

The Impact of Middle School Agriculture Education
on Student Enrollment in High School
Agricultural Education at Chisago
Lakes School District.

by

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ABSTRACT

Middle school education has long included a host of career and technical education courses. Agriculture, Food and Natural Resources, considering the disconnect in today's society from the family farm, seems to be one of the typical areas that are not included or cut due to budgetary issues. A middle school feeder program is an essential piece to striking career interest early in the student's lives and offering opportunity to them. With agriculture being the largest employer in the world, it seems unfathomable to not include this area in a middle school curriculum.

The purpose of this study was to determine what effects a middle school program would have on enrollment levels of high school agriculture courses. It attempted to understand the factors that influence student course selection including peers, teachers, curriculum and career objectives. It also tried to answer the question, is there a need? A survey was designed to answer

those questions and implemented on eighth and tenth grade students at Chisago Lakes School District in November of 2009.

The study discovered there is tremendous interest in the agriculture, food and natural resources area with a large percentage of students wanting a middle school option. While looking at all the influential factors affecting course enrollment, top choices included personal curriculum interest, teacher influence, and peer motivation.

The information and knowledge gained from this study will be very beneficial to all career and technical departments, state and national agricultural educators, and specifically administration and the community within the Chisago Lakes School District. These results will concentrate on developing a plan of action to increase middle school student opportunities within the Agriculture, Food and Natural Resources curriculum area.

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Chapter I: Introduction

Middle school education has long included a host of career and technical education (CTE) courses. CTE, once known as vocational education, has been part of the educational setting since the Smith-Hughes Act of 1917. Vocational education was first developed to train young people for entry level jobs as a result of the industrial revolution. Camp and Johnson (2005) expressed the following about contemporary vocational education:

CTE programs are becoming more academically rigorous and less directly tied to single occupations. CTE is no longer just a training program for workers; today CTE also prepares students for postsecondary work including college as well as lifelong learning. CTE does not replace academic subjects, but rather reinforces academic instruction by incorporating basic academic instruction in a purposeful way into CTE courses. CTE provides meaningful contexts in which students can apply the concepts they learn in academic classrooms in settings that help them to see the real-world relevance of what might otherwise be abstract concepts. (p. 55-56)

CTE program options range from family and consumer science, business, industrial technology, health occupations, marketing and agriculture education. Each of these has its own body of knowledge to help shape future career paths or to just give a broad educational experience. One of the key components to a comprehensive middle school experience is a full exploratory program (Schurr, 1992). Very few middle schools have all six of these programs, most focus on one to three exploratory options. Middle school opportunities may serve as an exploration for attempting to understand their employment future. Exploratory CTE courses might also serve as a prerequisite or an introduction to CTE courses in the high school.

Middle school Agriculture, Food, and Natural Resource classes have been officially recognized since the National FFA Convention of 1988 (Rossetti, Padilla, & McCaslin, 1994). Hillison (1994) reports that “In recent years, the middle/junior high school program has become a popular one and represents the fastest growing area of agricultural education.” This

exploratory course gives students an opportunity to learn about an industry very few are familiar with. Up until the early 20th century, most occupations or families were directly or indirectly impacted by agriculture for their existence. According to Fritz & Moody (1997), “Currently 97% of the U.S. citizens do not live on a farm or are not engaged in production agriculture” (p. 61). With agriculture being the number one employer in the world (Central Intelligence Agency, 2008), it seems imperative that it is taught not only in the high school but also in the middle school setting. Middle school Agriculture, Food, and Natural Resource programs were developed for many reasons. Agricultural literacy, career exploration and recruitment for the high school agriculture program are among a few reasons (Gibs, 2005). Agriculture literacy is the knowledge about the industry components and the developing areas within agriculture. Developing agricultural interest may then move them toward the related career path. Career guidance is imperative in all agricultural educators’ minds. Each activity developed by the instructor is to enhance agriculture literacy and to open an opportunity toward a career pathway (Faulkner, Steward & Baggett 2006; Conroy, 2000). While doing this, the middle school program is also a great recruitment piece for the future and development of the high school curriculum.

The Carl D. Perkins Vocational and Technical Education Act (Perkins) was originally authorized in 1984 with its most recent authorization by President Bush in 2006, Perkins IV. According to Lake Washington Technical College (2006) the purpose of the Perkins Act is to:

1. Prepare a workforce with the academic and vocational skills needed to compete successfully in a world market.
2. Further develop the academic and technical skills of career and technical education students through the development and achievement of high standards.

3. Link secondary and postsecondary programs, and academic, vocational, and technical instruction.
4. Disseminate national research about career and technical education.
5. Provide professional development and technical assistance to career and technical educators.

With the aid of Perkins IV funding and under the National Career Technical Education Foundation, the States' Career Clusters Initiative was put into place. This program initiates 16 career clusters for students to explore including Agriculture, Food, and Natural Resources (National Career Technical Education Foundation, 2009). Within these clusters are programs of study that can form the beginning of a career pathway for a middle school student. Student selected pathways will guide them through a plan of action to accomplish their career goals and to increase knowledge and skills within their career field.

The Minnesota Association of Agricultural Educators has a mission of “visionary leadership, service, and advocacy (2008).” Due to this motivation, agricultural education reaches the entire state in vastly different schools, hosting 172 different programs (Minnesota FFA Association, 2008). They touch both urban and rural students in a wide range of populations and classroom opportunities. The middle school curriculum would offer an elective class or sequence called Introduction to Agriculture. This course offers an exploratory option of the most popular classes offered at the high school level. The goal behind this feeder program is to educate, strike interest in the agriculture industry, and offer a career pathway.

Middle school Agriculture, Food, and Natural Resource programs can provide students a base knowledge of agriculture, combine science and math activities, train them in leadership and speaking skills, open career opportunities, and host competitive events in FFA (Myers, Dyer,

Breja, 2003; Hoover, Scanlon, 1991). Linking the need to the actual enrollment status can be a very frustrating task. Since the 1970's, student enrollment in agricultural education has wavered greatly (Breja & Dyer, 1999). Enrollment in the high school courses fluctuate greatly from year to year in Minnesota agriculture departments. It is the common goal of these departments to stabilize those numbers and continuously grow. The key to stabilization is the middle school agriculture program; it serves as a lifeline (Cupp & Weaver, 1994).

Statement of the Problem

Middle school Agriculture, Food, and Natural Resource programs can open the doors for high school recruitment in the agriculture department. With the transition from middle school to high school, student enrollment numbers have fluctuated greatly in the last 40 years (Breja & Dyer, 1999). Given a disconnect from the family farm, it is anticipated that many agriculture programs may fall victim to school budget cuts due to low enrollment. New program promotional efforts need to be developed to support student enrollment in high school Agriculture, Food, and Natural Resource programs.

There is an absence in research focused on middle school student exploratory curricula and its impact on student course selection at the secondary level. It is not known to what extent middle school agriculture education experiences impact student selection of the Agriculture, Food, and Natural Resources education career pathways while in high school. This study seeks to fill this knowledge gap.

Purpose of the Study

The purpose of this study is to identify what effects a middle school program would have on enrollment levels of high school agriculture courses. It will attempt to understand factors that

influence student course selection. Tenth and eighth grade students of Chisago Lakes High School will be surveyed to determine factors of enrollment verses non-enrollment and general interest. These factors will then be used to determine whether a middle school Agriculture, Food, and Natural Resources program may stabilize course enrollment and tailor to student interests.

Research Questions

This study will seek answers to the overarching question; what are the factors of a middle school Agriculture, Food, and Natural Resources program experience that will impact a student's decision to engage in an advanced study of agriculture at the high school level. The following questions will guide the study.

1. To what extent does the agriculture instructor impact the future course enrollment in agricultural education?
2. To what extent does the agriculture curriculum impact the future course enrollment in agricultural education?
3. To what extent do peers in an agriculture class impact future study in agricultural education?
4. Do student career goals impact their pursuit of an Agriculture, Food, and Natural Resources program of study in high school?

Importance of the Study

This study is important to Agriculture, Food, and Natural Resources education and its educators to maintain a healthy program. It is essential for those educators to also pinpoint what personal avenues affect the student's decision to continue agriculture classes in the high school.

Students may have varying personal reasons as to why they would or would not choose to continue with agriculture in the high school.

Middle school Agriculture, Food, and Natural Resource education has an opportunity to be a feeder program leading to enrollment success of its high school programs. The middle school agriculture classes need to form a bridge to the high school classes. The success and impression of the middle school program can have a direct impact on enrollment figures. The findings also have the potential to inform other career and technical programs of factors impacting students entering a potential program of study.

Definition of Terms

Agriculture – The science, art, or practices of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products (Merriam-Webster Online Dictionary, 2008).

Agriculture literacy – Having the knowledge or competence in agriculture (Merriam-Webster Online Dictionary, 2008).

Career Development Events – Events that link the classroom education with agriculture career skills. Examples may include Floral Judging and Design, Farm Business Management, Forestry or Ag Mechanics (National FFA Organization, 2008).

Career and Technical Education – The process of educating and training individuals for occupational competency (Hustad, Mason, Adams, 2003).

Discovery Degree – Added in 2000, this degree is reserved for active 7th or 8th grade FFA students based on membership and knowledge (National FFA Organization, 2008).

Exploratory Program - Exploratory programs are those in which give middle school students their first chance at independent class choice (California Department of Education,

2008). Programs could include agriculture, business, health occupations, family and consumer science, business, or industrial technology.

Feeder programs – A prerequisite program that supplies or connects to a higher level (Merriam-Webster Online Dictionary, 2008).

National FFA Organization - National organization that prepares members from 7th grade through 21 years old for leadership and careers in the science, business and technology of agriculture (Louisiana State University Collegiate FFA, 2003). This organization was formally known as Future Farmers of America. They changed their name at the 1988 national convention to align with the changing world of agriculture (Case & Whitaker, 1998).

Supervised Agricultural Experience (SAE) – According to the National FFA Organization, SAE's are the actual, hands-on application of concepts and principles learned in the agricultural education classroom. Students are supervised by agricultural education teachers in cooperation with parents, employers and other adults who assist them in the development and achievement of their educational and career goals (2008).

Chapter II: Literature Review

This chapter will include a review of literature in regards to the importance of agriculture, food and natural resource curriculum, a historical view of this subject, the curriculum, the middle school program, and appealing to the student population.

Why Agriculture, Food and Natural Resources

Agricultural Education has two sides to its existence, education and agriculture. Education is “the field of study that deals mainly with methods of teaching and learning in schools (Education, 2008).” Agriculture then is “the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products (Agriculture, 2008).” Through agriculture we exist. Without the obvious benefit from the food, drink and shelter it provides, all people would perish. Not only does it supply our basic needs, it also supplies the largest amount of employment in the world (Central Intelligence Agency, 2008). For these reasons, it becomes obvious why it is so important to include agriculture into education.

Agricultural education is all around us in many shapes and forms. Today it is not only delivered at the state college level, but also through distance education, technical schools, high schools, middle schools, extension, and publications. As technology expands, so does the availability of distance education and agriculture. Many students from the master’s degree down to the high school level are currently taking distance agriculture courses. It allows students the opportunity to learn even though geographically they could have never participated before. More high schools and even middle schools are offering exploratory classes within their curriculums now. This may include programs like horticulture, animal science, biotechnology, floral design, forestry or natural resources. Through extension and publications the masses can be taught. This

may include adult education programs, extension classes on a specific topic, or media articles dealing with a current matter. All of these delivery avenues combined gives everyone an opportunity to be educated.

Historical View of Agriculture, Food and Natural Resources

Agricultural education started long before its legislative history. The first true record was with the appearance of the European settlers in America during the 15th and 16th century. Upon arrival, the Native Americans helped to teach settlers how to grow native plants and what products could be used for furniture, tools, or shelter. In 1785, the Philadelphia Society for the Promotion of Agriculture was organized (Economic Research Service, 2000). This organization was the first true association of people interested in promoting and expanding agriculture. In 1810 the first periodical, the Agricultural Museum, was organized and published. This peaked the interest of many people to invest in agriculture, thus between 1825 and 1850 schools and colleges started offering agriculture courses (Economic Research Service, 2000). Legislative history then jumps aboard to help diversify and encourage the career and technical student by not only providing the schools, but also the teachers and funding for agricultural education. Each act through history branches out to increase the integrity and advancement of not only agriculture but all career and technical areas.

The first true legislative act affecting agriculture was the Morrill Land Grant College Act of 1862 and 1890. The 1862 legislation gave 30,000 acres of land to each state for the establishment of a vocational college (Andrews, 1918). This focused the attention on the agricultural and mechanical sciences as key players for development. The additional act in 1890 focused its concentration on the inclusion of African American individuals to these opportunities (Gordon, 2003).

In 1887 the Hatch act was passed. This act provided fifteen-thousand dollars to each college to develop agricultural experiment stations. Its purpose was to improve production agriculture through the development of these facilities. This then provided a scientific basis for the educational goals at each of the colleges (Hatch Act 2008). This act was truly a connector between the Morrill Acts and the future Smith Lever Act.

The Smith Lever Act of 1914 provided money to complete the triangle including the colleges, experimental stations, and finally extension (Gordon, 2003). This allowed for all parts of the educational system to come together and disperse the knowledge gained through the experimental stations. Extension then went out to instruct local citizens and perform demonstrations.

The next legislation would bring agricultural education to a younger crowd, secondary education. The Smith Hughes Act of 1917 primarily focused on how to teach boys to farm (Roberts, 2005). This served as a true separation of core subjects versus agricultural education. Not long after in 1928, Future Farmers of America, a male only secondary agriculture organization, spun out of this opportunity. It wasn't until 1969 that females were allowed into the organization. In 1988, the name was officially changed to the National FFA Organization to circumference the broadening topics of agriculture away from just farming (National FFA Organization, 2009).

From 1929-1956 the George Acts were enacted. These acts allotted more money for agricultural education based on farm population numbers within the state. Not only did it support the focus, but also helped support the FFA and NFA (New Farmers of America). Within these acts were allotments for a more diverse vocational education plan supporting not only agriculture but also marketing, home economics and industrial education (Gordon, 2003).

The Vocational Education Acts of 1963 and 1968 were the largest supporters of vocational education in history so far. For agriculture, it expanded its focus from farming to off site enterprises. This allowed for the development of a work study program and expansion of the FFA supervised agricultural experience program (Roberts, 2005). Besides expanding funding and programs, it also worked to unify vocational education programs.

In 1984 & 1990 the Perkins Acts were enacted. This act allowed for concentrations in program improvement and at-risk populations (Hustad, Mason & Adams, 2003). Stress was put on gender equity and the tech prep connection. For agricultural education it was important to bridge the technical schools with the secondary to improve trade skills and employability for all.

The School-to-Work Act 1994 and the Workforce Investment Act of 1998 concentrated on providing a skilled workforce. Focus was put on the occupational skills and competencies needed for both the employers and students. This emphasized the importance of SAE's, Tech Prep, and student apprenticeships within agriculture and all CTE programs (Hustad, Mason & Adams, 2003).

Among all of the legislative acts, No Child Left Behind (NCLB) of 2002 will become one of the biggest hindrances of career and technical education in history. This act focuses on core academics, research based instruction, and highly qualified teachers. With this in mind, agriculture has had to validate their existence and integrate more science and math base standards, leaving behind some of their technical skills. Although NCLB focuses on creating skilled workers, no allowance has been given to the CTE areas (U.S. Department of Education, 2004).

Back on the right track, the New Perkins Act of 2006 implements the connection between the post-secondary and secondary education efforts. For agricultural education that means

programs of study, stronger connection with business standards, and program improvement efforts. Though very similar to past Perkins legislation the focus is very evident. For middle school education, the Perkins Act affects not only the funding but puts great emphasis on the programs of study. In November of 1999 the Office of Vocational and Adult Education with the Department of Education, presented a 16 career cluster model (United States Department of Education, 2008). From that model, Agriculture, Food and Natural Resources became the program of focus for agricultural education in all forms. The programs of study under this career cluster will not only help the student with post-secondary or work readiness but help educators, parents, and industry leaders guide the students into career exploration, curriculum focus, and relevant technical job skills for the future (National Career Technical Education Foundation, 2009).

Agriculture, Food and Natural Resources Curriculum

The curriculum for Agriculture, Food and Natural Resources has changed drastically from its beginnings in the late 1800's. During the first half of its existence, agriculture meant truly production farming and nothing beyond. Today Agriculture, Food and Natural Resources includes much more than just farming, it includes seven contemporary career pathways and over 300 different careers (National FFA Organization, 2009). Those pathways include food products and processing systems, plant systems, animal systems, power, structural and technical systems, natural resources systems, environmental service systems, and agribusiness systems (States Career Cluster Initiative, 2009). The model for classroom agriculture follows an interlocking Venn diagram model (Appendix A) which includes three sections; Classroom, SAE, and FFA. It is imperative for all three of these components to work together to encompass a strong Agriculture, Food and Natural Resources program. The classroom should include both relevant

and rigorous course work based off of new industry technologies. Just as the world and agriculture evolves, so does the education of the students. Each school, based on local industry and student interest, may have different class selections such as large animal science, greenhouse management, small engines, equine science, floral design, or even companion animals. A program in the northern forests of Minnesota would be very different than a program in downtown Minneapolis, although a well rounded agriculture experience is the primary focus. The second piece to the entire experience is the supervised agricultural experience. According to the National FFA Organization, SAE's are the actual, hands-on application of concepts and principles learned in the agricultural education classroom. Students are supervised by agricultural education teachers in cooperation with parents, employers and other adults who assist them in the development and achievement of their educational and career goals (2008). The last component includes the FFA. This national organization prepares members from 7th grade through 21 years of age for leadership and careers in the science, business and technology of agriculture (Louisiana State University Collegiate FFA, 2003). It is the vision of the National Council for Agricultural Education to create "a world where all people value and understand the vital role of agriculture, food, fiber, and natural resource systems in advancing personal and global well-being" (The National Council for Agricultural Education, 2009).

The Middle School Program

Middle school agriculture programs can be a great introduction to a field many are far too detached from today. With students being our future, it is the responsibility of educators, peers, and parents to develop a well rounded and knowledgeable young adult. According to the National Middle School Association (2003) everyday millions of students in this age bracket are "... forming the attitudes, values, and habits of mind that will largely direct their behavior as

adults.” Targeting the middle school age bracket is pivotal in targeting students during their most influential time of life (National FFA Organization, 2002). Fritz and Moody (1997) report that middle school agriculture focuses education in key areas of interest and growth in middle aged students such as: agricultural literacy, career exploration, experimental learning, and personal development. It is through this class that high school agriculture can then grow and develop on these concepts preparing students for their futures.

Students in the middle school bracket ages 11-14 years have very unique desires and individual traits that need to be focused on. This is the period of time in which their bodies and minds are changing at extreme paces. According to the American Academy of Child & Adolescent Psychiatry (1997) this stage is full of trials and tribulations of independence, future interests, cognitive ability changes, sexuality changes, moral and values development, and self-direction challenges. Agricultural education and FFA focuses on these characteristics and offers many opportunities that are developmentally appropriate to make the right decisions and develop the appropriate skills. As an FFA member, middle school students have access to leadership conferences such as MFE (Made for Excellence), region leadership conferences, and state convention workshops. They also are eligible for a host of hands-on learning opportunities such as Supervised Agricultural Experience (SAE), Discovery Degree, Career Development Events (CDE), and Leadership CDE's.

Agricultural literacy will be a key focus area during this growth stage of student lives. According to Fritz and Moody (1997) 97 percent of all people have grown up without an agricultural influence. With agriculture supplying the necessities of life, it is vital that we educate about the social and environmental impact of agriculture throughout our nation. According to the National Research Council (1988) it is not enough to just touch the small percentage of students

that have prior knowledge of agriculture and are interested in pursuing the field. Agriculture policy is a huge focus of today's economy and we need people that are knowledgeable to define where we go as a country. With a good understanding of agriculture literacy, hundreds of doors will open in career opportunities.

With the enthusiasm and open mindedness of middle aged students, this is a great opportunity to focus on career exploration in agriculture. With the exploratory nature of these students, they are looking for an identity, an identity that could be shaped by allowing for this opportunity. Here students would have the opportunity to relate what they do in class to career or work skills within their own area.

Participating in the student organization, FFA, students can acquire real world experiences through career development events. These events connect the classroom education with job skills needed for a host of agriculture careers. Career development events cover twenty-three major areas ranging from public speaking, marketing, animal evaluation, to agriculture sales. (National FFA Organization, 2008) With an opportunity to get their hands dirty, students may strike more interest in a subject they never knew about.

Hands-on learning will be able to connect the rigor and relevance of agricultural education to career readiness skills. This method focuses on one segment of the FFA motto, "Doing to Learn" (National FFA, 2008) Learning allows for true success in content comprehension. In a demonstration of real world skills, hands-on methods prove that someone truly understands the topic. If an instructor is to teach students how to weld, you would not learn this skill from a book. This type of education must be focused on critical thinking and hands-on approaches. This focuses not only on a value in comprehension, but also on the curiosity and

energy levels associated with the middle aged student. Creating an avenue to funnel their energies and strike their curiosity allows for learning.

Personal growth is a very important aspect of the middle school child. During this time of their life they are developing their self identity, learning how to set goals, sorting out their values, learning how relationships truly work, and finding their place in life. According to the National FFA Organization (2004) middle school agricultural education was originated “to start developing self-discipline, organizational and leadership skills, competitive spirit and a regard for teamwork.” Through speaking contests students are learning self-confidence and leadership. With the inclusion of career development events students are setting goals and correlating career skills to what they are learning. With various cooperative learning avenues relationship building and leadership skills are developed. It is through these efforts that Minnesota agricultural education has recognized leadership as one of their education standards. (Minnesota Department of Education, 2006)

Appealing to Prospective Agriculture, Food and Natural Resources Students

According to Hillison (1994) “In recent years, the middle/junior high school program has become a popular one and represents the fastest growing area of agricultural education” (p. 4). Although the largest area, many agricultural departments still do not have a feeder program at all or struggle with obtaining members. Recruitment strategies are on the forefront of concern.

What really works? According to a study by Myers, Dyer, & Breja (2003) the top recruitment strategies include: middle school introductory programs, agriculture teacher-student relationship, FFA events, public relation measures, and the curriculum offered. Middle school programs have created a focus for continued exploration among students. Sparking the interest in agriculture is half the battle. Teacher-student relationships can definitely influence the student

enrollment numbers. Having a caring and well liked instructor makes it easier for students to continue in the field of study. FFA events foster enthusiasm, friendships, career interest, awards and leadership abilities. Through public relations the word gets out. This may include newspaper articles, videos, or brochures distributed to the communities. Lastly curriculum can make all the difference in the world. As students change so does the curriculum. Maybe you have to shift to a more animal or plant based design, include horse production, or infuse biotechnology. With any of these instilled into the program, students should be more likely to get involved!

Chapter III: Research Methodology

Background

Middle school programs in Agriculture, Food and Natural Resources are a gateway to more advanced and specialized agriculture courses at the high school level. With enrollment numbers fluctuating from year to year, it is imperative to figure out what drives these fluctuations in the high school program. Little research has been done on what factors cause low enrollment in high school Agriculture, Food and Natural Resource classes. This study seeks to understand middle school Agriculture, Food and Natural Resources students and the factors that impact their selection of high school courses. The findings will help Agriculture, Food and Natural Resources teachers develop a plan to increase enrollment or start a middle school program.

Methodology

This study is best described as quantitative research. Due to the nature of the research, the researcher will be using a descriptive research method. According to Gall, Gall, and Borg (2003) this is the best research method to show an understanding of the subject's beliefs about certain topics. They also note that most school reform has stemmed out of the descriptive research paradigm. Since the researcher will ask subjects to complete a set or questionnaire, the researcher will depend on a one point in time descriptive method looking for current opinions.

Questionnaires by character have a few advantages in this method over interviews, time and money (Gall, 2003). Due to subject proximity to each other and the researcher the survey method was time-efficient, convenient for the subjects, and cost effective for the researcher. It was determined by the researcher that even though questionnaires limit subject elaboration and

may impact the respondent's comprehension of the questions, the positive attributes outweighed the drawbacks (Gall, 2003).

To conduct this research, the researcher's school of employment was selected. The school was chosen due to the representation of a specific population, the need of a technical middle Agriculture, Food and Natural Resources school program and proximity of the researcher. Chisago Lakes School District is a consolidated district of five small towns consisting of Lindstrom, Center City, Shafer, Chisago City, and Taylors Falls located in east central Minnesota. The district has a suburban school feeling in a rural area, since it is located just thirty-five miles from the Minneapolis/St. Paul area. Student ethnicity at the high school level is approximately 92 percent white, 4 percent Asian, 3 percent mixed race, and 1 percent other. The Population of the school district is approximately 3,600 Pre-K through 12th grade mainly middle class socio-economic students (Chisago Lakes School District, 2009).

Procedure

The Chisago Lakes High school tenth grade and eighth grade population, approximately 250 students per grade will be the subject matter for this study. Due to the school not having a middle school program, the high school class was chosen due to their exposure to the current high school program. Although an elective course, many students have a base knowledge of the program by either having taken a class or they were exposure to it in the school setting. The researcher considered surveying the 9th grade population due to their closer age proximity to the middle school student. The researcher decided to proceed with the 10th grade class due to an early fall survey; thereby, maximizing the chance that subjects had taken an agriculture course. Each subject was asked their opinion on the agriculture program whether they have taken an agriculture class or not. In addition, the eighth grade class was also chosen for the study due to

their developmental level and ability to offer insight. Each student within this age bracket was asked about their interest in possible courses and what motivates their decision regarding class selection. It is the researchers hope to weigh both sides and construct an unbiased conclusion, about enrollment decisions and the implementation of a middle school program.

Prior to the study, the researcher went through human subject training supplied by UW-Stout to comply with the federal common rule and the U.S. FDA regulations. Upon completion of the training, the study was IRB approved. To obtain consent for each minor student to participate, a permission letter was sent home two weeks prior to its start through the subject's homeroom. In addition, the school district newsletter provided a description of the research. Parents had the option on the consent form to opt their child out of the research. A list developed indicating students that were not provided with parental consent thereby removing them from the subject pool.

Instrumentation

The research design is that of descriptive survey research. Through this survey it is hoped to gather quantitative data that highlight findings in response to the studies overarching research questions. Each survey question was carefully designed and analyzed to maximize their alignment with the four key research questions guiding the study (Gall, 2003). These questions individually addressed possible factors related to the subject's reasons for selecting an agriculture class. Factors included in the distribution include: curriculum impact, instructor impact, peer impact, and career goal impact. The response validity was based on the being able to determine which respondents have taken an agriculture course and those that have not. All eighth and tenth grade students were asked to participate to minimize sampling bias in the target population (Gall, 2003).

The survey included multiple choice and Likert scale question items. Multiple choice questions will allow the surveyed students to pick the best answer out of all possibilities given. The majority of questions were based on a four point Likert scale. Likert Scale questions allow a researcher to access the subject's personal emotions and ideals about a particular subject. These scales allow for a ranking system which will match the strength or weakness of their emotions with the answers. The Likert response allows for a precise spectrum of desired responses (San Diego University, 2009). According to research conducted by Charlotte Royeen (1985), the Likert scale is appropriate for the mental capabilities of young children.

Prior to the actual study a pilot study the instrument was distributed to a validation panel, to gauge effectiveness, reliability and validity of each survey question (Gall, 2003). One study tested by a veteran teacher with years of experience with this age range of students. In addition, the researcher's three FFA officer team members also tested the survey. Through their feedback, the researcher refined questions that were perceived confusing. Reliability was maximized through the pilot test and by applying the survey to a large subject pool. Validity was maximized through the pilot test and the refinement process (Gall, 2003).

The data collection method used included a researcher designed seven and nine question paper-based survey (Appendix B and C). The paper survey was chosen due to the ease of distribution and the lack of student access to computers at one time. Prior to dissemination, the school-wide survey date was submitted to and approved by building administration. Two days prior to the survey date, an email was disseminated to all staff explaining the survey's purpose and a copy of the proctor tutorial they needed to read. This allowed survey proctors to ask any questions of the researcher related to the data collection process. The survey was placed in each instructor's mailbox the night prior to the school-wide distribution. Included with the survey

were proctor directions and a preaddressed envelope with instructions to return them to the researcher in a manner that provided the confidentiality of the research respondents. Tutorials were included to insure survey administration uniformity.

Data Collection Procedures

Each student was be supplied a survey within their homeroom on a set date. The tutorial was read by the individual survey proctor (the subject's homeroom teacher). After instruction, respondents were allowed to read through and respond to the survey questions. The entire process took approximately ten minutes. Upon completion, each proctor placed the completed surveys back in the researcher's mailbox and check off their homeroom indicating the completion of the task. Those proctors that had not returned the surveys within two days of the proctor date were reminded through email sent by the researcher.

Data Analysis

Data was compiled and organized according to individual question and whether the respondent indicated taking an agriculture course. This allowed the researcher to analyze each cause of enrollment in relation to the prior knowledge of the students. From this information the researcher used descriptive statistics to analyze responses. Since the research was a sample at one point in time, the use of derived scores and central tendency are the main focus of analysis (Gall, 2003). This method will be used due to the opinion likeness of the study. The data from each question on the survey was matched to the respective overarching research question that the study sought to answer.

Findings and the researcher's recommendations are intended to be shared with Chisago Lakes school district administration, career and technical staff, and also the Minnesota

Association of Agricultural Educators. It is the researcher's hope that the importance of and the need of a middle school agriculture program can be shared with the appropriate publics and decision makers.

Chapter IV: Results

Introduction

This chapter examines the data gained from the agricultural influence survey administered to 486 students in October of 2009. The purpose of this study was to identify what effects a middle school program would have on enrollment levels of high school agriculture courses. The research was designed to understand factors that influence student course selection. Eighth and 10th grade students at Chisago Lakes Middle and High School were surveyed to determine factors of enrollment verses non-enrollment and to provide a picture of their general interest in agriculture education. The results will attend to each of the four key research questions guiding this study. Findings will be presented in the ensuing pages of this chapter.

Response Rate

Based off of parent permission responses, 258 of the 276 students in the tenth grade were eligible to complete the survey. Returned responses included 225 students or 87% of those eligible completed the survey. 272 out of 284 students in the eighth grade were eligible to take the survey based again on parent permission responses. 261 students completed the survey for a 96% response rate of those eligible.

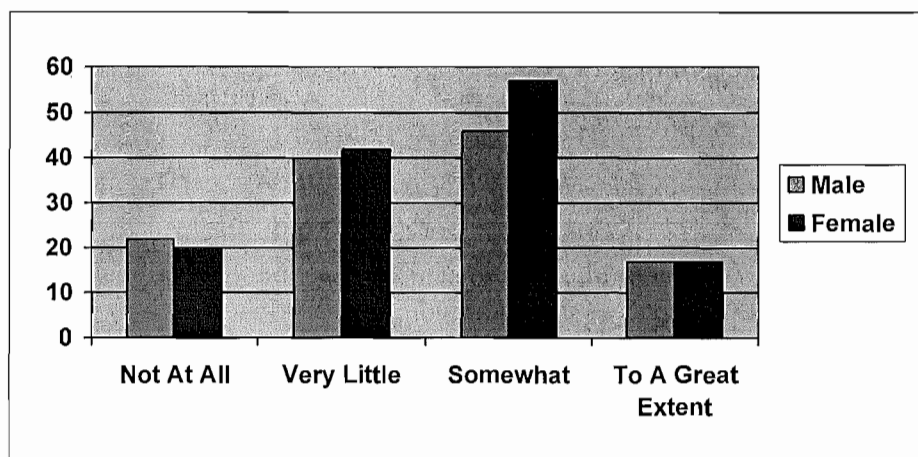
Eighth Grade Survey

Question one asked each student to identify whether they were male or female. With a 100% response rate to this question, it was found that there were 125 males (47.9%) and 136 females (52.1%) for a total of 261 responses.

Question two asked if class topics such as animal science, fish & wildlife, companion animals, natural resources, floral design, horse science, plant science, and youth leadership

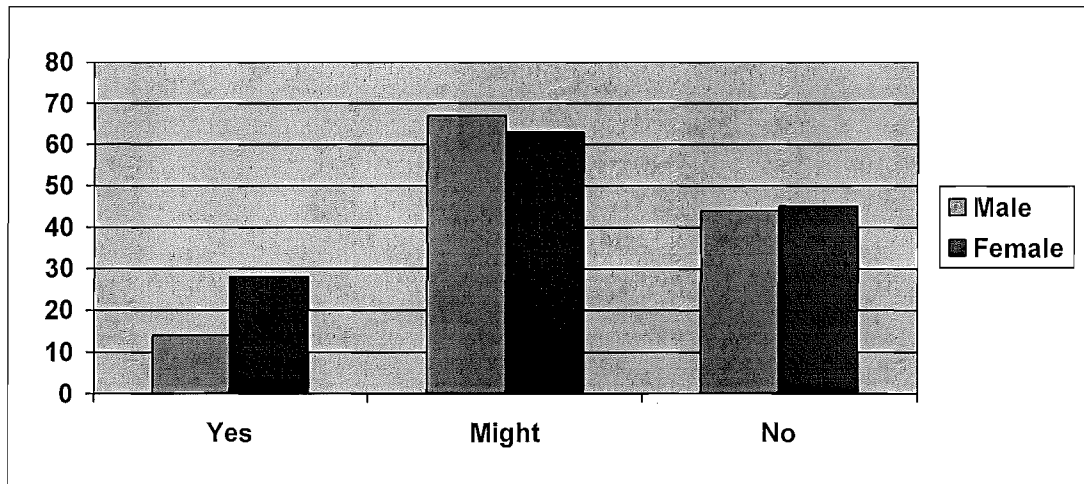
interested the respondent. This question sought to identify if there was immediate interest in the suggestion of the agriculture field. Results highlight that 16.1% were not at all interested, 31.4% were interested very little, 39.5% were somewhat interested and 13% were interested to a great extent. Figure 1 shows that over half the students have at least somewhat of an interest in those course topics. Complete results on figure 1.

Figure 1. Eighth Grade Agriculture Class Topic Interest



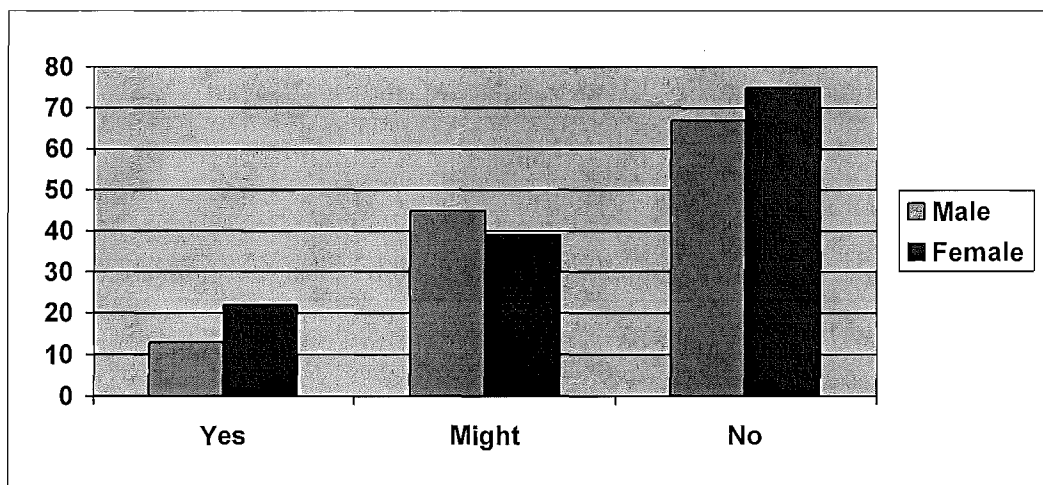
Question three inquired to those surveyed if they would be interested in taking a hands-on elective agriculture course if they had the opportunity. Forty-two respondents indicated they would, 130 might, and 89 would not. Figure 2 highlights that 65.9% of the respondents would or might take an elective agriculture course. Interestingly enough, more females (66.9%) than males (64.8%) reported a willingness to explore taking an agriculture course.

Figure 2. Probability of Taking an Elective Agriculture Course in Eighth Grade



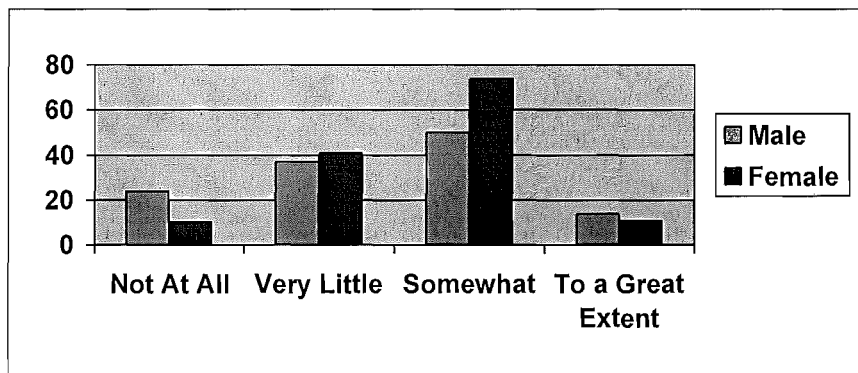
Question four asked the students if the topics of animal science, fish & wildlife, companion animals, natural resources, floral design, horse science, plant science, and youth leadership would sound like career options to them. 13.4% said yes, 32.2% said it might and 54.4% said no. Based on the results, 45.6% of those surveyed said that the agriculture topics listed might be or is a career interest area (see results on Figure 3)

Figure 3. Agriculture as a Eighth Grade Career Interest Area



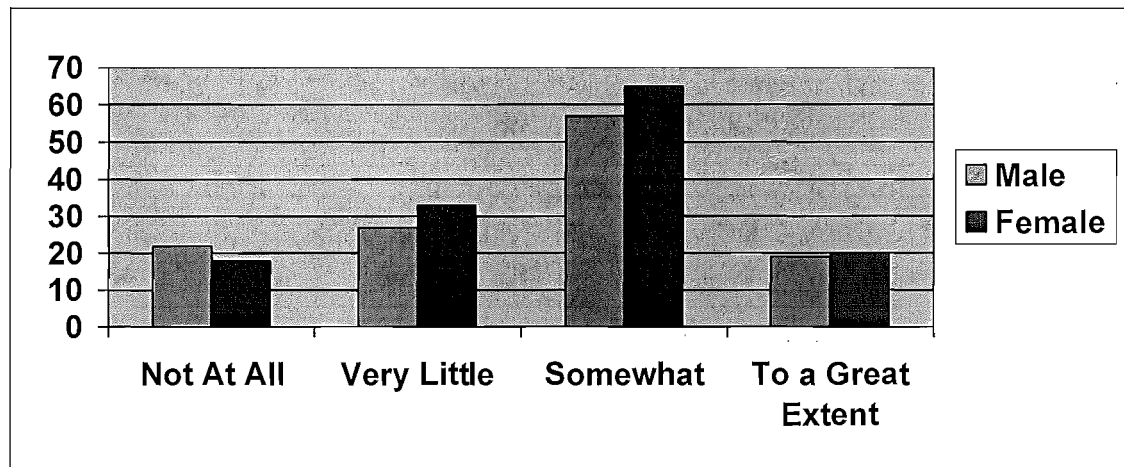
Question five asked to what extent their friends influence their class selections. 13.0% said not at all, 29.9% very little, 47.5% somewhat and 9.6% said to a great extent. Based off of figure 4, 51.2% of the males surveyed admit that their friends have somewhat or a great extent of influence on their course decisions. Interesting enough, 62.5% of the female students admit that their friends have somewhat or a great extent of influence on their course decisions. Additional results are highlighted in figure 4.

Figure 4. Influence of Friends on Eighth Grade Course Decisions



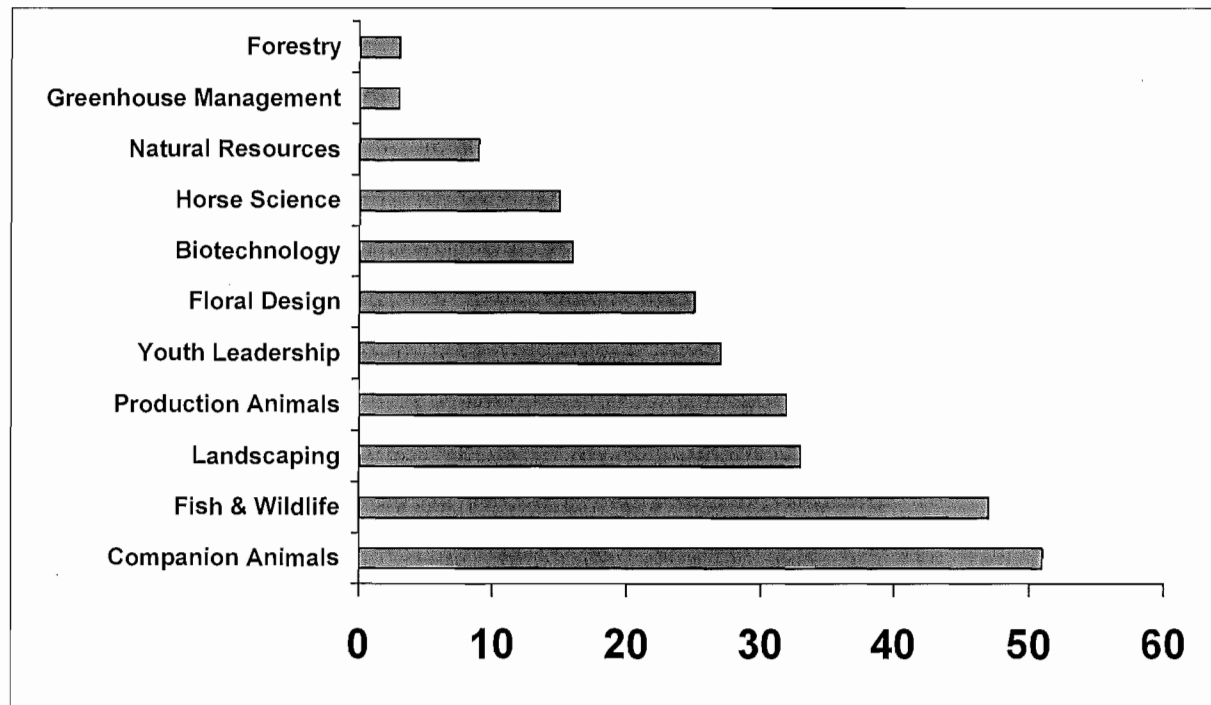
Question six rose to the students surveyed, does what they know about the teacher influence their course decisions? 15.3% said not at all, 23.0% very little, 46.7% somewhat and 15.0% said to a great extent. Based off figure 5, 60.8% of males and 62.5% of females say that the teacher has somewhat or a great extent of influence on their course decisions (see figure 5)

Figure 5. Eighth Grade Influence of Teacher Perceptions on Course Decisions



Question seven asked the students to rank in order of importance to them the agricultural topics that were listed. Topics included: Wildlife & Fisheries, Companion Animals, Production Animals, Horses, Biotechnology, Greenhouse Management, Forestry, Youth Leadership, Landscape Design, Floral Design and Natural Resources. Results were tallied based on their number one interest. The topic of most interest was companion animals (20%), followed by fish & wildlife (18.0%), landscaping (13%) and production animals (12%). Additional results are highlighted in figure 6.

Figure 6. Eighth Grade Student Agriculture Topic Interest

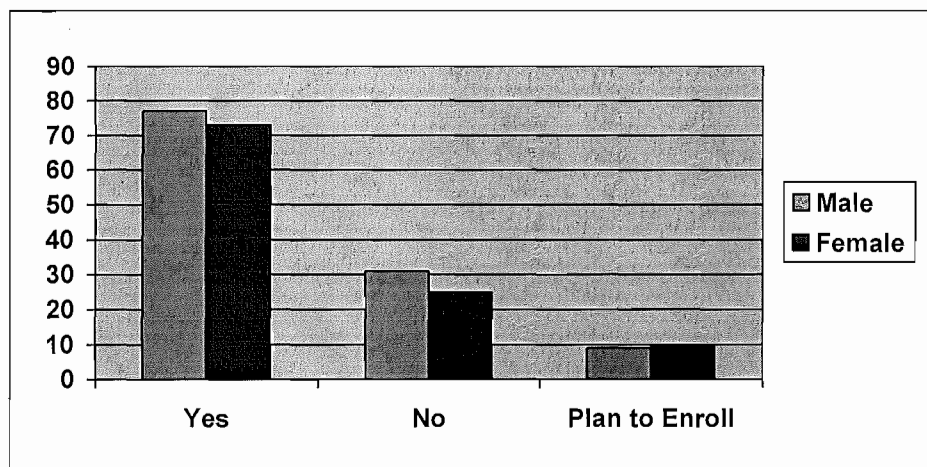


Tenth Grade Survey

Question one inquired each student to identify whether they were male or female. With a 100% response rate to this question, it was found that there were 117 males (52%) and 108 females (48%) for a total of 225 responses.

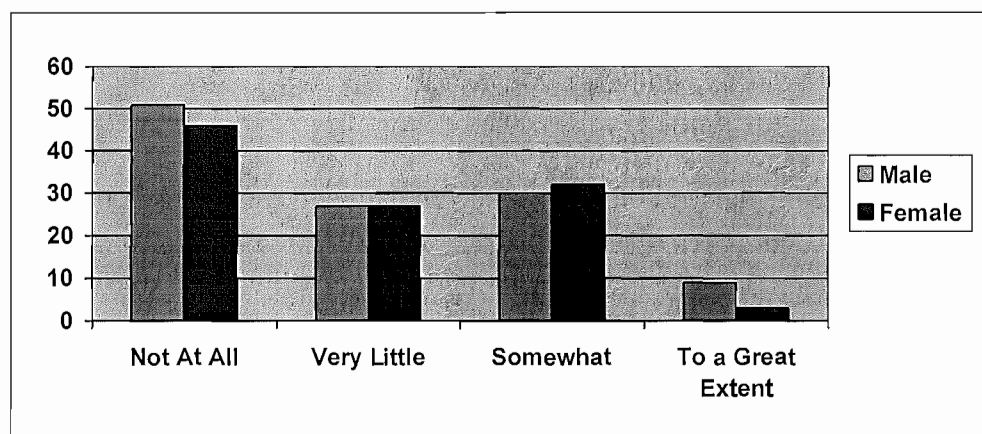
Question two asked the students if they plan on or have ever been enrolled in an agriculture course. This question was geared to get prior experience and planning information, since they have been exposed to the existing high school program. 66% said they have taken an agriculture course, while 8.4% plan on taking a course and 24.9% have no plans to take an agriculture course. Complete results on figure 7 below.

Figure 7. Tenth Grade High School Enrollment Status in Agriculture Classes



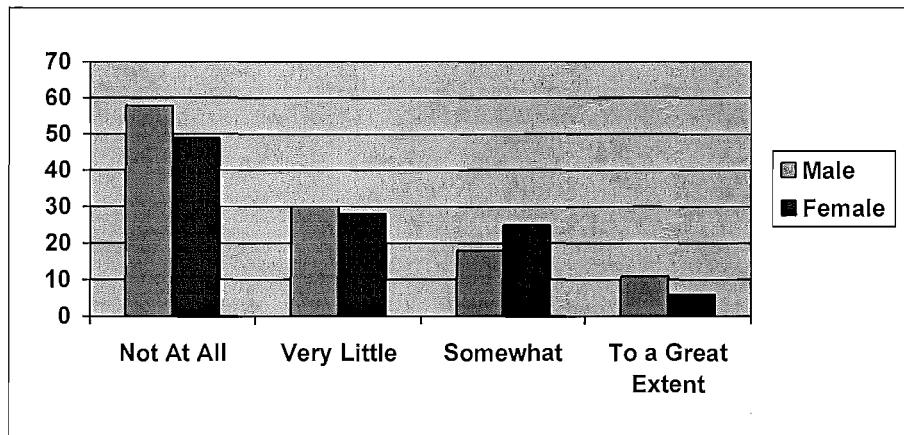
Question three inquired to what extent their friends influence their class selections. Totals include 43.1% claiming not at all, 24% very little, 27.6% somewhat and 5.4% said a great extent. Figure 8 highlights that 63.2% of the males surveyed admit that their friends have somewhat or a great extent of influence on their course decisions. Comparing the female results, 32.4% admit that their friends have somewhat or a great extent of influence on their course decisions. Surprisingly there is a difference between ninth grade and tenth grade and gender.

Figure 8. Tenth Grade Friend Influence on Course Selection



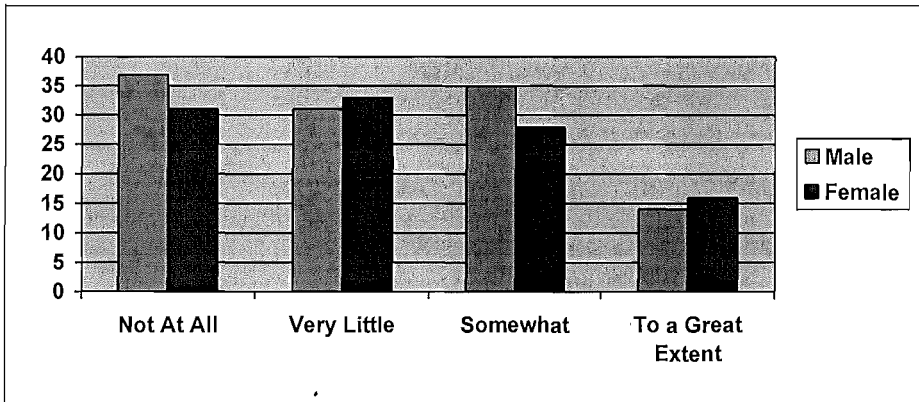
Question four asked to what extent scheduling conflicts play in agriculture course selection. 24.8% of males and 28.7% of females say that scheduling conflicts affect course enrollment at least somewhat. This statistic points out a little over 25% of our students struggle with scheduling conflicts (see Figure 9).

Figure 9. Tenth Grade Scheduling Conflicts



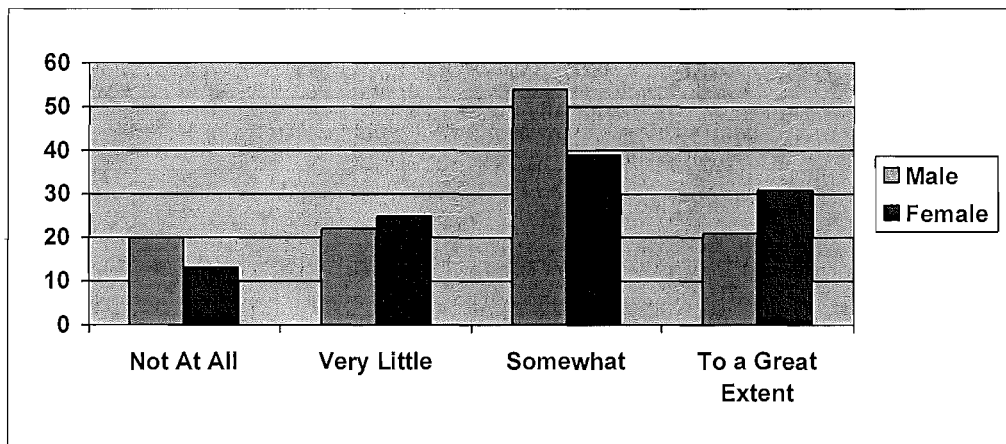
Question five asked the students to what extent their future career goals play on agriculture course selection. 41.9% of males and 40.7% of females stated that their career goals play at least somewhat of a role in course selection. If 40% of students are searching for a career and find it in agriculture, it is a telling sign for the entire department and also industry. Comprehensive results included on figure 10 below.

Figure 10. Tenth Grade Career Goal Effects on Agriculture Course Enrollment



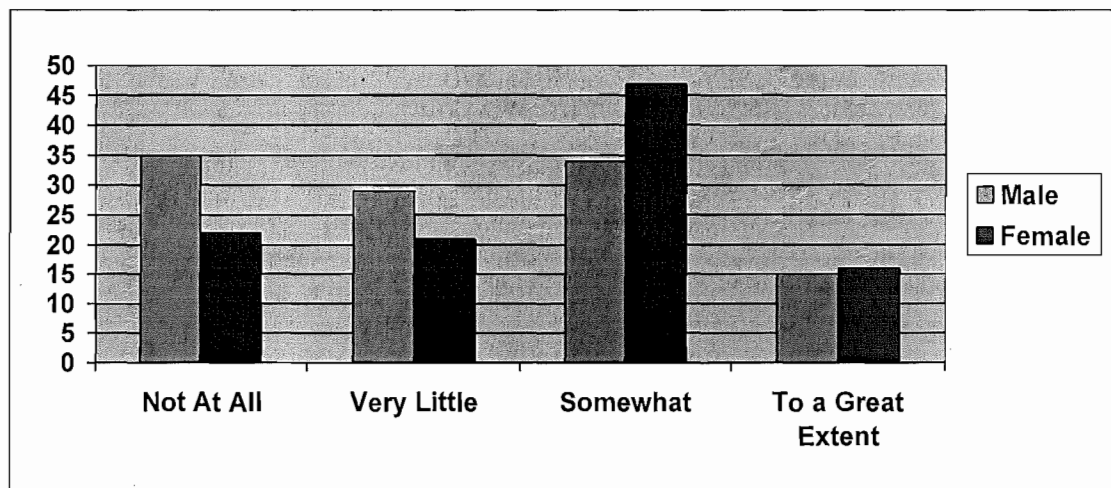
Question six asked the students to what extent their personal interest in courses offered at Chisago Lakes affected their course selection. 64.1% of males and 64.8% of females stated that their personal interests play at least somewhat of a role in course selection. As an elective course you would have thought this number would have been higher. Complete results on figure 11 below.

Figure 11. Tenth Grade Course Selection Based off of Personal Interest



Question seven asked the students to what extent their preconceived ideas about the instructors had on agriculture course enrollment. 26.0% said not at all, 22.8% very little, 37.0% somewhat and 14.2% said to a great extent. Overall, 51.1% stated that the instructors played at least somewhat of an influence in course selection (see Figure 12).

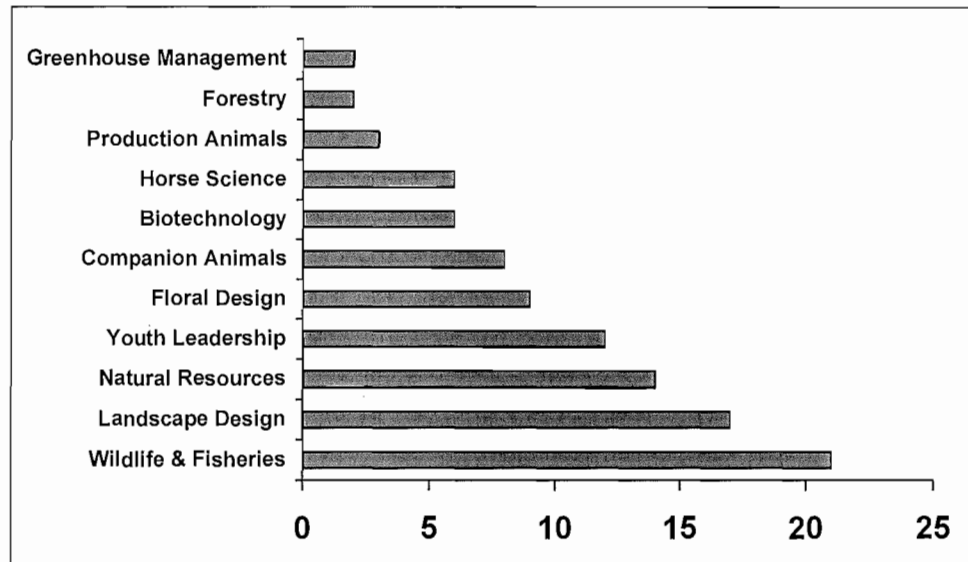
Figure 12. Tenth Grade Course Selection Based Off Personal Perception of Instructor



Question eight asked the students if they were given the opportunity to take a middle school agriculture class, would they? Among tenth grade males, 47.8% stated yes, 37.2% stated they would have considered it and 15% said no. Among tenth grade girls, 54.7% stated yes, 35.9% stated they would have considered it and 9.4% said no. With a total of 87.7% of tenth grade students that would have at least considered the option, there is an obvious need in the middle school for this opportunity.

To finish, question nine asked the students to rank in order of importance to them the agriculture topics that were listed. Topics included: Wildlife & Fisheries, Companion Animals, Production Animals, Horses, Biotechnology, Greenhouse Management, Forestry, Youth Leadership, Landscape Design, Floral Design and Natural Resources. Results were tallied based on their number one interest. The topic of most interest was Wildlife & Fisheries (20%), followed by Landscape Design (17%), Natural Resources (14%) and Youth Leadership (12%). Complete results on figure 13 below.

Figure 13. Tenth Grade Student Interest in Agriculture Topics



Chapter V: Discussion

Introduction

The goal of this study was to identify what effects, if any, a middle school program would have on enrollment levels of high school Agriculture, Food, and Natural Resources courses. Eighth and 10th grade students of Chisago Lakes High School were surveyed to determine factors of enrollment verses non-enrollment and also general interest. These factors were then used to determine whether a middle school Agriculture, Food, and Natural Resources program may stabilize course enrollment and tailor to student interests. In this chapter, the researcher will discuss conclusions based off of each research question, the limitations of the study, and final recommendations.

Conclusions and Recommendations of Research Questions

Research question one; To what extent does the agriculture instructor impact the future course enrollment in agricultural education? Findings indicate that 61 percent of eighth grade respondents and 51 percent of tenth grade respondents say that the instructor has above a likely impact on course selection. It can be concluded that there is a correlation between the likability of the instructor and student enrollment. Affirming Myers, Dyer, and Breja (2003) study , teacher-student relationships can definitely influence the student enrollment numbers. Having a caring and well liked instructor makes it easier for students connect to and continue in the field of study.

Recommendation one is vitally important to all agricultural educators and teacher preparation programs in agricultural education. How teachers develop and are trained is imperative to the life of each program. These findings include looking at the involvement of the instructors and connections they have with students. Becoming more visible to the students at

student functions, creating an FFA leadership opportunity, and relating with students on a personal level would all aid in connecting the instructor to the students.

Research question two; In an effort to understand the curriculum impact on student course enrollment in agricultural education. Among eighth grade respondents, 52 percent of them stated that agriculture topics interested them. As tenth grade students impacted already by the curriculum, 66 percent have taken a course and another 8 percent plan on enrolling in the future. These students agreed that 64 percent held a personal interest in the agriculture curriculum offered at their school. From these findings, it is concluded that although some students have not had a connection with these classes yet, it still is of high interest to the population. The high percentage of curriculum interest has to do with the hands-on and contemporary nature of the curriculum. Students can see the real world connections and opportunities that are available through career and technical education. All CTE areas are striving for these connections, especially through the States Career Cluster initiative.

Recommendations for research question two focuses on the students of CTE. Efforts to increase enrollment include a booth or presentation at freshman orientation to strike more high school interest, registration department fliers, or student ambassador programs. Showing middle school students examples of other student successes is enough to spark an interest so they look further into their decision of class opportunities. To encourage the development of a middle school program, efforts need to be focused on administration and school board presentations, community and advisory board support, and clearly strong parent support efforts. Conveying the need to the school board is crucial since they hold the financial key to all district programming. Without their support, middle school agricultural education comes to a dead end.

Research question three; This question looked at the extent of peer impact on course enrollment in agricultural education. According to the survey 57% of eighth grades students and 33% of tenth grade students say their peers have an effect on their course selection. Being broke down into gender roles seemed to reverse with age. Eighth grade females appear to be more influenced by peers with a 62% to 51% of male students. In high school, males seem to be more influenced by their peers with approximately 63%, where 32% of females stating the same thing. From the findings, it is interesting to conclude as a whole middle school students are more influenced by their surrounds. Yet the most fascinating conclusion to this question is the male and female role reversal.

These conclusions match the findings of the National Middle School Association (2003) studies of child development. In the middle school age bracket, the students are the most influential as they are developing their identities, what their beliefs and values are. Based off of these findings, the researcher's recommendation is to cater to highly interactive classes that offer rigorous hands-on projects and curriculum that gives them real life outcomes. Driving these developing students to instantly connect a topic to their lives and see success will insure class enrollment. These finding are imperative for each CTE educator to grasp on to. If they can strike interest at this age it may create a career pathway for life.

Research question four; This question sought to answer if student career goals impact their enrollment in the agriculture program in the high school. While 66% of eighth grade students say that they would be interested in taking a course, only 46% of those students might consider it to be a career option. At the tenth grade level, 66% have taken a course and 40% of students are possibly searching for a career in agriculture. Based on the survey, conclusions point

to a large percentage of students being interested in agriculture as a career field. High ranking courses of interest included Fish and Wildlife, Greenhouse Management and Natural Resources.

Recommendation: Increasing agricultural career interest requires implementing a middle school agriculture program, and staffing it with a teacher that resonates with middle school students. The natural curiosity of middle school students is conducive to setting the foundation for an agriculture, food and natural resources pathway. Additionally, it is recommended that the agriculture teachers and its professional community educate and inform school counselors thoroughly on student academic benefits and career options in agriculture. Many teachers blindly believe that school counselors understand subject/program area of practice. Unless that counselor has an agriculture background, the only thing to expect is they know the course description. It is recommended to have a session with all counselors on the many opportunities in agriculture so they may better guide students into a specific interest area.

Limitations of the Study

The limitations of this study include:

1. The findings represent one geographic area of MN; therefore findings may have been influenced by factors such as a concentrated grouping, knowledge of agriculture, and student grade restrictions. The findings then are not generalizable; it is merely a reporting of what the findings are relative to one school district.
2. The research design and survey tool, while controlling for validity and reliability, were designed for the researchers expressed research interest. Being a novice researcher, the study would need to be replicated to add a higher degree of confidence and to make the findings more generalizable.

3. Since the study was given in the fall, tenth grade students may just be starting their term or have no knowledge on the program or what it may offer. Their memory of positive or negative experiences may then play into their survey answers.

Final Recommendations

Through this study the student want and need for a middle school agriculture program is supported. With the high student interest and career prospect available in agriculture, it is a shame to deprive our students of this opportunity. The following is a list of overall recommendations based on the findings of the study. It is not implied that this is inclusive but a start to addressing the need.

1. Share the study with department advisory board, community members, administration, and the school board to solicit support in implementing a middle school agriculture program locally. The findings should also be shared on a broader level to all CTE instructors and CTE teacher preparation programs.
2. Create an educational booth at freshman orientation night or eighth grade exploration day. This requires the development of engaging promotional materials that communicate agriculture classes and career opportunities in an impactful manner.
3. Create a student ambassador program with key FFA students to help give new students a connection to the agriculture department. Showcase student achievements to show what their opportunities entail.
4. Educate the school counselors on classes offered at the high school and career opportunities in agriculture. They can be a huge advocate when the students are deciding a career pathway or schedule of classes.

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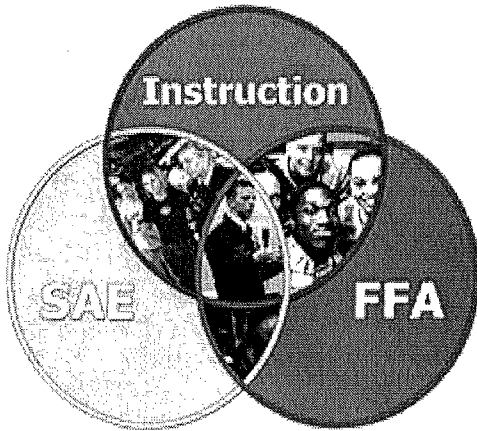
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Appendix A: Agricultural Education Model



Note. From http://www.ffa.org/index.cfm?method=c_about.mission

Appendix B: Instrument - 8th Grade Survey8th Grade Agriculture Interest Survey
(No names please) Thank you for your time!

1. Are you a male or female student?

- a. Male b. Female

2. Class topics like: animal science, fish & wildlife, companion animals, natural resources, floral design, horse science, plant science, youth leadership interest me.

- | | | | |
|------------|-------------|----------|-------------------|
| Not at all | Very Little | Somewhat | To a Great Extent |
| 1 | 2 | 3 | 4 |

3. If you had the opportunity to take a hands-on elective agriculture course would you?

- a. Yes b. No c. I might consider it

4. At this point, do any of these areas sound like career options you may consider?

- a. Yes b. No c. I might consider it

5. To what extent do your friends influence your decision on courses you take for electives?

- | | | | |
|------------|-------------|----------|-------------------|
| Not at all | Very Little | Somewhat | To a Great Extent |
| 1 | 2 | 3 | 4 |

6. When choosing an elective course does what you know about the teacher influence your decision?

- | | | | |
|------------|-------------|----------|-------------------|
| Not at all | Very Little | Somewhat | To a Great Extent |
| 1 | 2 | 3 | 4 |

7. Rank the following class topics in order of importance to you:

(1=most interested 10 = least interested)

- _____ Wildlife & Fisheries (Minnesota Wildlife, Birds, Insects and Fish)
- _____ Companion Animals (Cats, Dogs, all pets)
- _____ Production Animals (Cattle, Pigs, Sheep)
- _____ Horses
- _____ Biotechnology (DNA Extraction, Tissue Culture, Product Altering)
- _____ Greenhouse Management (Work with growing Flowers/Vegetables/Fruits)
- _____ Forestry (Tree Products)
- _____ Youth Leadership
- _____ Landscape Design (Learn how to landscape, hands-on labs)
- _____ Floral Design (Make flower arrangements/corsages/holiday designs)
- _____ Natural Resources (Environmental concerns, water-air-soil)

Appendix C: Instrument - 10th Grade Survey10th Grade Agriculture Influence Survey
(No names please)

1. Are you a male or female student? (Circle one)

- a. Male
- b. Female

2. Are you or have you ever enrolled in a high school agriculture class for example: Animal Science, Fish & Wildlife, Natural Resources, Floriculture? (Circle one)

- a. Yes
- b. No
- c. Plan to enroll

3. To what extent did your friends influence your decision to take a high school agriculture class? (Circle one)

Not at all	Very Little	Somewhat	To a Great Extent
1	2	3	4

4. To what extent did scheduling conflicts play a major role in the selection of an agriculture class in high school? (Circle one)

Not at all	Very Little	Somewhat	To a Great Extent
1	2	3	4

5. To what extent do your future career goals play a role in the selection of an agriculture class in the high school? (Circle one)

Not at all	Very Little	Somewhat	To a Great Extent
1	2	3	4

6. To what extent does your personal interest in the course opportunities at Chisago Lakes affect the selection of an agriculture class in the high school? (Circle one)

Not at all	Very Little	Somewhat	To a Great Extent
1	2	3	4

7. How much influence does your preconceived ideas about the current high school agriculture teachers (Lindeman & Schwartz) play on your selection of agriculture in the high school? (Circle one)

Not at all	Very Little	Somewhat	To a Great Extent
1	2	3	4

8. If you had the opportunity to take a hands-on elective agriculture course in the middle school would you have? Class topics would cover: animal science, fish & wildlife, natural resources, floral design, horse science, plant science, youth leadership, etc.) (Circle one)

a. Yes b. No c. I might consider it

9. Rank the following class topics in order of interest to you:
(1=most interested 10 = least interested)

- _____ Wildlife & Fisheries (Minnesota Wildlife, Birds, Insects and Fish)
- _____ Companion Animals (Cats, Dogs, all pets)
- _____ Production Animals (Cattle, Pigs, Sheep)
- _____ Horses
- _____ Biotechnology (DNA Extraction, Tissue Culture, Product Altering)
- _____ Greenhouse Management (Work with growing Flowers/Vegetables/Fruits)
- _____ Forestry (Tree Products)
- _____ Youth Leadership
- _____ Landscape Design (Learn how to landscape, hands-on labs)
- _____ Floral Design (Make flower arrangements/corsages/holiday designs)
- _____ Natural Resources (Environmental concerns, water-air-soil)

Thank you for your time and willingness to complete this survey ☺