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Agricultural Careers Information Materials  
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presented by

Julie Ann Drake

has been accepted towards fulfillment  
of the requirements for  
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AGRICULTURAL CAREERS INFORMATION MATERIALS DEVELOPMENT

By

Julie Ann Drake

A THESIS

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

MASTER OF SCIENCE

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1981



## ABSTRACT

### AGRICULTURAL CAREERS INFORMATION MATERIALS DEVELOPMENT

By

Julie Ann Drake

Career education and exploration is a relatively new area in education. It is important because it helps individuals explore career opportunities before they make career decisions. Occupations play a large role in determining life styles and self-images.

Little information is available to help youth explore agricultural occupations. There is a need for accurate, up-to-date, complete information about careers in agriculture.

A series of 10 one-page exploration sheets, about careers in the dairy industry, were developed as a pilot study for the development of materials related to all areas of agriculture. The materials were tested with high school teachers and students in Michigan for one month. The results of the testing indicate positive changes in the attitudes of the students towards agriculture and an increase in their knowledge of career opportunities in the dairy industry in areas where information was included in the career exploration materials. Corresponding changes were not seen in areas where no information was presented.

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## DEDICATION

This thesis, and all of the work, frustration, laughter and tears behind it, is dedicated to my parents. Their constant encouragement and never ending support helped me in more ways than they will ever know. They were always there to listen when I needed a shoulder to cry on -- even if they didn't know the reasons. While they didn't always understand what I was doing, their interest and support was always present. Their love has helped me to grow and reach the goals I have set.

Thank you, Mom and Dad, for everything.

## ACKNOWLEDGEMENTS

*A true friend unbosoms freely, advises justly,  
assists readily, adventures boldly, takes all  
patiently, defends courageously, and continues  
a friend unchangeably.*

*William Penn*

It is impossible to thank everyone who has helped in the completion of my Masters degree. However, I would like to mention those people who have played a special role in my graduate career.

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There is no way to name all of my friends who helped me in so many ways while I have been here. You were always there, to lend a hand, offer advice or consolations whenever I needed you. Without your support, understanding and encouragement, I never could have finished. It's special people like you who make great things possible.

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## TABLE OF CONTENTS

List of Tables		Page
Chapter		
1	INTRODUCTION	1
	STATEMENT OF THE PROBLEM	5
	Need for the Study	5
	Limitations of the Study	6
	DEFINITION OF TERMS	6
2	REVIEW OF LITERATURE	9
	History of Career Education	9
	Role of Career Education in the Decision- Making Process	18
	Career Education in Michigan	21
	Agriculture Related Career Education Materials	24
	SUMMARY	25
3	METHODS AND MATERIALS	27
	POPULATION	27
	RESEARCH INSTRUMENTS	28
	Survey Design	28
	Exploration Materials Development	30
	Data Collection	31
	METHODS OF ANALYSIS	32
	Pearson's Chi-Square Test	33
	Level of Significance	33
	SUMMARY	33
4	RESULTS	34
	Attitude Survey	34
	Population	34
	Responses to Survey Questions According to Selected Variables	35
	Student Responses to Career Exploration Materials	47
	Teacher Reactions to Career Exploration Materials	52
5.	DISCUSSION	55

Chapter		Page
6	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	61
	Research Instruments	62
	Major Findings	62
	CONCLUSIONS	63
	RECOMMENDATIONS	63
	Future Career Exploration Programs and Materials	64
	Recommendations for Future Study	65
	APPENDICES	66
	Related Correspondence	
	Research Instruments	
	Lists	
	BIBLIOGRAPHY	87

# LIST OF TABLES

TABLE		Page
1	Population	35
2	Type of Career Pursued as an Adult According to Sex	36
3	Type of Career Pursued as an Adult According to Grade	37
4	Type of Career Pursued as an Adult According to Residence	37
5	Types of Careers Specified by Students Who Responded "Other" to "What Type of Career Do You Think You Will Pursue as an Adult"	38
6	Percentage Pursuing Agriculture-Related Career According to Sex	39
7	Percentage Pursuing Agriculture-Related Career According to Residence	39
8	Responses to "Agriculture is a Growing Industry in the United States" According to Sex	40
9	Responses to "Agriculture is a Growing Industry in the United States" According to Residence	41
10	Responses to "People Who Are Employed in Agriculture Work Mainly on Farms" According to Residence	41
11	Responses to "Agriculture Makes Up a Small Part of Our Economy" According to Age	42
12	Responses to "Banks and Other Lending Institutions Are Always Looking for Prospective Employees with a Background in Agriculture and Dairy Science" According to Sex	42

TABLE		Page
13	Responses to "Banks and Other Lending Institutions Are Always Looking for Prospective Employees with a Background in Agriculture and Dairy Science" According to Grade	43
14	Responses to "Most Careers in the Dairy Industry Are on Dairy Farms" According to Residence	44
15	Responses to "The Dairy Industry Includes Public Relations and People-Oriented Jobs" According to Sex	44
16	Responses to "The Dairy Industry Includes Public Relations and People-Oriented Jobs" According to Grade	45
17	Responses to "An Interest in Photography Can be of Great Benefit in a Career in the Dairy Industry" According to Sex	45
18	Responses to "An Interest in Photography Can be of Great Benefit in a Career in the Dairy Industry" According to Grade	46
19	Responses to "I Would Like to Know More About Career Opportunities in the Dairy Industry" According to Sex	46
20	Responses to "I Know About Most of the Careers Available in the Dairy Industry" According to Sex	47
21	Statements Not Related to Information in The Career Exploration Booklets and the Percentage Change of SA-A Responses Which Occurred After Use of the Booklets	48
22	Percentage of Students Who Used Each Career Exploration Sheet	48



## CHAPTER 1

### INTRODUCTION

Everyone must choose a career at sometime in their life. Deciding on a career can be one of the most difficult and frustrating things a person has to do. It is also one of the most important things he or she will ever do. "Career" has been defined by Hoyt as "the totality of work one does in his or her life."<sup>1</sup> "Work", as defined by Merriam-Webster, is an occupation, employment, business or pursuit.<sup>2</sup> Hoyt has expanded this definition:

"Work is a conscious effort, other than that involved in activities whose primary purpose is either coping or relaxation, aimed at producing benefits for oneself and/or oneself and others."<sup>3</sup>

Studies have shown that most people describe themselves in terms of their work or occupation, i.e. "I am a doctor.", "I am a secretary.", etc. Campbell agrees.

"...Work has enormous impact on how we think of ourselves... we identify more closely with our occupation than with anything else."<sup>4</sup>

1. Hoyt, Kenneth B., An Introduction To Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974.
2. Merriam-Webster, The Merriam-Webster Dictionary, Pocket Books, New York, 1974.
3. Hoyt, Kenneth B., An Introduction To Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974.
4. Campbell, David, Ph.D., If You Don't Know Where You Are Going, You'll Probably End Up Someplace Else., Argus Communications, Niles, IL, 1974, p. 112.

Because a person's occupation plays such a major role in his or her self-image, it is important a great deal of effort and education be devoted to choosing the "best" occupation or career.

"Choosing a career is something you live through with intense feeling rather than just think through. It's a throbbing, natural process that unfolds as a major part of your whole growth and development as a person."<sup>5</sup>

To make an intelligent career choice, a person must be aware of his or her career options. The major responsibility for increasing career awareness has been given to our educational system. At the present time, our education system is not adequately fulfilling this role for all students.

"Too many of our citizens, political leaders and educators have defined adequate education largely in terms of preparation for and admission to institutions of higher learning. In doing so, they have neglected the educational needs of those who do not wish to go that route, as well as those who enter but do not finish college."<sup>6</sup>

Hoyt states:

"Eighty percent of high school students are readying themselves for college, while only 20% of the jobs require a college education ... Too many students are leaving classrooms with no marketable skills to use in the labor market."<sup>7</sup>

Along with a lack of marketable skills, many students leave the classrooms with a very limited knowledge of the types of careers available.

Research studies by the National Advisory Council for Career Education indicate that, by the age of nine, children generally have

5. Brownstone, David M. and Gene R. Hawes, The Complete Career Guide, Simon and Schuster, New York, NY, 1980, p. 16.

6. Final Report, The President's Commission on School Finance, 197-.

7. Hoyt, Kenneth B., Why Johnny and Joann Can't Work: An Interview With Kenneth Hoyt., Occupational Outlook Quarterly, Summer, 1977.

a relatively high knowledge level of the duties of highly visible occupations, i.e. doctor, lawyer, or policeman.<sup>8</sup> However, the studies also indicate that, while seventeen to nineteen-year-olds have a more complete understanding of the duties, responsibilities and educational requirements of highly visible occupations, the variety of occupations they know about is still very limited.<sup>9</sup> It is imperative schools do more to increase student awareness of careers.

Self-awareness is a major part of career awareness. Awareness of personal talents, abilities, likes and dislikes is a very necessary part of career decision-making.

To maximize the options available, a person must be aware of their assets. Self-awareness is a giant step in this direction.

"To be able to live the kind of life you want, you need to have as many choices open to you as possible. To make choices, you must have assets ... you must have something going for you."<sup>10</sup>

The United States education system has the responsibility of preparing young people to be productive and useful members of society. However, Goldhammer and Taylor contend:

"We currently fail to educate approximately one third of the youth enrolled in school. This is not due primarily to the inadequacies of the students, but to the inappropriateness of the programs to supply them with the kind of learning required."<sup>11</sup>

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8. Career Development Needs of Nine-Year-Olds: How to Improve Career Development Programs., National Advisory Council for Career Education, 1977.
  9. Career Development Needs of Seventeen-Year-Olds: How to Improve Career Development Programs., National Advisory Council for Career Education, 1977.
  10. Campbell, David, Ph.D., If You Don't Know Where You Are Going, You'll Probably End Up Someplace Else., Argus Communications, Niles, IL, 1974, p. 112.
  11. Goldhammer and Taylor, eds., Career Education: Perspective and Promise., Columbus, OH, Charles Merrill Publishing Co., 1972, p. 21.

Hoyt says:

"Too many students fail to see meaningful relationships between what they are being asked to learn in school and what they will do when they leave the educational system. This is true of both those who remain to graduate and those who drop out of the educational system."<sup>12</sup>

Career education is a program which has begun in the schools to help solve this problem.

"Career education concept can help equalize (this) process, for it's basis for being is relating content of school to real situations and real people in the real world of work..."<sup>13</sup>

Dr. Addison Hobbs, former director of the vocational education and career development services for the State Department of Education, describes career education as "functional education as opposed to traditional education".<sup>14</sup>

Career education is made up of several different parts. They are career awareness and exploration, self-awareness and assessment, career development, career preparation and career decision-making. One of the most important parts is career awareness and exploration.

Brownstone and Hawes list 5 steps for reaching career decisions.<sup>15</sup>

These steps can also be followed in career explorations.

- 1) Add up your career assets
- 2) Connect your assets to actual careers and ranges of careers
- 3) Search among promising careers by using key words
- 4) Work toward your "best fit" career choice via key clues
- 5) Keep other "good fit" careers in reserve.

12. Hoyt, Kenneth B., Why Johnny and Joann Can't Work: An Interview With Kenneth Hoyt., Occupational Outlook Quarterly, Summer, 1977.

13. Helling, Cliff, Dr., Career Education: An Introduction. Affairs of the Head, Heart, and Hands., Intermediate School District #281 Minneapolis, MN.

14. McCann, Hugh, Why Fewer Kids Are Going To College, Detroit Free Press, Feb. 10, 1974.

15. Brownstone, David M. and Gene R. Hawes, The Complete Career Guide, Simon and Schuster, New York, NY, 1980, p. 16.

By promoting career awareness and exploration, as well as all of the other areas of career education, the educational system can help prepare youth to meet the changing future. According to Frantz:

"There is a need to develop individuals who will be adaptable to technological, social, and economic change."<sup>16</sup>

### Problem Statement

If schools are to teach career awareness and assist students in their preparation for adulthood, they must have complete and accurate information about career opportunities available for use. It is the responsibility of businesses, industries, and professional organizations to supply this information.

This is especially true in the field of agriculture. At the present time there is very little career exploration material available related to agricultural occupations.

Agriculture is a highly diverse field, with many job opportunities. In order to keep the agricultural population from decreasing and to meet the demand for people to fill the jobs agriculture has available, information must be made available about the career opportunities in agriculture and the skills and education needed to do these jobs.

In response to these needs, a project was proposed to develop career exploration materials related to careers in the dairy industry. This project would serve as a pilot study for the development of materials related to all areas of agriculture.

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16. Frantz, Nevin R., Career Cluster Concepts, ERIC Clearinghouse on Vocational and Technical Education, The Center for Vocational and Technical Education, The Ohio State University, 1973.

The basic purpose of the project was to develop a method of presenting agricultural career information to youth in a clear, concise, easy-to-use manner. The materials needed to be in a form which could be used by individuals or easily adapted to classroom use.

The specific objectives of the pilot study were to:

- 1) Develop a method of presenting dairy-related careers information to youth.
- 2) Develop a method of testing the effectiveness of the materials.
- 3) Test the materials to see if they worked.
- 4) Pinpoint those areas of the materials which needed improvement.

#### Limitations of the Study

The study was limited to high school students, with the cooperation of teachers in four counties in the state of Michigan. Students and teachers were selected with the help of County Extension Agents and high school principals, during May and September of 1980. This study is limited to those schools which agreed to participate and the teachers within the schools who agreed to assist with the material testing.

#### DEFINITION OF TERMS

The following terms will be used frequently throughout this thesis. For the purpose of clarity they are defined.

#### Career

The totality of work one does in his or her life.<sup>17</sup>

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17. Hoyt, Kenneth B., An Introduction to Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974, p. 6

### Education

The totality of experiences through which one learns.<sup>18</sup>

### Career Education

The totality of experiences through which one learns about and prepares to engage in work as part of his or her way of living.<sup>19</sup>

### Work

A conscious effort, other than that involved in activities whose primary purpose is either coping or relaxation, aimed at producing benefits for oneself and/or oneself and others.<sup>20</sup>

### Career Development

Part of the school program which develops the knowledge, skills, and attitudes necessary for a person to PLAN, EXPLORE, and ESTABLISH life roles.<sup>21</sup>

### Career Preparation

Part of the school program which develops the knowledge, skills, and attitudes necessary for a person to PERFORM life roles.<sup>22</sup>

### Self-Awareness and Assessment

Self-awareness refers to assisting individuals to understand themselves and others.<sup>23</sup>

18. Hoyt, Kenneth B., An Introduction to Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974, p. 6.
19. Hoyt, Kenneth B., An Introduction to Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974, p. 6.
20. Hoyt, Kenneth B., An Introduction to Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974, p. 5.
21. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 10.
22. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 10.
23. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 11.

### Career Awareness and Exploration

Career awareness refers to the interdependence of family, citizen, leisure, and occupational roles; home, school, work, and community settings; and the various events such as job entry, marriage, and retirement, which may occur during the life stages of individuals.<sup>24</sup>

### Career Decision-Making

Decision-making refers to the skill of applying one's knowledge to a rational process of career choice.<sup>25</sup>

### Career Planning and Placement

Refers to the skills necessary to develop and implement systematic programs to reach career goals.<sup>26</sup>

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- 24. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 11.
  - 25. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 12.
  - 26. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 12.



## CHAPTER 2

### REVIEW OF LITERATURE

#### History of Career Education:

Career education is a relatively new area in the field of education. The name "career education" was coined in 1970 by Dr. Sidney Marland, then the U.S. Commissioner of Education.<sup>1</sup> Career education was officially recognized as a branch of education in 1971 and has since continued to grow strong. Career education represents a response to a call for educational reform.

Many people have expressed dissatisfaction with the American education system as it exists today. Included are students, parents, the business community, youth and adults who are out of school, and the general public. While their specific concerns may vary, all tend to agree on several points. Hoyt<sup>2</sup> listed the following, in a policy paper for the Department of Health, Education and Welfare, as areas generally mentioned and criticized.

- 1) Too many persons leaving our educational system are deficient in the basic academic skills required for adaptability in today's rapidly changing society.
- 2) Too many students fail to see meaningful relationships between what they are being asked to learn in school and what they will do when they leave the educational system.

1. Career Education in Michigan: An Introduction, Career Education Advisory Commission, Michigan Dept. of Education, p. 6.
2. Hoyt, Kenneth B., An Introduction to Career Education: A Policy Paper of the Office of Education, D.H.E.W., Nov. 1974, p. 2-4.

This is true of both those who remain to graduate and those who drop out of the educational system.

- 3) American education, as currently structured, best meets the educational needs of that minority of persons who will someday become college graduates. It has not given equal emphasis to meeting the educational needs of that vast majority of students who will never be college graduates.
- 4) American education has not kept pace with the rapidity of change in the post-industrial occupational society. As a result, when worker qualifications are compared with job requirements, we find over-educated and under-educated workers are present in large numbers. Both boredom of the over-educated worker and the frustration of the under-educated worker have contributed to the growing presence of worker alienation in the total occupational society.
- 5) Too many persons leave our educational system at both the secondary and collegiate level unequipped with the vocational skills, the self-understanding and career decision-making skills, or the work attitudes that are essential for making a successful transition from school to work.
- 6) The growing need for and presence of women in the work force has been adequately reflected in neither the educational nor the career options typically pictured for girls enrolled in our educational system.
- 7) The growing need for continuing and recurrent education on the part of adults are not being adequately met by our current systems of public education.
- 8) Insufficient attention has been given to learning opportunities outside of the structure of formal education which exist and are increasingly needed by both youth and adults in our society.
- 9) The general public, including parents and the business community, has not been given an adequate role in formulation of educational policy.
- 10) American education, as currently structured, does not adequately meet the needs of minority, nor of economically disadvantaged persons in our society.
- 11) Post high school education has given insufficient emphasis to education programs at the sub-baccalaureate degree level.

Some of these criticisms can be answered, in part, by pointing to the significant accomplishments of American education. The American

education system has grown in both quantity and quality in the past century. This is not, in itself, an answer to all of the problems however. An action program of educational reform is needed to answer the other criticisms. Career education is one such program.

The term "career education" has been defined in many different ways.

Goldhammer and Taylor<sup>3</sup> contend:

"....Career education is designed to capacitate individuals for their several life roles: economic, community, home, avocational, religious, and aesthetic ... designed for all students, career education should be viewed as lifelong and pervasive ... Career education is a systematic attempt to increase the options available to individuals and to facilitate more rational and valid career planning and preparation."

Hoyt<sup>4</sup> describes career education as:

"....a total effort of public education and the community aimed at helping all individuals to become familiar with the values of work-oriented society, to integrate these values into their lives in such a way that work becomes possible, meaningful, and satisfying."

Evans<sup>5</sup> maintains:

"Career education is the total effect of the community to develop a personally satisfying succession of opportunities for service through work, paid or unpaid, extending through life."

Michigan State University<sup>6</sup> has developed still another definition of career education:

"Career education is a pervasive element of the life-long educational process which emphasizes the interrelationship of occupational roles with civic, family, and avocational roles."

3. Goldhammer, Keith and Robert E. Taylor, Career Education: Perspective and Promise. Columbus, OH, Charles E. Merrill Publishing Co., 1972.
4. Hoyt, Kenneth B., R. Evans, E. Mackin and G. Magnum., Career Education: What It Is and How To Do It., Salt Lake City, Olympus Publishing Co., 1972.
5. Hoyt, Kenneth B., R. Evans, E. Mackin and G. Magnum., Career Education: What It Is and How To Do It., Salt Lake City, Olympus Publishing Co., 1972.
6. An Overview of Career Education: Module I, Michigan State University, Dr. Richard Gardner, College of Education.

Throughout all of these definitions, several words have frequently been used. They are "life roles", "career", "occupation", and "avocation". "Life roles" are defined as those roles we each assume every day of our lives -- family, citizen, occupational and avocational activities. Many times the words "career", "occupation", and "avocation" are used interchangeably. Actually they have rather different meanings.

Merriam-Webster<sup>7</sup> defines them as follows:

career: a course of action or events; a person's progress in his chosen occupation. An occupation or profession followed as a life's work. A chosen pursuit; a path or course.

avocation: a subordinate occupation pursued especially for pleasure. Hobby.

occupation: an activity in which one engages. To take possession of property. An activity that serves as one's regular source of livelihood.

When the word "career", in the term "career education", is defined as a path or course, it can include all aspects of an individual's life roles. When "career" is defined as occupation or profession, it leads to a much narrower interpretation of "career education." In the definitions of career education given earlier, the word "career" is generally used in it's broadest form, i.e. in terms of an individual's life roles.

Although definitions of "career education" differ in some aspects, most authorities will agree on several points.<sup>8</sup>

- 1) Career education is a conscientious effort, not merely an attitude or point of view.
- 2) Career education is a program which begins no later than

7. Merriam-Webster, The Merriam-Webster Dictionary, Pocket Books, New York, 1974.

8. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 20.

grade 1 and continues through all of adult education.

- 3) Career education is a program that is intended to serve all individuals rather than some special segment of the population.
- 4) Career education emphasizes education as preparation for work.

Authorities agree that career education is not synonymous with "vocational education" and that it is not the same as "education." They also agree that, for career education to be effective, it needs to be integrated into the total educational program, rather than added on as a new subject, curriculum or separate body of knowledge to be assimilated by students.<sup>9</sup>

There are three basic areas of disagreement common to most proponents of career education. They are: 1) the primary rationale for career education, 2) the long range goals of career education, and 3) whether career education should be an effort of the schools alone or whether it should involve the home and community as well.<sup>10</sup>

This disagreement which occurs concerning the primary rationale of career education centers around whether the career education movement developed because of a need to restructure American education, because of a need to improve the quality of transition from school to employment, or because of a need to restore work as a vital and viable personal value among American people.<sup>11</sup> There are several ways of looking at this issue.

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- 9 - Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 20.
  - 10 - Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 20-21.
  - 11 - Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 20.

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Some authorities stress the need to combine academic, general education, and vocational education programs, so that students can choose for a completely integrated system of educational opportunities.<sup>12</sup> These people want to dispell the idea that some students are working toward college entrance, some are preparing for work, while others are working towards obtaining a diploma. They see all education as preparation for work, and would like this to be an important goal of all who teach and of all who learn. This concept is generally supported by all people in the field of career education, but many disagree that this is the basic rationale of career education.

Another group of experts has centered their rationale for career education around the need to help all people leaving the educational system, at any level, find paid employment that is satisfying to the individual and beneficial to society as a whole.<sup>13</sup> These people base most of their efforts in career education programs around the current state of the economy and present employment outlooks. They see career education as a means of helping students prepare for and enter into the occupational society. For this group of people a paid job for everyone leaving the educational system is the ultimate goal.<sup>14</sup>

There is a third group of experts whose definition of career education is based on the rationale that work needs to be possible, meaningful, and satisfying to the individual.<sup>15</sup> This group makes a distinction between

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- 12. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 21.
  - 13. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 21.
  - 14. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 21.
  - 15. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 22.

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"work" and "making a living". The important aspect of work, to this group, is that it is meaningful to the individual and beneficial to society. It is not whether it is paid or unpaid employment. In their view, the concept of "productivity" is basic to a meaningful definition of work. The basic, underlying rationale of career education, as seen by this group, is to help individuals find personal satisfaction in their work.<sup>16</sup> They see the need to restructure our education system and the need to reduce unemployment and underemployment as stepping stones to the goal of helping individuals include their work values as a vital and viable part of their personal value system.

The disagreement about the rationale of career education is probably the most basic among educators. Until it is resolved, the nature of career education can never be totally defined.

The second area of disagreement is in the perception of the long range goals of career education. This area is of primary importance because it implies criteria to be used in evaluating the results of career education programs. Some definitions of career education limit the long range goals to post-educational job experiences of former students.<sup>17</sup> For these definitions, career education can be evaluated on the basis of appropriateness of career decisions, the number of students in training related occupations and the amount of satisfaction these persons receive from their work. Most definers of career education will agree that it is necessary to apply these criteria in evaluating career education, but

16. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 22.

17. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 22.

many would argue that, while they are necessary, this does not mean they are sufficient for evaluation of the total career education concept.<sup>18</sup>

Other authorities incorporate terms such as "total life style", "life roles", "self development" and "total life education" into their definitions of career education.<sup>19</sup> Because of its broad-based definition, this group has available criteria which could be used to evaluate the entire education system. While most people agree that career education holds the potential for influencing many aspects of a person's life, many feel there is a danger of presenting the concept of "career education" so broadly that it becomes difficult to distinguish it from "education" itself. Those who have such concerns, contend that career education is large enough and important enough to have a specific set of goals and criteria for evaluation that make it obvious that career education is only one of many important programs in our total educational system.<sup>20</sup>

Those people who see the goals of career education as making work possible, meaningful and satisfying to all individuals apply yet another set of criteria to evaluation of the career education program.<sup>21</sup> Three key words are important in this definition of career education. They are "possible", "meaningful", and "satisfying". These ideas extend the concept of career education beyond the criteria set up by those who see paid jobs as the end point of career education. They include criteria to evaluate the effectiveness of work for volunteers, full-time homemakers,

18. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 22.
19. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 22.
20. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 23.
21. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 23.

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for those on welfare, and for retired persons as well. They place emphasis on the development of work values which bring meaningfulness to the individual. They are concerned about the ways an individual can increase his/her feelings of self-worth, self-identity and accomplishment through the work he/she performs -- whether or not it is paid employment. These definers are concerned with worker satisfaction on the job. They limit their evaluative criteria to those things which can be shown to be related to work. Because of this, their criteria is broader than that of persons who are only concerned with paid employment, but much narrower than criteria based on such concepts as "life roles".<sup>22</sup>

The third area of disagreement centers around the question of whether career education should be presented as an effort of the schools alone or whether it needs to include the home and community as well. Some definers see career education as a program existing only within the public school system. Others see it involving the occupational community and home as well, but with control and direction belonging to the educational system. Still another group sees the home and community as active participants in career education. This group sees public education as just one of several agencies involved in career education.<sup>23</sup>

While it cannot be denied that these three areas of disagreement exist among authorities in the field of career education, it is possible these disagreements will serve to benefit the career education effort. No single definition of career education is without its strong points. Career

22. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 23.

23. Hoyt, Kenneth B., Towards a Definition of Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 24.

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education will grow and become stronger as definers attempt to convince others of the validity of their viewpoint and so, possibly, begin to reach a consensus as to the true definition of career education.

Although disagreements are found in the specific definitions and goals of career education, most authorities will agree that the basic philosophy of all definitions is the same. 'The philosophy surrounding career education assures the presentation of a variety of educational information combined with the opportunity for self-exploration, so that through personal choice, the student can draw upon the expertise, insights, and information available within the home, school, and/or community in order to make appropriate career development and placement decisions.'<sup>24</sup> This is true regardless of whether one views the ultimate goal of career education as a paid job, meaningful personal work values or enhancement of personal life roles and decision-making skills.

#### ROLE OF CAREER EDUCATION IN THE DECISION-MAKING PROCESS:

It is necessary to determine how career education programs help in the career decision-making process. According to Campbell:<sup>25</sup>

"The most important influence in your life style is your occupation. It will determine not only what you do each day, but it will also affect how you live, who your friends are, what clothes you wear, when you take vacations, how much money you make and how long you have to work ....."

Because occupations and careers are so important in determining a person's life style, it is imperative he/she give that aspect of his/her

24 . Author unknown. Taken from: An Overview of Career Education: Module I, Dr. Richard Gardner, Michigan State University, College of Education.

25 . Campbell, David, Ph.D., If You Don't Know Where You're Going, You'll Probably End Up Someplace Else., Argus Communications, Niles, IL, 1974, p. 112.

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future a great deal of attention. The average worker has two to three different careers in a lifetime. Some experts estimate as many as five.<sup>26</sup> Career education programs provide individuals with the opportunity to explore career options. This allows them to make intelligent, educated decisions when it is time to make a career decision.

Career education programs do this in a variety of different ways. Perhaps the most common, and widely recognized program, is vocational education. Vocational education programs are designed to prepare students to enter a specific occupation upon completion of the program.<sup>27</sup> They were active long before the idea of "career education" was brought to the public's eye. In 1912, Senator Carrol E. Page of Vermont presented a bill to Congress emphasizing the need for vocational education in our public schools. Fifty years earlier, in 1862, the Morrill Act provided a beginning for vocational education by establishing agricultural and mechanical colleges.<sup>28</sup> Other, subsequent, acts of Congress further aided these colleges. However, only a very small percentage of the population went to college. Page made it clear to the Senate that something to supplement the Morrill bill was very badly needed. From this start has grown the vocational education program we know today. It has greatly expanded from the agricultural programs it initially involved to include industrial arts programs, family living and home economics, as well as business and secretarial training.

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26. The Career Search: Who Has The Answers? Career Questions:Answers From The Experts., Ford Insider: A continuing series of college newspaper supplements, 1980.
27. Barlow, Melvin L., Historical Antecedent to Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 30-39.
28. Barlow, Melvin L., Historical Antecedent to Career Education., The Third Yearbook of the American Vocational Association, 1973, p. 30.



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Although it preceded the concept of "career education", vocational education is very much a part of career education.

".... Vocational education is not confined to any one section, nor any class of people, but has taken deep hold upon our agricultural, our commercial, and our manufacturing population."<sup>29</sup>

There are many other career education programs available. Another type, which approaches career education differently from vocational education, but still has the same basic goals, is Experienced-Based Career Education (EBCE). EBCE students spend a major part of their "school time" on learning projects in the community. Activities in EBCE are tailored to meet the needs, abilities, learning styles and goals of the individual student. Students are guided through the learning activities by working with adults in laboratories, offices, factories, shops, hospitals, schools, courtrooms, studios -- anywhere careers take place.<sup>30</sup>

The Careers Cluster Concept is another career education program which has been developed in recent years. The underlying foundation of the cluster concept is the integration of academic areas with the world of work. According to Herr and Swails:<sup>31</sup>

"Under the cluster concept, the intent is to provide students with skills, knowledge, and attitudes required for entry into a family or cluster of occupations; i.e. the construction occupation cluster."

Many states and regional programs have been developed, based on

- 29 . Barlow, Melvin L., Historical Antecedent to Career Education, The Third Yearbook of the American Vocational Association, 1973, p. 38.
- 30 . Experienced-Based Career Education, Northwest Regional Educational Laboratory, Portland, Oregon, 1976, p. 2.
- 31 . Herr, Edwin and Richard G. Swails, Theoretical and Conceptual Frameworks for Career Education, The Third Yearbook of the American Vocational Association, 1973, p. 51.

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the cluster concept. Some of the better known projects are the Career Cluster Program which was developed by the University of Maryland's Industrial Education Department and the Comprehensive Career Education Model, developed by The Center for Vocational and Technical Education at The Ohio State University.

Other common career education programs include internship programs, apprenticeship programs, shadowing<sup>32</sup> (which is similar to a one-day internship), career exploration activities<sup>33</sup>, and computer-assisted career education programs.

#### Career Education In Michigan:

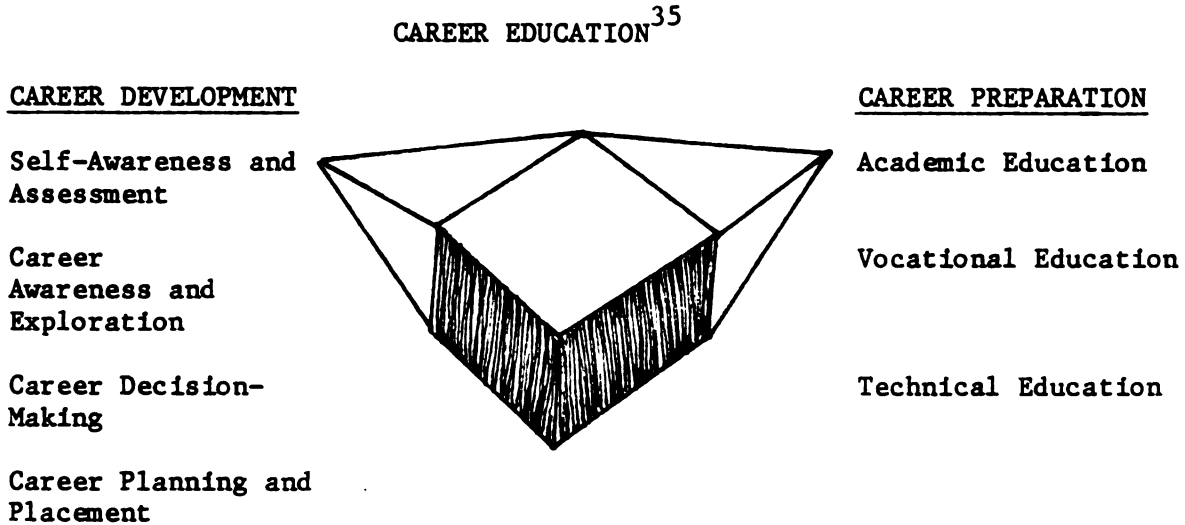
The career education program in Michigan is the result of the efforts of many people. It's legal existence was established in 1974 by Public Act 97 of the Public Acts of 1974. At this time, the Michigan Legislature took a very strong stand in favor of career education. Section 7 of Public Act 97 states:<sup>34</sup>

"Beginning with the 1975-76 school year each local educational agency shall establish performance objectives. Each local educational agency shall annually thereafter evaluate and make recommendations for it's comprehensive career education programs ...."

From this beginning, Michigan's career education program has grown increasingly stronger. The Michigan career education model combines "career development" i.e. self-awareness and assessment, career exploration, decision-making and career planning and placement; with the

- 32. Rasmussen, Marvin, Preparatory Programs in Career Education, The Third Yearbook of the American Vocational Association, 1973, p. 114-120.
- 33. Tennyson, W. Wesley, Career Exploration, The Third Yearbook of the American Vocational Association, 1973; p. 100-113.
- 34. Career Education In Michigan: An Introduction., State Board of Education, Career Education Advisory Commission, 1974, p. 4.

traditional bases of education -- academic, vocational and technical education. These three areas have been labeled "career preparation".



THE MICHIGAN CAREER EDUCATION  
MODEL  
-- AN INTEGRATED APPROACH --

In the Michigan Career Education Model, "career" refers not only to a paid job, but to the life-long succession of roles a person will experience.<sup>36</sup> The role of the career educator is to nurture the idea that education and the resultant involvement with a career can be ultimately more fulfilling if the individual has achieved the skills of career development -- to continually maintain the notion of who he/she is, what traits and abilities make him/her unique and how to assess the structure of each life role for more satisfying results. Beyond this, it is the

35. Career Education In Michigan: An Introduction, State Board of Education, Career Education Advisory Commission, 1974, p. 10.

36. Career Education In Michigan: An Introduction, State Board of Education, Career Education Advisory Commission, 1974, p. 6.

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responsibility of the individual to find "fulfillment" in his/her life.<sup>37</sup>

The goals of Michigan's career education program stress the acquisition of basic skills, preparation for social participation and change, the ability to think creatively and critically, development of a strong self-concept and the gaining of occupational skills.<sup>38</sup> Michigan has implemented many different projects in it's efforts to reach these goals. Many counties in Michigan have developed their own career education programs based on the guidelines outlined by the state and other programs which have been developed around the country. The types of programs offered include career exploration projects, experienced-based career education projects, career cluster programs, apprenticeship and internship programs and vocational education programs. Most Michigan schools offer vocational education programs, the majority of which are vocational agriculture programs. Some Michigan counties have established Skills Centers which offer vocational training in a variety of areas.

Michigan also has available an extensive computer-assisted career education program. It is the Michigan Occupational Information System (MOIS). MOIS is available without charge to all public agencies and private educational agencies in Michigan. It is a system designed to provide up-to-date occupational, educational and related training information to persons thinking of choosing or changing their occupation. MOIS contains over 370 occupation descriptions and 1400 specific job titles.<sup>39</sup> However, the information in MOIS is limited to occupations within Michigan.

37. Career Education In Michigan: An Introduction, State Board of Education, Career Education Advisory Commission, 1974, p. 6.

38. Career Education In Michigan: An Introduction, State Board of Education, Career Education Advisory Commission, 1974, p. 31.

39. Michigan Occupational Information System, flier distributed by the Michigan Department of Education.

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Agriculture Related Career Education Materials:

Most agriculture related career education materials are found in vocational education programs. These programs are designed for students who will be returning to the home farm, working as a herdsman or hired hand for someone else or entering the field of feed sales and agribusiness. Very little is offered related to opportunities in the other areas of agriculture. Vocational agriculture programs are based on practical application techniques. Little is offered in the areas of career exploration.

MOIS does offer some opportunity for exploring careers in agriculture. It lists approximately 8 occupations in the agriculture field but most are restricted to general descriptions such as "animal caretaker", "agriculture scientist", "veterinarian", or "agribusiness".<sup>40</sup>

Experienced-based career education programs can be designed to offer opportunities in exploring agriculture careers if it is requested by the student. Career cluster projects offer some information on agriculture careers also, but again, this information is generally limited to on-farm occupations.

There is definite lack of information available about off-farm agriculture occupations. Unless students have some general occupation in mind, they do not enter a career exploration activity in any given area. More information is needed dealing with the diversity of agriculture careers, so that more students will consider explorations in this area.

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40. Michigan Occupational Information System, taken from computer occupation list.

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SUMMARY:

Career education is a relatively new area in the field of education. It was officially founded in 1971 and has grown stronger every year. Experts in the field of career education have not agreed upon any one definition of career education but they do agree that career education must be:

- 1) a conscious effort on the part of our education system,
- 2) a program which must begin in grade 1 and continue throughout adulthood,
- 3) a program designed to serve all individuals rather than some special segment of the population, such as those going to colleges or universities,
- 4) and that career education emphasizes education as preparation for work.

However, authorities have not agreed upon some of the more basic points of career education. The major ones are 1) the primary rationale of career education, 2) the long-range goals of career education and 3) should career education be an effort of the schools alone or should it include the home and community as well. Regardless of which definition experts give and where they stand in relation to the rationale, long-range goals and place of career education in the schools and community, most agree upon the basic philosophy of career education. This philosophy assures the presentation of a variety of educational material combined with the opportunity for self-exploration, so that, through personal choice, the student can draw upon the expertise, insights, and information available in the home, school and/or community in order to make appropriate career development and placement decisions.

Career education is important because it helps individuals explore career opportunities before they must make a decision about their future.

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Our occupations and careers play a large role in determining our life styles and self-images. The average worker has two to three different careers in a lifetime. The more exposure to the variety of careers available we can receive, the better prepared we will be to make intelligent career decisions.

There is a wide variety of career education programs available. They range from vocational education, which is designed to prepare students to perform a specific occupation, to computer-assisted programs or career cluster programs which allow students to explore a variety of different careers, without becoming specialized in any of them. Michigan's career education effort makes available most of the different programs which are currently in existence. It is a program which was officially established in 1974 and has continued to expand and grow each year.

Career education is growing larger every day. However, at the present time, there is very little information available about careers in agriculture. Vocational programs offer projects in specific agriculture fields, but do not allow much opportunity for exploration. Other exploration programs have very limited information available about specific agriculture occupations. Most only review general areas such as agriculture scientist, animal caretaker, farmer, veterinarian or feed salesman. More information is needed by individuals about what agriculture has to offer in off-farm occupations if they are to make intelligent career decisions in the field of agriculture.

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## CHAPTER 3

### METHODS AND MATERIALS

#### POPULATION:

The sample population used in this project was made up of high school students (grades 9 through 12) from Ionia, Montcalm, St. Clair and Sanilac counties in Michigan. These counties were chosen because the County Cooperative Extension Agents expressed interest in helping with the project. Each agent provided names of several teachers he/she felt would be interested in participating in the testing. The teachers were contacted in the spring of 1980. From these names, five teachers agreed to participate (Appendix A).

A list of all the high schools within the designated counties was obtained from the school directory published by the Michigan High School Athletic Association.<sup>1</sup> The principal of each high school was contacted by telephone in September, 1980. Of the 31 principals contacted, 17 supplied names of teachers they thought would be interested in participating in the survey. Forty-two teachers were identified by principals. See Appendix B for a list of schools which participated in the survey.

Letters were sent to each teacher explaining the research project and asking for their cooperation in completing the materials testing

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1. School Directory, Michigan High School Athletic Association Bulletin, 1979-1980, Vol. LVI, Nov. 1979, No. 5.

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and survey (Appendix C). From this group, 22 teachers agreed to participate.

A total of 983 students were surveyed for the pretest. The types of classes used in this study included government, English, drafting, vocational agriculture, history, biology, civics, and business classes. Fifty percent of the classes surveyed were vocational agriculture classes.

### RESEARCH INSTRUMENTS:

#### Survey Design:

The purpose of the survey was to:

- 1) Identify the personal background of the students.
- 2) Identify the perceived career goals of the students.
- 3) Identify the attitudes of the students towards agriculture in general. How does the student view the agriculture industry?
- 4) Identify the attitudes of the students towards the dairy industry. What is their knowledge of the dairy industry in general?
- 5) Determine what the students know about the types of people who work in dairy related occupations.
- 6) Determine what the students know about specific career opportunities in the dairy industry.
- 7) Determine what the students feel they need to know about career opportunities in the dairy industry.

The survey served as a pretest in the testing of the career exploration materials developed by the author on careers in the dairy industry.

The survey deals with time-bound associations. Borg and Gall define a "time-bound association" as:<sup>2</sup>

"...relationships between questionnaire items that refer to the same point in time..."

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2. Borg, Walter R. and Meredith Damien Gall, Educational Research: An Introduction, Longman, Inc., New York, 1979, p. 287.

The questions in the survey are closed-form questions, i.e. permitting only certain responses. The questions dealing with the attitudes of the students offer five options for responding. These responses are based on a Likert-type scale<sup>3</sup> of "strongly agree", "agree", "no opinion", "disagree", and "strongly disagree" (Appendix D). The survey questions were developed with the assistance of Dr. Leroy Olson of Learning and Evaluation Services at Michigan State University.

Borg and Gall<sup>4</sup> list several rules for constructing questionnaire items. They include:

- 1) Clarify is essential. If your results are to be valid an item must mean the same thing to all respondents. For example, terms like "several", "most", and "usually" have no precise meaning and should be avoided.
- 2) Short items are preferable to long items because short items are easier to understand.
- 3) Negative items should be avoided since they are misread by many respondents; i.e. the negative word is overlooked resulting in the respondent giving an answer that is opposite to his real opinion.
- 4) Avoid "double-barreled" items, which require the subject to respond to two separate ideas with a single answer. An item such as "Although labor unions are desirable in most fields, they have no place in the teaching profession." cannot be answered with the usual closed-question format (such as strongly agree, agree, no opinion, disagree, strongly disagree) by a person who disagrees with one part of the item and agrees with the other part.
- 5) Do not use technical terms, jargon, or "big words" that some respondents may not understand. Remember, clarity is especially important in questionnaires since the respondent is usually reached by mail and has no one available to explain unclear items.

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3. Borg, Walter R. and Meredith Damien Gall, Educational Research: An Introduction, Longman, Inc., New York, 1979, p. 299.

4. Borg, Walter R. and Meredith Damien Gall, Educational Research: An Introduction, Longman, Inc., New York, 1979, p. 297.

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- 6) Finally, it is important that an effort be made to avoid biased or leading questions. If the subject is given hints as to the type of answer you would most prefer, there is some tendency to give you what you want. This tendency is especially strong when the letter of transmittal that accompanies the questionnaire has been signed by someone that the subject is eager to please.

These guidelines were followed in the development of the survey.

The survey was pretested with 50 high school seniors, from two schools in Ionia County, in June 1980. These students were selected on the basis of teacher cooperation. Two teachers agreed to test the survey with their students during the final week of school. These teachers were included in the actual materials testing which took place in the fall. However, none of the students used to pretest the survey, took part in the actual material testing.

#### Exploration Materials Development:

The career exploration materials developed (Appendix E) consist of a series of 10 one-page career exploration activity sheets about career opportunities in the dairy industry. The purpose of these materials is to increase youth awareness of occupations, related to the dairy industry, other than farming and veterinary medicine. The sheets developed included occupations in the areas of dairy foods manufacturing, feed and elevator supply, artificial insemination organizations, pharmaceutical or drug sales, international agriculture, cooperative extension service, dairy farming, veterinary medicine, DHIA technicians and agricultural loan officers.

The materials were developed with the assistance of subject matter experts (Appendix F) in each area. After the first draft was completed,

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the exploration sheet was given to the subject matter expert for review and comments. Any revisions necessary were made before the final sheets were printed.

Each activity sheet contains:

- a brief description of the responsibilities and duties of the job.
- information about the level of education required (H.S., B.S., M.S., or Ph.D.).
- activities for the individual to do to help him/her find out more about the career.
- places to obtain further information.

Upon completion, the sheets were combined into packets and distributed to the students. The students were asked to read all of the sheets in the packet, then, pick 5 which interested them and complete as many of the exploration activities as possible. The students were given 4 weeks to complete the sheets.

During the 4 week testing period, the teachers were asked to spend a minimum of one-half to one hour per week reviewing the student's progress. This was done to help insure the students used the materials.

#### Data Collection:

The pretest data was collected over a 3 week period during October, 1980. Each student was given a survey, administered by either the author or the teacher. After completion of the survey, the activity booklets were explained and handed out (Appendix E).

One month later, the students were given the survey again, as a posttest, in order to determine if there had been any change in their knowledge of careers in the dairy industry. At this time, they also

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received several questions related specifically to the career exploration booklets (Appendix G). The teachers received a questionnaire concerning the use of the career exploration materials in the classroom (Appendix H) one week before the follow-up survey was given to their students. The questionnaire was collected at the time the posttest was administered.

Of the 983 surveys administered, 810 useable surveys were obtained in the pretest. Surveys were eliminated from the pretest sample because of incomplete responses, i.e. the student answered less than 50% of the questions or because all answers were marked the same.

The posttest survey provided 657 useable surveys. Only those students who actually used the career exploration materials were surveyed in the posttest. Many students were eliminated from this group because of problems with teachers following through with the use of the materials in their classroom. Other surveys were eliminated because of incomplete responses or because all responses were marked the same.

#### METHOD OF ANALYSIS:

Data from the survey was coded and entered on the computer for analysis. Frequency counts were obtained on all items. Two-way contingency tables were obtained to determine relationships between variables.

The statistical analysis was done with the assistance of Drs. John Gill and Clyde Anderson of the Dairy Science Department at Michigan State University.



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Pearson's Chi-Square Test:

The Pearson's Chi-Square test was run to determine the relationship between variables. This is a test of independence between the rows and columns of the contingency tables.

Level of Significance:

Levels of significance were provided to the fourth decimal place by the statistical computer package used. A .05 level of significance was selected as the level at which differences between responses would be considered significant.

SUMMARY:

A series of career exploration sheets were developed by the author with the assistance of subject matter experts. These sheets were distributed to 983 high school students in four Michigan counties. Students used the materials over a one month period to test their effectiveness with youth in increasing awareness of career opportunities in the dairy industry.

A survey was developed by the author with the assistance of Learning and Evaluation Services at Michigan State University. This questionnaire was designed to measure the attitudes and knowledge of high school students toward career opportunities in agriculture and the dairy industry. The questionnaire served as the pre- and posttest for the career exploration materials.

The responses were statistically analyzed using Pearson's Chi-Square. Frequency counts were also made of all responses.

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## CHAPTER 4

### RESULTS

#### ATTITUDE SURVEY:

The results from the survey (Appendix D) were tabulated and analyzed using Pearson's Chi-Square test, to determine if the student's attitudes toward agriculture and the dairy industry, and their knowledge of career opportunities in these fields changed after using the career exploration materials. The pretest survey supplied 810 useable responses. The posttest supplied 657 useable responses. The pretest and posttest results were analyzed separately to determine relationships between the variables, within each group. The data was then combined and analyzed to determine differences between the groups. Only those differences which were shown to be significant, at the .05 level, in the combined data have been presented here.

#### Population:

Although the actual number of responses varied between the pretest and posttest population, the make-up of the population remained approximately the same. Table 1 shows that, in both the pretest and posttest, the population sample contained significantly more males than females. This could possibly be due to the fact that 50% of the classes sampled were vocational agriculture classes which were predominately male.

Table 1. Population (figures are percentage of total frequency)

Age	Pretest*		Posttest*	
	Male	Female	Male	Female
14 - 15	17	13	14	16
16 - 17	40	23	38	21
18 - 19	6	2	8	2
20 and up	0	0	0	0
Total	62	38	61	39

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\*Significant at .05 level.

#### Responses To Survey Questions According to Selected Variables:

The survey questions were cross-tabulated with selected variables to determine their influence on the responses. The variables selected were age, sex, grade, and residence.

Students were asked about the type of career they felt they would pursue as an adult. Significant differences were found between sexes, grades, and places of residence.

Table 2 shows the results of the comparison between sexes. There were significant changes in the number of males who felt they would pursue a skilled career requiring specialized training, but not college (decrease of 3%) and those who wanted a career requiring 4 or less years of college (increase of 2%). There were also significantly more males in the posttest who felt they wanted an unskilled career, requiring no specialized training. The reason for this increase is not known.

The results of comparing responses within grades are shown in Table 3. The posttest results show a much larger number of freshmen (52%)

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Table 2. Type of Career Pursued as an Adult According to Sex (figures are percentage of total frequency)

Type of Career	Pretest*		Posttest*	
	Male	Female	Male	Female
Requiring >4 yr of college	12	9	12	10
Requiring ≤4 yr of college	9	11	11	11
Skilled	22	7	19	9
Unskilled	3	2	5	2
Other	6	2	4	0
Undecided	9	7	9	7

\*Significant at .05 level.

and sophomores (44%) considering a career requiring college than was seen in the pretest sample. Along with the increase in the percentage pursuing careers requiring college, the freshmen and sophomores showed a 3% decrease in the number of "Undecided" responses and a 14% decrease in "Other" responses.

Table 4 gives the results of comparisons by residence. Only the figures for "Rural", "1000-2500", and "2500-5000" have been included in this table because 84% of the sampled population live in these areas. The other areas contain too few responses to be of any practical significance.

From this table we see a significant difference in the number of students who live in rural areas who want to pursue an unskilled career (7%) as compared to students who live in towns of 1000-2500 and 2500-5000 (3% and 4%). There were also more rural students who indicated "Other"

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as a career option (7% vs. 3%).

Table 3. Type of Career Pursued as an Adult According to Grade (figures are percentage of total frequency)

Type of Career	Pretest*				Posttest*			
	Fresh.	Soph.	Jr.	Sr.	Fresh.	Soph.	Jr.	Sr.
Requiring >4 yr of college	27	13	16	26	27	28	13	23
Requiring ≤4 yr of college	18	10	23	22	25	16	23	23
Skilled	23	39	28	28	21	31	31	30
Unskilled	6	11	6	3	8	6	9	4
Other	6	11	8	8	1	2	7	6
Undecided	21	16	18	13	18	17	18	14

\*Significant at .05 level.

Table 4. Type of Career Pursued as an Adult According to Residence (figures are percentage of total frequency)

Type of Career	Pretest*			Posttest*		
	Rural	1000-2500	2500-5000	Rural	1000-2500	2500-5000
Requiring >4 yr of college	20	16	23	21	22	22
Requiring ≤4 yr of college	19	22	20	20	25	29
Skilled	28	33	37	28	30	29
Unskilled	6	7	3	7	3	4
Other	11	4	3	7	3	3
Undecided	17	18	14	16	18	13

\*Significant at .05 level.

Those students who responded "Other" to the career choice question were asked to specify the career they were considering. Table 5 lists the careers mentioned. It is interesting to note that 53% of the students who responded "Other" indicated they would like to pursue a career in farming. The percentages were similar in both the pretest and the posttest.

Table 5. Types of Careers Specified By Students Who Responded "Other" To "What type of career do you think you will pursue as an adult."

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<b>Farming or Farmer</b>	<b>53%</b>	<b>Auto Body Repair</b>	<b>1.5%</b>
<b>Truck Driver</b>	<b>6%</b>	<b>Salesperson/Cashier</b>	<b>1.5%</b>
<b>Armed Forces</b>	<b>6%</b>	<b>Singer</b>	<b>1.5%</b>
<b>Secretary</b>	<b>4.5%</b>	<b>Architecture</b>	<b>1.5%</b>
<b>Sports</b>	<b>3%</b>	<b>Business</b>	<b>1.5%</b>
<b>Cosmotologist</b>	<b>3%</b>	<b>Nursing</b>	<b>1.5%</b>
<b>Pilot</b>	<b>1.5%</b>	<b>Police Officer</b>	<b>1.5%</b>
<b>Domestic Engineer</b>	<b>1.5%</b>	<b>Veterinarian</b>	<b>1.5%</b>

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**These** students evidently do not consider farming a professional occupation requiring a college education or a skilled career requiring some type of specialized training.

Students were asked if the career they will have as an adult will be related to agriculture. Sex and place of residence were found to have a significant effect on these responses.

Table 6 shows the responses according to sex. In both the pre- and Posttest survey, 32-36% more males than females were considering agri-

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culture-related careers. However, in the posttest survey, the number of females considering an agriculture-related career increased from 14% to 17%.

Table 6. Percentage Pursuing Agriculture-Related Career According to Sex (figures are percentage of total frequency)

Sex	Pretest*	Posttest*
Male	50	49
Female	14	17

\*Significant at .05 level.

Responses according to residence are shown in Table 7. Fifty percent of the students who live in rural areas were considering agriculture-related careers in both the pre- and posttest surveys. There was a 5-9% decrease in the number of students from towns of populations of 1000-2500 and 2500-5000 considering an agriculture-related career in the posttest survey.

Table 7. Percentage Pursuing Agriculture-Related Career According to Residence (figures are percentage of total frequency)

Residence	Pretest*	Posttest*
Rural	48	50
1000-2500	17	12
2500-5000	18	6

\*Significant at .05 level.

The following tables deal with the responses to the opinion statements on page 2 of the questionnaire (Appendix D). Each statement allowed for a response of strongly agree (SA), agree (A), no opinion (N), disagree (DA), and strongly disagree (SD). Significant changes were found within several of the variables on many of the statements.

Responses to "Agriculture is a growing industry in the United States" according to sex and residence are shown in Tables 8 and 9.

In Table 8 we see that more males (45-47%) responded SA or A to this statement than females (29-32%) in both the pretest and posttest. However, both groups increased their number of SA-A responses 2-4% in the posttest.

**Table 8.** Responses to "Agriculture is a growing industry in the United States" According to Sex (figures are percentage of total frequency)

Sex	SA		A		N		DA		SD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Male	15	21	30	26	6	6	9	6	1	1
Female	7	10	22	22	5	3	4	4	1	1
Total	22	31	52	48	11	9	13	10	2	2

Table 9 shows the same increase of SA-A responses within residence groups. All groups showed a marked increase of positive (SA-A) responses after using the exploration materials. The 2500-5000 group showed an increase of 8% (from 78% to 86%).

Table 10 shows responses to "People who are employed in agriculture work mainly on farms" according to residence. In this table we see a sharp decrease (8-29%) in the number of SA-A responses between the pretest and posttest. Most students (55-58%) disagreed (DA-SD) with

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Table 9. Responses to "Agriculture is a growing industry in the United States" According to Residence (figures are percentage of column totals)

Residence	SA		A		N		DA		SD	
	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*
Rural	25	35	50	45	8	10	14	9	3	1
1000-2500	17	18	57	62	11	5	15	14	0	1
2500-5000	22	35	56	51	12	6	11	8	0	0

\*Significant at .05 level.

this statement after using the exploration materials. The greatest change occurred in the 1000-2500 group which showed a decrease of 27% in it's SA-A responses.

Table 10. Responses to "People who are employed in agriculture work mainly on farms" According to Residence (figures are percentage of column totals)

Residence	SA		A		N		DA		SD	
	Pre	Post*	Pre	Post*	Pre	Post*	Pre	Post*	Pre	Post*
Rural	5	5	33	23	10	15	42	44	10	14
1000-2500	6	4	48	23	12	18	31	47	4	8
2500-5000	5	0	29	26	11	18	48	47	6	8

\*Significant at .05 level.

Responses to the statement "Agriculture makes up a small part of our economy" showed significant differences when broken down by age groups.

Table 11 shows an increase of 1-4% in the number of "N" responses for all age groups in the posttest results.

Table 12 shows responses to "Banks and other lending institutions

Table 11. Responses to "Agriculture makes up a small part of our economy" According to Age (figures are percentage of total frequency)

Age	SA		A		N		DA		SD	
	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*
14 - 15	4	4	8	10	4	5	9	9	4	3
16 - 17	5	5	16	12	4	8	23	19	15	15
18 - 19	1	1	2	2	0	1	2	3	2	3
20 and up	0	0	0	0	0	0	0	0	0	0
Total	10	10	26	24	8	14	34	31	21	21

\*Significant at .05 level.

are always looking for prespective employees with a background in agriculture and dairy science" according to sex. Table 13 shows the responses according to grade. Both tables show an increase in positive (SA-A) responses in the posttest results. Males SA-A responses increased 20%

Table 12. Responses to "Banks and other lending institutions are always looking for prospective employees with a background in agriculture and dairy science" According to Sex (figures are percentage of total frequency)

Sex	SA		A		N		DA		SD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Male	2	7	13	18	24	19	15	11	7	5
Female	1	3	7	12	15	15	11	8	5	2
Total	3	10	20	30	39	34	26	19	12	7

while females only showed a 7% increase. There is still a high percentage of no opinion responses.



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Table 13 shows a greater degree of change in positive (SA-A) responses for freshmen (4% to 8%) and seniors (8% to 16%) than is seen for sophomores (3% to 5%) and juniors (8% to 11%).

**Table 13.** Responses to "Banks and other lending institutions are always looking for prospective employees with a background in agriculture and dairy science" According to Grade (figures are percentage of total frequency)

High School Grade	SA		A		N		DA		SD	
	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post
Fresh.	0	2	5	6	6	8	6	4	3	2
Soph.	1	2	2	3	5	4	2	2	1	1
Junior	1	2	7	9	12	9	9	5	3	2
Total	3	10	21	30	39	34	26	18	11	7

\*Significant at .05 level.

Responses to "Most career in the dairy industry are on dairy farms" according to residence are shown in Table 14. There was a significant increase in DA-SD responses for students from rural areas and towns with populations of 1000-2500 in the posttest survey. There was a 12% increase in "N" responses for students from town with populations of 2500-5000 after using the exploration materials.

Significant differences were found when responses to "The dairy industry includes public relation and people-oriented jobs" were broken down by sex and grade.

In Table 15, both males and females showed an increase of SA-A responses after using the exploration materials. There was a 4% increase in positive (SA-A) responses for the males, while females showed a 2% increase in "N" responses.



Table 14. Responses to "Most careers in the dairy industry are on dairy farms" According to Residence (figures are percentage of column totals)

Residence	SA		A		N		DA		SD	
	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*
Rural	8	7	38	30	13	14	35	38	6	11
1000-2500	6	12	45	35	30	19	28	31	1	3
2500-5000	8	6	30	34	14	26	41	40	7	5

\*Significant at .05 level.

Table 15. Responses to "The dairy industry includes public relation and people-oriented jobs" According to Sex (figures are percentage of total frequency)

Sex	SA		A		N		DA		SD	
	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post
Male	5	5	26	30	21	15	8	7	2	2
Female	3	5	20	20	9	11	5	3	0	1
Total	8	10	46	50	30	26	13	10	2	3

\*Significant at .05 level.

Responses within grades in Table 16 show juniors had a greater degree of change in SA-A responses than the other three groups. All grades increased in SA-A responses 1 to 3%.

Data in Tables 17 and 18 show that student awareness of job opportunities involving an interest in photography was increased after using the exploration materials.

In Table 17, both males and females showed a 4 to 6% increase in positive (SA-A) responses.

Table 16. Responses to "The dairy industry includes public relations and people-oriented jobs" According to Grade (figures are percentage of total frequency)

High School Grade	SA		A		N		DA		SD	
	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*	Pre*	Post*
Fresh.	2	3	9	10	6	5	3	2	1	1
Soph.	1	2	4	5	5	5	1	1	0	1
Junior	2	3	13	15	10	6	5	4	1	0
Senior	3	3	20	21	10	10	3	3	0	1
Total	8	11	46	51	31	26	12	10	2	3

\*Significant at .05 level.

Table 17. Responses to "An interest in photography can be of great benefit in a career in the dairy industry" According to Sex (figures are percentage of total frequency)

Sex	SA		A		N		DA		SD	
	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post
Male	3	5	17	21	21	19	14	12	6	4
Female	1	3	9	11	16	14	9	9	4	2
Total	4	8	26	32	37	33	23	21	10	6

\*Significant at .05 level.

In Table 18, seniors showed the greatest increase of positive (SA-A) responses (4%).

Table 19 shows responses to "I would like to know more about career opportunities in the dairy industry" according to sex. In this table we

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Table 18. Responses to "An interest in photography can be of great benefit in a career in the dairy industry" According to Grade (figures are percentage of total frequency)

High School Grade	SA		A		N		DA		SD	
	Pre	Post*	Pre	Post*	Pre	Post*	Pre	Post*	Pre	Post*
Fresh.	1	2	5	4	7	7	5	6	3	2
Soph.	1	2	3	4	4	5	2	2	1	0
Junior	1	2	10	10	11	9	6	5	3	1
Senior	1	2	8	13	14	12	10	8	3	3
Total	4	8	26	31	37	33	23	21	10	6

\*Significant at .05 level.

see a 3% increase in SA-A responses for females but a decrease of 4% in SA-A responses for males.

Table 19. Responses to "I would like to know more about career opportunities in the dairy industry" According to Sex (figures are percentage of total frequency)

Sex	SA		A		N		DA		SD	
	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post
Male	7	8	23	18	17	18	10	10	5	6
Female	2	3	8	10	15	12	8	8	5	6
Total	9	11	31	28	32	30	18	18	10	12

\*Significant at .05 level.

Table 20 shows student responses to "I know about most of the careers available in the dairy industry" according to sex. This table shows an increase in the number of students who felt they knew about most of the

careers available in the dairy industry after using the exploration materials. There was a slightly larger increase in SA-A responses for females (3%) than males (2%).

**Table 20.** Responses to "I know about most of the careers available in the dairy industry" According to Sex (figures are percentage of total frequency)

Sex	SA		A		N		DA		SD	
	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post	Pre*	Post
Male	3	4	14	15	17	18	19	16	8	8
Female	2	1	4	8	11	10	14	14	8	6
Total	5	5	18	23	28	28	33	30	16	14

\*Significant at .05 level.

Several attitude statements were included in the survey, related to information and occupations not included in the career exploration booklets. Table 21 lists the statements and the changes which occurred in total responses between the pre- and posttest surveys. Student responses to these statements showed no significant changes after the use of the exploration materials.

#### STUDENT RESPONSES TO CAREER EXPLORATION MATERIALS:

At the time of the posttest survey, students were also given a questionnaire pertaining only to the career exploration materials. See Appendix G for an example of this questionnaire.

Table 22 gives a listing of the individual career exploration sheets and the percentage of students who used each. Each student was asked to use 5 different sheets. The majority used 1 to 3 different



sheets.

Table 21. Statements Not Related to Information in the Career Exploration Booklets and the Percentage Change of SA-A Responses Which Occurred After Use of the Booklets (figures are percentage of total frequency)

Statement	Pre	Post	$\Delta$
The dairy industry is the largest branch of the agriculture industry in the United States	51	52	+1
The number of job opportunities in the dairy industry is decreasing every year	27	28	+1
Most people who work in occupations related to dairy come from farms	50	49	-1
A thorough understanding of dairy cattle is essential to finding a job in the dairy industry	55	51	-4

Table 22. Percentage of Students Who Used Each Career Exploration Sheet

Activity Sheet	%
Dairy Foods Manufacturing	47*
Feed and Elevator Supply	52*
Artificial Insemination Organizations	40*
Pharmaceutical or Drug Sales	34*
International Agriculture	27*
Cooperative Extension Service	25*
Dairy Farming	59*
D.H.I.A. Technician	27*
Veterinary Medicine	50*
Agricultural Loan Officer	30*
Don't Remember	25#
No Response	40#

\*Percent of those who responded.  
#Percent of total sample.

The students were asked several questions about the usefulness of career exploration materials in general and specifically about the materials developed by the author. Seventy percent of the students answered this question.

Responses to the question about the usefulness of career exploration materials in general showed both positive and negative responses. Eighty percent of the students who responded felt career exploration materials were useful. The most frequently given reasons for their helpfulness were:

- They show people about jobs.
- You get to see about other jobs.
- They help you decide about your future job.
- They help broaden our minds.
- They give career ideas.
- They are informative
- You can read and learn about jobs.
- They help you know about more careers.

Twenty percent of the students who responded did not feel career exploration materials were helpful. The reasons given include:

- Boring.
- Not very specific.
- It depends on how you use them.

When questioned about the usefulness of the materials developed by the author, 70% of the students who responded felt the activities suggested in the dairy career exploration sheets were helpful in finding out more about a specific career. Sixty-eight percent of all the students

responded to this question. The most frequently expressed reasons why they were useful were:

- They give places to start looking for more information.
- The sheets go into a lot of detail.
- They tell what's involved and how to get started.
- Made you think.

Thirty percent of the students who responded did not think the activities were helpful. Their reasons were:

- They were hard to do.
- They took too much time.
- Not enough information was given.
- It's hard to travel places when you're going to school.

The students were asked what they felt were the strongest points (best parts) of the career exploration sheets they used. Sixty percent of the students answered this question. The areas most commonly mentioned were:

- A wide range of careers were covered.
- The good, organized way they were put together.
- Topics -- they were well picked.
- The listing of jobs pertaining to each opportunity.
- The part that tells you where to find out more.
- Very informative.
- All of it was good.
- The part about schooling needed and type of personality.
- True facts were given.
- The activities.

- The career explanations.
- They were neat and attractive.
- Easy to read.

The students were also asked which parts of the materials needed improvement. The following areas were most frequently mentioned by the 60% who answered this question:

- More detail is needed on what's involved in the job.
- Give the salaries.
- None.
- The vocabulary should be on our level.
- Need more subjects (careers).
- Need more facts.
- Give more places to write.
- The activities were hard to do.
- Need more things to do in class.

Space was provided at the end of the questionnaire for student comments and suggestions. The students were strongly encouraged to be honest in their remarks. Below are listed the most common remarks and suggestions of the students.

- This was very helpful.
- Interesting.
- More careers are needed.
- More of these booklets on different careers would be a great help in searching for a career.
- Very boring.
- Most people don't take farming seriously.
- Good job!

- Increase the variety of careers.
- Give more information about careers and list a few more careers in agriculture.
- Good idea and well put together.
- Wish I had this information earlier.
- Good info. I only thought there was one kind of farming but after reading through your booklet, I found there were many more career opportunities.
- Good idea to put Where To Start on the back of each page.
- Would be better used in younger grades (6th or 7th).

#### TEACHER REACTIONS TO CAREER EXPLORATION MATERIALS:

One week prior to the final surveying of their students, each teacher received a questionnaire asking for their comments about the career exploration materials (Appendix H).

When questioned about the usefulness of the materials in a classroom situation. 90% of the teachers felt the materials were helpful.

The most frequent comments were:

- It gives a few of the jobs besides farming.
- They were easy to read and a good starting point.
- They were useful in small group situations.
- They allowed them to investigate the options on their own and with their teacher.
- They are brief and take little time to complete.

A complete listing of the teacher's responses to this question has been provided in Appendix I.

The teachers were asked what they liked most about the exploration materials and those things they liked the least. A complete listing of

their responses to these questions can be found in Appendix J and K.

Several things were frequently mentioned in the list of what teachers liked best about the materials. They are:

- The activities.
- Well organized; attractive format.
- Easy to read and understand.
- The references as to who to contact.

The most commonly mentioned things teachers did not like about the exploration materials were:

- They need more depth.
- Not enough subjects.
- The activities were too long and complex for most students to complete.

Some problems were encountered by students in using the exploration materials. The most common areas mentioned were:

- The students were confined to the classroom for information.
- Lack of interest.
- Several had difficulty getting responses from companies.
- Their age -- this information should be presented in 7th, 8th or 9th grade.

Appendix L offers a complete list of teacher responses to this question.

In the last question of the questionnaire, the teachers were asked for suggestions for improving the career exploration materials. Appendix M contains a complete list of suggestions. The teachers were in agreement on several areas which could be improved. They include:

- Expand the units -- more careers.
- Produce more extensively detailed resource material, i.e.

slide tapes, film strips, movies, etc.

-- Start these materials at a younger age (8th or 9th grade).

-- Provide more information about the jobs.

## CHAPTER 5

### DISCUSSION

The results presented in Chapter 4 indicate definite changes in the attitudes of the students toward agriculture and their knowledge of career opportunities. Student awareness of job opportunities in the dairy industry increased significantly after using the career exploration materials. Because there was not a control group in this study, it is not possible to attribute all changes in student attitudes and knowledge to the exploration materials they used. However, it is reasonable to assume that the materials played a large role in this change.

Tables 8 and 9 show an increase in the number of students who agree agriculture is a growing industry in the United States. This positive change resulted, at least in part, from an increased knowledge of agriculture and what it has to offer. This increase in knowledge came about through the use of the career exploration materials. The information and activities presented in the materials helped to increase student awareness of agriculture and helped give students a more complete understanding of the dairy industry.

The data presented in Tables 12 through 18 indicate student awareness of job opportunities in the dairy industry increased after the use of the career exploration materials. In each case, student responses indicate an increased knowledge of the types of careers available and



the interests which can be incorporated into a career in the dairy industry.

Several attitude statements were included in the survey related to information not presented in the career exploration booklets. In the majority of these statements, no significant differences were found between the pre- and posttest student responses. Significant changes occurred in student knowledge and attitudes in those areas where the students received information about specific careers in the career exploration booklets. No significant changes were seen when information was not presented. This leads to the conclusion that the materials were effective in increasing student awareness of opportunities available in the dairy industry.

Through the use of the exploration materials and the suggested activities, the students were exposed to careers involving manufacturing, marketing, production, sales, advertising, administration, public relations, animal management, quality control, product development, travel, scientific research, teaching, animal health, record keeping, business management, and accounting. In this pilot project, the students were given information on 10 occupations not commonly considered to be agricultural occupations. They were exposed to many job opportunities they previously were not aware of or had not considered as a viable option in the field of agriculture.

Upon completion of the career exploration materials, more females expressed an interest in learning about careers in the dairy industry than in the pretest sample (Table 19). This increase can be interpreted as an increased awareness of dairy-related occupations as career options for women. For a long time, agriculture has been considered primarily

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a man's field. The only agriculture-related occupation available to most women was that of a farmer's wife. One of the goals of this project was to increase the awareness and career choices of all students. The data presented, indicates that a definite step has been taken in increasing the awareness of women.

The primary objective of this project was to develop an effective method of presenting agricultural career information to youth. The materials had to be useful to students on an individual basis or in a group situation.

When questioned about the usefulness of career exploration materials in general, in helping students learn about careers, 80% of the responding students felt they were helpful. Seventy percent of the students who answered questions pertaining to the usefulness of the materials developed by the author felt the materials were helpful to them. The students felt the activity sheets helped to increase their awareness, and enable them to start looking for information on their own.

The students expressed both positive and negative reactions to the information and suggested activities on each exploration sheet. The positive responses indicate the students found the sheets to be informative and helpful in learning about new careers. The students who did not like the exploration materials generally found them to be boring or not very specific. Seventy percent of the students felt the suggested activities were especially helpful because they gave them a place to start looking for more information, they made them think and helped them find out what was involved in a specific occupation and what is needed to get started in it. Some of the common criticisms of the activities were that they were hard to do, they took too much time and it was hard

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Most of these criticisms are related to the fact that students were asked to investigate the occupations on their own or in small groups. For many, this is the first time they have been faced with the task of asking questions and looking for information.

One criteria for developing the career exploration materials was that they be clear, concise, and easy to read. From the reactions and responses of the students presented in Chapter 4, we can see that the majority of the students felt the materials met this criteria. The students felt the materials were informative, well organized, contained true facts and easy to read. The most common criticism made by the students, of the materials, was that more subjects or careers needed to be included. This fact, in itself, adds validity to the conclusion that the materials were helpful in presenting agricultural career information. Upon completion of the materials, student interest had been stimulated to the point that they would like more material of this type on agriculture-related careers other than those in the dairy industry.

A second criteria for the development of the career exploration material was that the material must be useable by individuals or easily adapted to classroom use. The comments of the teachers, found in Appendix I, show that 90% of the teachers felt the materials were useful in the classroom as well as to individuals.

The teachers were very enthusiastic about the materials. They felt the materials were concise, well written, easy to read, well organized, and very informative. They also felt the materials filled a previously neglected area in education.



Teacher acceptance is a major step on the road to success for any type of educational program or material. This is especially true in the development of new materials which require teacher cooperation for their success. The comments and suggestions expressed by the teachers concerning the materials developed by the author, indicate a high acceptance rate among the teachers involved in the testing. This fact greatly enhanced the effectiveness of the material with the students.

The last question of both the teacher and student questionnaires asked for suggestions and comments on the career exploration materials. There is a great deal of similarity between the student comments and the teacher comments. Both groups had a very positive reaction to the materials and requested a greater variety of career information be made available. The majority of students felt the exploration activities were helpful but they also expressed a desire for more "in-class" activities. Both groups felt this would enhance the flexibility and usefulness of the materials.

An interesting fact to note is that both groups felt these materials needed to be presented to students much earlier in their school careers. Only 7 to 9% of all the students surveyed were undecided about the type of career they would pursue in an adult. By the time young people reach high school, the majority have made some type of career decision. This can range from deciding to go to college to pursue an interest in a general area, such as business, to deciding on the specific occupation they will enter. By presenting career exploration information earlier, we can provide youth with a broader knowledge base on which to make their decisions. The students and teachers in the population sampled agreed with this idea. Both groups felt students would benefit much more from this material if it were presented in the 6th or 7th grades. This

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is the time when young people are seriously beginning to think about "What do I want to be when I grow up?". This is the time when they are most receptive to new ideas and experiences. This fact deserves very serious consideration in future career exploration programs.

In some cases, only a small percentage of change was seen in the students attitudes and levels of knowledge concerning dairy careers. This could be due to the fact that the students were only given one month in which to use the exploration materials and do the suggested activities. If the materials were used for a longer time, the students would learn more about job opportunities in the dairy industry. A common complaint from the students was that they had not received any information from the companies they wrote to. If the materials were used on a continuous basis, the students could receive more information from their inquiries and also have more opportunity to make visits and do the other activities which require more time.

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## CHAPTER 6

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The major purpose of this project was to develop a method of presenting agricultural career information to youth in a manner which was clear, concise, easy to use and adaptable to individual or classroom use.

The impetus for this project came from the expressed needs of educators and youth for complete and accurate information about career opportunities available in agriculture. At the present time, there is very little career exploration material available related to agricultural careers.

The area of career education and career exploration is relatively new in the field of education. Career education is important because it helps individuals explore career opportunities before they must make a decision about their future. Our occupations play a large role in determining our life styles and self-images.

The United States education system has the responsibility of preparing young people to be productive and useful members of society. Career education is a program which was begun in the schools to help with this task. It is the responsibility of businesses, industries and professional organizations to supply the information the school systems need about career opportunities.

In response to these needs, a series of 10 one-page career exploration sheets were developed on careers in the dairy industry. The deve-

lopment of these materials was intended to serve as a pilot study for the development of materials related to all areas of agriculture.

#### Research Instruments:

The population used to test the career exploration materials was made up of high school students (grades 9 through 12) from Ionia, Montcalm, St. Clair, and Sanilac counties in Michigan. Twenty-two teachers and 983 students were involved in the actual testing of the materials.

The students were given a questionnaire dealing with knowledge of and attitudes towards careers in the dairy industry at the beginning of the testing period. This survey was used to determine the starting point of the students.

The students used the career exploration materials for one month. At the end of this time, they were again surveyed, with the same questionnaire, in an effort to detect any changes which might have occurred.

#### Major Findings:

Upon completion of the testing, the data was tabulated and analyzed using Pearson's Chi-Square test. The results of this analysis show a positive change in the attitudes of the students toward agriculture and an increase in their knowledge of career opportunities in the dairy industry in areas where students received specific career information in the exploration booklets. There were no significant changes in student knowledge in areas where the information was not included in the career exploration booklets.

The students and teachers were asked for their opinions of the career exploration materials at the time of the posttest survey. Both

groups expressed very positive reactions to the materials. The students found the materials to be clear, concise, and easy to use. Teachers felt the materials were very informative, clear, and easily adapted to classroom use.

#### CONCLUSIONS:

From the survey results and the comments of the students and teachers, concerning the career exploration materials developed by the author, it is possible to conclude that one page career exploration sheets which contain:

- a brief description of the occupation
- activities for further exploration
- places to obtain further information

are effective tools for increasing student awareness of career opportunities in the dairy industry. Teachers found this type of learning tool to be very useful in a classroom situation. They felt these materials effectively filled a gap in the career information presently available on agricultural careers and expressed a desire for more of this type of material on a wider variety of occupations.

#### RECOMMENDATIONS:

This research project has only begun to scratch the surface of development of agricultural career exploration materials. A great deal more work needs to be done in the area of career exploration materials development and testing. From the comments and data gathered during the completion of this project, the following recommendations can be made.

Future Career Exploration Programs and Materials:

- 1) Career exploration programs of the type designed and tested in this should be directed at young people in grades 6 through 8. Youth who have reached high school age have generally formulated their career plans and decided on an adult occupation. By beginning a career exploration program earlier, students will be better informed of career possibilities when they begin the career decision-making process.
- 2) Career exploration materials need to be developed in all areas of agriculture. Students and teachers have expressed a desire for a greater variety of exploration materials in all aspects of agriculture.
- 3) Future career exploration materials should contain more activities which can be done within the confines of a classroom.
- 4) There is a lack of materials available, from businesses and industry, which explains specific career opportunities in the areas of agri-business, agricultural communications, and public relations. The majority of the materials, available at present, do not explain what is involved in a given occupation. Most give a general overview of the company's organization and products but neglect to mention what type of people they employ. Agricultural businesses and industries must devote more effort to the development of materials, which outline the career opportunities they have to offer if they hope to find qualified people to employ.
- 5) A teacher's guide needs to be developed to accompany the career exploration booklets developed in this project. The guide should

contain alternative suggestions for using the materials in a class-room and a list of supplemental materials which are available such as movies, filmstrips, slide tapes or video tapes.

- 6) A comprehensive listing of existing materials related to agricultural occupations needs to be compiled and made available to teachers and professionals in the field of career education.

Recommendations For Future Study:

- 1) To insure the materials being developed are applicable to youth in grades 6 through 8, future studies need to be done to determine the knowledge and interest levels of young people in this category.
- 2) More work needs to be done to determine the type of activities which are most beneficial to students in career exploration.

## **APPENDICES**



APPENDIX A

MICHIGAN STATE UNIVERSITY

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COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

DEPARTMENT OF DAIRY SCIENCE • ANTHONY HALL

TELEPHONE (517) 355-8432

EAST LANSING • MICHIGAN • 48824

Hello

My name is Julie Drake, and I am a graduate student at Michigan State University. As part of my graduate work, I am surveying high school students, concerning their knowledge of the agriculture industry, the dairy industry and the types of career opportunities available in these areas.

Your name was given to me by (    name    ) the (    county    ) Extension Agent. He suggested your classes as a possible testing group for my survey. I realize it is getting close to the end of the school year and that things are getting pretty busy now, but I would appreciate it if you would take a few minutes to fill out the enclosed card, indicating whether or not you would be interested in participating in the survey next fall. Please return this card as soon as possible.

Thank you for your time and cooperation.

Sincerely,

Julie Drake  
Graduate Assistant  
Department of Dairy Science  
Michigan State University  
East Lansing, MI 48824

Encl.:  
JD:fd

## APPENDIX B

Greenville High School  
Greenville, Michigan

Lakeview High School  
Lakeview, Michigan

Vestaburg High School  
Vestaburg, Michigan

Marlette High School  
Marlette, Michigan

Carsonville High School  
Carsonville, Michigan

Yale High School  
Yale, Michigan

Pewamo-Westphalia High School  
Pewamo, Michigan

Ionia High School  
Ionia, Michigan

Richmond High School  
Richmond, Michigan

Carson City-Crystal High School  
Carson City, Michigan

Holy Cross High School  
Marine City, Michigan

Algonac High School  
Algonac, Michigan

Brown City High School  
Brown City, Michigan

Sandusky High School  
Sandusky, Michigan

Capac High School  
Capac, Michigan

Lakewood High School  
Lake Odessa, Michigan

Belding High School  
Belding, Michigan

MICHIGAN STATE UNIVERSITY

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COLLEGE OF AGRICULTURE AND NATURAL RESOURCES  
DEPARTMENT OF DAIRY SCIENCE • ANTHONY HALL  
TELEPHONE (517) 355-8432

EAST LANSING • MICHIGAN • 48824

Hello

My name is Julie Drake. I am a graduate student at Michigan State University. I am working on a master's degree in Extension Education in the Dairy Science Department here. As part of my thesis project, I am developing career exploration materials emphasizing careers in agriculture and careers involving animals. I am currently trying to find teachers willing to test my materials with their students. Your name was given to me by your school principal as someone who might agree to participate.

If you are agreeable, I would like to conduct a survey of your class during the week of . I will be surveying several schools in your area at this time and would like to complete as many as possible during this week. The survey itself takes about 20 minutes and deals with student's knowledge about careers in agriculture - how much do they know and how much would they like to know. After the survey is completed, I would like to spend about 15 minutes with you going over the career exploration materials I am developing. These materials consist of approximately 10 one-page career exploration sheets on different careers in agriculture. Each one contains a brief description of the career, several exploration activities the student can do to find out more about the particular career and a list of places where they can begin to get information. I would like each group to use at least 5 of the sheets during the testing period. I would like to test the materials during a 4-week period beginning October . After the students have completed the

sheets I will be doing a post-test to determine the effectiveness of the materials. I realize these activities are putting an additional strain on your already busy schedule, but I will greatly appreciate any help you can give me. These materials make up the major portion of my master's work. Any assistance you can give me will help to make them more meaningful.

I am enclosing a card on which you can indicate 3 times it would be most convenient for you to have me come and survey class. Please return this card by September .

Thank you for your time and consideration. I am looking forward to working with you in the near future. If you have any questions about the survey or exploration material, please call me at (517)353-2943. If I can be of assistance to you in any other way, please don't hesitate to contact me.

Thank you again for your help.

Sincerely,

Julie Drake  
Graduate Assistant  
Department of Dairy Science  
119 Anthony Hall  
Michigan State University  
East Lansing, MI 48824

Encl.:  
JD:fd

### Materials Description

The materials I have developed are the major portion of my master's program at Michigan State. This work is being done as a pilot study for a larger program to be developed by the College of Agriculture and Natural Resources here at MSU.

These materials consist of a set of 20 one-page sheets which contain ideas for exploring a career in a specific area of agriculture, i.e. dairy food manufacturing, international agriculture, milk marketing or the Cooperative Extension Service. (see example). Each sheet gives:

- a brief description of the responsibilities and duties of the job
- information about the level of education required (H.S., B.S., M.S. or Ph.D.)
- activities for the student to do to help him/her find out more about the career
- where to find additional information

Along with these materials I have developed a survey designed to find out how much students know about the many different opportunities available in agriculture. This survey takes about 20 minutes to complete and will serve as the pre-test and post-test for the one page sheets.

At this time, I am trying to find 2 or 3 teachers in your school who work with juniors and/or seniors, who will agree to let me survey their class and also use the one page exploration sheets during a 4-week time period. I would like each class to use at least 5 of the sheets during this time. These 5 can be either the choice of the individual students or the teacher, i.e. each student can use 5 different sheets or the class can all use the same 5 sheets. I would like the teacher to spend time (1/2 to 1 hour) every week reviewing the students' activities concerning these materials. I would like to know:

- do the students think the sheets are helpful?
- are the suggested exploration activities of any help?

- do you (as a teacher) see any use for them in a classroom?
- what are some of the problems students are encountering using these sheets?

Through the use of a post-test, I will determine if the students learned anything about career opportunities in agriculture. I would also like to spend some time with the teachers to find out how they feel about the materials and what problems they encountered in their use in the classroom.

Since these materials are a major part of my master's work, I would greatly appreciate any help you can give me in determining their usefulness.

Thank you.

Julie Drake

## APPENDIX D

## SURVEY OF CAREERS

INTRODUCTION

In this survey we would like to answer several questions.

1. How do you see agriculture as an industry and how important is it to the economy?
2. What do you know about the dairy industry as a part of the agricultural industry?
3. What do you know about careers in the dairy industry?
4. How much would you like to know about careers in the dairy industry?

Please indicate your responses to the following statements as honestly as possible. There are no right or wrong answers. The results of this survey can only be as accurate as your responses. Your thoughtful consideration of each item is requested. All responses will be strictly confidential and will be compiled with those of other participants.

PLEASE SELECT ONLY ONE RESPONSE FOR EACH ITEM. Your cooperation in completing this survey is greatly appreciated.

Thank you.

*Julie Drake*

GENERAL INFORMATION:

Please Check The Appropriate Boxes:

1. Age: 14-15 ☐<sub>1</sub>, 16-17 ☐<sub>2</sub>, 18-19 ☐<sub>3</sub>, 20 or above ☐<sub>4</sub>
2. Sex: Male ☐<sub>1</sub>, Female ☐<sub>2</sub>
3. Level in School: Freshman ☐<sub>1</sub>, Sophomore ☐<sub>2</sub>, Junior ☐<sub>3</sub>, Senior ☐<sub>4</sub>
4. Do you live in:
  - a. a rural area or on a farm ☐<sub>1</sub>
  - b. a town of under 1000 population ☐<sub>2</sub>
  - c. a town or city of 1000 to 2500 ☐<sub>3</sub>
  - d. a town or city of 2500 to 5000 ☐<sub>4</sub>
  - e. a town or city of 5000 to 10,000 ☐<sub>5</sub>
  - f. a city of 10,000 to 50,000 ☐<sub>6</sub>
  - g. a city of 50,000 to 250,000 ☐<sub>7</sub>
5. What type of career do you think you will pursue as an adult? (please choose only one item).
  - a. Professional, requiring 4 or more years of college ☐<sub>1</sub>
  - b. Professional, requiring less than 4 years of college ☐<sub>2</sub>
  - c. Skilled worker, requiring specialized training but not college ☐<sub>3</sub>
  - d. Unskilled worker, requiring no specialized training ☐<sub>4</sub>
  - e. Other, (please specify) \_\_\_\_\_ ☐<sub>5</sub>
  - f. Undecided. ☐<sub>6</sub>
6. Will the career you pursue as an adult be related to agriculture?
 

Yes ☐<sub>1</sub>      No ☐<sub>2</sub>

For the following statements, please indicate whether you SA, strongly agree; A, agree; N, have no opinion; DA, disagree; or SD, strongly disagree. PLEASE SELECT ONLY ONE RESPONSE FOR EACH ITEM.

7. Agriculture is a growing industry in the United States.
8. People who are employed in agriculture, work mainly on farms.
9. Agriculture makes up a small part of our economy.
10. The dairy industry is the largest branch of the agricultural industry in the United States.
11. Career opportunities in dairy science are limited to farming and milking cows.
12. The dairy industry is involved in the production and marketing of dairy products.
13. People with a background in journalism find many job opportunities in the dairy industry.
14. Banks and other lending institutions are always looking for prospective employees with a background in agriculture and dairy science.
15. Most careers in the dairy industry require a college education.
16. Most careers in the dairy industry are on dairy farms.
17. A thorough understanding of dairy cattle is essential to finding a job in the dairy industry.
18. There are many opportunities for overseas travel in dairy-related careers.
19. The dairy industry includes public relations and people-oriented jobs.
20. The number of job opportunities in the dairy industry is decreasing every year.
21. An interest in photography can be of great benefit in a career in dairy science.
22. The dairy industry offers many different types of job opportunities.
23. I think it is important to know about as many different types of careers as possible.
24. I would like to know more about career opportunities in the dairy industry.
25. I know about most of the careers available in the dairy industry.
26. Agricultural jobs are for people who are not smart enough to get a job in other businesses or industries.
27. Interests in marketing and advertising can be incorporated into a career in the dairy industry.
28. Most of the people who work in occupations related to dairy come from a farm.



APPENDIX E

CAREER EXPLORATION MATERIALS

# Exploring A Career

# Cooperative Extension Service

Even an organization's directions can and do change. Established in 1914, the Cooperative Extension Service's first function was to spread new agricultural and homemaking skills information to farmers and homemakers. Today, the Extension Service employs specialists in areas such as field crops, family living, nutrition, 4-H and youth work, livestock, dairy, horticulture, marketing, general agriculture, resource development, and many other areas.

The Cooperative Extension Service is a national education organization. It is active in all fifty states and operates in cooperation with the land grant universities, such as Michigan State University. Extension is very much a people-oriented organization. The basic philosophy is "Helping people help themselves through education." Extension's chief business is to teach people in their own communities. This is done through informal meetings, study groups, demonstrations and consultations. Everything is geared to the concerns of the individual. Extension's programs are more practically oriented than theoretical, and are intended for immediate application. Since practical application is very important, it is very helpful for the extension agent to have some practical experience in his or her employment area.

The Cooperative Extension Service employs people with many different talents. Because it is such a large organization, Extension employs many people in administrative capacities such as secretaries, bookkeepers or personnel managers. There are state specialists who work out of the land grant universities and deal with problems and programs in specific areas. Area agents who work in several counties, often specialize in one area of agriculture, and teach people about that area. Individual counties also employ agricultural agents to work in specific areas or to serve



all of the agricultural programs. Most counties have a 4-H agent to take care of the youth programs, a home economist to work with the consumer education programs, and resource development agents to work with communities on resource utilization, community planning and other public concerns. In addition to these people, many counties hire program assistants to assist extension agents with some of the programs.

To be a successful extension agent, a person must enjoy working with people. He/She needs strong communication skills; both verbal and written. If you have these skills and are also interested in helping people help themselves, explore the career opportunities available with the Cooperative Extension Service.

### EXPLORATION ACTIVITIES

1. Find out where the state CES offices are located. Does your county have a CES office? Where is it located? What specific qualifications are needed to work for the Cooperative Extension Service?
2. Visit your county extension office. How many agents work out of this office? In what areas do they work? Does your county employ program assistants? How many? With which programs do they work?
3. Spend time talking with a county agent. What are his/her job responsibilities? What are his/her activities in an average day? What are some of the advantages of this job? Some of the disadvantages? Does he/she have any advice for someone who is considering this career?
4. Talk with a program assistant. What are his/her job responsibilities? How did he/she become involved in this work? What are some of the advantages of his/her job? Disadvantages? Does he/she have any advice to someone who would like to work in this area?
5. If after talking with the county agent and program assistant, you would like some actual experience working with the Cooperative Extension Service, volunteer to work for an extension agent during the summer or find out about the possibilities of being hired as a summer program assistant.

### WHERE TO START

Your County Extension Office

Cooperative Extension Service  
Agriculture Hall  
Michigan State University  
East Lansing, MI 48824

Public Library

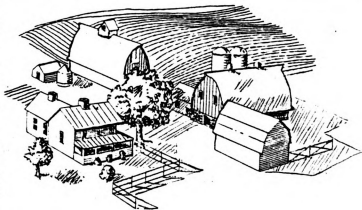
Cooperative Extension Service  
Science & Education Administration  
U.S. Department of Agriculture  
Washington, DC 20250

For more information, contact Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

# Exploring A Career

## Dairy Farming

How many businesses can you name that require the businessman to have a thorough understanding of accounting and finance, public relations, agricultural marketing and futures, labor management, building design and construction, animal health practices, advertising, safety, landscaping, pollution control, environmental protection, food quality control, anatomy, reproduction, nutrition, machine maintenance, weather forecasting, soil management, weed identification, insect identification, and animal psychology? These are just a few skills today's modern dairy farmers must have.



Today's farmers are among the most efficient producers in the world. Every farmer can feed approximately 81 people with the food he/she produces. Although the number of farms, farmers and dairy cattle in the United States has decreased greatly in the past 50 years, our food supply has not. Dairy farmers are good examples of this efficiency. Fifty years ago dairy farmers could get about 4500 pounds of milk per year from the average cow. Today, the average cow produces over 11,000 pounds of milk in a year.

Milk is a major source of calcium and phosphorus in the human diet. It is also a good source of protein. For these reasons, it is important that an adequate supply of dairy products be available to meet our needs. Dairy farming is a difficult and demanding occupation but it is also a very rewarding occupation. Providing a high quality product, like milk, at the most competitive price possible is a challenge to all businessmen and dairy farmers have met that challenge well.

Dairying is an expensive business. It is not easy to enter this field unless you have grown up on a farm and have the necessary land and buildings available to get started or unless you can enter into a partnership with someone. However, with perseverance and hard work, it is possible to find financial backing from banks or farm loan institutions.

Successful dairy farming requires a commitment of time, energy and money. It also requires patience and an understanding of animals. If you enjoy working with animals and being outdoors, consider dairy farming as a possible career.

## EXPLORATION ACTIVITIES

1. Visit your local library or school library. How many dairy farms are there in the United States? How big are they; i.e., average number of cows, average number of acres?
2. Visit your county extension office. Talk with the county dairy agent or agriculture agent. Find out:
  - How many dairy farms are there in the county?
  - What is their average size?
  - What does the extension agent see as some of the biggest problems faced by dairy farmers in this county?
  - Is the number of farms increasing or decreasing?
  - Do they buy or produce the feed the cows need?Ask the county agent to suggest one or two farmers you could visit to get a better understanding of farming.
3. Visit the farmers suggested by your county agent. Talk with him/her about his/her life as a dairy farmer.
  - How did he/she get started in the dairy business?
  - What are his/her activities in a normal day?
  - How many hours a day does he/she work?
  - Is this a single family farm or a partnership?
  - How many cows does he/she milk? How many times a day? How long does it take him/her to milk?
  - Does he/she hire any outside labor? During what seasons of the year?
  - What does he/she see as some of the advantages of dairy farming? Disadvantages?
  - Does he/she have any suggestions for someone considering dairy farming as a career?
4. Arrange to work on a dairy farm for the summer or on weekends. This will give you a more realistic understanding of what it takes to be a dairy farmer.
5. Visit your local bank. Talk to the loan officer about the collateral needed to start a dairy farm. Will the bank finance a loan to someone to start a farm? If not, why not? If yes, under what terms?

## WHERE TO START

Public Library

County Extension Office

Department of Dairy Science  
124 Anthony Hall  
Michigan State University  
East Lansing, MI 48824

County Farm Bureau Office

# Exploring A Career

## Dairy Foods Manufacturing

In 1978 the United States produced 121,928 million pounds of milk. 55,990 million pounds of this milk was processed and sold as fluid milk, while the rest was made into ice cream, cottage cheese, non-fat dry milk, cheese, butter, and many other dairy products. Many manufacturing plants are needed to process this large amount of milk. These plants fall into three general categories. The first deals primarily with fluid milk. It pasturizes, bottles, and distributes fluid milk and fluid milk by-products such as cottage cheese. The second type makes ice cream and/or ice cream mix and the third manufactures butter, cheese, non-fat dry milk, condensed milk or other manufactured products. Sometimes, milk processing and ice cream manufacturing plants combine operations in one location.

There is a large variety of jobs available in dairy food manufacturing. They range from administrative work in an office to driving a truck for delivering the finished products. Some of these jobs require a college education, while others can be obtained after graduation from high school. Salaries in these types of jobs vary in accordance with the education required.



### Exploration Activities

1. Make a list of companies who manufacture dairy products. Visit one of these companies and tour their facilities. What products do they manufacture?

2. What types of jobs are available in this company? Make a list.
3. What level of education is required to work in the different jobs you have identified?
4. Select one occupation from your list, explore it more deeply. Talk to someone who is currently employed in this area. Spend several hours watching them work. How did they get involved in this occupation? What suggestions do they have for someone considering this occupation?

### Where to Start

Michigan Milk Producers Association  
24270 W. Seven Mile Road  
Detroit, MI 48219

National Milk Producers Federation  
30 F Street N.W.  
Washington, DC 20001

Michigan Department of Agriculture  
Dairy Division  
PO Box 2000B  
Lansing, MI 48901

For more information, contact the Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

# Exploring A Career

## D.H.I.A. Technician

An accurate record-keeping system is an essential ingredient to the success of any enterprise. This is true for large corporations as well as the self-employed business man. There are organizations whose only business is keeping the record systems of other enterprises up to date. The Dairy Herd Improvement Association (D.H.I.A.) is one such organization. They help dairy farmers keep accurate management and production records on their dairy operation.

The D.H.I.A. technician works with the farmers in his or her area. The technician collects management and production information on each cow in the farmer's herd. He/She records the amounts, quality and cost of the forages consumed by the herd and may take a milk sample from each cow and send it to the main lab for a composition analysis. Tests for mastitis can also be run on the milk samples. All of this information helps a farmer manage his herd more efficiently by identifying weak spots in his management practices and allows him to identify the least productive cows so they can be culled.

Working as a D.H.I.A. technician allows a great deal of flexibility in your work schedule. The size of the area the technician serves is an individual decision. Each technician works on his/her own, but is under the direction of a local, area or state D.H.I.A. organization. Technicians get paid according to the number of cows and herds they test.





If you like working with dairy cattle and people and would like the satisfaction of knowing you play an important part in the dairy industry, look at the career opportunities as a D.H.I.A. technician.

### Exploration Activities

1. Contact the state Dairy Herd Improvement Association and find out:
  - a. How many dairy herds are served by this organization?
  - b. What percentage of the total number of herds in the state are being tested?
  - c. What are some of the specific services offered to dairymen?
  - d. How many technicians are employed by D.H.I.A.?
  - e. What type of education is required to be a D.H.I.A. technician?
  - f. What is the average salary of a D.H.I.A. technician in this state?
  - g. What fringe benefits are available to employees of D.H.I.A.?
2. Arrange to travel with a D.H.I.A. technician in your area. How many herds does he/she serve? How many cows? What services does he/she provide to the farmers he/she works with?
3. Talk with a D.H.I.A. technician about his/her job. What does he/she feel are some of the advantages of this kind of job? Some of the disadvantages? Does he/she have any helpful suggestions for someone considering this line of work?

### Where to Start

Michigan Dairy Herd Improvement Association  
4418 Forest Road  
East Lansing, MI 48823

County Extension Office

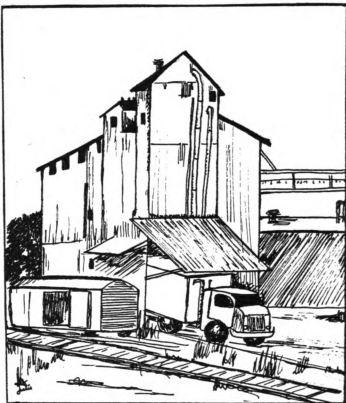
For more information, contact Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

# Exploring A Career

## Feed and Elevator Supply

The feed and elevator supply business is a rapidly expanding field. It is a business which deals with the making and selling of feed for many types of livestock, as well as the marketing of other supplies related to the farming industry.

Elevators are the primary feed outlets for farmers. Along with supplying commercial feeds and supplements, the elevators perform essential marketing services for farmers who are selling excess grain. Some elevators deal only in the areas of making and selling feeds. Others are also involved in related supply areas.



Farm supply businesses provide farmers with the equipment and supplies needed to efficiently run a farm. They usually handle everything from baler twine to curry combs and horse halters. Some farm supply companies also sell machinery and large farm equipment.

There are many employment opportunities in this area. However, most of the positions require specialized training in animal nutrition, ration balancing, business management, accounting, law or personnel management. In-service training programs are offered to employees by the feed and supply companies. Short-courses and two-year college programs are offered by colleges and universities also.

### Exploration Activities

1. Identify several of the major feed companies and farm supply companies in the United States. Which ones operate in your area?
2. What types of employment opportunities do these companies offer?
3. What type of education is required to work in this field? Does the company offer any in-service training programs to prospective employees?
4. What programs are available at state colleges and universities which are related to the feed and elevator supply business?
5. Visit a local elevator and/or farm supply store. Is it an individually owned business or the local outlet for a larger company?
6. What services are offered by the local elevator? The farm supply company?
7. Talk to some of the people who are employed at the elevator. What are their job responsibilities? Find out why they became involved in this type of work.

### How to Get Started

Below are listed several organizations which will help you to begin exploring career opportunities in feed and elevator supply.

Institute of Agricultural Technology  
College of Agriculture and Natural Resources  
Michigan State University  
East Lansing, MI 48824

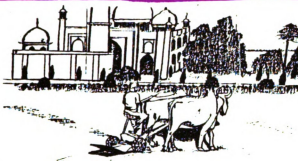
Ralston Purina, Inc.  
Checkerboard Square  
St. Louis, MO 63188

Farm Bureau Services, Inc.  
P.O. Box 30960  
Lansing, MI 48909

For more information, contact the Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

# Exploring A Career

# International Agriculture



Have you ever dreamed of traveling overseas? Are you interested in working with people in developing nations? Would you like to contribute to the development of adequate food systems in other countries through work with their native plants or animals? If any of these things interest you, there may be employment available to you in international agriculture.

The basic philosophy and goal of international agriculture is "to contribute to the development of more adequate food systems, the development and maintenance of natural resources and the improvement of human conditions in developing countries through collaborative applied research, advisory services, educational programs and assistance in the building of institutional capabilities within developing countries." There is a great demand for people with a background in the animal sciences, plant sciences, and agricultural economics. Appointments overseas generally last for one or two years at a time. These international experiences benefit and strengthen performance and opportunities in U.S. based programs.

Most opportunities in international agriculture require a 2 or 4 year degree in agriculture or natural resources. Opportunities are available to qualified people to provide technical assistance in animal and plant production and international trade. In addition to the basic technical skills developed at the university level, knowledge of a second language and an understanding of the cultural, social, political, and economic environment are crucial to a successful and satisfying experience overseas.

The international agriculture program has undergone many changes in the last 30 years and more changes are occurring every day. If you think you may be interested in being part of these changes, you should explore the job opportunities available in international agriculture.

### EXPLORATION ACTIVITIES

1. Identify several organizations and agencies involved in international agriculture programs.
2. Select one organization or agency from your list. What countries do they work in? What type of people do they employ? What are the goals of this organization?
3. What type of education is required for employment by the organization or agency you chose?
4. What are the occupations of most people employed overseas? How long does the average assignment for overseas work last? (6 months, 1 year, 2 years, etc. . .)
5. What languages, other than English, are spoken by people who work overseas? What is the most common one?

### WHERE TO START

Agency for International Development  
Washington, DC 20253

United States Department of Agriculture  
Washington, DC 20250

Ralston Purina, Inc.  
Checkerboard Square  
International Programs  
St. Louis, MO

CROP  
Church World Service  
475 Riverside Drive  
New York, NY 10027

Institute of International Agriculture  
118 Agriculture Hall  
Michigan State University  
East Lansing, MI 48824

### **ACTION**

Midwest Regional Service Center  
1 North Wacker Drive  
Chicago, IL 60606

CARE, Inc.  
660 First Avenue  
New York, NY 10016

W. K. Kellogg Foundation  
400 North Avenue  
Battle Creek, MI 49016

For more information, contact Chairman, Dept. of Dairy Science, Michigan State University, East Lansing, Michigan 48824.

## Exploring A Career

# Pharmaceutical or Drug Sales

Increased agricultural production in the future is essential to the survival of our increasing world population and to improving the standard of living for people all over the world. The hope of a well-fed world can become a reality only through continued application of basic research, more efficient livestock and crop production and world-wide distribution of agricultural products.

Pharmaceutical or drug companies play an important role in the development of animal health products, feed additives, and other agricultural chemicals needed by livestock and crop producers to increase their productivity. Employment with one of these companies offers opportunities for travel, as well as a chance to conduct educational programs for farmers, veterinarians and feed dealers.

Most pharmaceutical or drug companies require their employees to have a college degree in biology or the animal sciences. The entry level jobs are generally in the area of sales and marketing. Job opportunities in the research branch of the pharmaceutical or drug industry require a Ph.D. or D.V.M. degree.

As a sales representative, you would have the opportunity to travel and come in contact with farmers and professionals in all areas of livestock and crop production. You would conduct programs, explaining your products, for farmers along with other industry people. You would have the opportunity to visit with veterinarians or feed dealers and explain your products and programs to them. The average sales and marketing representative works with approximately 180-200 people in a 4-6 week period.

If you have an interest in the animal industry, enjoy talking with people, like to meet new people and/or have a flair for selling things, explore the field of pharmaceutical or drug sales.

## EXPLORATION ACTIVITIES

1. Make a list of the major companies in the United States that manufacture animal health products, feed additives, agricultural chemicals and seeds. Where are they located? Do they specialize in any area or are they involved in all of these areas?
2. From the list you compiled, identify one company that is active in your area. Write or call them and get more specific information about their company, such as:
  - How many people do they employ?
  - In what capacity?
  - What is the educational background of most of the people they employ?
  - What employment opportunities are available with their company?
  - What qualifications are needed to be employed by this company?
3. Find out the name of the area sales representative of the company you are investigating. Arrange to meet with him/her and ask questions, such as What are some of the advantages of this type of job? What are some of the disadvantages? Does he/she have any suggestions to someone who is considering working in this area?

## WHERE TO START

Upjohn, Inc.  
Kalamazoo, MI 49001

Dow Chemical  
Midland, MI 48640

Eli Lilly and Company  
PO Box 618  
Indianapolis, IN 46206

Parke-Davis Company  
PO Box 118  
Detroit, MI 48232

Merck Company  
PO Box 2000  
Rahway, NJ 07065

For more information, contact Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

# Exploring A Career

## Veterinary Medicine

Veterinary medicine is modern medical science applied to animals. The opportunities available to a person interested in this field are almost unlimited. Jobs are available in urban areas, with farm animals, in zoos, with research animals or even in outer space programs.

The most commonly recognized career in veterinary medicine is that of the veterinarian. These people are involved in preventive medical care, as well as emergency medical care of animals. They also are involved in the diagnosis, control and eradication of diseases transmittable to man from animals.

Veterinarians may act as meat inspectors at meat packing plants. They serve in advisory, research or regulatory capacities for governmental agencies such as the U.S. Department of Agriculture, Public Health Service, or the Food and Drug Administration. Private industries who manufacture human and animal health products or feed additives for livestock also employ veterinarians. In this type of job, a veterinarian is involved in product safety and determining the effects of antibiotic residues and determining withdrawal rates of new drugs. They also help to develop new feed additives to promote more efficient production of food products. Industries employ veterinarians for environmental safety studies. Zoos employ veterinarians to care for their animals, also.

Many veterinarians are in private practice. That is, they work for themselves, not a governmental agency or commercial industry. These private practices are generally either small animal practices--dogs, cats, and other housepets--or large animal practices--cattle, horses or other livestock.

To become a veterinarian requires a great deal of education. However, for someone who is interested in veterinary medicine but not in many years of college, there are careers available as a veterinary assistant or animal technician. People in these careers are responsible for the everyday care of animals in vet clinics or research labs. The technician may help the veterinarian who examines and treats the animals. They carry out the veterinarians orders on feeding and other kinds of care. If the person is licensed as a veterinary assistant, he/she may also prepare animals for surgery, administer anesthesia and administer medication under the supervision of a veterinarian.

To be a success in a career in veterinary medicine you must like and understand animals. You should be able to meet, work with and talk well with people. If you think you have these qualities, consider a career in veterinary medicine.



## EXPLORATION ACTIVITIES

1. Go to your school library or the public library and look up several books on careers in veterinary medicine. Make a list of the different career opportunities mentioned in them. What qualifications are needed for each of these jobs?
2. Visit your local veterinary clinic. Is it:
  - a small animal clinic where the veterinarian mainly works with dogs, cats and other common pets;
  - or is it a large animal practice where the veterinarian works with cattle, horses and other livestock;
  - or maybe it is a combination of both.
  - Is the clinic an individually owned business or are several veterinarians in partnership?
  - Does this clinic employ any veterinary assistants or animal technicians?
3. Arrange to spend time talking with a veterinarian. What are his/her activities in a normal day? What does he/she feel are the major advantages of his/her job? What are some of the disadvantages? What advice can he/she give to someone considering a career in veterinary medicine.
4. Spend some time talking to a veterinary assistant or animal technician. What are his/her job responsibilities? How much education is required to do this type of work? What are some of the advantages of this type of job? Disadvantages? What advice can he/she give to someone considering this type of career?
5. Visit your local zoo. Locate the veterinarian who takes care of the zoo animals and talk to him/her about his/her job. What responsibilities does he/she have?
6. Contact the state veterinarians office at the state Department of Agriculture. Set up an appointment to talk with someone about the duties of the state veterinarian. How many veterinarians does the state government employ? What are their responsibilities?

## WHERE TO START

College of Veterinary Medicine  
A-136 East Fee Hall  
Michigan State University  
East Lansing, MI 48824

American Veterinary Medical Association  
930 North Meacham Road  
Schaumburg, IL 60172

County Cooperative Extension  
Service Office

Public Library

Animal and Plant Health Inspection Service  
U.S. Department of Agriculture  
123 East Grant St.  
Minneapolis, MN 55403

For more information, contact Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

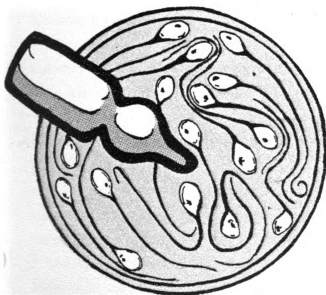
## Exploring A Career

# Artificial Insemination Organizations

Fifteen years ago, approximately 30% of all the dairy cows in the United States were bred by artificial insemination (A.I.). Today about 60% of the cows and 30% of the heifers are bred this way. There are 20 or more major A.I. organizations in the United States. As farmers better utilize artificial insemination and the services offered by A.I. organizations, the job opportunities in this area will increase, too. A.I. organizations offer employment possibilities in advertising, administration, public relations, sire selection and proving, animal management, quality control, or marketing and sales.

To begin exploring a career with an A.I. organization, you must start with the basics - - - what types of work do they do? While individual organizations differ in specific job qualification requirements, the positions available and the duties of those positions will be the same everywhere.

### Exploration Activities



1. Identify and list all of the A.I. organizations which operate in your area. Which are the major organizations and which are subsidiaries of larger organizations?
2. Visit a major A.I. organization or the affiliated organization in your area. What services do they offer? What is the administrative structure of the organization?

3. Identify 4 or 5 different job possibilities in the organization. For each position determine -
  - a. duties and responsibilities of the position
  - b. level of education needed to do this work
  - c. salary range
  - d. benefits offered
  - e. opportunities for advancement
  - f. future outlook of the job
4. Identify a specific job you may be interested in doing. Spend time talking to someone who is currently employed in this area. How did they get involved in this line of work? What type of background is he/she from? What types of classes would he/she suggest as helpful in preparing for this kind of job?

#### How to Get Started

Below are listed several organizations which can help you get started in exploring career opportunities with artificial insemination organizations.

Select Sires, Inc.  
11740 U.S. 42  
Plain City, OH 43064

Sire Power, Inc.  
Route #2  
Tunkhannock, PA 18657

Michigan Animal Breeders Cooperative  
3655 Forest Road  
East Lansing, Michigan 48823

American Breeders Service  
DeForest, WI 53532

Curtiss Breeding Industries, Inc.  
Cary, IL 60013

Midwest Breeders Cooperative  
Shawano, WI 54166

For more information, contact the Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

Exploring A Career

# Agricultural Loan Officer

Agriculture is the largest industry in the United States and it is constantly growing and changing. It is perhaps the most essential element to our continuing prosperity. In order for the farmers and ranchers of our nation to continue producing sufficient agricultural products to feed the people of this country and the world, they must utilize the latest developments in science and technology. Today's producers have expanded their operations to employ more land as well as larger and more expensive equipment and facilities. To do this requires a great deal of capital. Farmers and ranchers receive most of this capital in the form of credit from the many banks and lending institutions in the United States.

Commercial banks and lending institutions are in the business of lending money. They are constantly faced with decisions on whether to grant loans to applicants for new automobiles, college tuition, new homes, business developments, purchases of farm machinery, land, remodeling, and hundreds of other reasons. In order to make correct decisions, the banks and other institutions need qualified loan officers to analyze each individual case.

This is especially true in the case of agricultural loans. There are organizations and lending institutions, such as the Production Credit Association and Federal Land Bank, which deal strictly with financing agricultural loans. These groups, as well as commercial banks, are always looking for people with an agricultural background and an interest in accounting and finance to act as loan officers. If you have an interest in farming and agriculture and an aptitude for figures and finance, look at the opportunities available as an agricultural loan officer.



## EXPLORATION ACTIVITIES

1. Visit your local bank. Find out who is in charge of making agricultural loans. How many loans do they make annually? What guidelines do they use when deciding to approve or reject a loan application? What is the average length of time the loans are made for? Spend some time talking with the loan officer about his/her job. What does he/she feel are some of the good points of the job? What are some of the bad points? What type of education is required to do this job? What are some of the benefits offered to employees by the bank? What is the average salary?
2. Make a list of the institutions and organizations in your area that specialize in making agriculture loans. Which ones specialize in long-term (greater than 7 years) loans? Which grant primarily short- to intermediate-term loans? What guidelines do they use to determine eligibility for a loan?
3. Visit one of the organizations you identified in the list above. Talk with one of the persons responsible for granting loans. How does his/her job differ from the loan officer's in the bank? What does he/she feel are some of the advantages of the job? Some of the disadvantages? What type of education is needed for this type of work? What are some of the benefits offered to employees of this organization? What is the average salary? How do these compare to a bank?

## WHERE TO START

The Farm Credits Bank of St. Paul  
St. Paul, MN 55101  
(serves Michigan, Wisconsin,  
Minnesota and North Dakota)

Federal Intermediate Credit Bank of St. Paul  
375 Jackson Street  
St. Paul, MN 55101  
(serves Michigan, Wisconsin, Minnesota  
and North Dakota)

Regional Production Credit Assoc.

Local Bank or Savings & Loan

For more information, contact Chairman, Department of Dairy Science, Michigan State University, East Lansing, MI 48824.

## APPENDIX F

List of Subject Matter Experts:

## Artificial Insemination Organizations

- Dr. Ivan Mao, Michigan State University
- Ms. Sue Fritz, Michigan Animal Breeders Cooperative

## Feed and Elevator Supply

## Dairy Food Manufacturing

- Dr. Gale Baumgardner, Michigan State University

## Pharmaceutical and Drug Sales

- Mr. Norman Braksick, Upjohn, Inc.
- Dr. Lee Shull, Michigan State University

## Cooperative Extension Service

- Dr. Gale Baumgardner, Michigan State University

## International Agriculture

- Dr. Kim Wilson, Michigan State University

## Banking and Finance

- Mr. Barry Lasure, Production Credit Association

## Dairy Farmer

## Veterinary Medicine

- Dr. John Judy, Michigan State University

## DHIA Technician

- Mr. Martin Wilson, California DHIA
- Dr. John Speicher, Michigan State University
- Dr. Terry Smith, The Ohio State University

## APPENDIX G

THE FOLLOWING QUESTIONS DEAL ONLY WITH THE CAREER EXPLORATION MATERIALS YOU USED.

Please answer the following questions as completely and honestly as possible. Any suggestions you can make to help improve these materials is greatly appreciated.

Thank you for all of your help and cooperation.

1. Which career exploration sheets did you use?
2. Do you think materials such as these career exploration sheets are useful in helping students become aware of career opportunities? Why or why not?
3. Did you find the suggested exploration activities helpful in finding out more about the specific careers? Why or why not?
4. What do you think are the strongest points (best parts) of these sheets? Why?
5. What parts need the most improvement? How could they be improved?
6. Comments (all are welcome!).

## MICHIGAN STATE UNIVERSITY

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COLLEGE OF AGRICULTURE AND NATURAL RESOURCES  
DEPARTMENT OF DAIRY SCIENCE • ANTHONY HALL  
TELEPHONE (517) 355-8432

EAST LANSING • MICHIGAN • 48824

October 20, 1980

Hi!

Enclosed is a questionnaire pertaining to the career exploration materials you are using with your students. I would appreciate it if you would take some time to fill it out. I will pick it up when I come back to survey your students again.

Your comments and suggestions about these materials will be greatly appreciated. I would like to make these materials as useful to students and teachers as possible, so please be specific in your criticisms and comments.

Thank you for your help and cooperation.

Sincerely,

Julie Drake  
Graduate Assistant  
Department of Dairy Science  
Room 22 Anthony Hall  
Michigan State University  
East Lansing, MI 48824  
(517) 355-2332

Encl.:  
JD:fd



1. Do you think the Career Exploration materials are useful in a classroom situation? Why or why not?
2. What do you like most about the exploration materials?
3. What do you like least about the exploration materials?
4. What kinds of problems did your students have in using the materials?
5. What suggestions do you have for improving these materials (any and all comments are greatly appreciated!)?

## APPENDIX I

Teacher Responses to "Do you think the career exploration materials are useful in a classroom situation? Why or why not?"

Responses	Reason
Yes	It gives a few of the job besides farming.
Yes	I think these materials would be most useful in Ag. classes and classes explaining careers and thus made available to interested students.
Yes	They were easy to read and made a good starting point.
Yes	We used them in a small group situation. The students were able to discuss among themselves their mutual concerns.
---	They were of limited usefulness in the classroom because the materials contain only limited resources for use in the classroom. Most of the learning suggestions which one made take the student out of the classroom where more resources are.
No	Not for seniors. Most of our seniors by now have something in mind.
Yes	In my situation (rural school) these materials are very appropriate since many sons/daughters of farmers who in years gone by could go into farming are now forced by economics to look elsewhere.
Yes	Because they are brief and take little time to complete.
Yes	I used it to force some decisions. Anything we can do to encourage the student as he plans his career is worthwhile.
Yes	But it may be best used in classes geared toward career exploration or agriculture. Motivating students toward this was difficult in an American History class.
Yes	With the right type of student. Many students in Voc. classes are not highly self-motivated. Your list of activities need to be more motivational in nature so that much can be done within the limits of the classroom where the student can get immediate reinforcement.

- Yes But hard to tell until students get back information.
- Yes Because the usual type of classroom reference material is of little value. Research Report 408 on Recreation and Tourism of Job Specification as a bulletin would be excellent.
- Yes In my class, the students didn't take these materials seriously and though class time was spent on them -- no other outside time was.
- Yes If the students are interested in agriculture.
- Yes Easy to read and understand.
- Yes They are certainly helpful to the students because it allows them to investigate the options on their own and with their teacher.
- Yes These materials were very helpful. They provided a good introduction to each career topic.

## APPENDIX J

Teacher Responses to "What do you like most about the career exploration materials?"

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- Material is all in one booklet.
- The activities, as well as general information on each career.
- Well organized.
- The wide range of careers and different student activities that could be accomplished. They served as a good guideline for study.
- Attractive format. The excellent idea that we need well developed career guidance material.
- Concise, well written.
- The topics.
- They were easy to read. The activities are general and can be completed in a short time.
- Easy to read and understand.
- The references as to who to contact in industry.
- It is a needed tool that serves a neglected role of education. These materials with this format are useful regardless of the area covered.
- The different topics or occupations to which the student was exposed within the limits of agriculture.
- Addresses to the companies.
- Broad view of technician type jobs.
- They're informative and nicely presented.
- They are explorations -- the students do the work for themselves. I think they can get more out of it.
- The type of questions used.
- The references provided, so students may obtain additional information. Very colorful bulletins. Well organized.

- It allows the student to get a glimpse of a career. They are able to get in direct contact with a company directly related to their area of interest.

## APPENDIX K

Teacher Response to "What do you like least about the exploration materials?"

---

- It doesn't tell the salary expected. I know the material would soon be outdated.
- They need a little more depth.
- Were geared too low for high school students. I feel they were better suited for junior high.
- Their lack of complete information concerning the subject.
- Limited in scope.
- Many of the activities were too long and complex to realistically expect a student to do on his own. (Were they written by people with experience with real students?)
- The information is very general; more specific data would be helpful. Need a wider variety of subjects.
- Not enough subjects.
- They are on only a limited field of agricultural occupations.
- The visitation activity. It was not practical for our students due to financial reasons and location.
- Lack of information about each category. I realize the student was to search out more on his own, however, he needs more motivational information presented in a more interesting fashion.
- Lack depth.
- Not diverse enough. Seem to key on limited opportunities.
- The entire program is excellent.
- The material available was good, but it would have been nice to have a greater variety of occupations.

## APPENDIX L

Problems Encountered by Students Using the Career Exploration Materials According to the Teachers

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- The teacher should get the additional information before starting the unit.
- Many just were not interested in any type of farming careers. Some were surprized at the different careers available.
- Reading level and writing letters.
- Hard to make all the contacts and visitations.
- They were confined to the classroom for information. They lacked the ability to talk to people in the field.
- Not all students felt they were applicable.
- Length of the assignments.
- No specific problems.
- Very little problems.
- I was working with too high a level of kids and many know that career info already. I recommend using it on the junior high or 9th grade Ag classes.
- I felt they had problems getting started because they had difficulty realizing the value this held for them. Perhaps a more motivational or instructive introduction is needed.
- My students are used to "in class" work. They have not the desire nor the interest to do anything outside of class unless it is something for which they will receive immediate reinforcement and gratification. Outside interviews, writing for information, visits to businesses are all important aspects of career exploration, but realistically, will not be done by this particular type of student.
- Their age -- should be done in the 7th or maybe 8th grade. These people are ready and want this type of material.
- Basically the problem was a general lack of interest.
- Lack of interest -- not because of the material but because of lack of interest in agriculture.
- Lack of information in our library.

- Several had difficulties getting responses from companies.
- More information is needed on particular topics.



## APPENDIX M

Teacher's Suggestions for Improving the Career Exploration Materials

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- Expand the units -- more careers.
- Need a teacher's edition -- with different ideas on how to use them. A suggested list of movies or slide tape program for each area.
- Produce more extensively detailed resource materials. A slide tape or video tape with a person actually working at the job. A complete job description such as the Young Dairyman articles in Hoard's Dairyman would be a help.
- Start with these materials at a younger age -- say 8th or 9th grade.
- Incorporate the listing of agriculture fields from the G.I.S. and M.O.I.S. computer information services which are available to Michigan students -- if they are aware of it.
- Don't let each kid write the companies, but let one write each company and collect the data in a file system at school. These can be used quite well with California Poly Tech's 8 filmstrips on careers in some cases.
- More "in class" type activities. More information given within the folders! Vary the style of presenting the information -- diagrams, pictures, outlines instead of all paragraphs.
- Have career people visit the classroom for major interest areas. In your career booklets, why not send to the address yourself and get the return propaganda yourself and insert it in the career manual. Also Ag. teachers would probably work with you so have Ag. teachers put a local personal page in the pamphlet themselves.
- Needs more information about jobs themselves.
- Increase the variety of job opportunities. Offer or suggest filmstrips/movies to explain and show the diversity of opportunities.
- A shorter description would suffice while supplying a greater variety of occupations.
- More information provided.

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