guidance in Action program indicated that the level of aspirations of the experimental group increased significantly more than the control group. Further results of a survey indicate that the objectives of the Developmental Career Guidance in Action Program have been met. The findings indicate that the experimental group as opposed to the control group (1) showed more growth in regard to occupational knowledge and planning, (2) reexamined their value structure, (3) showed a more acceptable attitude toward counselors, and (4) perceived a greater need for professional help.[33]

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[32]George E. Leonard, "Vocational Planning and Career Behavior: A Report on the Developmental Career Guidance Project," Educational Technology, Volume 9, No. 3 (1969), 43.

[33]George D. Leonard, Developmental Career Guidance in Action, The First Year (Detroit: Wayne State University, 1967), pp. 96-100. (Eric: ED 013 456.)

According to Marusic, differences in gain scores for an experimental group in a two-month career exploration program in Warwick, Rhode Island, were highly significant when compared to the control group. Sixty eighth-grade students were randomly selected from eleven classes and randomly placed into experimental and control groups. The four stages followed by the experimental group were as follows:

> (1) Students were asked to draw an occupation they at the time considered best for them. (2) After they had done the drawing, they described in writing the meaning of their drawing. (3) Students' drawings were shown on an opaque projector in the class, and the students' written explanations were read concurrently. Students discussed the drawings, the occupations goals. (4) A number of students volunteered to gather photographs and more information about some occupations representative of a family, and then presented them in the class.[34]

The control group utilized the traditional test and materials while being taught in the traditional lecture method manner. The investigator concludes that this new method of providing occupational information is more interesting, meaningful, and personal to the students than the traditional method.

Two hundred and eighty-eight male students were involved in a four-week career exploration program aimed at assessing the relative efficacy of the experimental groups as opposed to the control groups. The experimental groups consisted of:

(1) Video-presented group social modeling,

(2) Structured stimulus materials, and

(3) Video-presented group social modeling plus structured stimulus materials.

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[34]S. S. Marusic, "Use of Occupational Drawings to Enhance Vocational Development," Personnel and Guidance Journal, Volume 47 (1969), 520.

The control groups consisted of:

(1) Insight group counseling,

(2) Wait (no counseling), and

(3) Reserve group.

Activities suggested for the experimental groups were to observe workers; read vocational simulation kits; listen to audio tapes describing jobs; talk to counselors, teachers, and personnel managers; write letters; and visit personnel offices and colleges.

An evaluation of the program provided the following results: (1) Significantly more knowledge of and ability to simulate career decision-making behaviors were held by students in the video-presented group social-modeling experimental group than by the insight group counseling (control); or the wait control groups in two schools. (2) Students in the video-presented group social-modeling with structured stimulus materials (experimental group) exhibited significantly greater frequency and variety of career decision-making behaviors than did the insight group counseling (control) at one school. (3) Students in the video-presented group, social-modeling with structured stimulus materials, were significantly more effective in promoting subjects' actual performance of career decision-making behavior than the insight group counseling (control) at one school. (4) Students in the structured stimulus materials experimental group demonstrated significantly more ability to simulate career decision-making behaviors than the wait control group in one school.[35]

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[35]J. A. Hamilton, Video Group Social Models, Group Stimulus Materials and Client Characteristics in Vocational Counseling: An Experimental Study (Washington, D. C.: American Educational Research Association, 1969), p. 17. (Eric: ED 028 475.)

A career education course was initiated in eighth, ninth, and tenth grade classes in three school systems in Ohio in which the following course content was utilized: the world of economics, the nature of work, decision-making and planning, the manpower market, occupations and employment trends, skills and economic value of education, and technology and change. The results of this study involving 767 students are: (1) The experimental groups gain on the posttest was 33.4 percent greater than for the control groups; and (2) the experimental treatment induced attitudinal changes toward manpower and economic issues and promoted interest in future decisions and actions.[36]

In a study designed to determine if simulation materials would produce attitudinal changes toward education and work and/or increase the students' knowledge of the career process, three sixth-grade classes were randomly selected from two school districts. The scores for these students were compared with the scores of three randomly selected control groups. The program consisted of fifteen hours of class time over a one-month period for the treatment groups. The control groups remained in the regular curriculum. Although the difference between the experimental and control groups was not significant, the actual gain was greater for the experimental groups. The simulation materials also evoked a high level of interest.[37]

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[36]R. L. Darcy, An Experimental Junior High School Course in Occupational Opportunities and Labor Market Processes (Athens, Ohio: Ohio University, 1968), pp. vi-vii. (Eric: ED 022 056.)

[37]R. G. Shirts, Career Simulation for Sixth Grade Pupils (San Diego County: Department of Education, 1966), pp. 13, 15. (Eric: ED 010 076.

Research has been conducted on career simulation by Barbula and Isaac in which attitudinal changes toward vocational concepts were anticipated. The experimental and control groups consisted of sixth and eighth grade students. No statistically significant differences were found between the groups on a ten-item questionnaire on vocational insightfulness; the researchers felt that the negative results were partially due to an insensitive instrument. They felt that additional development work needed to be done with simulation as a method of teaching.[38]

According to Impellitteri, the computer-assisted career exploration system at the junior high school level (N = 140 males) was effective in providing a means of exploring occupational opportunities. The purposes of this program were

> to provide an easily updated individualized occupational information retrieval system; to develop through an essentially heuristic approach a process whereby youth could develop their own individualized frameworks of the occupational structure; and to provide an experience for youth to acquire, by simulated practice, operational strategies in relating their abilities and interests to occupational opportunities.[39]

No significant difference was found between the experimental and control groups in a study reported by Brubaker.

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[38]P. M. Barbula and Stephen W. Isaac, Career Simulation for Adolescent Pupils, Final Report (California: San Diego County Department of Education, 1968), pp. 26-27.

[39]J. T. Impellitteri, "Exploration with a Computer Assisted Occupational Information System," Educational Technology, Volume 9, No. 3 (1969), p. 37.

> The experimental program was designed to provide students with knowledge of vocational and citizenship roles, appropriate attitudes involving participation in these roles, and a social science framework for the analysis and further understanding of such roles in a changing society.[40]

The control group consisted of students enrolled in the traditional courses of vocational guidance and civics. An occupational aspiration scale and a self-concept scale were used to determine whether differences existed. The sample consisted of 104 ninth-grade students.

In evaluating P.A.C.E., Goff pretested and posttested second, fourth, and sixth grade students to determine their knowledge of occupations. It was found that the students assimilated vocational and occupational information, and that older elementary students exhibited greater vocational awareness. Change in level of aspiration as a function of learning potential, however, was not differentiated between the experimental and control groups.[41]

In a study reported by Yabroff, two hundred forth-eight ninth-grade students of high, middle, and low ability were randomly divided into three treatment groups. Group I received decision-making experience by using local probability data, and Group II received these experiences by using general probability data. Group III received no additional instruction. All of the students received four weeks of group guidance prior to being randomly divided into the three experimental treatments.

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[40] D. L. Brubaker, "Anthropology and Vocational Guidance: An Experimental Approach," Vocational Guidance Quarterly, Volume 15 (1967), 210.

[41] William Goff and others, Project P.A.C.E. (Preparing, Aspiring, Career Exploration), Dayton, Ohio: Dayton City School District, 1967), pp. 22-29. (Eric: ED 012 934.)

Group I (local probability data) for all abiltiy levels scored significantly higher than Group II or Group III in: (1) knowledge of the decision-making process, (2) awareness of educational alternatives, and (3) knowledge of probabilities for alternatives.[42]

Vivian S. Sherman evaluated a career education program which made use of innovative vocational guidance curriculum materials. Seventh, eighth, and ninth grade vocational students were involved in the eight-week experimental treatment. Sherman concluded that some statistically significant results showed that the curriculum produced positive effects on attitude toward self. Certain limitations (model and materials application limited) led to the conclusion that, in effect, the materials in their present form have not been adequately tested. Other findings, such as sex differences and some grade by school interaction, tended to suggest direction for further research.[43]

OTHER INNOVATIVE CAREER EDUCATION PROGRAMS

According to Hayes, students need to be provided with accurate occupational information upon which decisions can be made and upon which individualized counseling can be built. It is suggested that students and teachers should not be overly concerned with the absolute

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[42]William W. Yabroff, An Experiment in Teaching Decision-Making (Sacramento: California State Department of Education, 1964), pp. 3-5. (Eric: ED 010 701.)

[43]Vivian S. Sherman, Trail and Testing of an Experimental Guidance Curriculum, Final Report (Palo Alto: American Institute for Research in Behavioral Science, 1967), pp. 7-8, 48-49. (Eric: ED 020 554.)

number of occupations but with the range of occupations studied in career education programs.[44]

This section is concerned with some of the many innovative programs and methods of providing occupational information to youth. Evaluative results on the following studies were not provided.

In the Rochester Career Guidance Project, life-career studies were developed. These studies involved slide-audio stories of three individuals each at work on his job. Of the three people, one is usually a woman and one is usually of a minority group. Aside from describing their jobs, each person's occupational history and aspirations are taped to provide the students with the developmental aspect of careers. Burnham states, however, that "current career guidance practices can be vastly improved without necessarily adding computers or audio-visual equipment."[45] The objectives of the Rochester Career Guidance Project are to provide occupational information, to provide the student with some control over his future, and to relate the school to the community in a way which improves guidance activities.

Krumboltz suggests using self-administered simulation kits to explore occupations. Stanford University has developed problem solving kits for accounting, appliance service and repair, electronic technician, medical laboratory technology, police work, sales, and x-ray technology. After

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[44] J. Hayes, "Role of Occupational Information in Career Guidance," Educational Research, Volume 9 (1967), 191-6.

[45] R. Burnham and others, "The Rochester Career Guidance Project," Educational Technology, Volume 9, No. 3 (1969), 39.

a motivational introduction, the problem with necessary information needed to solve the problem is presented. The problems are realistic and representative of those actually faced by employees in the occupation.[46]

An elective one-year course called Self-Understanding Through Occupational Exploration (SUTOE) has been implemented to assist ninth grade students to explore educational and occupational avenues. The objectives of SUTOE are to (1) become familiar with the employers' point-of-view and requirements, (2) provide knowledge of economics as it relates to labor force needs, (3) provide a better understanding of the opportunities of high school and technical school training programs, and (4) allow the students to assess their strengths and weaknesses. To achieve these objectives, the following techniques were used: investigation and search, idea exchange in groups, role playing, interviewing, letter writing, oral and written reports, visitation to business and industry, guest speakers, viewing of career films and filmstrips, and research techniques.[47]

A program in career exploration currently involves 7,000 fifth and sixth grade students in Philadelphia. The Room to Grow Program utilized teachers, guest speakers, tours, the curriculum guide: Room to Grow, career displays brochures, audio-visual materials and guidance counselors in its 45 minutes to one hour and a half sessions. The

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[46]J. D. Krumboltz and B. Bergland, "Experiencing Work Almost Like It Is," Educational Technology, Volume 9, No. 3 (1969), 47-9.

[47]Teacher's Guide to: Self Understanding Through Occupational Exploration (SUTOE), Salem, Oregon: Oregon State Department of Education, 1968), pp. 6, 10-16.

objectives of the program are: "(1) to improve self-confidence, (2) to provide a wide range of career experiences, and (3) to develop a desirable approach to the process of career choice."[48] Topics studied in the Room to Grow Program are student attitudes toward work, socio-economic levels, educational aspirations, and self-concepts.

The Atlanta Public School System is providing career exploration experiences through the medium of fine arts (music, drawing, painting, drama, poetry, photography, and cinema). Multi-sensory units are being utilized. Thirty-nine occupational television programs are being shown to these students. Posters of workers are placed in the schools to complement the television programs. Children in the project schools also draw, write poems, role-play, make occupational puppets, write skits, and devise and play occupational games.[49]

Vocational role-models dressed in their working clothes are being utilized in a Detroit elementary school. The workers bring the tools of their trade to the school to better characterize their job. Students at each grade level are exposed to several jobs which comprise nine job families.[50]

Six weeks of career exploration experiences per year are being provided to 6,000 seventh and eighth grade students in six Ohio schools.

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[48]Allen H. Platt, Room to Grow: Something Special for All Kids (Philadelphia: Philadelphia School District, 1969), pp. 3-4. (Eric: ED 033 403.)

[49]Cook, "Occupational Information and Fine Arts," 15-17.

[50]I. M. Bank, "Children Explore Careerland through Vocational Role-Models," Vocational Guidance Quarterly, Volume 17 (1969), 284-9.

> The schools have scheduled the career orientation units in different ways. Some include them as a part of the regular subject curriculum on the basis of a six-week or three-week, two-period-per-day block, whereas another school scheduled the units for two full weeks at the end of each three trimesters.[51]

All of the students are exposed to occupations in agriculture, business, construction and manufacturing, sales and marketing, personal service, repair service, governmental services, transportation, and professions. All of the teachers in these schools are involved in this program including coaches, music teachers, and guidance personnel.

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[51] H. D. Brum, "Exposing Students to the World of Work," Industrial Arts and Vocational Education, Volume 58, No. 8 (1969), 66.

Chapter III

METHODS AND PROCEDURES

The methods and procedures used in this study are described as follows: (1) sample, (2) treatment groups, (3) instrumentation, and (4) specific design.

Sample

The Lincoln County Exemplary Program was initiated in eight elementary schools, grades one through six, in the fall of 1971. Intact groups of students were assigned to the experimental and control groups. Using a table of random numbers, students were randomly selected from intact groups to participate in this study.

Notation and sample size for the treatment groups (experimental = T_e and control = T_c) and grade levels (first grade = L_1, second grade = L_2, third grade = L_3, fourth grade = L_4, fifth grade = L_5, and sixth grade = L_6) are as follows:

	L_1	L_2	L_3	L_4	L_5	L_6
T_e	n=40	n=40	n=40	n=40	n=40	n=40
T_c	n=40	n=40	n=40	n=40	n=40	n=40

During the 1971-72 school year, two thousand, four hundred thirty-six (2,436) students were enrolled in grades one through six. The student population in the career education program was eight hundred, eighty-seven(887). The population who were not involved in the career education program consisted of one thousand, five hundred, forty-nine (1,549) students.

Of the eighteen (18) elementary schools in Lincoln County, one or more of the faculty in eight (8) schools were involved in the career education program. Twenty-nine members of the professional faculty received inservice training and subsequently implemented career education in their classes. Fifty-two members of the professional faculty were not involved in career education in Lincoln County.

Eighty students (experimental and control) from each grade level were pretested in September 1971 utilizing the Occupational Awareness Test. To be included in the treatment groups, a pretest score on the Occupational Awareness Test and posttest scores on the Language Achievement Test, Mathematics Achievement Test, and the Occupational Awareness Test were required. Students not participating in the testing situation for all three instruments were removed from the sample.

The sample size was reduced from n=240 for the experimental treatment group to n=214. The sample size for the control treatment group was reduced from n=240 to n=205. In many instances, the investigator possessed partical data on particular students. However, if complete data were not available, the participant was removed from the sample.

Treatment Groups

For the purpose of determining whether there were significant differences between the adjusted posttest means, the following treatment groups were utilized:

The experimental treatment group consisted of those randomly selected students in grades one through six whose teachers had participated in an

inservice workshop on career education during the summer of 1971. Through the teachers and the coordinated effort of the Exemplary Project staff, the following experiences were provided to the students: (1) field experiences, (2) manipulative activities, (3) multi-media experiences, (4) resource role models, and (5) simulation and role playing experiences. The career awareness theme was correlation with Fine Arts, Language Arts, Mathematics, Science, and Social Studies.

The control treatment group consisted of those randomly selected students in grades one through six whose teachers had not participated in planned career education experiences.

Instrumentation

Three test instruments were administered to the experimental and control groups. California Language Achievement Tests[1], California Mathematics Achievement Tests[2], and Occupational Awareness Tests[3] were administered by testing specialists and program supervisors.

The California Language Achievement Test measures achievement in English language skills. The test includes sections in Capitalization, Punctuation, Usage and Structure, and Spelling. The following levels were used: Level 1 for grades one and two, and Level 2 for grades three and four, and Level 3 for grades five and six.

The California Mathematics Achievement Test measures achievement in mathematics. The test includes sections in Computation, Concepts, and Problems. Level 3 also includes a section in Fractions. The

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[1]Devised by Ernest W. Tiegs, Ph.D., and Willis W. Clark, Ed.D.

[2]Devised by Ernest W. Tiegs, Ph.D., and Willis W. Clark, Ed.D.

[3]Devised by Thomas E. Woodall, Billy J. Burton, Daryle G. Elkins, and Herbert B. Holstein.

following levels were used: Level 1 for grades one and two, Level 2 for grades three and four, and Level 3 for grades five and six.

The Occupational Awareness Test measures knowledge of workers. The test includes questions dealing with identification of workers, linking workers with the tools of their trade, placing workers in the environmental setting in which their job is performed, and identifying the proper duties associated with specific occupations.

The Occupational Awareness Test, level one, is a pictorial test involving a wide sampling of the occupational spectrum. The test includes four sections, each designed to focus on a particular phase of occupational awareness. Section I involves the identification of occupational figures. Section II is devoted to the selection of appropriate occupational tools. Section III is designed to test the ability of students to place workers in their proper environmental setting. Section IV relates to the students knowledge of the occupational elements of home and family.

The Occupational Awareness Test, level two focuses on occupations that exist at the community level and in cultural settings more unfamiliar to the student. In view of this factor, this test again samples a wide range of community occupations. Level two utilizes both pictures and written material and involves the same format as the level one test.

The Occupational Awareness Test, level three is designed to measure the extent to which the level three curriculum has succeeded in increasing the level of student's occupational knowledge. The test is entirely written at this level, and its four sections focus on essentially the same general areas as the level one and two tests, except for Section I, which involves the linking of occupational workers to the function that they perform.

The Occupational Awareness Test, level four is as follows: Each of the test's two sections involves the linking of twenty-six occupational workers to their appropriate duty or job. The test is matching in nature with students being asked to match a list of workers on the left of the test page with the proper job from a list of duties on the right side.

The Occupational Awareness Test, level five is designed to measure the extent to which the curriculum has succeeded in increasing the level of students occupational knowledge. This test, like that at level four, involves the matching of occupational workers with their appropriate functions or duties. There are two sections of twenty-six questions each.

The Occupational Awareness Test, level six contains two sections. The first section is multiple choice and in each question an occupation is listed. Three job duties or functions are listed as alternatives. The task of the student is to select the proper job from the available alternatives. Section II involves the matching of workers with their appropriate job or function.

Specific Design

The students participating in this study were pretested in September 1971. The Occupational Awareness Test was used for the pretest. The posttests were administered in May 1972. The posttests included the California Language Achievement Test, California Mathematics Achievement Test, and the Occupational Awareness Test.

The independent varibles and covariates were: Pretest score = X_1, and Grade Level = X_2. The dependent or experimental variables were: Language Achievement = Y_1, Mathematics Achievement = Y_2, and Occupational Awareness = Y_3.

An analysis of covariance (Multiple Regression Analysis) was utilized to determine if a difference existed between the adjusted posttest scores of the experimental group and the adjusted posttest scores of the control group on the three dependent variables. Null hypotheses were rejected at the 0.01 level of significance using a directional or one-tailed test.

The analysis of covariance was chosen to increase the precision of the analysis of variance statistical treatment by adjusting the criterion scores for differences in occupational awareness and grade level. The analysis of covariance adjusts the measures of variability for the effects of the covariates by subtracting the amount of variability that is "explained" by the covariates.[4]

> When a variance ratio exceeds the chosen significant point, the null hypothesis is rejected. If the null hypothesis is rejected, the presence of a relationship between the variable represented by the grouping and the dependent variable becomes plausible.[5]

The analysis of covariance was utilized as the statistical techniques for testing the hypotheses in the investigation. This technique provides a test of the significance of the differences between the adjusted means.[6]

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[4]Joseph C. Bledsoe, A Study Guide in Statistical Inference (Athens, Georgia: Privately published, 1970), pp. 70-71.

[5]Phillip H. DuBois, An Introduction to Psychological Statistics (New York: Harper and Roe Publishers, 1965), p. 362.

[6]Henry E. Garrett, Statistics in Psychology and Education (New York: David McKay Company, Inc., 1966), p. 276.

The design of this study was quasi-experimental design 10 (Pretest-Posttest Nonequivalent Control Group Design) described as follows by Campbell and Stanley.[7]

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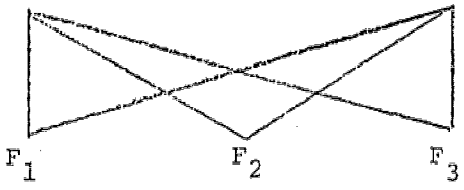
- - - - - - - - - - - - - - -
O O

The experimental and control groups did not have pre-experimental sampling equivalence. Subjects were not assigned to treatment groups randomly from a common population. The experimental students were randomly selected from intact classes of student involved in the Career Awareness Program while the control students were selected from the remaining students who had not participated in the Career Awareness Program.

The analysis of covariance was applied to yield on F_1 value for language achievement, F_2 value for mathematics achievement, and F_3 value for occupational awareness.

Experimental	Control
Grade Levels 1 - 6 n = 214	Grade Levels 1 - 6 n = 205



Due to the wide range of scores on the pretest and subsequent post-tests, a log transformation was utilized. To effectively estimate the

[7] D. T. Campbell and J. C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally & Company, 1963), p. 47.

coefficients, more data are required than is available at each grade level in this study. Therefore all grade levels within each treatment are grouped.

The model used to transform the data is as follows:

$$\text{Log } Y = a + b_1 \text{ (Experimental versus control)} + b_2 \text{ Log (Pretest score)} + b_3 \text{ Log (Grade level)}$$

OR

$$Y = K \text{ (Pretest)}^{b_2} \text{ (Grade Level)}^{b_3}$$

where the value of K depends on whether the treatment was applied.

Chapter IV

FINDINGS

This chapter contains the results from statistical treatment of the data for the testing of hypotheses.

The operational hypotheses stated in the null form were as follows:

1. There is no significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on language achievement.

2. There is no significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on mathematics achievement.

3. There is no significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on occupational awareness.

The null hypothesis asserts that no difference exists between the population parameters of the groups being compared. Even though sample differences may be observed, these differences can reasonably be explained as a result of random variation. The results of the analysis of the data must indicate that a population difference exists at the stated level of significance to reject the null hypothesis. If the results do not indicate that a population mean difference exists (except for random variation), the null hypothesis cannot be rejected. The 0.01 level of probability was used in this study as the level for rejection

of the null hypotheses (the difference can result only 1 time in 100 when the treatment is actually having no effect). A one-tailed or directional test was used. It was ascertained that for one degree of freedom in the numerator and 415 degrees of freedom in the denominator, an F-ratio of 6.70 is significant as the 0.01 level. For one degree of freedom in the numerator and 415 degrees of freedom in the denominator an F-ratio of 3.86 is significant at the 0.05 level.

The hypotheses were tested with a sample of 419 public school youth in grades one through six during the school year 1971-72.

The alternative or research hypotheses were as follows:

1. There is a significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on language achievement.

2. There is a significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on mathematics achievement.

3. There is a significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on occupational awareness.

The analysis of covariance was employed to "control" or "adjust" statistically for initial differences of the students, thereby allowing for an unbiased comparison of the effects of the treatments. This is accomplished by adjusting the students' scores on the dependent variables Y (criterion scores) to allow for differences in the independent variables X_1 (pretest) and X_2 (grade level). Each covariate was used only when it was significant in predicting posttest scores.

Due to the wide range of scores on the pretest and subsequent posttests, a log transformation was utilized. To effectively estimate the coefficients, more data are required than is available at each grade level in this study, therefore all grade levels within each treatment are grouped.

The model used to tranform the data is as follows:

$$\text{Log } Y = a + b_1 \text{ (Experimental = 1, Control = 0)} + b_2 \text{ Log (Pretest score)} + b_3 \text{ Log (Grade level)}$$

OR

$$Y = K \text{ (Pretest)}^{b_2} \text{ (Grade level)}^{b_3}$$

where the value of K depends on whether the treatment was applied.

The symbols used are as follows: Y_1 = language achievement, Y_2 = mathematics achievement, and Y_3 = occupational awareness and e = experimental and c = control. For example, Y_{1e} represents language achievement for the experimental group.

For language achievement, the following results were obtained:

$$\text{Log } Y_1 = 1.248 + 0.045\binom{0}{1} + 0.170 \text{ Log(Pretest)} + 0.386 \text{ Log(Grade level)}$$

$$\text{Log } Y_{1e} = 10^{1.293}(\text{Pretest})^{0.170}(\text{Grade level})^{0.386} = 19.6(\text{Pretest})^{0.170}(\text{Grade level})^{0.386}$$

$$\text{Log } Y_{1c} = 10^{1.248}(\text{Pretest})^{0.170}(\text{Grade level})^{0.386} = 17.7(\text{Pretest})^{0.170}(\text{Grade level})^{0.386}$$

The adjusted posttest means for the experimental group was (19.6/17.7 x 100 = 111 - 100) 11% higher than the adjusted posttest means for the control group on language achievement.

Grade	Y_{1e}	Y_{1c}
	19.6	17.7
2	39.1	35.3
3	29.0	26.2
4	57.9	52.1
5	43.0	38.8
6	85.8	77.5

This procedure provides the adjusted posttest means for language achievement using the pretest and grade levels as covariates. The data indicate that adjusted posttest means are greater for all grade levels in the experimental group than the control group on language achievement. This data is graphically illustrated in Figure 2.

For mathematics achievement, the following results were obtained:

$$\text{Log } Y_2 = 1.708 + 0.094\binom{0}{1} + 0.232 \text{ Log(Grade level)}$$

$$\text{Log } Y_{2e} = 1.802 \text{ (Grade level)}^{0.232}$$
$$= 63.5 \text{ (Grade level)}^{0.232}$$

$$\text{Log } Y_{2c} = 1.708 \text{ (Grade level)}^{0.232}$$
$$= 51.0 \text{ (Grade level)}^{0.232}$$

The adjusted posttest means for the experimental group was (63.5/51.0 x 100 = 124.5 - 100) 24.5% higher than the adjusted posttest means for the control group on mathematics achievement.

Grade	Y_{2e}	Y_{2c}
1	63.5	51.0
6	96.3	77.4

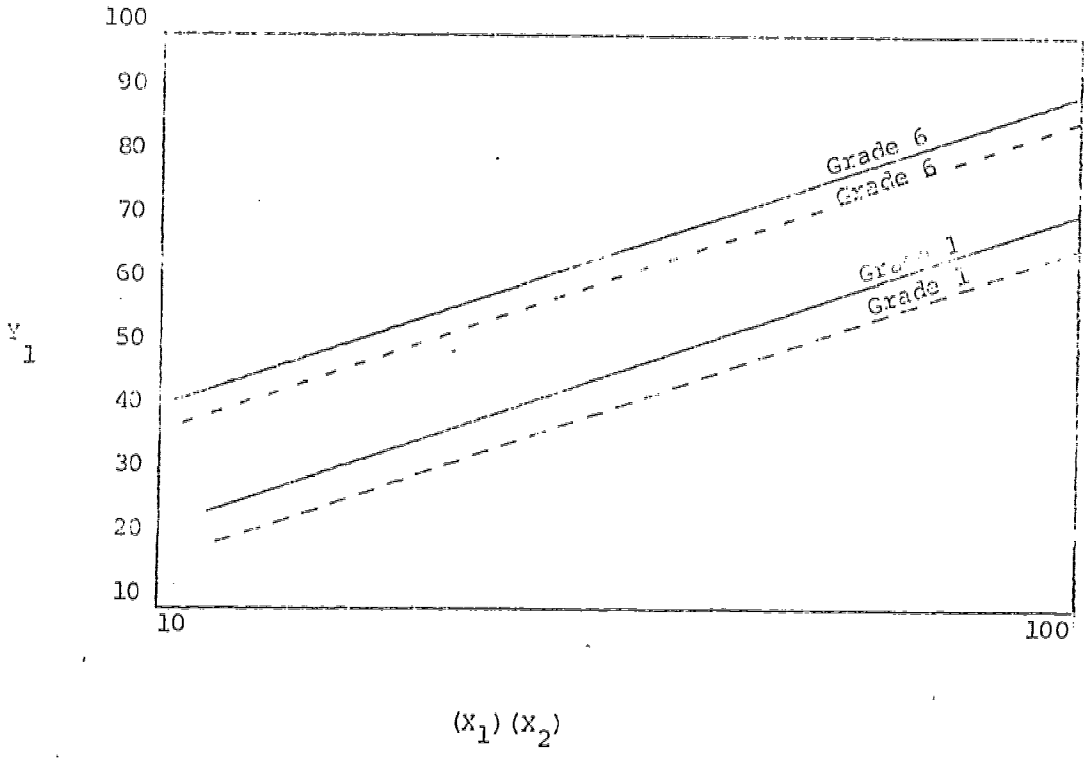


Figure 2. Adjusted posttest means for Language Achievement using the pretest and grade levels as covariates.

Key:

Treatment Group _____

Control Group - - - - - -

This procedure provides the adjusted posttest means for mathematics achievement using grade level as a covariate. The data indicate that the adjusted posttest means are greater for the experimental group than the control group on mathematics achievement. This data is graphically illustrated in Figure 3.

For occupational awareness, the following results were obtained:

$$\text{Log } Y_3 = 0.621 + 0.073\binom{0}{1} + 0.620 \text{ Log (Pretest)}$$

$$\text{Log } Y_{3e} = 10^{0.694}(\text{Pretest})^{0.620}$$
$$= 4.94(\text{Pretest})^{0.620}$$

$$\text{Log } Y_{3c} = 10^{0.621}(\text{Pretest})^{0.620}$$
$$= 4.18(\text{Pretest})^{0.620}$$

The adjusted posttest means for the experimental group was (4.94/4.18 x 100 = 118 - 100) 18% higher than the adjusted posttest means for the control group on occupational awareness.

Pretest	Y_{3e}	Y_{3c}
1	4.94	4.18
10	20.6	17.4
100	85.9	72.9

This procedure provides the adjusted posttest means for occupational awareness using the pretest as a covariate. The data indicate that the adjusted posttest means are greater for the experimental group than the control group on occupational awareness. This data is graphically illustrated in Figure 4.

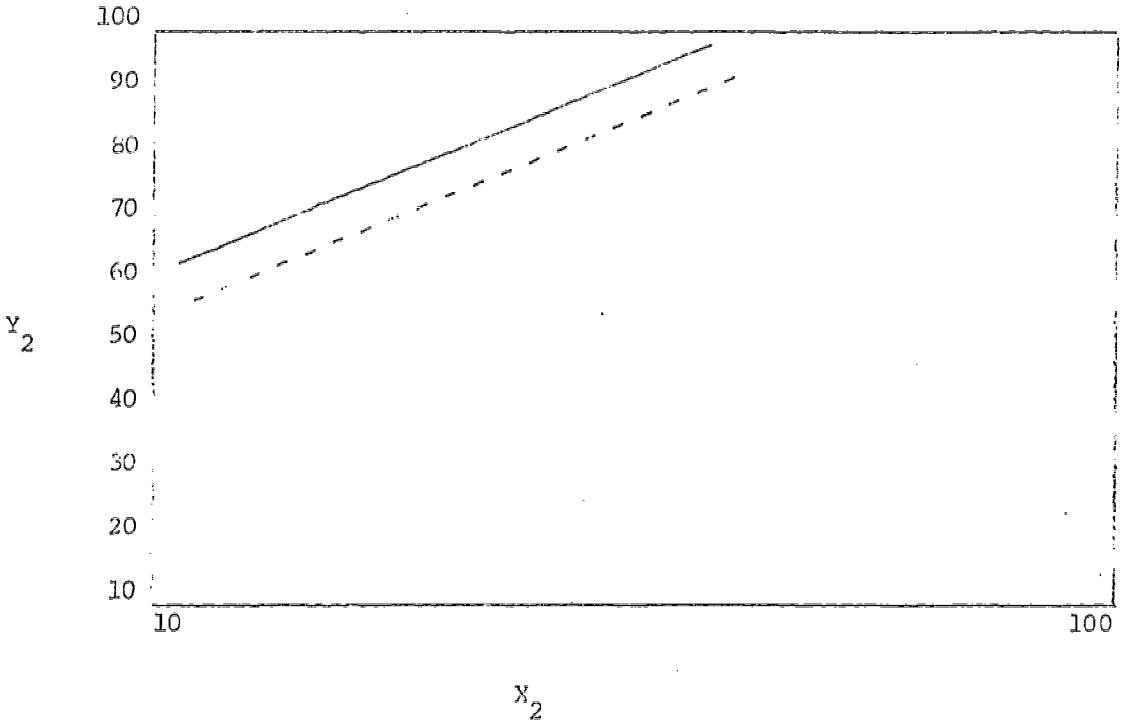


Figure 3. Adjusted posttest means for Mathematics Achievement using the grade level as the covariate.

Key:

Treatment Group _____

Control Group - - - - - - - -

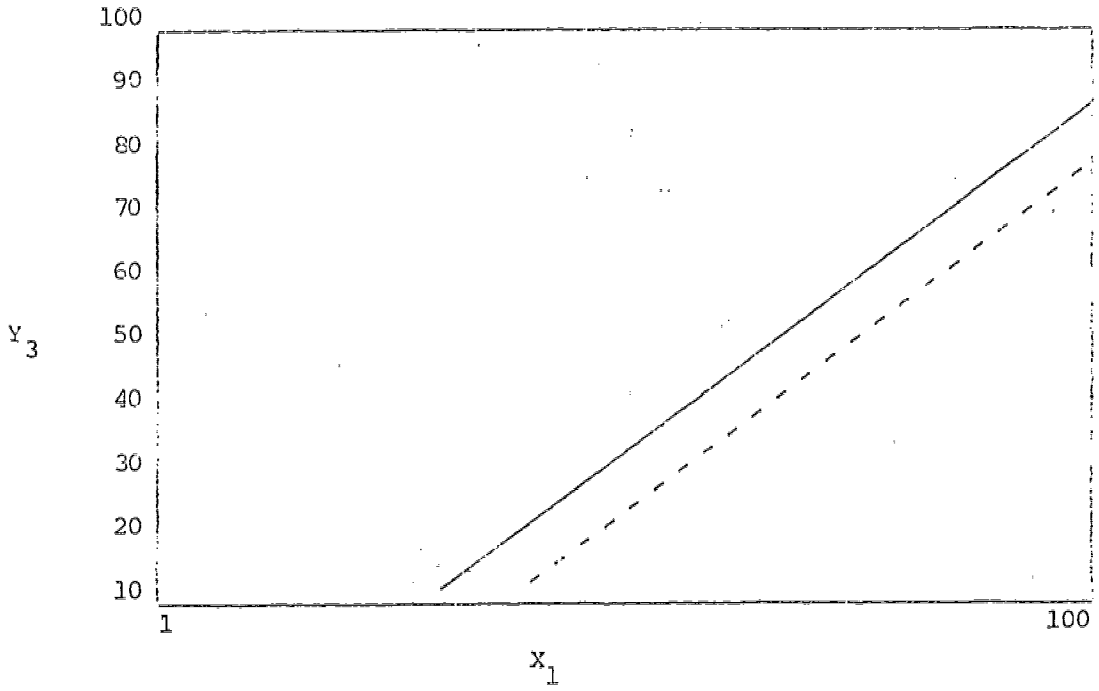


Figure 4. Adjusted posttest means for Occupational Awareness using the pretest as the covariate.

Key:

Treatment Group _____

Control Group - - - - - - -

Table 1 presents the results of the analysis of covariance for the adjusted posttest means for language achievement. The data indicate that the difference between the experimental group and the control group is significant at the 0.01 level. The F ratio derived through statistical analysis of the data is 7.32. The tabled F ratio with 1 df in the numerator and 415 df in the denomintor is 6.70. The computed F ratio being greater than the tabled F ratio indicates a significant difference.

Null hypothesis one is therefore rejected and the research hypothesis appears plausible. The research hypothesis states that: There is a significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on language achievement.

The analysis of covariance for treatment on mathematics achievement is illustrated in Table 2. The data indicate that the difference between the experimental group and the control group is significant at the 0.01 level. The F ratio obtained following statistical analysis of the data is 14.30. The tabled F ratio is 6.70.

Null hypothesis two is therefore rejected and the research hypothesis appears highly plausible. The research hypothesis states that: There is a significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on mathematics achievement.

Table 3 provides the analysis of covariance for treatment on occupational awareness. The data reveal that a significant difference exists between the experimental group and the control group at the 0.01 level. The statistical analysis furnished an F ratio of 14.84. The tabled F ratio is 6.70.

Table 1

Analysis of Covariance for Treatment on Language Achievement (Y_1)

Source of Variation	Degrees of Freedom	Sums of Squares	Means Squares	F Values
Treatment	1	0.202	0.202	7.32*
Log Pretest	1	0.915	0.915	33.10
Log Grade Level	1	3.950	3.950	143.12
Residual	415	11.416	0.2076	

*Significant at the 0.01 Level

Table 2

Analysis of Covariance for Treatment on Mathematics Achievement (Y_2)

Source of Variation	Degrees of Freedom	Sums of Squares	Means Squares	F Values
Treatment	1	0.92	0.92	14.30*
Log Grade Level	1	1.50	1.50	23.38
Residual	416	26.74	0.0642	

*Significant at the 0.01 Level

Table 3

Analysis of Covariance for Treatment on Occupational Awareness (Y_3)

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F Values
Treatment	1	0.54	0.54	14.84*
Log Pretest	1	12.80	12.80	354.78
Residual	416	15.05	0.0361	

*Significant at the 0.01 Level

The null hypothesis is rejected. It states that: There is no significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on occupational awareness. The research hypothesis seems highly plausible. The research hypothesis states that: There is a significant difference between the adjusted posttest means of the experimental group and the adjusted posttest means of the control group on occupational awareness.

Chapter V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

SUMMARY

The Problem

The general question in this study involved the acquistion of knowledge by students in grades one through six upon which future decisions can be based. The specific research question asked in this study is as follows: Will the student who has been provided with experiences in the Lincoln County Exemplary Program possess more knowledge about language, mathematics, and occupations than the student who has not been provided with these experiences.

Significance of the the Problem

Changing from a relatively simple to a highly technological society, from an open to a "walled-in" society, from an experiential to a theoretical approach to education and from a stable to a highly moble society has caused considerable anguish for the youth of the Nation concerning their indentity, relationship to work, and the role of formal education.

Underemployment and unemployment exist while new occupations emerge at an accelerating rate. Traditional methods of gaining experience that facilitate the decision-making process have in many instances ceased to exist. Yet the need exists for those who are to be viable members of the American society to gain experiences upon which accurate career decisions can be made in the future.

It is difficult if not impossible for an individual to develop self awareness and identity when he is not provided experiences which facilitate this development. It is also extremely difficult for an individual to develop an occupational awareness when his experiential base is void of experiences which facilitate this development.

The Lincoln County Exemplary project in Career Education has focused its resources on the development of self awareness and occupational awareness in students by providing systematic learning experiences in Fine Arts, Language Arts, Mathematics, Science, and Social Studies which will aid students in making accurate career decisions.

The Lincoln County Exemplary project possesses face validity. This project seems to possess all of the elements of an effective delivery system. Yet the need exists for an objective evaluation upon which modification can be made where appropriate.

Limitations

This study is limited to students in grades one through six in the schools of Lincoln County, West Virginia.

Objectives

The objectives in this study were:

1. To compare the experimental treatment students with the control treatment students on language achievement.

2. To compare the experimental treatment students with the control treatment students on mathematics achievement.

3. To compare the experimental treatment students with the control treatment students on occupational awareness.

Hypotheses

The operational hypotheses in this study stated in the null form were as follows:

1. There will be no significant difference between the adjusted posttest language achievement means of the experimental treatment students and the adjusted posttest language achievement means of the control treatment students.

2. There will be no significant difference between the adjusted posttest mathematics achievement means of the experimental treatment students and the adjusted posttest mathematics achievement means of the control treatment students.

3. There will be no significant difference between the adjusted posttest occupational awareness means of the experimental treatment students and the adjusted posttest occupational awareness means of the control treatment students.

Review of Literature

A large amount of information concerning career education programs has been generated in recent years. Publications related to curricula, objectives, models, various strategies for implementation, rationale, and Bibliographies are becoming readily available.

Many career education programs have been evaluated objectively and subjectively utilizing qualitative and quantitative data. However the need for continuous evaluation for modification and redirection confronts those who are interested in implementing and up-grading a systematic approach to providing meaningful learning experiences upon which students can make accurate career decisions.

Sample

The Lincoln County Exemplary Program was initiated in eight elementary schools, grades one through six, in the fall of 1971. Intact groups of students were assigned to the experimental and control groups. Using a table of random numbers, students were randomly selected from intact groups to participate in this study.

Eighty students (Experimental and Control) from each grade level were pretested in September 1971 utilizing the Occupational Awareness Test. To be included in the treatment groups, a pretest score on the Occupational Awareness Test and posttest scores on the Language Achievement Test, Mathematics Achievement Test, and the Occupational Awareness Test were required. Students not participating in the testing situation for all three instruments were removed from the sample.

The experimental group consisted of 214 students in grades one through six. The control group consisted of 205 students in grades one through six.

Treatments Groups

For the purpose of determining whether there were significant differences between the adjusted posttest means, the following treatment groups were utilized:

1. The experimental treatment group consisted of randomly selected students in grades one through six who had been provided with career education experiences.

2. The control treatment group consisted of randomly selected students in grades one through six who had <u>not</u> been provided with career education experiences.

Instrumentation

The following test instruments were administerd to the experimental and control groups: The California Language Achievement Test[1], the California Mathematics Achievement Test[2], and the Occupational Awareness Test[3].

The California Language Achievement Test measures achievement in English language skills. The test includes sections in Capitalization, Punctuation, Usage and Structure, and Spelling.

The California Mathematics Achievement Test measures achievement in mathematics. The test includes sections in Computation, Concepts, and Problems, Level 3 also includes a section in Fractions.

The Occupational Awareness Test measures knowledge of workers. The test includes questions dealing with identification of workers, linking workers with the tools of their trade, placing workers in the environmental setting in which their job is performed, and identifying the proper duties associated with specific occupations.

Specific Design

An analysis of covariance (Multiple Regression Analysis) was utilized to determine if a difference existed between the adjusted posttest scores of the experimental group and the adjusted posttest scores of the control group on the three dependant variables (language

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[1]Devised by Ernest W. Tiegs, Ph.D., and Willis W. Clark, Ed.D.

[2]Devised by Ernest W. Tiegs, Ph.D., and Willis W. Clark, Ed.D.

[3]Devised by Thomas E. Woodall, Billy J. Burton, Daryle G. Elkins, and Herbert B. Holstein.

achievement, mathematics achievement, and occupational awareness). Null hypotheses were rejected at the 0.01 level of significance using a directional or one-tailed test.

Findings

The adjusted posttest means for the experimental group were 11 percent higher than the adjusted posttest means for the control group on language achievement.

The adjusted posttest means for the experimental group were 24.5 percent higher than the adjusted posttest means for the control group on mathematics achievement.

The adjusted posttest means for the experimental group were 18 percent higher than the adjusted posttest means for the control group on occupational awareness.

The results of the analysis of covariance yeilded F ratios of 7.32, 14.30, and 14.84. These F ratios indicate that the difference between the treatment groups is significant at the 0.01 level on language achievement, mathematics achievement and occupational awareness.

Null hypotheses one, two, and three were rejected. The alternative or research hypotheses appear to be highly plausible based on the analysis of covariance. The research hypotheses are as follows:

1. There will be a significant difference between the adjusted posttest language achievement means of the experimental treatment students and the adjusted posttest language achievement means of the control treatment students.

2. There will be a significant difference between the adjusted posttest mathematics achievement means of the experimental treatment students and the adjusted posttest mathematics achievement means of the control treatment students.

3. There will be a significant difference between the adjusted posttest occupational awareness means of the experimental treatment students and the adjusted posttest occupational awareness means of the control treatment students.

CONCLUSIONS

The conclusions are based on data obtained through the use of the California Language Achievement Test, the California Mathematics Achievement Test, and the Occupational Awareness Test and statistics computed through the use of the analysis of covariance. The conclusions are confined to populations similar in grade level and socio-economic status. Generalizations are also confined to evaluation instruments comparable to those used in this study. Purposes other than the comparison of language achievement, mathematics achievement, and occupational awareness were not explored in this study. The conclusions suggested within the limitations of this study are as follows:

1. Students in grades one through six who were provided with planned career education experiences for two semesters were significantly different on language achievement from students in grades one through six who were not exposed to planned career education experiences. The adjusted posttest means for the experimental group were 11 percent higher than the adjusted posttest means for the control group on language achievement.

2. Students in grades one through six who were provided with planned career education experiences for two semesters were significantly different on mathematics achievement from students in grades one through six who were not exposed to planned career education experiences. The adjusted posttest means for the experimental group were 24.5 percent higher than the adjusted posttest means for the control group on mathematics achievement.

3. Students in grades one through six who were provided with planned career education experiences for two semesters were significantly different on occupational awareness from students in grades ones through six who were not exposed to planned education experiences. The adjusted posttest means for the experimental group were 18 percent higher than the adjusted posttest means for the control group on occupational awareness.

IMPLICATIONS

The emphasis in this study has been on the career education treatment variable and its effects on language achievement, mathematics achievement, and occupational awareness. This study provides evidence that the process of systematically receiving meaningful career education experiences produces a positive effect on language achievement, mathematics achievement, and occupational awareness.

The Lincoln County Career Education Project is based on certain hypotheses. This study provided credibility to the following hypotheses:

1. Illustrating the value of academic skills in terms of their relationship to the career world provides an effective vehicle for achieving career education goals and academic subject goals.

2. An activity centered functional approach which illustrates abstract theory allows for a greater understanding of self, academics, and the career world.

3. Cooperative interaction with individuals significant to the student (parents, peers, teachers, counselors, administrators, and members of the community) provides meaning to the process of formal education.

4. Experienced teachers will systematically implement innovative programs when they are provided with meaningful inservice education which focuses on both process and task components.

5. Administrative leadership which directs its attention to meeting the needs of teachers facilitates effective implementation of innovative projects.

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