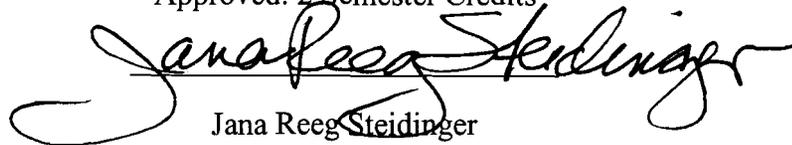Boyceville High School Female Students' Opinions
Toward Perspective Technology
Education Courses

by
Frank Fetzer

A Research Paper
Submitted in Partial Fulfillment of the
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ABSTRACT

Technology has become deeply imbedded in our society as new forms of technology are being introduced at an amazing rate. New occupations are created daily which, in some aspect, are related to technology. Students need to be exposed to as much technology as possible in their schools in order to help make informed career decisions and to ensure their ability to succeed in a highly technical job market. Technology Education prepares students for the workforce by enhancing their technology literacy and providing opportunities for technological career exploration.

Technology Education has unfortunately been plagued by a major absence of female enrollment. Boyceville High School follows that trend with a lack of female participation in Technology Education. Due to this gender inequity situation, a significant proportion of the student population is missing an opportunity to be exposed to a crucial aspect of society.

The purpose of this research study was to identify female students' opinions of current and potential Technology Education courses at Boyceville High School. Female students were asked to complete a survey identifying courses which spark their interest and whether they would

participate in the courses if offered. By identifying and offering those courses of interest, the intent would be to increase female enrollment in Technology Education.

The results indicated that the Photography course was the only existing Technology Education course with significant female interest. The study also identified Graphics Communications and Web Page Design as potential courses with considerable female interest. Study participants, almost unanimously, indicated they would enroll in the courses of interest if offered.

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TABLE OF CONTENTS

List of Tables

CHAPTER I: Introduction

Introduction

For as long as Technology Education has existed, there has been an uneven distribution of male to female enrollment. Female students tend to shy away from these male dominated classrooms. In the past, the reasons for this gender inequity were obvious. Society dictated that males were responsible for filling all industrial and technological fields. Therefore, females were discouraged and often not allowed to enroll in industrial technology classes.

Times and society have changed. Women have the option of either staying at home with their children or working outside of the home. They are distributed throughout all areas of the workforce and have proven to be as capable as males in both technical and industrial careers. Society demands that female and male students be equally prepared for the advancing technological world. Such expectations have created the need for females to be equally exposed to technology related curriculum. Many schools have changed their programs in order to encourage female students to enroll in Technology Education classes at a greater frequency. Despite this altered curriculum, female students still represent a small portion of the population enrolled in Technology Education courses.

The lack of female students participating in Technology Education courses is one of the most common problems professionals in the field have to face. Districts continue to push for diversified enrollment. Often parents and school administration feel that classes that are only directed at one half of the school's population are wasting valuable resources. Additional work must be done to increase female enrollment in these areas. According to Karnes (1999) "Technology Education will never truly be general education - an integral and meaningful component of every students' educational experience - unless this obvious flaw is remedied

through whatever means is necessary to do so" (p.12).

Providing equal opportunities for males and females is a critical issue for Boyceville High School, a 9-12 school with an approximate enrollment of 300, located in Northwestern Wisconsin. While an increased percentage of Boyceville's workforce commutes to larger cities in the area, the majority are still employed in farming and general labor. The socio-economical situation in the community varies from lower to middle class, with a small percentage in the upper-middle class range. With a fluctuating population of approximately 1,000, very limited career opportunities are available within the immediate Boyceville area.

Boyceville High School's Technology Education program suffers from the same lack of female enrollment that has plagued other programs. Female students represented just over 30% of the students enrolled in Technology Education courses during the past three years according to Boyceville High School's Guidance Councilor Sue Grohn (personal communication, January 15, 2006). This figure is misleading due to the fact that the majority of the females are enrolled in photography classes, while the other technology courses had a significantly smaller female enrollment. The courses offered include Photography, Woodworking, Electronics, and Industrial Enterprise. The last was added, with limited success, as an attempt to increase female enrollment. All students (male and female) are required to participate in exploratory classes in Technology Education during their 7th and 8th grade years. In high school, enrollment in technology courses is optional. According to Childress(2006), "Technology education students at the secondary level represent a fair cross section of society, but the profession needs to keep its students enrolling in high school after they have taken the middle school exploratory courses"(p.8). Boyceville High School's Technology Education department, in conjunction with

the Guidance department will intend to identify courses and curricular material to increase female students' participation in technology courses.

Statement of the Problem

The purpose of this study was to determine the Technology Education course preferences of 9-12th grade female students enrolled at Boyceville High School. A survey was distributed to female students in their homerooms during the spring semester of 2006.

Purpose

1. Society has a need for women who are knowledgeable and comfortable with technology. Employers will benefit because of early female exposure to non-traditional female careers.

2. The future of Technology Education is dependant upon the ability to equally attract students of both genders.

3. Boyceville's school board supports gender equity in Technology Education.

4. Boyceville's Technology Education program receives a significant amount of its funding from CESA. CESA can base funding for Technology Education on a gender-balanced enrollment.

5. Teachers benefit by identifying possible curriculum and course changes that would increase the diversity of their student populations.

6. Female students benefit by being exposed to a wide variety of careers and developing skills that might not be addressed in other areas.

Assumptions

Three assumptions have been made during this study.

1. The school district's decision to alter courses and curriculum would not be based on monetary issues.

2. Students would not be discouraged from enrolling in technology classes by parents, peers, guidance counselors, or teachers.

3. Students based their answers upon their own opinions.

Definitions of Terms

There are multiple terms that are referred to throughout the study. Their definitions follow.

Cooperative Educational Service Agency (CESA) –Wisconsin regional educational agency that provides educational assistance to school districts. Assistance includes grants, training, subject expertise and resources.

Explorer Classes - Classes designed to expose middle school students to all of the opportunities available in the different departments of the high school. The classes are intended to spark interest and assist 8th grade students in making informed decisions while selecting and scheduling their high school classes.

Gender Equity – Equal opportunities provided for males and females. Both genders' needs are accommodated at the same time and in the same manner.

Technology - Anything made by mankind that helps to solve a problem, improve quality of life, or allows mankind to do something they could not do before.

Technology Education - Classes designed to help students develop skills in problem solving, design, the use of tools, and knowledge of technology. Common classes include Drafting, Metals, Woods, Construction, and Communications.

Methodology

Information was gathered through the use of a survey distributed to 9th-12th grade female

students enrolled at Boyceville High School. It was distributed to the students during homeroom in the spring of 2006. The survey data was analyzed to identify female students' opinions toward current and potential Technology Education courses.

Chapter II: Literature Review

Introduction

Many high schools nationwide have attempted, with varying degrees of success, to incorporate female students into traditionally male dominated Technology Education courses. In most instances, female students were successfully assimilated into Technology Education courses through systematic elimination of school related obstacles that discourage female participation.

Technology Education teachers have recognized the need to devote increased amounts of time and energy toward addressing the lack of female involvement in Technology Education. When the situation was first addressed, studies primarily focused on the need for gender equity in Technology Education. Research studies next focused on the degree to which the problem existed yet provided little insight regarding resolution. Not until the past decade have studies begun to offer possible solutions and implementation plans.

Gender Roles

Females have been excluded from Technology Education, since the discipline's inception. When the purpose of education was to pass on survival skills, males were taught to hunt, farm, and protect the family while females were taught to care for their children and to cook. Therefore, men were trained as providers and women as caregivers.

As families evolved from the survival/basic procreation mode, education methodologies changed as well. Families began to pass on specific trade skills from generation to generation. According to Phillips (1985) "The laws of the group...required that every young man be taught a hand skill and be required to contribute to the group through his skills" (p.15). Just as they had before, men taught their sons the family trade and mothers taught their daughters domestic skills.

Social structure separations only exasperated women's exclusion from learning manual and technical skills. Working class families required the females to raise the children while the men provided for the family by participating in farming or the trades. In upper class families, neither the male nor female were likely to participate in the trades or manual arts. Phillips

(1985) states "These dominant groups shaped the organization of education and established Classical Education" (p.15). Their attention transferred to non-survival interests such as religion and art.

Gender Equity

Females were often not allowed to enroll in industrial arts courses of the 1950's. According to Haynie (1999), "The boys who enrolled in the industrial arts shop courses, and the men who taught those classes, viewed them as a "man's world" (p.27). The industrial arts students' and teachers' conviction mirrored the social perception of the era. Such attitude supports the premise on which female students were typically excluded from the classes.

During the late 1960's, the stereotypical gender roles of the past began to dissolve. Women assumed workforce positions previously considered only acceptable for men. The need for double incomes to support a family, created the necessity for many women to abandon the role of traditional housewife (Haisler, 2000). With the large influx of women into the workforce, jobs once considered to be strictly for men became available to women.

Gender equity is currently moving toward reality. Women are represented in all areas of the professional world with technology being no exception. Stonebarger(1998)acknowledges gender equity advancements "From the North pole to the South pole, to the very farthest reaches of outer space, women scientists and engineers of today are more and more making their mark"(p. 6).

Extent of the Problem

Technology Education is far from achieving gender equity. 49% of the high school students in the United States are female; yet only one fifth of the students enrolled in Technology Education courses are female, according to CESA representative Nancy Grease (personal communication, December 14, 2003). This disproportionate ratio illustrates the deficiency of female students in Technology Education classes. The majority of high schools nationwide have yet to develop a solution to the problem.

The extent to which females are isolated from Technology Education is not restricted to

the student population. Female teachers are highly under represented in the profession. In some regions, more than 96% of the Technology Education teachers are male. Braundi, Dalley, Paxton, Petrina, and O'Riley (2000) observed "A case can be made that the selection of teachers and teacher educators is based on the presence of the Y-chromosome" (p.56). They substantiate their claim based upon the fact that of the 463 Technology Education students and faculty, in their study, only 28 were female.

The exclusion of female students from Technology Education courses is a limitation to that population's exposure to vocational opportunities. "The fact that girls are using technology less than boys is doing a day by day, hour by hour, damage to their future prospects" (Studio Marimar, 2000).

Puck and Welty(2001) state "To make informed decisions about the future, girls and young women need to recognize the breadth of career opportunities that are available and how they are impacted by technology" (p.16). Technology Education exposes students to a broad range of careers and demonstrates technology's impact on those careers. Yet, the female students who do not participate in Technology Education may face limited technology exposure and limited career opportunities.

Wood (2000) reinforces the essential need for technology skills:

> In 2010 as many as one fourth of all jobs will be technologically oriented. Thus, people with advanced skills, such as computer engineers and programmers, can expect greater opportunities and higher salaries than people with more limited skills. Any student who opts out of science, math, and technology risks being relegated to the lower ranks of the work world. (p.35)

Mammes(2004) further delineates the limitations of females in the employment pool without technology skills "This phenomenon not only narrows the possibilities of choosing a

career, but also leads to a specifically female patterns of unemployment and limits women's quality of life" (p.89).

Possible Solutions

In order to ensure female high school students are not restricted from Technology Education classes, identifying and rectifying school impediments is crucial. Only through new approaches and evaluating successful advancements can young women be guaranteed the same opportunities in Technology Education as young men. Sharing both successes and failures of new recruiting and retention approaches within the field will expedite the elimination of the inequity. According to Starkweather (2000), "They must adjust their thoughts and actions to provide a new image of themselves and their program" (p.8).

Often female students feel discouraged from enrolling in Technology Education courses for fear of being the singular female in the class. If Technology Education teachers collaborate with the school guidance counselors, who develop the students' class schedules, this can be alleviated. Silverman & Pritchar (1996) recommend scheduling the female students into the same class "Once numbers get over 3 – 4 girls in a class, other girls will not be as likely to feel uncomfortable about taking Technology Education" (p.52). According to Waite (2003), "Peer support and participation in technology education courses will allow for young women to feel more confident within a Technology Education environment" (p.275).

The typical school shop is often not a familiar environment for female students. Changing the atmosphere within the area can alter their perception. Some easily accomplished changes include: displaying posters which depict females using technology; removing some of the older pictures that feature exclusively male technology users; painting walls a pleasant color; and

removing old furniture and any classroom objects marred with obscenities. Flowers (1998) prescribes "Turn the facilities into a clean, pleasant environment for both sexes" (p.23).

Many female students are not interested in traditional industrial arts projects such as automotives and woodworking. The course projects should first be appealing as encouragement for enrolling in a Technology Education course. Flowers suggests offering alternative projects that are gender specific to females. Gender-neutral projects might also suffice to spark their interest.

Courses, curriculum, software, and educational materials should be selected that better allow for the diversity between male and female students. Kalyanpur and Kirmani (2005) stress:

> Gender continues to play a significant role regarding interests and practices. For instance, studies on gender differences in computer usage have found that while boys chose programs and online games related to cars, sports, war and similar aggressive activities, girls tended to choose programs that revolved around artistic or nurturing activities. (p.14)

Braundy, Bryson, and Petrina (2003) state, "We recommend that more courses be made available and be required for girls" (p.192). By providing additional courses, the likelihood that one of them will create female interest increases. Requiring participation in Technology Education, guarantees that female students will be exposed to emerging technologies and have an enhanced opportunity to explore technological careers.

Flowers notes that female students often have few role models within their immediate environment. High school teachers tend to be male. The adults working within technical fields, with whom they are acquainted, may be male as well. An increase in female teachers or even

female classroom presenters will provide the female students with additional positive role models.

Those female students who do participate in Technology Education should be made aware of career opportunities not just within the wide realm of technology, but specifically as Technology Education instructors. Even female students who have participated and excelled in Technology Education shy away from the male dominated field. Haynie (2005) proposes, "These problems will best be eliminated if more women are encouraged to enter the profession and advance to positions of leadership in which they may serve as role models" (p.15).

Conclusion

As society has evolved, so has the need to increase female participation in the male dominated area of Technology Education. In early civilization, the exclusion may have been justified. Such is not the case in present society. Female roles in the workforce have greatly increased, creating a need to provide female students with opportunities to explore and become familiar with technology. In order to neutralize the inequity, educators must make a conceited effort to ensure Technology Education courses provide an educational program which is appropriate, accessible, and appealing to both sexes.

Chapter III: Methodology

Introduction

Technology Education plays a crucial role in preparing students for a technological world. Boyceville High School's Technology Education courses have consistently struggled to recruit female students. This study was intended to determine new courses and curriculum changes leading to increased female student enrollment in Technology Education courses at Boyceville High School. This chapter will address the research population and subjects, the data collection process, and the data analysis procedure.

Subjects

The research subjects were 66 female students from Boyceville High School who volunteered to participate in this study. The male population was not involved due to adequate male student enrollment in the technology classes. The females were between the ages of 14 and 19 and in 9th-12th grades. The majority of the students already have some exposure to Technology Education classes due to the requirement of a middle school exploratory class.

The students came from mainly lower to middle class families. A portion of many families' income is from farming or trade work. Although a large metropolitan area is within an hour's drive, many of the students have little exposure to life outside their small community.

Instrument

The data was collected through the use of a survey administered in the spring semester of the 2005-2006 school year. The survey intent was to identify course and curricular changes to support an increased female student participation in Technology Education courses at Boyceville

High School. The survey was designed in a manner so as not to discourage or intimidate the participating subjects.

Data Collection

A consent form and cover letter were distributed to all 9th-12th grade female students during their homeroom. The information was to be read and signed by both the student and their parent/guardian. The survey instrument was then administered two days later to all the students, who returned the consent form, during their homeroom. The subjects were asked to complete their survey during that same homeroom period and return it to their homeroom teachers. In order to encourage participation, all participating students received a compensatory candy bar.

Data Analysis

The results of the survey were analyzed to identify new courses that would increase female students' enrollment in the Technology Education program at Boyceville High School. The results were also analyzed to determine if correlations existed between age and grade level and survey recommendations.

Limitations

This study's major limitation is that it was conducted at only one school. The results do not necessarily apply to all Technology Education programs. In order to ensure consistent results, the same study would need to be conducted within a similar population of school districts.

Student participation was a limitation of this study. The participating students were only those, who returned signed consent forms from parents/guardians, not the entire population of high school females. School-related information distributed to students does not always reach the parents/guardians who, in turn, do not always read and respond. Because the survey was

optional may have caused many students and parents/guardians to opt out believing it not to be a relevant activity.

Due to the age of the participant students, some may not have seriously responded. Others may have been tempted to report false information. Some of the students may have had no opinions of their present technology courses; and, some may have had no opinions regarding additional courses and curriculum.

Chapter IV: Results

Introduction

The purpose of this study was to identify Boyceville High School female students' opinions toward perspective Technology Education courses. Participating female high school students completed a survey instrument. The survey asked the students to identify courses they would be interested in pursuing and to identify those courses in which they would most likely enroll.

Demographic Information

Boyceville High Schools Female students were given parental consent forms during their homeroom in April 2006. Those students who returned the form signed by a parent or guardian were eligible to complete the research survey. 124 consent forms were distributed to female students during their homeroom and 66 signed forms were returned. Surveys were then completed by 66 students or approximately 53% of the students who were given consent forms.

Table 1 describes the demographic information of those surveyed. The participants were asked to identify their grade level as well as their age. The freshman class had the least amount of participation with only seven participants or 10.6% of those surveyed. The junior class had the highest amount of participation with 24 participants or 34.8% of those surveyed.

Table 1

Demographics

Grade level and age	Frequency	Percent
Freshman	07	10.6
Sophomore	18	27.3
Junior	24	36.4

Senior	17	25.8
14-15 year-olds	12	18.2
16 year-olds	19	28.8
17 year-olds	23	34.8
18-19 year-olds	12	18.2

Previous Technology Education Exposure

Participants were asked if they had previously been enrolled in a Technology Education course at Boyceville High School. 46 participants or 70% answered no.

Participants were asked to identify the current technology courses in which they were enrolled. Table 2 illustrates participant's previous enrollment in currently offered courses. Industrial Enterprise had the least amount of participation with no students identifying previous enrollment in the course. Photography had the highest amount of participation, with 17 selections or 25.8% of the participants indicating previous enrollment in the course. If student enrollment in Photography courses were removed from the survey, only 6 participants or 9% would have been previously enrolled in any Technology Education Course at Boyceville High School.

Table 2

Participation in Existing Courses

Course	Frequency	Percent
Electronics	01	01.5
Industrial Enterprise	00	00
Woodworking	05	07.6

Photography	17	25.8

Student Interest in Technology Education Courses

Participants were asked to identify courses, which they would be interested in perusing, from a brief course description list. Courses currently offered are: Electronics, Industrial Enterprise, Woodworking, and Photography. Potential courses include: Computer Programming and Repair, Construction, Drafting, General Automotive, Graphic Communications, Metals, Research and Development, Technology and Our World, Transportation, Video/Television Production, and Web Page Design). Table 3 illustrates participant responses. Courses with the least amount of indicated interest were: Technology and Our World with five selections or 7.6% of the participants; Electronics, Construction with seven selections, or 10.6% of the participants; and Metals with seven selections, or 10.6% of the participants. The courses with the greatest amount of indicated interest were Video/Television Production with 27 selections or 40.9% of the participants; Graphics Communications with 39 selections or 59.1% of the participants; Web Page Design with 43 selections or 65.2% of the participants; and Photography with 44 selections or 66.7% of the participants. The course with the greatest amount of interest, Photography, is part of Boyceville High School's current Technology Education program.

Table 3

Student Interest in Technology Education Courses

Course	Frequency	Percent
Current Course		
Electronics	07	10.6
Industrial Enterprise	10	15.2
Photography	44	66.7
Woodworking	17	25.8
Potential Courses		
Computer Programming	14	21.2
Construction	07	10.6
Drafting	22	33.3
General Automotive	20	30.3
Graphic Communications	39	59.1
Metals	07	10.6
Research and Development	11	16.7
Technology and Our World	05	07.6
Transportation	07	10.6
Video/Tel. Production	27	40.9
Web Page Design	43	65.2

Courses Most Likely to Pursue

Students were to select and rank the courses they were most likely to pursue. Included were current courses (Electronics, Industrial Enterprise, Woodworking and Photography) and potential courses (Computer Programming and Repair, Drafting, Construction, General Automotive, Graphic Communications, Metals, Research and Development, Technology and Our World, Transportation, Video/Television Production, and Web Page Design). Table 4 identifies the number of times each course was selected as a top choice and the number of times a course was selected as one of the top three choices. Courses selected least often as one of top three choices were: Technology and Our World with two selections or 3% of the participants; Electronics with four selections or 6.1% of the participants; Transportation with four selections or 6.1% of the participants; Construction with five selections or 7.6% of the participants; and Research and Development with five selections or 7.6% of the participants. Courses selected most often as one of the top three choices were: Woodworking with 17 selections or 25.8% of the participants; Video/ Television Production with 24 selections or 36.4% of the participants; Web Page Design with 29 selections or 44% of the participants; and Photography with 39 selections or 59.1% of the participants. Photography was also selected as the top choice with 19 selections or 28.8% of the participants.

Table 4
Courses Most Likely to Pursue

Course	Frequency	Percent
Current Course		
Electronics		
Top Choice	00	00
Top Three	04	06.1
Industrial Enterprise		
Top Choice	03	04.5
Top Three	14	21.2
Photography		
Top Choice	19	28.8
Top Three	39	59.1
Woodworking		
Top Choice	05	07.6
Top Three	17	25.8
Potential Courses		
Computer Programming/Repair		
Top Choice	01	01.5
Top Three	06	09
Construction		
Top Choice	00	00
Top Three	05	07.6
Drafting		
Top Choice	06	09.1
Top Three	13	19.7
General Automotive		
Top Choice	05	07.6
Top Three	14	21.3
Graphic Communications		
Top Choice	02	03
Top Three	16	24.3
Metals		
Top Choice	01	01.5
Top Three	03	04.5
Research and Development		
Top Choice	01	01.5
Top Three	05	07.6
Technology and Our World		
Top Choice	01	01.5
Top Three	02	03
Transportation		
Top Choice	01	01.5

Top Three	04	06.1
Video/Television Production		
Top Choice	11	16.7
Top Three	24	36.4
Web Page Design		
Top Choice	10	15.2
Top Three	29	44

Age and Grade Level Course Preferences

The results were analyzed to determine if correlations existed between age and grade

level and course preferences. No correlation was found.

Enrolling in Course Most Likely to Pursue

Participants were asked if they would enroll in the course they selected as their number

one choice if offered at Boyceville High School. 65 of the participants or 98.5% indicated they

would enroll in their number one course if offered.

Discouragement from Enrollment

Participants were asked if they believed anyone would discourage them from enrolling in

the course they selected as their number one choice. Five participants or 7.6% believed they

would be discouraged from enrolling in the course. Parents, friends, and teachers were the

people that participants indicated might discourage them from enrolling in the course.

Chapter V: Discussion

Introduction

Society demands both males and females to be better prepared for a more technologically oriented world. New forms of technology are introduced everyday. Employees need to feel comfortable with work-related technology and adjust to emerging technologies with relative ease. Technology Education's role in the school is to prepare students with requisite skills to launch them into a world of technology.

Technology Education courses at Boyceville High School have traditionally been male dominated. The current course offerings, with the exception of Photography, have failed to increase female enrollment to an equitable level. The Technology Education courses must equally reach both genders of the student population in order to prepare students to be part of a technologically literate workforce.

Female students at Boyceville High School were given an opportunity to participate in a research study to determine their opinions toward potential Technology Education courses. Those granted parental/guardian permission completed the research survey. From a list of current and potential Technology Education courses, the participating students were directed to identify courses of interest and those they would be most likely pursue. The survey data was analyzed to determine which courses could make the biggest impact in balancing the student population in Technology Education courses. Further analysis also determined if adding additional courses to the curriculum would increase female enrollment.

Limitations

This study's major limitation is that it was conducted at only one school. The results do not necessarily apply to all Technology Education programs. In order to ensure consistent

results, the same study would need to be conducted within a similar population of school districts.

Student participation was a limitation of this study. The participating students were only those, who returned signed consent forms from parents/guardians, not the entire population of high school females. School-related information distributed to students does not always reach the parents/ guardians who, in turn, do not always read and respond. Because the survey was optional may have caused many students and parents/guardians to opt out believing it not to be a relevant activity.

Due to the age of the participant students, some may not have seriously responded. Others may have been tempted to report false information. Some of the students may have had no opinions of their present technology courses; and, some may have had no opinions regarding additional courses and curriculum.

Discussion of Survey Results

The survey completed by female students at Boyceville High School produced results consistent with previous research. The participants exhibited the least amount of interest in tradition Technology Education Courses, including Electronics, Construction, Metals, and Transportation. They exhibited moderate interest in courses such as Woodworking, Automotive, Computer Programming, Industrial Enterprise, and Drafting. Participants exhibited the most interest in courses which provided enhanced creativity and artistic opportunity, including Video/Television Production, Graphics Communications, Web Page Design and Photography.

Participants indicated they would enroll in their potential courses of choice if offered. Only five students acknowledged they would not be encouraged, by parents/guardians, to enroll in the Technology Education courses of their choice.

Conclusions

Female students' participation in Technology Education courses at Boyceville High

School is greatly affected by the course offerings in the program. Female students, past and

present, have exhibited little interest in three of the four current Technology Education courses,

Electronics, Industrial Enterprise, and Woodworking. The addition of Web Page Design,

Video/Television Production, and/or Graphics Communications would likely bring an increase in

female enrollment in the Technology Education program. Photography, which currently enrolls a

large percentage of female students, will probably continue to be of primary interest for female

students regardless to additional female oriented courses.

Recommendations

Based upon the findings of this study, the researcher recommends additional courses

added to the Boyceville High School Technology Education program. The study indicates the

addition of female oriented courses would dramatically increase female enrollment. In order to

increase female students' technology opportunities, the courses should augment the Technology

Education curriculum and should not replace any existing courses. The additional courses may

increase male enrollment as well.

Future studies should include male students. A program evaluation is not complete with

only half of the potential population included. This same study conducted with the full

population would be highly beneficial in improving all students' satisfaction and technology

opportunities.

In order to more accurately judge future trends in female enrollment, middle school

students should be included. Many of the students surveyed have graduated from high school

and will have no additional Technology Education opportunities at Boyceville High School. The present middle school population has at least four years in which to impact the enrollment of Boyceville High School's Technology Education courses.

A great deal of work still needs to be done in order to increase females' opportunities in Technology Education. New methods to increase overall program enrollment should be implemented. As school budget reductions increase, Technology Education teachers must strive to make their programs essential to school curriculum and to all students.

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Appendix A: Student Questionnaire

Female Students' Opinions of Prospective Technology Education Courses at Boyceville High School

Please respond to the following questions and statements as applicable to you and your opinions toward Technology Education courses. Your responses will be used in the evaluation of perspective Technology Education courses at Boyceville High School and will be confidential. Please check all appropriate responses.

1.   What is your age?

_____ 14

_____ 15

_____ 16

_____ 17

_____ 18

_____ Other (specify age) _____

2.   What is your current year in school?

_____ Freshman

_____ Sophomore

_____ Junior

_____ Senior

3.   Have you ever taken a Technology Education course at Boyceville High School? (This does not include middle school exploratory courses.)

_____ Yes

_____ No

4.   Which technology courses have you taken at Boyceville High School? (You may check more than one.)

_____   Electronics

_____   Industrial Enterprise

_____ Woodworking

_____ Photography

5.   Which of the following courses would you be interested in taking? (You may choose more than one from both categories.)

Existing Courses

_____   **Electronics** (Learning how electricity works, from small devices to the electricity in our homes)

_____   **Industrial Enterprise** (Forming a company to design, build, and sell a product)

_____   **Photography** (Composing digital photographs, developing and printing black and white photographs)

_____   **Woodworking** (Learning how to safely use woodworking equipment to create projects)

Potential Courses

_____   **Computer Programming and Repair** (Learning how computers work, computer repair, and the basics of programming)

_____   **Construction** (Exploring the different aspects of the construction industry, using models and life size activities)

_____   **Drafting** (Using computers to design and draw various objects, from shoes to houses)

_____   **General Automotive** (Learning simple, everyday maintenance and service of vehicles)

_____   **Graphic Communications** (Creating web pages, desktop publishing, and printing)

_____   **Metals** (Learning how to safely use metalworking equipment to build metal projects)

_____   **Research and Development** (Designing products and studying potential markets)

_____   **Technology and Our World** (Studying how technology affects society and the environment)

_____   **Transportation** (Studying the evolution of transportation and its effects on our world)

_____ **Video/Television Production** (Filming and
editing video to create a weekly newscast)

_____ **Web Page Design** (Creating web pages and
web sites)

6. From the list below, select and rank the three courses you would most likely take. Rank them from **1** to **3**, with **1** being your first class choice. (You may choose more than one from both categories.)

Existing Courses

_____ Electronics

_____ Industrial Enterprise

_____ Photography

_____ Woodworking

Potential Courses

_____ Computer Programming and Repair

_____ Construction

_____ Drafting

_____ General Automotive

_____ Graphic Communications

_____ Metals

_____ Research and Development

_____ Technology and Our World

_____ Transportation

_____ Video/Television Production

_____ Web Page Design

7. If the course you ranked as a 1 (most likely to take), was offered at Boyceville High School, would you take it?

_____ Yes

_____ No

If no, why not? _____

8. If the course was offered and did not conflict with required course work, do you think anyone would discourage you from taking the course? (This may include, but is not limited to, parents, friends, teachers, or guidance counselors.)

_____ Yes

If yes, who? _____

_____ No

Appendix B: Guardian Consent

April 10, 2006

Dear Parent or Guardian,

The purpose of this letter is to request permission for your daughter to participate in research that I am conducting at Boyceville High School. My name is Frank Fetzer and I am the Technology Education teacher at Boyceville High School. I am interested in improving course opportunities for female students in the Technology Education Department. On Thursday April 13th, while in their homeroom, female students will be asked to complete a survey regarding their interest in several Technology Education courses.

Participation is completely voluntary. Students who choose to participate and later wish to withdraw may do so without consequence. Participation will be kept confidential. Students who might receive any negative feedback from other students for participating in this survey should contact their Guidance Counselor Mrs. Grohn. Participants will be compensated with a candy bar upon completion of the survey.

My daughter, _____ (Student's Name), does/does not [circle one] have permission to complete this survey.

Parent/Guardian Signature   _____

Student Signature   _____

This study has been reviewed and approved by the University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have any questions or concerns regarding this study please contact the Investigator or Advisor.
If you have any questions, concerns, or reports regarding the rights of your subject, please contact the IRB Administrator.

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Boyceville High School Female Students' Opinions
Toward Perspective Technology
Education Courses

by
Frank Fetzer

A Research Paper
Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree
in

Industrial/Technology Education

Approved: 2 Semester Credits

_____

Jana Reeg Steidinger

The Graduate School
University of Wisconsin-Stout
July 17, 2006