Montana female high school senior FFA members perception of selected barriers to participation in agricultural mechanics
by Cindy Kathleen Arnott

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Agricultural Education
Montana State University

Abstract:
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Based on the results of this study, a majority of students perceived their agriculture instructor and family as being supportive of their studying agricultural mechanics. Students who did not study any curricula in agricultural mechanics perceived little support from family, friends, agriculture instructors, or school counselors. Although a majority of students had studied some agricultural mechanics curricula, involvement outside the classroom was less frequent. In addition, many students felt their parents worked in agricultural mechanics careers and had been encouraged by both parents to help with mechanics jobs at home. Students believed they would not enjoy a traditional female career and had positive perceptions of their ability to learn and perform agricultural mechanics skills, but did not perceive agricultural mechanics as a potential career. Finally, nearly half of the students had been verbally teased by male students during agricultural mechanics activities.

MONTANA FEMALE HIGH SCHOOL SENIOR FFA MEMBERS PERCEPTION OF SELECTED BARRIERS TO PARTICIPATION IN AGRICULTURAL MECHANICS

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APPROVAL

of a thesis submitted by

Cindy Kathleen Arnott

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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Signature Cindy Kathleen Arnott

Date July 31, 1995

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ABSTRACT

This study determined the perception 1994-95 Montana high school, senior, female FFA members have toward selected barriers to participation in agricultural mechanics activities. Data for this study were gathered through the use of a mailed questionnaire. Information received from the survey was statistically analyzed using Microsoft Excel.

Based on the results of this study, a majority of students perceived their agriculture instructor and family as being supportive of their studying agricultural mechanics. Students who did not study any curricula in agricultural mechanics perceived little support from family, friends, agriculture instructors, or school counselors. Although a majority of students had studied some agricultural mechanics curricula, involvement outside the classroom was less frequent. In addition, many students felt their parents worked in agricultural mechanics careers and had been encouraged by both parents to help with mechanics jobs at home. Students believed they would not enjoy a traditional female career and had positive perceptions of their ability to learn and perform agricultural mechanics skills, but did not perceive agricultural mechanics as a potential career. Finally, nearly half of the students had been verbally teased by male students during agricultural mechanics activities.

CHAPTER 1

THE PROBLEM AND ITS SETTING

Introduction

In 1917 the Smith-Hughes National Vocational Education Act "provided funds to promote vocational education for present and prospective farmers" (Phipps, 1980, p.7). Since that time, vocational educators have battled to provide effective courses satisfying the needs of new generations of American workers. Numerous changes have occurred in vocational and agricultural education during the past seventy-eight years to meet the challenges of a transforming society.

A meter of the fluctuations in vocational education is the changes in the federal acts providing funds for the programs. Since the first act of 1917, "the underlying goal of federal efforts in [vocational education] has been to guarantee that the education system provides the skilled labor force needed for a technical and competitive economy" (Hudson, 1994, p.3). The emphasis of vocational and agricultural education remained fairly consistent with the original Smith-Hughes Act of 1917 until 1963, when it was determined several changes needed to be made. The 1963 Vocational Education Act broadened the definition of vocational education and added goals to include " the

provision of programs and services for disadvantaged and disabled students" (Hudson, 1994, p.5). The 1968 amendment to the Vocational Education Act improved the implementation of goals with specialized funding for each goal. The success of targeting special populations in vocational education prompted congress to add more categories of special populations in 1974 and again in 1976. Also included in the 1976 legislation were "provisions to eliminate sex bias and sex stereotyping in vocational education" (Hudson, 1994, p.5). In 1984 the Carl D. Perkins Vocational Education Act became the funding source for vocational education and required schools to insure full access for special populations in recruitment, enrollment, and placement. The final and current act to fund vocational education is the Carl D. Perkins Vocational Education and Applied Technology Education Act of 1990. This act emphasized the continuation of services for special populations and expanded the equal access rulings (Hudson, 1994).

As a component of vocational education, agricultural education has strived to realize the goals set forth in the Perkins Act of 1990. To insure all students access to Agricultural Education the Agricultural Education Strategic Plan adopted the goal "To serve all people and groups equally and without discrimination" (National FFA Organization, 1994). FFA, the youth organization that is an

integral part of agricultural education, has also worked to insure equality in its programs since opening it membership to minorities and females in 1965 and 1969. The National FFA Organization has developed a workshop entitled "Who's Behind Door #2?", that offers strategies for unbiased recruitment of all populations.

Nationwide, membership in FFA has begun to move towards equality. From a zero percent share of membership in 1968, females now make up 26.6 percent of FFA membership nationally (National FFA Organization, 1994). In Montana, females account for twenty-four percent of the enrollment in agricultural education classes at the high school level (Vocational Enrollment Reports to Montana Office of Public Instruction, 1993-94).

Despite these advances some components of agricultural education are still struggling with serious inequalities in nontraditional enrollment and participation. One of these areas is agricultural mechanics. In Montana high schools only eleven percent of enrollees in agricultural mechanics classes in high schools are females. Non-enrollment in these classes indicates that females are not being exposed to the same opportunities for vocational training, leaving their future employment potential and career selection more narrowly defined.

To provide opportunities more equally to both genders of students it is necessary to overcome the difference in

agricultural mechanics enrollment. In order to surmount this disparity it will be essential to identify the barriers to females enrolling in agricultural mechanics classes.

Statement of the Problem

The purpose of this study was to survey 1994-95 senior females in Montana secondary Agricultural Education programs to determine their perception of selected barriers to participation in local and state Agricultural Mechanics activities, and their perceptions toward a career in agricultural mechanics.

Research Questions

The study was guided by the following research questions:

1. How did female students perceive their agriculture instructors attitude toward females in agricultural mechanics?
2. How did females students perceive support and encouragement for participating in agricultural mechanics from selected individuals?
3. What were female students' perceptions of agricultural mechanics and non-traditional careers?
4. What perception did female students' have of their parents' involvement in agricultural mechanics?

Need for Study

Nontraditional blue collar jobs have tremendous potential for females. Gordon (1991), reported that women in nontraditional jobs earn twenty to thirty percent more than women in traditional job areas. Nontraditional jobs also offer stability because "it seems likely that blue collar work will remain a significant part of the labor force for the foreseeable future" (Wallace, 1982, p. 135).

As new opportunities in blue collar jobs are opened up to females it is important they have the education to recognize the opportunities and develop the skills necessary to obtain an entry level position. While job skills change due to the explosion in new technology for every endeavor, basic skills and tasks will continue to be the backbone of any skilled labor (Cheek,1990). Agricultural education offers the information and training that can enable a student to have success in obtaining these jobs or the knowledge necessary to pursue the post-secondary training required to obtain these jobs. Cheek (1990), felt that "programs in agricultural education continue to be successful in preparing students for the workforce" (p. 47).

Agricultural education plays an extremely important role in the career education of students. According to Burnett and Venable (1986), "Seventy percent of students make their occupational choice by the eleventh grade" (p.182). Cheek (1990), also reported that "outside of

vocational education little practical help is provided in the school setting to assist students with career exploration and decision making" (p. 52).

Another important issue is the concern for sex equity, especially in education programs traditionally pursued by a single gender. Agricultural education has always been largely dominated by males, even after its youth organization, FFA, allowed girls to join. Today the number of girls enrolled in agricultural education is 26.6 percent (National FFA Organization, 1994), a healthy portion, but far from balanced. In recognition of this issue, the federal funding source for agricultural education, the Carl D. Perkins Vocational Education and Applied Technology Education Act of 1990, has targeted gender equity as a concern for funding. In a report to Congress it was stated that "the Perkins Act...seeks to foster the enrollment of students in vocational programs that are "non-traditional for their gender" (Hudson, 1994, p. 107). The Perkins goals for gender equity go far beyond insuring "fairness". The intent for vocational gender equity is to increase employment opportunities for women (Hudson, 1994).

In spite of the work being done to improve gender equity and encourage participation in nontraditional areas, females are still not participating in agricultural mechanics activities at the same rate as male students. Enrollment of females in agricultural

mechanics in Montana secondary schools is only eleven percent of total enrollment in the classes. Proportionally, 33 percent of all males enrolled in agricultural education are enrolled in an agricultural mechanics class. Only twelve percent of females enrolled in agricultural education are enrolled in an agricultural mechanics class.

The difference in enrollment is even more disturbing when advanced tiers of classes are observed. The more classes a student takes in a particular area, the more likely they are to pursue a career in that area (Stone and Wang, 1990). However, Hudson (1994), indicated that "sex stereotyping is higher for students who concentrate in an area" (p. 124).

Increasing the proportion of females in agricultural education is an important issue for Montana agricultural educators. As education funding dollars become more scare, a program that is not serving all populations effectively decreases its ability to compete for those dollars available. The probity of a discipline that neglects a portion of the population is also debatable. An important element to gender equity is the opportunities missed by people when they are not included in a program. The opportunities provided to females participating in mechanics activities would increase their career options and their earning potential in the future.

The importance of education for females in nontraditional vocational areas is increasingly evident. Gender equity has become a priority for funding programs and education agencies, resulting in increased chances for participation (Hudson, 1994). These opportunities in vocational training programs open up new chances for successful careers for participants. Female students apparently are not taking advantage of these opportunities, or are encountering prohibitive barriers to participation. Before equity can be achieved it will be necessary to identify the barriers that are affecting female participation in agricultural mechanics.

Definitions

1) Non-traditional jobs: Jobs in which females make up less than twenty-five percent of the workforce.
2) Agricultural Mechanics: Agricultural education in the areas of construction and drafting, metallurgy, machining, electricity, power supply and transmission, plumbing, machine operation and woodworking.
3) Agricultural Mechanics Activity: Any activity that involves an agricultural mechanics skill; including instruction in the classroom or laboratory, a Supervised Agricultural Experience Program involved with mechanics, agricultural

mechanics exhibits at fair or expo, a FFA competitive Agricultural Mechanics event, or an Agricultural Mechanics educational workshop.

4) Supervised Agricultural Experience (SAE) programs: An exploratory, entrepreneurial, or placement program that allows agricultural education students to develop skills and occupational proficiency in an agricultural field.

Limitations

The following limitations were placed upon this research:

1) Only females in Montana secondary agricultural education programs who are FFA members and seniors in 1994-95 were surveyed;

3) Students from schools that did not turn in an FFA roster to the Montana State FFA Advisor will not be included in this study.

Assumptions

The following assumptions were made:

1) There are barriers to females participating in Montana secondary Agricultural Mechanics activities.

2) Opportunities to participate in Montana secondary agricultural mechanics are present and female students are not taking advantage of these opportunities.

3) Agriculture programs are adhering to the four-year core curriculum for agricultural education in Montana.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The Role of Agricultural Education

Federal funding for agricultural education in public schools was established when the Smith-Hughes National Vocational Education Act was passed in 1917. This act provided monies for organizing and maintaining vocational agricultural classes nationwide. Presently, agricultural education classes are offered in every state and funding from the federal government is provided through the Carl D. Perkins Vocational and Applied Technology Education Act of 1990.

Agricultural education is guided by the National Goals of Agricultural Education

1. To update instruction in agriculture and expand programs about agriculture.
2. To service all people and groups equally and without discrimination.
3. To amplify and expand the "whole person" concept of education, including leadership, personal and interpersonal skills.
4. To develop educational programs that continually and systematically respond to the trends and demands of the market place.
5. To provide the stimuli that will foster the spirit of free enterprise and develop creative entrepreneurship and innovation.
6. To provide leadership and cultivate strong partner ships in the total educational system.

7. To elevate and extend our standards of excellence in classroom and laboratory instruction, supervised experience and student organizations. (The National Council, 1990)

Agricultural education has remained a dynamic discipline, responding to the changing needs of society, the workforce, and students. The Report of the Montana Leadership Council for Agricultural Education defines agricultural education as

> A science, technology and leadership development program designed to provide instruction in traditional and nontraditional (high tech) opportunities in agriculture-an industry vital to mankind. Instruction should include knowledge of food and fiber production, processing, careers and employment opportunities, global production, domestic and international marketing and the history of the industry. Development of the whole person in central to the instructional process. Students should develop an understanding of agriculture and also develop competencies needed to enter and advance in careers such as agriculture production, agribusiness management and marketing, world agriculture trade, agricultural research and engineering, agriculture product processing, transportation and retailing, landscape design, timber harvesting and processing, natural resources management, horticulture, information management, education, mechanics and other fields. (1992, p. 2)

In an effort to keep Montana's Agricultural Education programs progressing, a core curriculum was developed following the recommendations of the Montana Leadership Council for agricultural education and the concerns of teachers in the field. The curriculum provides a comprehensive guide to the learner outcomes and specific

competencies which should be incorporated into every Montana agricultural education program.

The four years of agricultural education are designated as 9th grade: Fundamentals of Agricultural Resources, 10th grade: Foundations of Agricultural Resources, 11th grade: Utilization of Agricultural Resources and 12th grade: Management of Agricultural Resources. Each year is also broke down into four specific areas of instruction: Human Resource Development, Agricultural Physical Sciences, Financial Resources, and Agricultural Resources. Units which include skills applicable to non-traditional agricultural mechanics jobs for women are: Lab Equipment Safety and Management, Fabrication and Planning, Properties of Materials and Processing, Land Descriptions, Soils and Land Use, Metallurgy, Electricity and Electronics, Internal Combustion, Electric Motors, Transmission of Power, Material Fabrication and Repair, Alternative Energy Sources, Equipment Maintenance and Management, Agricultural Construction, and Skill Development Activities (Montana Agricultural Education Curriculum, 1994). In addition to the units offered in the core curriculum many schools offer specialized classes. Titles of these classes include Agricultural Welding, Small Engine Agricultural Power, Agricultural Construction and Carpentry, Agricultural Electricity, Agricultural Engineering, Agricultural Mechanics, Agricultural Woods, Power Trains, Agricultural

Technology, Farm Power and Agricultural Machine Shop (Vocational Enrollment Reports to OPI, 1993-94).

These agricultural education programs are offered in 66 schools across Montana. Five of these programs are multiple teacher programs varying from two to four person departments. The sixty-six programs are taught in all sizes of schools, from the largest Montana size ranking of Class AA to the smallest size ranking of Class C.

Although agricultural education has undergone many changes in its seventy-six years, the philosophy of vocational education remains firmly embedded in the curriculum. "Programs in agriculture continue to be successful in preparing students for the workforce" (Cheek, 1990, p. 47). "Vocational programs have been found to improve the employment outcomes... of others who find work in jobs related to their training, making these programs valuable routes to self-sufficiency and upward mobility" (Hudson, 1994, p. 79).

Gordon (1991), also noted that one barrier to women obtaining non-traditional occupations was the "limited information about non-traditional opportunities" (p. 45). Cheek (1990), reported that "outside of vocational education, little practical help is provided in the school setting to assist students with career exploration and decision making" (p. 52). Therefore, the role of agricultural education is important not only for the basic

skills training, but also for the opportunity for exposure to non-traditional careers.

Females in the Workforce

Women in American society have long been a part of the "invisible female labor force" (Lindenstien Walshok, 1981, p. xi). Females have contributed to the survival of American families and economies, from the Native American women to the European settlers. Some of the occupations outside the home performed by female settlers included innkeeping, operating printing presses, furniture construction, lace making, cloth production, barbers, stitching and town undertaker. "In spite of this impressive list, the work women did in their own homes far exceeded in economic importance the other jobs they held" (Wertheimer, 1977, p. 13).

As the colonies prospered and gained their freedom, the role of the woman worker was redefined. Traditional jobs such as mid-wifery and medicine were denied women because of the male-only schooling system. An original shortage in able-bodied male workers was relieved, and opportunities for women became limited to a very narrow range of employment possibilities; "notably clerical work, semi-skilled factory work and semi-skilled domestic work" (Dex, 1985, p.6).

Despite the limited opportunities, the percent of females seeking employment outside the home has grown

steadily throughout history. According to Weiner (1985), in 1870 females constituted fourteen percent of the total United States labor force. By 1930 this number had reached twenty-two percent and in 1980 females constituted 42 percent of the national workforce. By 1990 females comprised forty-five percent of the civilian labor force in Montana and fifty-five percent of all women were in the labor force (Montana Department of Labor and Industry, September 1994, p.5).

Regardless of their contributions, the visibility of females as a part of the workforce has been a newly developing phenomenon. In fact, "recognition of females as employees has been sudden, dating from the late 1960's onward" (Dex, 1981, p. 3). Although the recognition of female workers has increased awareness of related issues, according to Phyliss Wallace (1982), "despite the increase in the number and proportion of working women, the types of jobs that women hold and the income disparities that women experience have not changed significantly" (p. 153). Hudson also noted in the 1994 interim report to congress that;

> Most women will work during at least some portion of their adult lives; that women constitute a large and growing part of the labor force; that most women work out of necessity; and that in spite of all this, working women are concentrated in a few lower paying occupational areas (p. 195).

Non-traditional blue collar jobs offer some of the greatest opportunities for women. Blue collar jobs

represent a large portion of the labor force and the number of jobs available continues to increase each year. Many blue collar jobs pay better than white-collar jobs and offer excellent benefits as well as salary (O'Farrell, 1982). Gordon (1991), reported that "women in non-traditional jobs earn twenty to thirty percent more than women in traditional occupations" (p.41). O'Farrell (1982), also reported that "women who stay in non-traditional blue collar work report relatively high satisfaction with both increased pay and challenging work" (p.136).

Females in Agricultural Education

At the inception of agricultural education in 1917, vocational classes were designed for young men only. As modifications were made during the 1960's to the Vocational Education Act the need to allow female students access became increasingly apparent. In 1969, the Future Farmers of America chose to include females in its membership. The 1976 Vocational Education Act included "provisions to eliminate sex bias and sex stereotyping in vocational education" (Hudson, 1994, p.5).

During the 1993-94 school year there were a reported 3,759 students (duplicated numbers) enrolled in agricultural education classes in Montana. Of this population 911 were females, or approximately twenty-four percent. Many of the classes offered were specifically titled for agricultural

mechanics, as discussed previously. In these agricultural mechanics classes a total of 1047 students were enrolled, 112 were female. Therefore, the enrollment in agricultural mechanics classes was eleven percent female and eighty-nine percent male (Vocational Enrollment Reports to Montana Office of Public Instruction, 1993-94).

Of the 911 females in Montana agricultural education programs, 112 were enrolled in an agricultural mechanics class, or approximately twelve percent of females in agricultural education were enrolled in agricultural mechanics. In contrast, of the 2848 males in agricultural education in Montana, 935 were taking an agricultural mechanics class, or about thirty-three percent.

Even though all students enrolled in a general agricultural education class were exposed to a broad agricultural mechanics curriculum in the four year core curriculum, very few females chose to continue agricultural mechanics education in a specialized course.

The Perkins Act "seeks to foster the enrollment of students in vocational programs that are 'non-traditional' for their gender" (Hudson, 1994, p 107) because "increasing women's employment options is the underlying intent of vocational sex equity (Hudson, 1994, p 109). Enrolling students in agricultural education is an important step that can be taken to bridge the gender gap in non-traditional occupations. However, "some parents exert a negative

influence upon their daughters by reinforcing traditional sex-role stereotypes" (Vocational Equity Research Training and Evaluation Center, 1989, p. 37). Other obstacles are also present such as the perceptions of agricultural education as being for "white males from farms" (Scanlon, Yoder, Hoover, 1986).

Agricultural Mechanics as a Career for Females

Burnett and Venable (1986), reported that "Seventy percent of students make their occupational choice by the eleventh grade" (p. 178). However, O'Farrell (1982) stated that women become interested at a later age (p. 141). This trend and its impact on a non-traditional career is compounded by the fact that girls do not prepare for the labor market work to the same extent as boys (Hudson, 1994, p. 104).

Another barrier to mechanics as a career choice for females may be the concept of self-efficacy. Self-efficacy is a person's belief that they are capable of achieving or performing a given task. Kelly (1993), wrote that "for women career self-efficacy seems to have a greater influence on perceived career options" (p. 60) and that "college women had higher efficacy expectations for traditionally female occupations than for traditionally male occupations" (p. 59).

Burnett and Venable (1986), also stated that the most influential persons affecting students occupational plans

were the father and mother. O'Farrell (1982), commented that women who succeed in non-traditional jobs often report that they had experience or exposure unusual for a woman somewhere in their background (p. 141). In a 1981 study of women in blue collar occupations, Lindenstien Walshok (1981), also noted that one similarity among many successful females in traditional male jobs was some early exposure to tools and problem solving of a mechanical and technical nature (p. 194). For female students who come from families who encourage participation in traditional curriculum and discouraging non-traditional programs, overcoming barriers to participate in agricultural mechanics can be very difficult.

Despite the challenges, jobs in non-traditional blue collar fields can be very rewarding. According to the Montana Department of Labor and Industry the average salary for construction work is $23,962; manufacturing, $25,512; miscellaneous repair services, $18,837; and for occupations in communication, utilities, and transportation, $27,727; areas which are non-traditional and incorporate skills encountered in Agricultural Mechanics programs (Montana Annual Planning Information 1994-1995, 1994, pg 47). These high wages for non-traditional areas compare favorably to wages for the traditional areas for female employment. The average wage for a worker in Retail Trade is $11,902, for a worker in a Private Household is $8,865, for Hotels and

Lodging is $9,574, for Business Services is $13,116, and for Eating and Drinking Establishments is $7,642. In addition, employment opportunities in non-traditional areas are increasing in Montana. From 1987 to 1993 construction fields added 5100 workers, manufacturing added 1900 workers and transportation, communication and utilities added 700 employees (Montana Annual Planning Information 1994-95, June 1994).

Barriers to Participation

Barriers to participating in agricultural education, vocational education, and non-traditional education have been the target of concern by many in recent years. In order to achieve equity it is important to identify those barriers that limit opportunities.

A study conducted by the Vocational Equity Research, Training, and Evaluation Center identified many barriers to female participation in a vocational high school in Connecticut. The researchers reported "gender bias influences all aspects of vocational instruction" (1989, p 33). Specific barriers identified included: negative influence due to parental reinforcement of traditional sex-role stereotypes, differential treatment of females, different job expectations for females and males, expectations of prior experience, preferential treatment towards males, excluding females from favorable assignments,

expecting females to do clerical work as opposed to "shop" work, females had to "prove" themselves to male students, males students verbally harassed female students, few perceived job opportunities, lack of confidence in ability to perform skills, lack of support from guidance counselors, and a lack of recruitment.

Gordon (1991), identified several social and educational barriers to female participation in vocation education. These barriers include socialization to traditional female roles, unsupportive family and friends, negative attitudes of peers, lack of self-confidence, lack of female role models, lack of support for sex equity efforts by instructors and other personnel, and isolation in classrooms (1991).

Summary

Agricultural education is a dynamic component of vocational education, that offers many opportunities to students in Montana. Females make up 24% of the agricultural education enrollment in Montana. Agricultural mechanics, however, still remains largely male dominated. Agricultural mechanics education teaches basic skills and offers exposure to many career options. Many barriers have been identified that may stifle participation by females in agricultural mechanics education.

CHAPTER 3

METHODOLOGY

Population Description and Sampling Procedures

Population Description

The population in this study was comprised of girls enrolled in Montana Agricultural Education programs who were seniors during the 1994-95 school year, and were current FFA members. The National FFA Center provided a list of labels that included all students who were seniors in Montana Agricultural Education programs and had paid their FFA dues. Each agricultural education instructor who had students on the list was contacted to verify which of the students were girls and that they were seniors.

This process identified 123 students who met the parameters of the population definition. A census of the entire population was conducted.

Follow-Up Design

Each student was assigned a number on a master address list. This number was placed on the cover of their instrument and allowed the researcher to conduct follow-up mailings to those individuals who did not initially respond.

The Instrument

The instrument for this survey was designed by the researcher with the aid of a panel of experts. The instrument included questions for students who did participate in agricultural mechanics classes and those who did not participate. Instruments used in comparable studies were reviewed during the design process.

The instrument was a two-part instrument. Part one of the instrument also had two sub-sections. The first question of the instrument (Appendix B) asked students how long they had studied selected subjects in agricultural mechanics. If the response to question one indicated the student had not studied any areas of agricultural mechanics they were directed to proceed to question 19 and continue. If the student response indicated they had studied some aspects of agricultural mechanics they were directed to complete questions 2-18, and then go to question 31 and complete the rest of the instrument. Questions 2-17 asked students about their experiences in the agricultural mechanics classes and whether they had been supported in their study of agricultural mechanics. Questions 19-30 asked students who had not participated in agricultural mechanics about their perceptions of an agricultural mechanics class and their reasons for not enrolling in such a course. Questions 31-63 requested information about persons who had encouraged students to enroll in an

agricultural mechanics class, attitude toward mechanics, self-efficacy, employment expectations, and experiences with parents. All questions in part one of the instrument were answered on a Likert-type scale, numbered 1-7:

1-Strongly Disagree
2-Disagree
3-Mildly Disagree
4-Neither Agree or Disagree
5-Mildly Agree
6-Agree
7-Strongly Agree

Part two of the instrument requested demographic information from students. This information included information about where they live, their family, and their participation in leadership and other FFA activities. At the end of section 2 were three questions with open-ended response for general comments by the students.

Instrument Validation

A preliminary instrument was completed by 13 female students who were members of the Collegiate FFA Chapter or were enrolled in Agricultural Education classes at Montana State University-Bozeman. The instrument was personally given to the 13 students on March 28- April 30 and returned to researcher the same day.

The instrument and results from the preliminary test were reviewed by professors Margaret Briggs, C. Van Shelhamer, and Martin Frick. These individuals evaluated the instrument for clarity, readability, and relevance to

the research questions for this research project. After the review, the instrument was updated and prepared to be sent to the research population.

Data Collection Procedures

On April 18, 1995 a cover letter (Appendix A) and instrument (Appendix B) were mailed to the members of the targeted population. Students not responding were sent a post-card (Appendix C) on April 28, 1995. On May 10, 1995 a second instrument and cover letter (Appendix D) were mailed to non-responders. On May 1, 1995 a letter (Appendix E) was mailed to the agricultural education teachers in a packet from Montana State University-Bozeman, asking the teachers to encourage students to complete their instruments and return them. On May 19, 1995 an appropriate number of instruments and a cover letter (Appendix F) were mailed to each agricultural education department whose student(s) had not responded.

Thirty-three instruments were collected from the first mailing and post-card, 21 from the second mailing and 8 from the mailing to the teachers. Six instruments were returned with notes that the person did not belong in the population as defined, as well as one student identified by a phone call from the agriculture instructor to the researcher. With the 7 students removed, the population was 116 students. A total of 62 functional instruments were

returned, therefore, the useable return rate for the population was 54 percent.

Data Analysis

The data from the instruments were analyzed using Microsoft Excel, version 5.0. The data was entered as a database in Excel. Summary statistics were obtained by using Descriptive Statistics from the Data Analysis option of Excel. Frequency counts were obtained by running Histogram from the Data Analysis option of Excel. T-tests were run using the T-test: 2 sample with unequal variance from the Data Analysis option of Excel.

The instruments were divided into two groups based on response to question 1. These groups were: (1) students who had studied some curricula in agricultural mechanics (referred to as enrollees [e]), and (2) students who had not studied any curricula in agricultural mechanics (referred to as nonenrollees [ne]). The responses were further divided by the time of return. Early responders were those instruments received prior to May 10, 1995, late responders were received before May 19, 1995, and any responses received between May 19 and June 1 were categorized as late-late responders. All returns (10) that were nonenrolles were late responders. To determine whether enrollee responses from early, late, and late-late responders could be treated as one group, T-tests were run. The first T-test

for two samples assuming unequal variances was for the responses from late and late-late responders. T-tests on 78 questions were run between the groups and 2 questions showed a significant difference. These few differences out of such a large number of tests can be attributed to chance alone and was not considered to be significant. A second set of T-tests were run between enrollee early responders and all other enrollee returns. No significant differences were found.

CHAPTER 4

RESULTS OF THE STUDY

Introduction

The purpose of the study was to determine the perception of Montana 1994-95 senior female FFA members about selected barriers to participation in agricultural mechanics activities. These barriers include: (1) parental experience and attitudes, (2) agriculture instructor's attitudes, (3) relationships with other students, and (4) attitudes toward agricultural mechanics as a career.

The results of the study have been divided into several categories: (1) demographic data, (2) participation in agricultural mechanics activities, (3) support and encouragement from selected individuals, (4) perceptions of agriculture instructor's attitude toward females in agriculture education, (5) parental involvement in agricultural mechanics, (6) attitudes toward traditional and non-traditional careers, (7) attitudes toward agricultural mechanics as a career, (8) relationship with male students in agricultural mechanics activities.

Demographic Data

The respondents of this survey lived in a variety of situations as seen in Table 1. Of the students responding to the survey most were from farms and ranches (37) with the rest split between non-farm rural homes (14) and urban homes (11). The total number of respondents was 62.

Table 1. Frequency of response to location of student's home. (N=62)

Location of home	Frequency	%
farm or ranch	37	59.7
rural area	14	22.6
town or city	11	17.7

As seen in Table 2, a majority of students (36) reported attending school in towns with populations of less than 2,500. Fifteen students attended school in towns of 2500-10,000, 5 reported their school was in a town of 10,000-25,000, and 5 of the respondents attended schools in cities with populations larger than 25,000.

Table 2. Frequency of response to population of the town where students attended school. (N=62)

Population	Frequency	%
less than 2,500	36	50.0
2,500-10,000	15	24.2
10,000-25,000	5	8.1
more than 25,000	6	9.7

The data also show that respondents have lived in their communities for an extended period of time. The data in Table 3 show that 52 students had lived in their community for more than 10 years. Only one students indicated that she had lived in her community for less than 2 years.

Table 3. Frequency of response to number of years students lived in their community. (N=62)

Number of years	Frequency	%
0-2	1	1.6
2-5	2	3.2
5-10	7	11.3
more than 10	52	83.9

The students reported that 11 had no brothers, 34 had 1 brother, 13 had 2 brothers, and 4 had 3 or more brothers (Table 4). The data in Table 5 indicate 19 students reported they had no sisters, 28 reported having 1 sister, 11 reported having 2 sisters, and 4 students reported having 3 or more sisters. The data in Table 6 show 46 students reported their family included a mother and father, 5 students reported a mother and stepfather, 2 students reported a father and stepmother, 6 students reported living with only their mother, and 2 students reported their family as other.

The data in Table 7 show that 7 students had been FFA members for 1 year, 8 students had been members for 2 years,

Table 4. Frequency of response to student's number of brothers. (N=62)

Number of brothers	Frequency	%
0	11	17.7
1	34	54.8
2	13	21.0
3 or more	4	6.5

Table 5. Frequency of response to student's number of sisters. (N=62)

Number of sisters	Frequency	%
0	19	30.7
1	28	45.2
2	11	17.7
3 or more	4	1.6

Table 6. Frequency of response to student's current family unit. (n=61)

Family description	Frequency	%
mother and father	46	74.2
mother and stepfather	5	8.1
stepmother and father	2	3.2
mother	6	9.7
father	0	0.0
other	2	3.2

8 students had been members for 3 years, and 39 (62.9%) students had been FFA members for 4 years.

Table 7. Frequency of response to number of years students have been FFA members. (N=62)

Number of years	Frequency	%
1	7	11.3
2	8	12.9
3	8	12.9
4	39	62.9

Participation in Agricultural Mechanics Activities

As seniors, and with multiple years of participation in FFA for most respondents, students should have had many opportunities to participate in agricultural mechanics activities inside and outside the classroom. Two questions were asked of the students to determine their activities in agricultural mechanics.

The amount of time spent studying agricultural education is illustrated in Table 8. Participation for less than 1 semester indicates the curricula was taught inside another class, not as a separate course. For example, an instructor may teach a unit about general agricultural mechanics in an Agriculture 1 course, that lasts 6 weeks. The curriculum studied by the most students were carpentry and welding. The least studied curricula was electricity. The mode for all responses was students not studying the curricula. These data indicated that as many as 24.2% (15)

students studied welding and general mechanics for at least a semester. This might be contradictory to research showing that sex stereotyping is increased as coursework becomes more concentrated (Hudson, 1994).

Table 8. Frequency of response to how much time students spent studying selected curricula in agricultural mechanics. (N=62)

Course	Frequency					
	none	less than 3 weeks	3-6 weeks	6-9 weeks	quarter	semester
	n %	n %	n %	n %	n %	n %
carpentry	17 (27.4)	15 (24.2)	3 (4.8)	7 (11.3)	8 (12.9)	12 (19.4)
welding/metals	16 (25.8)	9 (14.5)	5 (8.1)	9 (14.5)	8 (12.9)	15 (24.2)
electricity	25 (40.3)	15 (24.2)	6 (9.7)	5 (8.1)	6 (9.7)	5 (8.1)
engine repair	23 (37.1)	16 (25.8)	6 (9.7)	2 (3.2)	7 (11.3)	8 (12.9)
general mechanics	21 (33.9)	8 (12.9)	9 (14.5)	3 (4.8)	6 (9.7)	15 (24.2)

Participation in agricultural mechanics also occurs outside the classroom, in activities such as Supervised Agricultural Experience programs, workshops and competitive events through FFA. Table 9 shows the highest level of participation in agricultural mechanics contests. The possible levels were local, district, state and national. A total of 32.3% (11.3 + 21.0) of respondents had participated in an agricultural mechanics contest. No respondents indicated participation above the district level.

Table 9. Frequency of response to highest level of participation in agricultural mechanics contests. (N=62)

	Level of Participation				
	none	local	district	state	national
Frequency (%)	42 (67.7)	7 (11.3)	13 (21.0)	0 (0.0)	0 (0.0)

Encouragement and Support from Selected Individuals

The data for the balance of the results contain frequencies from Likert-type scales. Conventions used to describe data were 1-1.49, strongly disagree; 1.50-2.49, disagree; 2.50-3.49, mildly disagree; 3.50-4.49, neither agree or disagree; 4.50-5.49, mildly agree; 5.50-6.49, agree; 6.50-7.00, strongly agree.

The data in Table 10 indicated that students who did study some curricula in agricultural mechanics mildly agreed that mothers, friends, and guidance counselors were supportive of their involvement, means ranged from 4.48-5.67. There was one mean for guidance counselors at 4.48, and two means for mothers at 5.53 and 5.67, that fell outside the range of mildly agree. Between 28.9% and 54.8% of the students indicated they neither agreed or disagreed that their guidance counselor had supported their studying agricultural mechanics. Students either agreed or mildly agreed they were supported by their fathers and agriculture instructors. Between 42.2% and 57.4% of students strongly agreed they had been supported by their agriculture

Table 10. Frequency, mean and standard deviation of response to support from various individuals for studying selected agricultural mechanics curriculum.

Individual and classes	N	Frequency 1 n	%	2 n	%	3 n	%	4 n	%	5 n	%	6 n	%	7 n	%	Mean	SD
My father/male guardian has supported my studying:																	
carpentry	47	0	(0.0)	1	(2.1)	2	(4.3)	11	(23.4)	3	(6.4)	12	(25.5)	18	(38.3)	5.64	1.42
metals/welding	47	1	(2.1)	2	(4.3)	0	(0.0)	14	(29.8)	3	(6.4)	8	(17.0)	19	(40.4)	5.47	1.63
electricity/wiring	42	1	(2.4)	1	(2.4)	1	(2.4)	14	(33.3)	3	(7.1)	10	(23.8)	12	(28.6)	5.26	1.55
engine repair/maintenance	40	0	(0.0)	3	(7.5)	0	(0.0)	12	(30.0)	2	(5.0)	10	(25.0)	15	(37.5)	5.45	1.56
general agricultural mechanics	45	0	(0.0)	0	(0.0)	1	(2.2)	11	(24.4)	2	(4.4)	12	(26.7)	19	(42.2)	5.82	1.28
My mother/female guardian has supported my studying:																	
carpentry	47	2	(4.3)	0	(0.0)	0	(0.0)	13	(27.7)	4	(8.5)	10	(21.3)	18	(38.3)	5.53	1.57
metals/welding	43	2	(4.7)	1	(2.3)	0	(0.0)	16	(37.2)	4	(9.3)	6	(14.0)	18	(41.9)	5.32	1.68
electricity/wiring	42	1	(2.4)	1	(2.4)	0	(0.0)	15	(35.7)	5	(11.9)	9	(21.4)	11	(26.2)	5.21	1.49
engine repair/maintenance	42	2	(4.8)	0	(0.0)	0	(0.0)	13	(31.0)	2	(4.8)	11	(26.2)	14	(33.3)	5.43	1.59
general agricultural mechanics	45	1	(2.2)	0	(0.0)	0	(0.0)	13	(28.8)	3	(6.7)	9	(20.0)	19	(42.2)	5.67	1.46
My male friends have supported my studying:																	
carpentry	47	1	(2.1)	3	(6.4)	1	(2.1)	12	(25.5)	10	(21.3)	8	(17.0)	12	(25.5)	5.11	1.58
metals/welding	47	1	(2.1)	2	(4.4)	3	(4.8)	10	(21.3)	11	(23.4)	8	(17.0)	12	(25.5)	5.13	1.56
electricity/wiring	41	2	(4.9)	3	(7.3)	2	(4.9)	11	(26.8)	7	(17.1)	8	(19.5)	8	(19.5)	4.80	1.71
engine repair/maintenance	42	1	(2.4)	3	(7.1)	4	(9.5)	5	(11.9)	10	(23.8)	8	(19.0)	11	(19.5)	5.10	1.68
general agricultural mechanics	45	0	(0.0)	2	(4.4)	2	(4.4)	7	(15.6)	12	(26.7)	7	(15.6)	15	(33.3)	5.44	1.44

Table 10. Frequency, mean and standard deviation of response to support from various individuals for studying selected agricultural mechanics curriculum. (continued)

Individual and classes	N	Frequency 1	2	3	4	5	6	7	Mean	SD
My female friends have supported my studying:										
carpentry	47	1 (2.1)	0 (0.0)	3 (6.4)	15 (31.9)	8 (17.0)	12 (25.5)	8 (17.0)	5.06	1.37
metals/welding	47	0 (0.0)	1 (2.1)	3 (6.4)	13 (27.7)	9 (19.1)	10 (21.3)	11 (23.4)	5.21	1.37
electricity/wiring	42	0 (0.0)	1 (2.4)	4 (9.5)	12 (28.6)	11 (26.2)	8 (19.0)	6 (14.3)	4.93	1.30
engine repair/maintenance	42	0 (0.0)	1 (2.4)	5 (11.9)	10 (23.8)	9 (21.4)	9 (21.4)	8 (19.0)	5.05	1.40
general agricultural mechanics	42	0 (0.0)	0 (0.0)	3 (6.7)	14 (31.1)	8 (19.0)	9 (20.0)	11 (24.4)	5.24	1.32
My agriculture instructor has supported my studying:										
carpentry	46	3 (6.5)	1 (2.2)	2 (4.3)	5 (10.9)	3 (6.5)	9 (19.7)	24 (52.2)	5.70	1.82
metals/welding	47	3 (6.4)	2 (4.3)	1 (2.1)	5 (10.6)	1 (2.1)	8 (17.0)	27 (57.4)	5.79	1.88
electricity/wiring	42	3 (7.1)	2 (4.8)	1 (2.4)	5 (11.9)	2 (4.8)	8 (19.0)	21 (50.0)	5.60	1.93
engine repair/maintenance	42	0 (0.0)	2 (4.8)	2 (4.8)	5 (11.9)	2 (4.8)	5 (11.9)	23 (54.8)	5.57	1.99
general agricultural mechanics	45	2 (4.4)	0 (0.0)	1 (2.2)	11 (24.4)	2 (4.4)	12 (26.7)	19 (42.2)	5.78	1.83
My guidance counselor has supported my studying:										
carpentry	47	3 (6.4)	1 (2.1)	0 (0.0)	23 (48.9)	1 (2.1)	9 (19.1)	9 (19.1)	4.70	1.68
metals/welding	47	4 (8.5)	1 (2.1)	0 (0.0)	23 (48.9)	1 (2.1)	7 (14.9)	11 (23.4)	4.72	1.77
electricity/wiring	42	4 (9.5)	5 (11.9)	0 (0.0)	23 (54.8)	2 (4.8)	4 (9.5)	8 (19.0)	4.48	1.71
engine repair/maintenance	42	2 (4.8)	3 (7.1)	0 (0.0)	13 (31.0)	2 (4.8)	11 (26.2)	14 (33.3)	4.57	1.68
general agricultural mechanics	45	1 (2.2)	3 (6.7)	0 (0.0)	13 (28.9)	3 (6.7)	9 (20.0)	19 (42.2)	4.76	1.69

instructors, however, as many as 31.0% (4.4 + 0.0 + 2.2+ 24.4) of students did not agree to any degree that they had been supported by their agriculture instructor.

There were large differences in perceptions of encouragement to enroll from students who had studied and those who hadn't studied as documented in Tables 11-16. Students who had not studied any area in agricultural education disagreed they had been encouraged by the selected individuals to study agricultural mechanics; means ranged from 2.67-3.33. The only exception was a 3.56 mean (mildly disagree) for father's encouragement to study engine repair and maintenance. With that exception, all data show that 80% to 90% (8 or 9) of the students who had not studied any agricultural mechanics curricula did not agree to any degree that they had received encouragement to study agricultural mechanics curricula from the selected individuals.

Students who had studied some curricula in agricultural mechanics neither agreed or disagreed, means ranged from 4.18-4.44, that female friends (Table 14) and guidance counselors (Table 16) encouraged their enrollment in agricultural mechanics curriculum, except for female friends encouragement of general mechanics, with which they mildly agreed (mean = 4.74). This same group reported mildly agreeing that fathers, mothers, and agriculture instructors had encouraged enrolling in agricultural mechanics curriculum.

Table 11. Frequency, mean and standard deviation of response to encouragement from father for studying selected agricultural mechanics curriculum.

Individual and classes		N	Frequency 1 n	%	2 n	%	3 n	%	4 n	%	5 n	%	6 n	%	7 n	%	Mean	SD
Father/male guardian has encouraged enrolling in:																		
carpentry	(e)*	46	2	(4.3)	1	(2.2)	0	(0.0)	14	(30.4)	3	(6.5)	14	(30.4)	12	(26.1)	5.28	1.59
	(ne)**	10	4	(40.0)	0	(0.0)	1	(10.0)	4	(40.0)	0	(0.0)	0	(0.0)	1	(10.0)	3.00	2.00
welding	(e)	48	2	(4.2)	1	(2.1)	1	(2.1)	13	(27.1)	4	(8.3)	13	(27.1)	14	(29.2)	5.31	1.61
	(ne)	9	4	(44.4)	1	(11.1)	0	(0.0)	2	(22.2)	0	(0.0)	1	(11.1)	1	(11.1)	3.00	2.35
electricity	(e)	44	2	(4.5)	1	(2.3)	1	(2.3)	17	(38.6)	3	(6.8)	10	(22.7)	10	(22.7)	5.00	1.61
	(ne)	9	4	(44.4)	1	(11.1)	0	(0.0)	2	(22.2)	0	(0.0)	1	(11.1)	1	(11.1)	3.00	2.35
engine repair	(e)	45	1	(2.2)	2	(4.4)	1	(2.2)	13	(28.9)	3	(6.7)	11	(24.4)	14	(31.1)	5.31	1.61
	(ne)	9	3	(33.3)	1	(11.1)	0	(0.0)	2	(22.2)	1	(11.1)	0	(0.0)	2	(22.2)	3.56	2.46
general mech.	(e)	47	1	(2.1)	1	(2.1)	1	(2.1)	11	(21.3)	7	(14.9)	10	(21.3)	16	(34.0)	5.47	1.50
	(ne)	9	3	(33.3)	2	(22.2)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.89	2.03

*(e)-students who studied some agricultural mechanics curriculum
**(ne)-students who had not studied any agricultural mechanics curriculum.

Table 12. Frequency, mean and standard deviation of response to encouragement from mother to enroll in selected agricultural mechanics curriculum.

			Frequency																	
		N	1		2		3		4		5		6		7		Mean	SD		
			n	%	n	%	n	%	n	%	n	%	n	%	n	%				
Mother/female guardian encouraged enrolling in:																				
carpentry	(e)*	46	2	(4.3)	1	(2.2)	0	(0.0)	19	(41.3)	2	(4.3)	8	(17.4)	14	(30.4)	5.13	1.66		
	(ne)**	10	5	(50.0)	0	(0.0)	0	(0.0)	4	(40.0)	0	(0.0)	0	(0.0)	1	(10.0)	2.82	2.10		
welding	(e)	48	2	(4.2)	1	(2.1)	0	(0.0)	17	(35.4)	5	(10.4)	8	(16.7)	15	(31.3)	5.21	1.62		
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18		
electricity	(e)	44	2	(4.5)	1	(2.3)	0	(0.0)	21	(47.7)	1	(2.3)	6	(13.6)	13	(29.5)	5.00	1.67		
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18		
engine repair	(e)	45	2	(4.4)	1	(2.2)	0	(0.0)	18	(40.0)	3	(6.7)	6	(13.3)	15	(33.3)	5.16	1.68		
	(ne)	9	4	(44.4)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	2	(22.2)	3.33	2.50		
general mechanics	(e)	47	1	(2.1)	1	(2.1)	0	(0.0)	18	(38.3)	3	(6.4)	7	(14.9)	17	(36.2)	5.34	1.56		
	(ne)	9	4	(44.4)	1	(11.1)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.78	62.11		

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied any agricultural mechanics

Table 13. Frequency, mean and standard deviation of response to encouragement from male friends to enroll in selected agricultural mechanics curriculum.

			Frequency																					
		N	1		2		3		4		5		6		7		Mean	SD						
			n	%	n	%	n	%	n	%	n	%	n	%	n	%								
Male friends have encouraged enrolling in:																								
carpentry	(e)*	46	1	(2.2)	1	(2.2)	0	(0.0)	18	(39.1)	3	(6.5)	7	(15.2)	17	(37.0)	4.74	1.34						
	(ne)**	10	5	(50.0)	0	(0.0)	0	(0.0)	4	(40.0)	0	(0.0)	0	(0.0)	1	(10.0)	2.80	2.10						
welding	(e)	48	2	(4.2)	2	(4.2)	0	(0.0)	20	(41.7)	5	(10.4)	11	(22.9)	8	(16.7)	4.85	1.54						
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18						
electricity	(e)	45	1	(2.2)	2	(4.4)	3	(6.7)	21	(46.7)	4	(8.9)	7	(15.6)	6	(13.3)	4.59	1.45						
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18						
engine repair	(e)	46	2	(4.3)	3	(6.5)	0	(0.0)	14	(30.4)	12	(26.1)	6	(13.0)	9	(19.6)	4.85	1.59						
	(ne)	9	4	(44.4)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	2	(22.2)	3.33	2.50						
general mech.	(e)	47	1	(2.1)	2	(4.3)	1	(2.1)	16	(34.0)	9	(19.1)	7	(14.9)	11	(23.4)	5.02	1.52						
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18						

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-who had not studied agricultural mechanics.

Table 14. Frequency, mean, and standard deviation of response to encouragement from female friends to enroll in selected agricultural mechanics curriculum.

			Frequency								
		N	1	2	3	4	5	6	7	Mean	SD
			n %	n %	n %	n %	n %	n %	n %		
My female friends have encouraged me to enroll in:											
carpentry	(e)*	46	3 (6.5)	0 (0.0)	3 (6.5)	23 (50.0)	8 (17.4)	6 (13.0)	3 (6.5)	4.37	1.36
	(ne)**	10	5 (50.0)	0 (0.0)	0 (0.0)	4 (40.0)	0 (0.0)	0 (0.0)	1 (10.0)	2.80	2.10
welding	(e)	48	4 (8.3)	0 (0.0)	3 (6.3)	22 (45.8)	8 (16.7)	5 (10.4)	6 (12.5)	4.44	1.54
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	2 (22.2)	0 (0.0)	1 (11.1)	1 (11.1)	2.89	2.42
electricity	(e)	44	3 (6.8)	1 (2.3)	3 (6.8)	24 (54.5)	6 (13.6)	3 (6.8)	4 (9.1)	4.23	1.41
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	3 (33.3)	0 (0.0)	0 (0.0)	1 (11.1)	2.67	2.18
engine repair	(e)	46	4 (8.7)	0 (0.0)	5 (10.9)	19 (41.3)	7 (15.2)	4 (8.7)	7 (15.2)	4.41	1.63
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	2 (22.2)	0 (0.0)	1 (11.1)	1 (11.1)	2.89	2.42
general mech.	(e)	47	2 (4.3)	0 (0.0)	1 (2.1)	24 (51.1)	5 (10.6)	8 (17.0)	7 (14.9)	4.74	1.42
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	3 (33.3)	0 (0.0)	0 (0.0)	1 (11.1)	2.67	2.18

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-who had not studied agricultural mechanics.

Table 15. Frequency, mean and standard deviation of response to encouragement from agriculture instructors to enroll in selected agricultural mechanics curriculum.

			Frequency								
		N	1	2	3	4	5	6	7	Mean	SD
			n %	n %	n %	n %	n %	n %	n %		
Agriculture instructor encouraged enrolling in:											
carpentry	(e)*	47	5 (10.6)	1 (2.1)	0 (0.0)	10 (21.3)	6 (12.8)	9 (19.1)	16 (34.0)	5.17	1.93
	(ne)**	10	5 (50.0)	0 (0.0)	0 (0.0)	4 (40.0)	0 (0.0)	0 (0.0)	1 (10.0)	2.80	2.10
welding	(e)	49	5 (10.2)	1 (2.0)	1 (2.0)	8 (16.3)	5 (10.2)	10 (20.4)	19 (38.8)	5.31	1.95
	(ne)	9	4 (44.4)	0 (0.0)	1 (11.1)	2 (22.2)	1 (11.1)	0 (0.0)	1 (11.1)	3.00	2.18
electricity	(e)	45	5 (11.1)	1 (2.2)	0 (0.0)	14 (31.1)	4 (8.9)	5 (11.1)	16 (35.6)	5.00	1.98
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	2 (22.2)	1 (11.1)	0 (0.0)	1 (11.1)	2.78	2.28
engine repair	(e)	46	5 (10.9)	2 (4.3)	0 (0.0)	8 (17.4)	5 (10.9)	8 (17.4)	18 (39.1)	5.22	2.02
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	2 (22.2)	1 (11.1)	0 (0.0)	1 (11.1)	2.78	2.28
general mech.	(e)	47	4 (8.5)	1 (2.1)	0 (0.0)	8 (17.0)	6 (12.8)	9 (19.1)	19 (40.4)	5.43	1.85
	(ne)	9	5 (55.5)	0 (0.0)	0 (0.0)	2 (22.2)	1 (11.1)	0 (0.0)	1 (11.1)	2.78	2.28

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-who had not studied agricultural mechanics.

Table 16. Frequency, mean and standard deviation of response to encouragement from guidance counselors to enroll in selected agricultural mechanics curriculum.

			Frequency													
		N	1		2		3		4		5		6		7		Mean	SD
			n	%	n	%	n	%	n	%	n	%	n	%	n	%		
Guidance counselor has encouraged enrolling in:																		
carpentry	(e)*	47	4	(8.5)	3	(6.4)	0	(0.0)	26	(55.3)	2	(4.3)	7	(14.9)	5	(10.6)	4.28	1.61
	(ne)**	10	5	(50.0)	0	(0.0)	0	(0.0)	4	(40.0)	0	(0.0)	0	(0.0)	1	(10.0)	2.80	2.10
welding	(e)	49	4	(8.2)	3	(6.1)	1	(2.0)	24	(49.0)	3	(6.1)	6	(12.2)	8	(16.3)	4.41	1.71
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	2	(22.2)	0	(0.0)	1	(11.1)	1	(11.1)	2.89	2.42
electricity	(e)	45	4	(8.9)	3	(6.7)	0	(0.0)	26	(57.8)	3	(6.7)	4	(8.9)	5	(11.1)	4.18	1.59
	(ne)	9	4	(44.4)	1	(11.1)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.78	2.11
engine repair	(e)	46	4	(8.7)	3	(6.5)	0	(0.0)	24	(52.2)	3	(6.5)	5	(10.9)	7	(15.2)	4.35	1.69
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18
general mech.	(e)	47	3	(6.4)	3	(6.4)	0	(0.0)	27	(57.4)	3	(6.4)	5	(10.6)	6	(12.8)	4.34	1.55
	(ne)	9	5	(55.5)	0	(0.0)	0	(0.0)	3	(33.3)	0	(0.0)	0	(0.0)	1	(11.1)	2.67	2.18

*(e)-students who had studied some agricultural mechanics curricula

**(ne)-students who had not studied agricultural mechanics

For all students together, large portions reported a 4 or less for encouragement from selected individuals. The fewest number of students marking 4 or less was in agriculture instructors encouragement to enroll in engine repair/maintenance where 21.5% (0.0 + 4.8 + 4.8 +11.9) of respondents neither agreed or disagreed, or disagreed to some extent. Students response to guidance counselors encouragement to enroll in carpentry showed that 76.2% (9.5 + 11.9 + 0 + 54.8) of the students marked 4 or lower.

Perceptions of Instructor's Attitudes

The data from Table 17 indicated students who have studied an agricultural mechanics curriculum mildly agreed the instructor made the mechanics lab a welcome environment for all students (5.40) and that all students were graded to the same level (5.37). The students also reported disagreeing that females aren't allowed to do as much as male students (2.49) and that the instructor favors males over females (2.46). The mode for all positive statements was 6 or 7. The mode for all negative statements was 1. However, as many as 58.8% (21.6 + 17.6 + 9.8 + 9.8) reported not disagreeing with the statement the that instructor was more protective of females. Also in response to the statement that females were more likely to do paperwork or monitor tool checkout, 42.3% (11.5 + 13.5 +3.8 + 13.5) of respondents did not disagree. The data in Table 17 showed

Table 17. Frequency, mean and standard deviation of student's response to agricultural instructor's attitude toward students in agricultural mechanics.

Attitudes		N	Frequency 1 n	%	2 n	%	3 n	%	4 n	%	5 n	%	6 n	%	7 n	%	Mean	SD
The lab is made a welcome environment for all students.	(e)*	52	5	(9.6)	2	(3.8)	2	(3.8)	4	(7.7)	5	(9.6)	13	(21.0)	21	(33.9)	5.40	1.97
	(ne)**	10	0	(0.0)	0	(0.0)	0	(0.0)	2	(20.0)	5	(50.0)	0	(0.0)	3	(30.0)	5.40	1.17
All students are graded to the same standards	(e)	52	4	(7.7)	2	(3.8)	4	(7.7)	4	(7.7)	6	(11.5)	11	(21.2)	21	(40.4)	5.37	1.93
	(ne)	10	1	(10.0)	1	(10.0)	1	(10.0)	0	(0.0)	2	(20.0)	2	(20.0)	3	(30.0)	4.90	2.18
Instructor has similar expectations for all students.	(e)	52	8	(15.4)	1	(1.9)	8	(15.4)	1	(1.9)	3	(3.8)	16	(30.8)	15	(28.8)	4.88	2.19
	(ne)	10	2	(20.0)	2	(20.0)	0	(0.0)	1	(10.0)	2	(20.0)	1	(10.0)	2	(20.0)	4.00	2.36
Instructor is more protective of females than males	(e)	51	15	(29.4)	6	(11.8)	0	(0.0)	11	(21.6)	9	(17.6)	5	(9.8)	5	(9.8)	3.55	2.11
	(ne)	10	2	(20.0)	1	(10.0)	0	(0.0)	2	(20.0)	0	(0.0)	3	(30.0)	2	(20.0)	4.40	2.67
Females are more likely to do paperwork or monitor tool checkout	(e)	52	21	(40.4)	7	(13.5)	1	(1.9)	6	(11.5)	7	(13.5)	3	(3.8)	7	(13.5)	3.15	2.27
	(ne)	10	2	(20.0)	0	(0.0)	2	(20.0)	2	(20.0)	3	(30.0)	0	(0.0)	1	(10.0)	3.80	1.87
Female students are given different tasks than male students	(e)	52	23	(44.2)	5	(9.6)	4	(7.7)	3	(5.8)	5	(9.6)	5	(9.6)	7	(13.5)	3.10	2.33
	(ne)	10	2	(20.0)	3	(30.0)	0	(0.0)	2	(20.0)	2	(20.0)	0	(0.0)	1	(10.0)	3.30	2.00
Females aren't allowed to do as much as male students.	(e)	51	25	(49.0)	8	(15.4)	5	(9.6)	4	(7.7)	3	(5.9)	2	(3.9)	4	(7.7)	2.49	1.96
	(ne)	10	3	(30.0)	1	(10.0)	1	(10.0)	2	(20.0)	2	(20.0)	0	(0.0)	1	(10.0)	3.30	2.06
Instructor favors males over females	(e)	52	25	(48.1)	9	(17.3)	7	(13.5)	3	(5.8)	0	(0.0)	4	(7.7)	4	(7.7)	2.46	1.97
	(ne)	10	2	(20.0)	1	(10.0)	1	(10.0)	2	(20.0)	1	(10.0)	1	10.0)	2	(20.0)	4.00	2.26

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied agricultural mechanics

that, at a minimum, 21.2% (5.8 + 0.0 + 7.7 + 7.7) ofrespondents did not disagree with negatively worded questions or agree with positively worded questions.

Parental Involvement in Agricultural Mechanics

The data in Table 18 indicated that students agreed they had seen their father performing agricultural mechanics skills, whether they had studied agricultural mechanics curriculum (mean of 6.49) or they had not studied any mechanics curricula (mean of 6.10). Students who hadn't studied an agricultural mechanics curricula mildly agreed the lab was made a welcome environment for all student (5.4), however 80% (50 + 0 + 30) responded 5 or higher. These students mildly disagreed that female students are given different jobs than male students and that females aren't allowed to do as much as male students in the mechanics lab (mean of 3.3 for both statements). Agricultural mechanics curriculum (mean of 6.10). The 70.6% (51.0 + 11.8 + 7.8) of enrolled students and 60% (60 +0 + 0) of non-enrolled students also disagreed to some extent that their mother had a career in agricultural mechanics. Responses from students who had not studied any agricultural mechanics curricula indicated that 60% (10 + 10 + 40) agreed to some extent that their father had a career in

Table 18. Frequency, mean, and standard deviation of response to mother's and father's experience in agricultural mechanics.

Experience		N	Frequency 1 n %	2 n %	3 n %	4 n %	5 n %	6 n %	7 n %	Mean	SD
Have seen father perform ag mechanics skills	(e)*	51	2 (3.9)	0 (0.0)	0 (0.0)	1 (2.0)	1 (2.0)	9 (17.6)	38 (74.5)	6.49	1.27
	(ne)**	10	1 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (10.0)	1 (10.0)	7 (70.0)	6.10	1.91
Have seen mother perform ag mechanics skills	(e)	51	7 (13.7)	2 (3.9)	3 (5.9)	4 (7.8)	12 (23.5)	6 (11.8)	17 (33.3)	4.92	2.10
	(ne)	10	2 (20.0)	0 (0.0)	1 (10.0)	2 (3.9)	0 (0.0)	2 (20.0)	3 (30.0)	4.60	2.37
Father encouraged student to help with mechanics skills	(e)	51	6 (11.8)	1 (2.0)	0 (0.0)	5 (9.8)	6 (11.8)	11 (21.6)	22 (43.1)	5.45	1.99
	(ne)	10	2 (20.0)	1 (10.0)	0 (0.0)	1 (10.0)	0 (0.0)	2 (20.0)	4 (40.0)	4.80	2.57
Mother encouraged student to help with mechanics skills	(e)	51	4 (7.8)	0 (0.0)	1 (2.0)	11 (21.6)	6 (11.8)	11 (21.6)	18 (35.3)	5.35	1.76
	(ne)	10	2 (20.0)	1 (10.0)	0 (0.0)	1 (10.0)	1 (10.0)	1 (10.0)	4 (40.0)	4.70	2.54
Father has a career in agricultural mechanics	(e)	51	16 (31.4)	1 (2.0)	2 (3.9)	7 (13.7)	8 (15.7)	2 (3.9)	15 (29.4)	4.10	2.45
	(ne)	10	2 (20.0)	1 (10.0)	0 (0.0)	1 (10.0)	1 (10.0)	1 (10.0)	4 (40.0)	2.90	2.51
Mother has a career in agricultural mechanics	(e)	51	26 (51.0)	6 (11.8)	4 (7.8)	8 (15.7)	3 (5.9)	2 (3.9)	2 (3.9)	2.41	1.80
	(ne)	10	6 (60.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (20.0)	1 (10.0)	1 (10.0)	1.20	0.43

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied agricultural mechanics

agricultural mechanics. The data from both groups of respondents show that they mildly agreedtheir father and mother had encouraged them to help with mechanics skills.

Attitude Toward Traditional and Non-traditional Careers

Some research indicated that women who were successful in non-traditional blue collar jobs often had experience unusual for a woman in their background. However, the students who had participated in agricultural mechanics curriculum indicated that 78.5% (2.0 + 15.7 + 60.8) of their fathers and 58.8% (9.8 + 9.8 + 39.2) of their mothers had traditional occupations for their gender, as reported in Table 19. Data from Table 19 also indicated that of respondents who had studied some agricultural mechanics 40% (18 + 12 + 10) would enjoy a traditional male career. Those females who hadn't studied any agricultural mechanics reported that 44.4% (22.2 + 0 + 22.2) would enjoy a traditional female career.

Attitudes Toward Agricultural Mechanics

The data from Table 20 indicated that students, whether they had or had not studied agricultural mechanics curriculum, agreed they could learn how to perform basic agricultural mechanics skills (means of 6.53 and 5.50

Table 19. Frequency, mean and standard deviation of response to traditional careers for males and females.

		N	Frequency 1 n %	2 n %	3 n %	4 n %	5 n %	6 n %	7 n %	Mean	SD
Father thinks females should work in traditional occupations.	(e)*	51	23 (45.1)	6 (11.8)	5 (9.8)	9 (17.6)	3 (5.9)	2 (3.9)	3 (5.9)	2.63	1.89
	(ne)**	10	5 (50.0)	2 (20.0)	0 (0.0)	3 (30.0)	0 (0.0)	0 (0.0)	0 (0.0)	2.10	1.37
Mother thinks females should work in traditional occupations.	(e)	51	25 (49.0)	3 (5.9)	7 (13.7)	9 (17.6)	3 (5.9)	0 (0.0)	4 (7.8)	2.57	1.89
	(ne)	10	4 (40.0)	0 (0.0)	0 (0.0)	4 (40.0)	1 (10.0)	1 (10.0)	0 (0.0)	3.10	1.91
Father has a typical male occupation.	(e)	51	3 (5.9)	1 (2.0)	1 (2.0)	6 (11.8)	1 (2.0)	8 (15.7)	31 (60.8)	5.92	1.76
	(ne)	10	1 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (40.0)	5 (50.0)	6.00	1.83
Mother has a typical female occupation.	(e)	51	7 (13.7)	4 (7.8)	4 (7.8)	6 (11.8)	5 (9.8)	5 (9.8)	20 (39.2)	4.82	2.25
	(ne)	10	2 (20.0)	0 (0.0)	1 (10.0)	1 (10.0)	1 (10.0)	3 (30.0)	2 (20.0)	4.60	2.27
Would enjoy a traditional female career.	(e)	50	19 (38.0)	4 (8.0)	4 (8.0)	12 (24.0)	4 (8.0)	3 (6.0)	4 (8.0)	3.06	2.01
	(ne)	9	2 (22.2)	2 (22.2)	0 (0.0)	1 (11.1)	2 (22.2)	0 (0.0)	2 (22.2)	3.78	2.37
Would enjoy a traditional male career.	(e)	50	12 (24.0)	1 (2.0)	1 (2.0)	16 (32.0)	9 (18.0)	6 (12.0)	5 (10.0)	3.94	1.97
	(ne)	9	1 (11.1)	1 (11.1)	1 (11.1)	3 (33.3)	0 (0.0)	1 (11.1)	2 (22.2)	4.22	2.11

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied agricultural mechanics.

Table 20. Frequency, mean and standard deviation of response to views of agricultural mechanics.

Attitude		N	Frequency 1 n	%	2 n	%	3 n	%	4 n	%	5 n	%	6 n	%	7 n	%	Mean	SD
Like to complete agricultural mechanics skills.	(e)*	52	1	(1.9)	1	(1.9)	1	(1.9)	11	(21.2)	8	(15.4)	10	(19.2)	20	(39.2)	5.57	1.49
	(ne)**	10	3	(30.0)	2	(20.0)	1	(10.0)	3	(30.0)	1	(10.0)	0	(0.0)	0	(0.0)	2.70	1.49
More likely to enroll in a mechanics class if other females were enrolled.	(e)	52	15	(28.9)	7	(13.5)	5	(9.6)	7	(13.5)	5	(9.6)	6	(11.5)	7	(13.5)	3.50	2.20
	(ne)	10	5	(50.0)	0	(0.0)	2	(20.0)	1	(10.0)	1	(10.0)	1	(10.0)	0	(0.0)	2.60	1.90
Capable of performing basic agricultural mechanics skills.	(e)	52	1	(1.9)	0	(0.0)	3	(5.8)	1	(1.9)	10	(19.2)	17	(32.7)	20	(39.2)	5.88	1.29
	(ne)	10	1	(10.0)	2	(20.0)	1	(10.0)	1	(10.0)	3	(30.0)	1	(10.0)	1	(10.0)	4.00	1.94
Can learn how to perform basic agricultural mechanics skills.	(e)	52	1	(1.9)	0	(0.0)	0	(0.0)	0	(0.0)	2	(3.8)	14	(26.9)	34	(65.4)	6.53	0.97
	(ne)	10	1	(10.0)	0	(0.0)	0	(0.0)	1	(10.0)	2	(20.0)	2	(20.0)	4	(40.0)	5.50	1.90
Physically strong enough to perform basic agricultural mechanics skills.	(e)	51	1	(2.0)	1	(2.0)	0	(0.0)	0	(0.0)	4	(7.8)	16	(31.4)	29	(56.9)	6.31	1.17
	(ne)	10	0	(0.0)	0	(0.0)	0	(0.0)	2	(20.0)	1	(10.0)	2	(20.0)	5	(50.0)	6.00	1.25
Agricultural mechanics seem very complex.	(e)	49	9	(18.4)	4	(8.2)	6	(12.2)	11	(22.4)	11	(22.4)	7	(14.3)	2	(4.1)	3.80	1.80
	(ne)	10	0	(0.0)	0	(0.0)	2	(20.0)	2	(20.0)	4	(40.0)	0	(0.0)	2	(20.0)	4.80	1.40
Agricultural mechanics is dirty.	(e)	51	19	(37.3)	8	(15.7)	7	(13.7)	5	(9.8)	8	(15.7)	3	(5.9)	1	(2.0)	2.76	1.80
	(ne)	10	1	(10.0)	2	(20.0)	1	(1.0)	3	(30.0)	1	(10.0)	0	(0.0)	2	(20.0)	3.90	2.02
Females in mechanics are less feminine.	(e)	51	30	(58.8)	5	(9.8)	4	(7.8)	4	(7.8)	4	(7.8)	1	(2.0)	3	(5.9)	2.25	1.86
	(ne)	10	6	(60.0)	2	(20.0)	1	(10.0)	0	(0.0)	1	(10.0)	0	(0.0)	0	(0.0)	1.80	1.32
Can learn mechanics skills as well as males.	(e)	51	1	(2.0)	1	(2.0)	0	(0.0)	0	(0.0)	2	(3.9)	16	(31.4)	31	(60.8)	6.39	1.15
	(ne)	10	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	3	(30.0)	0	(0.0)	7	(70.0)	6.40	0.97
Career in mechanics requires an intelligent individual.	(e)	51	5	(9.8)	0	(0.0)	4	(7.8)	7	(13.7)	12	(23.1)	13	(25.5)	10	(19.6)	4.96	2.45
	(ne)	10	1	(10.0)	0	(0.0)	0	(0.0)	2	(20.0)	3	(30.0)	2	(20.0)	2	(20.0)	5.00	1.76

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied agricultural mechanics.

respectively), were physically strong enough to perform such skills (means of 6.31 and 6.00), and could learn mechanics skills as well as males (means 6.39 and 6.40). The respondents disagreed that female mechanics were less feminine (2.25 and 1.80). Students who had studied an agricultural mechanics curricula indicated that 73.8% (15.4+ 19.2 + 39.2) liked to complete agricultural mechanics skills. These data are quite different than the findings of the Vocational Equity Research, Training, and Evaluation Center. Of the students who had not studied an agricultural mechanics curricula 90% (30 + 20 + 10 + 30) did not agree they liked to complete agricultural mechanics skills.

The data from Table 21 indicated students neither agreed or disagreed that a job in agricultural mechanics would pay well in Montana (4.42). Students who had studied an agricultural mechanics curricula neither agreed or disagreed they would enjoy an agricultural mechanics Supervised Agricultural Experience program. Responses from females who had participated in agricultural mechanics show that 50% (10 + 10 + 16 +14) did not agree they could get a job in agricultural mechanics. Students who had not studied agricultural mechanics reported that 90% (20 + 20 + 10 + 40) did not agree they could get a job in agricultural mechanics. Of the females who had studied agricultural mechanics, 54.9% (21.6 + 13.7 + 19.6) indicated they would enjoy a career in agricultural mechanics, however 33.3%

Table 21. Frequency, mean, and standard deviation of response to beliefs about Supervised Agriculture Experience programs and future employment in agricultural mechanics.

Belief		N	Frequency 1 n	%	2 n	%	3 n	%	4 n	%	5 n	%	6 n	%	7 n	%	Mean	SD
Would enjoy an agricultural mechanics SAE.	(e)*	50	2	(4.0)	3	(6.0)	5	(10.0)	13	(26.0)	8	(16.0)	4	(8.0)	15	(30.0)	4.88	1.78
	(ne)**	10	2	(20.0)	2	(20.0)	1	(10.0)	4	(40.0)	0	(0.0)	0	(0.0)	1	(10.0)	3.20	1.81
Could get a job in agricultural mechanics.	(e)	50	5	(10.0)	5	(10.0)	8	(16.0)	7	(14.0)	8	(16.0)	7	(14.0)	10	(20.0)	4.38	1.98
	(ne)	10	3	(30.0)	2	(20.0)	2	(20.0)	1	(10.0)	0	(0.0)	1	(10.0)	1	(10.0)	3.00	2.11
Would enjoy a career in agricultural mechanics.	(e)	51	6	(11.8)	5	(9.8)	1	(2.0)	11	(21.6)	11	(21.6)	7	(13.7)	10	(19.6)	4.51	1.95
	(ne)	10	5	(50.0)	2	(20.0)	0	(0.0)	2	(20.0)	1	(10.0)	0	(0.0)	0	(0.0)	2.20	1.55
Agricultural mechanics is a potential career for me.	(e)	51	11	(21.6)	8	(15.7)	3	(5.9)	12	(23.5)	7	(13.7)	2	(3.9)	8	(15.7)	3.67	2.08
	(ne)	10	6	(60.0)	0	(0.0)	2	(20.0)	2	(20.0)	0	(0.0)	0	(0.0)	0	(0.0)	2.00	1.33
A career in agricultural mechanics would pay well in Montana.	(e)	50	5	(10.0)	1	(2.0)	1	(2.0)	20	(40.0)	12	(24.0)	6	(12.0)	5	(10.0)	4.42	1.58
	(ne)	10	0	(0.0)	2	(20.0)	1	(10.0)	3	(30.0)	2	(20.0)	1	(10.0)	1	(10.0)	4.20	1.62

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied agricultural mechanics.

(13.7 + 3.9 + 15.7) indicated that agricultural mechanics was a potential career. None of the students who had notstudied agricultural mechanics indicated agricultural mechanics as a potential career.

The data from Table 22 indicated that students who didn't enroll in an agricultural mechanics curriculum mildly agreed they didn't like mechanics (5.22). Four students agreed they didn't enroll because it didn't fit in their schedule or a class wasn't offered in their school.

Relationship with Males in Agricultural Mechanics Classes

Data from Table 23 indicate that 40.4% (11.5 + 15.4 + 13.5) of females who studied some agricultural mechanics curricula agreed males verbally teased females during mechanics. Students who had not studied mechanics curriculum reported that 60% (30 + 20 + 10) agreed males would verbally tease females during mechanics, 60% (40 + 10 + 10) agreed it was hard to earn respect from males in mechanics and 50% (30 + 10 + 10) agreed males knew more about mechanics than females. And although the mean of responses from females who had studied mechanics indicated they mildly disagreed (mean of 3.31) that it was hard to earn respect from males, 40.4% (11.5 + 7.7 + 5.8 + 15.4) did not disagree with the statement.

Upon concluding the survey, respondents were given the opportunity to respond openly to questions about females and agricultural mechanics. The first question asked what other

Table 22. Frequency counts, means and standard deviations of non-enrolled students' responses about reasons for not enrolling in agricultural mechanics.

I haven't enrolled because...	n	Frequency 1 n %	2 n %	3 n %	4 n %	5 n %	6 n %	7 n %	Mean	SD
Don't like mechanics.	9	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)	4 (44.4)	2 (22.2)	2 (22.2)	5.22	1.79
It didn't fit in my schedule.	4	1 (25.0)	0 (0.0)	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (50.0)	4.50	3.00
No class offered in my school.	4	1 (25.0)	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (50.0)	4.25	3.20

Table 23. Frequency count, mean, and standard deviation of response to relationship with males in mechanics classes.

		n	Frequency 1 n %	2 n %	3 n %	4 n %	5 n %	6 n %	7 n %	Mean	SD
Males verbally tease females during mechanics.	(e)*	52	19 (36.5)	4 (7.7)	2 (3.8)	6 (11.5)	6 (11.5)	8 (15.4)	7 (13.5)	3.54	2.34
	(ne)**	10	1 (10.0)	1 (10.0)	1 (10.0)	1 (10.0)	3 (30.0)	2 (20.0)	1 (10.0)	4.40	1.90
Hard to earn respect from males in mechanics.	(e)	52	16 (30.8)	7 (13.5)	8 (15.4)	6 (11.5)	4 (7.7)	3 (5.8)	8 (15.4)	3.31	2.18
	(ne)	10	3 (30.0)	0 (0.0)	1 (10.0)	0 (0.0)	4 (40.0)	1 (10.0)	1 (10.0)	3.90	2.23
Males know more about mechanics than females.	(e)	50	13 (26.0)	4 (8.0)	6 (12.0)	6 (12.0)	6 (12.0)	11 (22.0)	4 (8.0)	3.74	2.13
	(ne)	10	2 (20.0)	1 (10.0)	1 (10.0)	1 (10.0)	3 (30.0)	1 (10.0)	1 (10.0)	3.90	2.08

*(e)-students who had studied some agricultural mechanics curricula
**(ne)-students who had not studied agricultural mechanics.

the following categories: (1) knowledge, (2) relationship with males, (3) time and interest, (4) advisors, (5) no barriers, and (6) miscellaneous. Barriers related to a lack of time were the most prevalent. The second question in the free response area asked what events or action would have made participation more likely. Student responses were concentrated in two area: (1) advisors and instruction, and barriers students had encountered. The responses fell under(2) more female involvement. There were also several miscellaneous responses. The final item simply provided space to make any comments respondents felt were pertinent. The comments varied from statements about equal opportunity for women, the ability of females to do anything they wanted, advisors and opportunity, to several miscellaneous comments. The responses are listed in Appendix G.

CHAPTER 5

CONCLUSIONS, RESULTS, AND SUMMARY

The purpose of this study was to determine the perceptions of 1994-95 Montana high school senior females who were FFA members toward selected factors identified as barriers to their participating in agricultural mechanics activities. The research questions guiding this study were: what perception do female FFA members have of agricultural instructors attitude toward females in agricultural mechanics, how did females students perceive support and encouragement for participating in agricultural mechanics, what are female students perceptions of agricultural mechanics and non-traditional careers, and what perception do students have of their parents' involvement in agricultural mechanics?

Data for the study were gathered in questionnaires mailed to 116 students. Respondents returned 62 useable instruments, yielding a response rate of 54%. Data were collected in several areas: (1) demographics, (2) participation in agricultural mechanics activities, (3) support and encouragement from selected individuals, (4) perceptions of agriculture instructor's attitudes toward females in agricultural mechanics, (5) parental involvement in agricultural mechanics, (6)attitudes toward traditional and non-traditional careers, (7) attitudes toward agricultural

mechanics as a career, and (8) relationship with males in agricultural mechanics activities.

Conclusions

Based on data analysis the following conclusions have been made about this popultation:

1. Although mean scores indicated positive relationships with agriculture education instructors, a percentage of students who had studied some agricultural mechanics curriculum did experience barriers from their agriculture education instructor.
2. The majority of females did not compete in agricultural mechanics contests outside the classroom, and did not compete in contests above the district level.
3. Females who did not study any agricultural mechanics curricula did not perceive encouragement to study from any of the selected individuals.
4. Over one third of the females agreed that establishing positive relationships with and respect from males in the agricultural mechanics classroom was often difficult.
5. A third of students who had participated in agricultural mechanics agreed it was a potential career. Students who did not participate in

agricultural mechanics did not view agricultural mechanics as a potential career.

6. The females had seen both parents perform mechanics skills, and had been encouraged by both parents to help with mechanics jobs. Although the majority of parents had traditional jobs for their gender, they did not feel that females should be restricted to traditional jobs.

Recommendations

As a result of this study the following recommendations are offered:

1. Agricultural instructors and teacher educators must identify behaviors in the classroom which present barriers to participation. It is essential that instructors complete a candid appraisal of their behavior to determine what actions can be taken to eliminate barriers.
2. Agriculture instructors should encourage young women to pursue agricultural mechanics activities outside the classroom. These activities could include Supervised Agricultural Experience programs, workshops and contests.
3. To prevent "teasing" from male students, agriculture instructors should provide constant monitoring and attention in agricultural mechanics activities. Vigilance to insure that friendly bantering does not

become harassment is essential.

4. More exposure to agricultural mechanics careers needs to be included in the classroom. This information should include career descriptions, availability information, and exposure to actual work environments. The Montana Department of Labor publishes a list of individuals in non-traditional careers that may provide resources for students to see women working in agricultural mechanics.
5. To encourage more support from guidance counselors for students enrolling in agricultural mechanics classes agriculture instructors should strive to develop positive professional relationships with guidance counselors. This may include inviting guidance counselors to visit their classrooms, taking counselors to activities, and visiting SAE programs with the counselor.
6. To get new ideas and to remain updated about gender equity issues agriculture instructor should participate in gender equity workshops offered for education professionals.

Recommendations for Further Study

1. Research should be conducted on younger students and students who have not remained in agriculture education programs through their senior year to determine their

perception of barriers to participation in agricultural mechanics activities.

2. Research should be conducted to determine the effect of barriers on female participation in agricultural mechanics.
3. Research should be conducted to identify other prohibitive barriers to participation in agricultural mechanics for Montana female students, which have not been recognized.
4. Research should be conducted to determine the relationship between female students, male students, and agriculture instructors during traditional and non-traditional classes.

Summary

The data from this study show the perceptions of Montana, 1994-95 senior, female, FFA members toward selected barriers to participation in agricultural mechanics. The data show that the barriers have been encountered by many female agriculture education students.

The information contained in this study will be useful to agriculture instructors, teacher educators, school administration, and equity monitors.

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APPENDICES

APPENDIX A

COVER LETTER

MONTANA STATE UNIVERSITY
BOZEMAN

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Agricultural and Technology Education
Cheever Hall
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Telephone (406) 994-3201
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April 4, 1995

Dear Montana Agriculture Education Student,

I am a graduate student at MSU-Bozeman, surveying female students who are seniors and current FFA members in Montana High Schools to determine their participation in and perceptions of Agricultural Mechanics.

This survey is not intended to single out programs or teachers. Its purpose is to identify any common problems that females face in participating in Agricultural Mechanics, or any common barriers that prevent females from participation in Agricultural Mechanics. Only about 20 minutes will be needed to complete the survey, and all students returning surveys will be entered into a drawing for $25.00 and a Collegiate FFA T-shirt.

Your response to this questionnaire is very critical and will be kept in strict confidence. Your responses will not be reported to your school or agriculture instructor. The code number on the questionnaire is used for follow-up purposes and award selection only.

I want to thank you in advance for your prompt, honest responses. When finished with the questionnaire, fold the survey so the return address on back shows, staple or tape the return, and drop it in the mail by April 20, 1995.

Thank you again for your valuable time and assistance.

Sincerely,

Cindy Arnott
Graduate Student

Van Shelhamer
Committee Chairman

APPENDIX B

SURVEY INSTRUMENT

This survey is comprised of two sections. Section I relates to agricultural mechanics and your perceptions and experiences. Section II request demographic information about respondents.

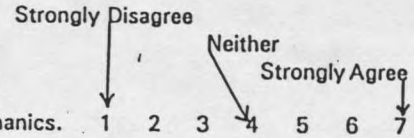
Responses to the survey will be kept confidential and should be recorded on this survey. After completing the two sections please return the survey.

SECTION I

Directions: Read each statement and mark your level of agreement from 1 to 7:

1-Strongly Disagree
2-Disagree
3-Mildly Disagree
4-Neither Agree or Disagree
5-Mildly Agree
6-Agree
7-Strongly Agree

Example:



If you really enjoy working in agricultural mechanics you would mark 7.

THE FOLLOWING DEFINITIONS MAY HELP:

Agricultural Mechanics: Any skills or activities which fall under the following categories; Metals and Welding, Carpentry, Project Planning and Design, Engine and Machine Repair and Maintenance, Power Trains, Electricity and Wiring, Plumbing, Surveying, and other skills which are required in maintaining a farm, ranch, or homestead.

Agricultural Mechanics Class: A class which is offered through the Agriculture Education department and concentrated on teaching skills which are necessary to complete an Agricultural Mechanics operation as described above.

Check what length of time you studied the area.

	3 weeks or less	3-6 weeks	6-9 weeks	quarter	semester
1. I have participated in the following agricultural mechanics instruction areas:					
A.Agricultural Carpentry	____	____	____	____	____
B.Agricultural Metals/Welding	____	____	____	____	____
C.Agricultural Electricity/wiring	____	____	____	____	____
D.Agricultural Engine Repair/Maintenance	____	____	____	____	____
E.General Agricultural Mechanics	____	____	____	____	____

If you have not studied any of the areas please go to question 19. If you have studied any of the areas go on to question 2.

	SD			Neither			SA
2. My father/male guardian has supported my studying:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
3. My mother/female guardian has supported my studying:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
4. My male friends have supported my studying:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
5. My female friends has supported my studying:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
6. My agriculture instructor has supported my studying:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7

	SD			Neither			SA
7. My guidance counselor has supported my studying:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
8. When in agricultural mechanics activities my instructor has similar expectations for all students.	1	2	3	4	5	6	7
9. Female students are given different tasks than male students when in the mechanics lab.	1	2	3	4	5	6	7
10. All students are graded to the same standards on Agricultural mechanics skills.	1	2	3	4	5	6	7
11. My agriculture education instructor is more protective of females than males in the mechanics lab.	1	2	3	4	5	6	7
12. My agriculture education instructor favors males more in agricultural mechanics activities.	1	2	3	4	5	6	7
13. Females aren't allowed to do as much in the mechanics lab as male students.	1	2	3	4	5	6	7
14. Females are more likely to do paperwork or monitor tool checkout than males in my agriculture program.	1	2	3	4	5	6	7
15. My agriculture instructor makes the mechanics lab a welcome environment for all students.	1	2	3	4	5	6	7
16. I like to complete agricultural mechanics skills.	1	2	3	4	5	6	7
17. I have been verbally teased by the males in the agricultural mechanics classes.	1	2	3	4	5	6	7
18. It has been hard to earn respect from the male students in my agricultural mechanics class(es).	1	2	3	4	5	6	7

If you completed questions 2-18 go to question 31.

19. I haven't enrolled in an Agricultural Mechanics class because:							
a)I don't like mechanics.	1	2	3	4	5	6	7
b)it doesn't fit in my schedule.	1	2	3	4	5	6	7
c)there isn't one offered in my school.	1	2	3	4	5	6	7
d)other_____.	1	2	3	4	5	6	7
20. If I were involved in agricultural mechanics activities my instructor would have similar expectations for all students.	1	2	3	4	5	6	7

	SD			Neither			SA
21. I believe in our program females students are given different tasks than male students when in the agricultural mechanics lab.	1	2	3	4	5	6	7
22. I feel all students are graded to the same standards on agricultural mechanics skills.	1	2	3	4	5	6	7
23. I believe my agriculture education instructor would be more protective of females than males in the mechanics lab.	1	2	3	4	5	6	7
24. I believe my agriculture education instructor would favor males more than females in agricultural mechanics activities.	1	2	3	4	5	6	7
25. I think in our ag program females aren't allowed to do as much in the mechanics lab as male students.	1	2	3	4	5	6	7
26. I believe in our ag program females are more likely to do paperwork or monitor tool checkout than males in my agriculture program.	1	2	3	4	5	6	7
27. I believe my agriculture instructor makes the mechanics lab a welcome environment for all students.	1	2	3	4	5	6	7
28. I believe I would like to complete agricultural mechanics skills.	1	2	3	4	5	6	7
29. I would be verbally teased by the males in the agricultural mechanics classes.	1	2	3	4	5	6	7
30. It would be hard to earn respect from the male students in an agricultural mechanics class.	1	2	3	4	5	6	7
31. Males know more about mechanics than females.	1	2	3	4	5	6	7
32. My father/male guardian has encouraged me to enroll in:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
33. My mother/female guardian has encouraged me to enroll in:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7

	SD			Neither			SA
34. My male friends have encouraged me to enroll in:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agriculture mechanics	1	2	3	4	5	6	7
35. My female friends have encouraged me to enroll in:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
36. My agriculture instructor has encouraged me to enroll in:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
37. My guidance counselor has encouraged me to enroll in:							
a)agricultural carpentry	1	2	3	4	5	6	7
b)agricultural metals/welding	1	2	3	4	5	6	7
c)agricultural electricity/wiring	1	2	3	4	5	6	7
d)agricultural engine repair/maintenance	1	2	3	4	5	6	7
e)general agricultural mechanics	1	2	3	4	5	6	7
38. I would be more likely to take an agricultural mechanics class if I wouldn't be the only female	1	2	3	4	5	6	7
39. I am capable of performing basic agricultural mechanics skills.	1	2	3	4	5	6	7
40. I can learn how to perform basic agricultural mechanics skills.	1	2	3	4	5	6	7
41. I am physically strong enough to perform agricultural mechanics skills.	1	2	3	4	5	6	7
42. Ag mechanics skills seem very complex.	1	2	3	4	5	6	7
43. I think agricultural mechanics is dirty.	1	2	3	4	5	6	7
44. Females who work in agricultural mechanics occupations are less feminine than females who are in traditional female occupations.	1	2	3	4	5	6	7
45. I can learn to perform agricultural mechanics activities as well as males.	1	2	3	4	5	6	7

	SD			Neither			SA
46. I would enjoy an SAE centered around ag mechanics.	1	2	3	4	5	6	7
47. I could get a job in agricultural mechanics.	1	2	3	4	5	6	7
48. My father thinks females should work in traditional occupations.	1	2	3	4	5	6	7
49. My mother thinks females should work in traditional occupations.	1	2	3	4	5	6	7
50. My father has a typical male occupation.	1	2	3	4	5	6	7
51. My mother has a typical female occupation.	1	2	3	4	5	6	7
52. I have seen my father/male guardian performing agricultural mechanics skills.	1	2	3	4	5	6	7
53. I have seen my mother/female guardian performing agricultural mechanics skills.	1	2	3	4	5	6	7
54. My father/male guardian encouraged me to help with mechanics jobs.	1	2	3	4	5	6	7
55. My mother/female guardian encouraged me to help with mechanics jobs.	1	2	3	4	5	6	7
56. I would enjoy a career in agricultural mechanics.	1	2	3	4	5	6	7
57. Agricultural mechanics is a potential career for me.	1	2	3	4	5	6	7
58. A career in agricultural mechanics requires a intelligent individual.	1	2	3	4	5	6	7
59. My father/male guardian has a career in agricultural mechanics.	1	2	3	4	5	6	7
60. My mother/female guardian has a career in agricultural mechanics.	1	2	3	4	5	6	7
61. I would enjoy a traditional female career.	1	2	3	4	5	6	7
62. I would enjoy a traditional male career.	1	2	3	4	5	6	7
63. A career in agricultural mechanics would pay well in Montana.	1	2	3	4	5	6	7

SECTION II

Section II relates to demographic information. Please answer the questions as accurately as possible.

1. Where is your home located?
   a) farm/ranch
   b) rural area
   c) town/city

2. What is the population of the town where you attend school.
   a) less than 2,500
   b) 2,500-10,000
   c) 10,000-25,000
   d) more than 25,000

3. Indicate in which region of Montana your home is located in:
   a) Western (West of the Continental Divide)
   b) Central (Continental Divide to Billings)
   c) East (East of Billings)

4. How many years have you lived in this community?
   a) 0-2
   b) 2-5
   c) 5-10
   d) more that 10

5. How many brothers do you have?
   a) 0
   b) 1
   c) 2
   d) 3 or more

6. How many sisters do you have?
   a) 0
   b) 1
   c) 2
   d) 3 or more

7. Indicate which best describes your current family unit:
   a) mother and father
   b) mother and stepfather
   c) stepmother and father
   d) mother
   e) father
   f) other

8. How many years have you been an FFA member?
   a) 1
   b) 2
   c) 3
   d) 4

9. Indicate what content areas and at what level you have competed in FFA contests:

	Local	District	State	National
Public Speaking	____	_____	____	_____
Sales & Service	____	_____	____	_____
Livestock Eval.	____	_____	____	_____
Agronomy/Range/Soils	____	_____	____	_____
Farm Business	____	_____	____	_____
Ag Mechanics	____	_____	____	_____
Parliamentary Procedure	____	_____	____	_____

10. Indicate which leadership activities you have participated in:

	# of years
Made for Excellence	_____
Alumni Camp	_____
Washington Leadership Conf.	_____
District Leadership School	_____
Chapter Officer	_____
District Officer	_____
Other _____	_____

Please answer the following questions.

What other barriers prevented you from participating in an agricultural mechanics class, activity, or SAE?

What events or actions would have made it more likely for you to participate in an agricultural mechanics class, activity, or SAE?

Please make any other comments you feel are pertinent to the topic of females in agricultural mechanics.

APPENDIX C

REMINDER POST CARD

Dear Student,

Approximately two weeks ago you received a survey about agricultural mechanics in the mail. At this time your return has not been received.

I realize what a busy time this is for you, and understand that a few minutes can be hard to find. However, I hope that you can make the time to complete the survey and return it. Remember, if you return your survey you will be eligible for the **$25.00 and the t-shirt.** I also would like to again reassure you that your responses are completely confidential and will not be discussed with anyone.

Thank you for your time and attention.

Cindy Arnott

APPENDIX D

SECOND MAILING COVER LETTER

MONTANA STATE UNIVERSITY
BOZEMAN

Department of Education
Agricultural and Technology Education
Cheever Hall
MSU • Bozeman
Bozeman, MT 59717-0374
Telephone (406) 994-3201
Fax (406) 994-6696

May 5, 1995

Dear Montana Agriculture Education Student,

Recently you should have received a questionnaire surveying female students who are seniors and current FFA members in Montana High Schools to determine their participation in and perceptions of Agricultural Mechanics. At this time your response has not yet been received. As there are only 120 students who were sent the survey, your response is critical.

I just want to remind you this survey is not intended to single out programs or teachers. Its purpose is to identify any common problems that females face in participating in Agricultural Mechanics, or any common barriers that prevent females from participation in Agricultural Mechanics. Only about 20 minutes will be needed to complete the survey, and all students returning surveys will be entered into a drawing for $25.00 and a Collegiate FFA T-shirt.

Your response to this questionnaire is very critical and will be kept in strict confidence. My graduate degree in Agriculture Education cannot be completed without your help. Again, your responses will not be reported to your school or agriculture instructor. The code number on the questionnaire is used for follow-up purposes and award selection only.

I want to thank you in advance for your prompt, honest responses. When finished with the questionnaire, fold the survey so the return address on back shows, staple or tape the return, and drop it in the mail by May 12, 1995.

Thank you again for your valuable time and assistance.

Sincerely,

Cindy Arnott
Graduate Student

Van Shelhamer
Committee Chairman

APPENDIX E

LETTER TO AGRICULTURE TEACHERS

MONTANA STATE UNIVERSITY
BOZEMAN

Department of Education
Agricultural and Technology Education
Cheever Hall
MSU • Bozeman
Bozeman, MT 59717-0374
Telephone (406) 994-3201
Fax (406) 994-6696

May 5, 1995

Dear Montana Agriculture Education Instructor,

Recently one or more or your students should have received a questionnaire surveying female students who are seniors and current FFA members in Montana High Schools to determine their participation in and perceptions of Agricultural Mechanics. At this time the response rate has been rather dismal. As there are only 120 students who were sent the survey, every response is critical. I need your assistance!! Please ask your students who received the survey to finish the survey and mail their responses back before May 12, 1995.

This survey is not intended to single out programs or teachers. Its purpose is to identify any common problems that females face in participating in Agricultural Mechanics, or any common barriers that prevent females from participation in Agricultural Mechanics. Only about 20 minutes will be needed to complete the survey, and all students returning surveys will be entered into a drawing for $25.00 and a Collegiate FFA T-shirt.

The response to this questionnaire is very critical and will be kept in strict confidence. My graduate degree in Agriculture Education cannot be completed without your student's help.

Thank you for your valuable time and assistance.

Sincerely,

Cindy Arnott
Graduate Student

Van Shelhamer
Committee Chairman

APPENDIX F

THIRD MAILING COVER LETTER TO TEACHERS

MONTANA STATE UNIVERSITY
BOZEMAN

Department of Education
Agricultural and Technology Education
Cheever Hall
MSU • Bozeman
Bozeman, MT 59717-0374
Telephone (406) 994-3201
Fax (406) 994-6696

May 19, 1995

Dear ,

Hello! The end is near. As you know I have been working on my research for my graduate degree. At this point the student return rate on my survey is less that 50%. My graduate committee seems to think this is not enough for a viable survey (imagine that). in light of the low return rate and the few days left in the school year I am beseeching you, my fellow ag teacher, for help.

I recently sent surveys to one or more students from your program. The student(s) I haven't received returns from are {student name}. Please give the students about 15 minutes and have her complete the survey enclosed with this letter. Once completed the survey can be dropped in the mail, no postage necessary. I realize that this is an extremely busy time for both you and your students. I promise not to bug you again if you help me out this time!

The survey will not be used to single out any program or teacher, and the responses are confidential. I really believe that the research can be of help to Agricultural Education in Montana.

I know that time is hard to find. I wouldn't enlist your aid if it wasn't essential. I only sent out 123 surveys, therefore, it is crucial that I have every survey returned.

Thank you for your time and support.

Sincerely,

Cindy Arnott
Graduate Student

APPENDIX G

COMMENTS FROM SURVEY

What other barriers prevented you from participating in an agricultural mechanics class, activity or SAE?

Knowledge
*The fact that the boys were already so far ahead of me-same with physics
*My lack of knowledge in that area

Relationship with Males
*Attitudes of the guys in the class and the harassment I went through-it wasn't worth it. The teacher kinda put me on the spot cause I was the only girl and the only one that was covering this kind of material for the 1st time.
*Males in our high school harassed me a lot.

Time and Interest
*I really didn't have any barriers, besides that I couldn't fit it into my schedule.
*None, there were just many their classes I wanted to take.
*I'm very busy with athletics and other things that interest me more.
*Not enough time working and school
*I was too busy competing in my other events to dedicate my time to that to.
*Knowledge and interest
*Too many classes in school.
*I'm not really interested in mechanics.
*Not enough time in my schedule.
*There were no barriers. I am just not interested. I can do those things, I just like other things better.
*Time
*Other barriers have been time and too many other things going on
*Lack of interest
*Schedule

Advisors
*My advisor is a male chauvinist jerk
*My advisor wasn't very gung ho on the SAE projects, but I have taken a metals class and participated in mechanic activities.

No Barriers
*I am participating in an agricultural mechanics class
*No other barriers prevented me.
*I wasn't that interested.
*None

Miscellaneous
*The opportunity, because I live in town and am a small person, I rarely have the chance to have "hands on" experience
*Didn't take lower level agriculture classes.

What events or actions would have made it more likely for you to participate in an agricultural mechanics class, activity, or SAE?

Advisors and Instruction
*More organized FFA chapter.
*More projects with class, notification of contests
*Maybe if my FFA advisor would have pushed me more.
*If our advisor would've informed us as we were freshman what mechanics had to offer, I may have tried it.
*In depth instruction
*I would have liked to be encouraged and given opportunities to do other things than sit on a computer all class.
*More variety of activities and more awareness
*The advisor could have treated girls like part of the class. I was the only girl and had to do a lot of paperwork.
*A different instructor my senior year. More time with less classes.
*If there would of been something fun involved.
*If my advisor had encouraged the activity more.
*An instructor who is more organized so that time is not a large factor in my decision.
*More hand on experience.

More Female Involvement
*More female involvement would have made it easier.
*Other girls-instructor thinks girls may be interested-all female class
*More girls, different attitudes from the guys, a curriculum that didn't assume I already knew the basics and had an idea about the tools and equipment.
*More females in my chapter participating
*If more of my friends would've

Miscellaneous
*Less harassment from the guys
*A sex change.
*More support from the males
*I did not have any other classes I had not taken.
*If I didn't work, I would be in a mechanics class.
*Taking more ag classes
*None, I'm already in.
*If I was going into that field.
*Less access and a less work load.
*No events or actions. I want to be a journalist. I have no interest in becoming a mechanic.
*It would have made it easier with a different schedule
*Nothing, everything was done great
*If we had animals or I owned land
*Schedules

Please make any other comments you feel are pertinent to the topic of females in agricultural mechanics.

Women Should be Given Equal Opportunity
*I feel that since we were seen as the inferior sex, guys still want it to be that way. They have to let us have the same opportunities. We're human too.
*They should be given more of a chance and not considered "kitchen type'. Thank you.
*The current attitude is -a girl involved in agriculture mechanics is either a tomboy or a "neo nazi feminist" who is trying to prove her superiority on clearly dominant male turf. It's not "cool". It's like guys in home ec-only worse. At home, I have to do maintenance work on my car and farm equipment, but the big stuff is the territory of the men. They would let me help-I prefer to stay out of their way. We had one girl who competed in agriculture mechanics but she was only after the male attention, and it spoiled it for anyone else who ever thought of competing. Unfortunately, I am fairly passive in this area and don't mind depending on the guys to repair my car or equipment, although I would rather be self sufficient.
*I believe agriculture teachers should give fair changes to males and females instead of siding with the male students all the time.
*I think that the males should treat us as equals. I also think they should teach us if we want to learn.

Advisor
*My advisor encourages the girls in our chapter to participate in any activities that they are interested in.
*I feel that in most cases the advisor is fair. the agriculture advisor at my school knew that I could weld. I have been for three years. But if there is paper work to be done I, being the only female in my class, is the first to be picked by him to do it, rather than weld or do projects like that. However, the mechanics advisor is very fair to females in this area.
*In our school females get involved greatly
*Our teacher and school is very supportive of our Ag classes

Opportunity
*Most females don't get much of an opportunity to work with mechanics a lot.
*Plenty of opportunities for females to learn about agriculture mechanics are offered through my Ag Ed program. Significant biases aren't a problem.

Females Can Do Anything if They Want To
*Females can make good mechanics if that's what their determined to be, although it is scientifically correct that males are stronger.

*I feel that females belong in mechanics just as equally as males. *We are all capable of becoming our own person and fulfilling our own dreams.
*I am in Urban Ag and would encourage anyone to take it. Women can do anything men can.

Females Can Do Anything if They Want To, cont.
*I think females should and do have as much opportunity as males in our society.
*It's OK and promising in today's society.
*Anybody can do anything they want if they put their mind to it. *If a person really wants to do something, it doesn't matter if they're male, female, black, white, green or purple, if they really want to do it, they'll do it.
*I feel that females should do whatever they are capable of

Miscellaneous
*I know how to change oil and a few other basic things, but that's it. I feel a female should know a little bit, but I also feel it's a man's duty- unless a female is interested or wants to be involved with agricultural mechanics. Female mechanics would probably be really neat people although I've never met one.
The survey I took was pretty neutral. I an not picky. I just do what I feel.
*Jobs should not be classified as a "male job" or a "female job". *I think it is great that girls are starting to really get into Agricultural mechanics

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