USING THE INTERNET AS A TEACHING AND LEARNING TOOL

A Thesis

Presented in Partial Fulfillment of the Requirements for the Degree of
Master of Science in the Graduate School of The Ohio State University

By

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The Ohio State University
1996

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I dedicate this study to my parents, Ronald and Sharlee Badertscher.
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CHAPTER I.
INTRODUCTION

Background and Setting

Educators have entered the information age. The learner today has so many different sources of information to use that he or she cannot possibly use each bit for the process of learning. Lifestyles have changed over the past several years. The television, newspaper, magazine, and friend on the street are no longer the most relevant sources of information. Many of these sources are out of date by the time the person accesses them. Situations have also changed in classrooms. Although a printed textbook serves as a good reference manual, the teacher must rely on other sources of information to teach the most current information.

Programs such as Instructional Television, Channel One, current periodicals, field trips, and resource people have become commonplace in U.S. school systems. The addition of the computer to the classroom was first seen as an aid to instruction, is now becoming a major source of information for students and teachers. One must know how to properly use the computer to access, analyze, and report information if they are to be competitive in the future work force.

The use of the computer to access information has become a major focus in school systems in Ohio the past few years. School Net is bringing money to Ohio's schools to equip every classroom in the state
with the wiring necessary for computer connections which may open the windows to the world. Some schools, entitled "equity schools" have also qualified for extra money for hardware and software. (NWO-RPDC, 1995) Several Ohio schools are not ready for this technology because of poor building infrastructure, lack of trained staff, and/or unsupportive communities. (Jones, Valdez, Nowakowski, and Rasmussen, 1996) Students need access to the world of information to be successful. Teachers must be able to use computers to access the information necessary to provide students with this wealth of information.

This study explores the use of modern education's most exciting and useful tool in decades, the Internet. The study describes current agricultural education teachers' use of the information superhighway to solve problems in the local classroom. Areas of exploration include the teachers' abilities to use electronic mail, news groups, file transfer protocol, and web browsers to assist with the learning process. This new medium for information known as the Internet is growing so fast that many predict the Internet will be the main source of information for the emerging technological society.

The Internet was first started as a military project called Arpanet. The system was to serve as a method of communication in the event of a war in the United States of America. Later, universities joined the system as a channel for sharing research and expertise. Now, the system of computer networks has expanded to businesses and homes. (Lichty, 1995) Because of the Internet's growing use in business and in the home, today's student must be well educated in the use of the system. If
students are not literate in using the Internet, they will lack the necessary skills to become successful in the work force and may be deprived of advancing in a career.

Ohio's teachers of Agricultural Education must be able to use the Internet to train their students in one of the most rapidly changing technical fields-agriculture. If teachers of agricultural education are not literate, students may fall behind in job skills. Several questions arise. How much do Ohio Agricultural Education teachers know about the Internet? Do they have access to the hardware, software, and knowledge it takes to "surf the net?" If not, will professional development solve the problem of knowledge? Will School Net or School Net Plus solve the problems of hardware, software, and ability to access the Internet? Will educators be able to influence unsupportive communities about the importance of the Internet?

Currently all Ohio Agricultural Education teachers are part of the Ohio Educational Computer Network (OECN). This network consists of regional computer sites known as "A", "B", and "C" sites depending on the type of school district and location in the state. By being linked to "A", "B", or "C" sites, they have access to electronic mail known as E-mail. In an effort to improve communications with Ohio's agricultural education teachers, the associate director of Vocational and Career Education in Agriculture has taken the first step in making teachers literate about the information superhighway by sending weekly electronic mail to this group. Some teachers now send messages back to the associate director requesting news and information. For some teachers, this use of electronic mail is the extent of the information superhighway. Some teachers do not receive this weekly memo on a regular basis.
Other teachers are online with the most up-to-date hardware and software, communicating with universities and trading files of information. (Sommers, 1996)

**Purpose of the Study**

Teachers are at different points of development in using the Internet. School systems can provide all of the equipment necessary to access the information superhighway. However, if teachers are unable or unwilling to learn how to use this equipment, efforts will be futile. Some teachers may not be interested in the Internet. Others may find the system financially out of reach given the state of funding in some Ohio school systems. Still other teachers may view the Internet as a passing fad. The specific purpose of this study was divided into eight objectives which are listed below.

**Research Objectives**

1. To describe Ohio agricultural education teachers on the following demographic characteristics: gender, level of education, geographic location, and program type.

2. To describe the attitudes of Ohio agricultural education teachers regarding the use of the Internet as a teaching, reference, and learning tool.

3. To determine what percentage of Ohio agricultural education teachers have access to the Internet at home and school.
4. To determine what percentage of Ohio agricultural education teachers actually use the Internet as a teaching and learning tool.

5. To describe the level of use of various components of the Internet (i.e., electronic mail, news groups, world wide web, gopher, and file transfer protocol) by Ohio agricultural education teachers.

6. To determine the barriers that prevent Ohio agricultural education teachers from using the Internet as a teaching and learning tool.

7. To determine the level of interest of Ohio agricultural education teachers in professional development specific to the Internet in their content areas.

8. To describe the method of professional development delivery preferred by Ohio agricultural education teachers regarding training on the use of the Internet.

**Definition of Terms**

1. **Level of Use of the Internet**
   
   **Constitutive definition:** Level of use of the Internet is the relative degree or intensity of doing something for a purpose. In this definition, level of use refers to the Internet, or world-wide system of computer networks. (American Heritage, 1992)

   **Operational definition:** For the purpose of this study, level of use of the Internet was defined as the amount a teacher uses the
Internet for teaching and/or learning purposes. It will be
determined by responses on a survey regarding type of access, and
how much an individual uses that type of access.

2. Barriers to the Use of the Internet

**Constitutive definition:** Barriers to the use of the Internet is
defined as something immaterial that obstructs or impedes doing
something for a purpose. (American Heritage, 1992)

**Operational definition:** For the purpose of this study, barriers to
the use of the Internet was defined as those reasons why a teacher
does not use the Internet for teaching and/or learning purposes.
Barriers will be determined by responses on a survey regarding why
an individual cannot or does not use the Internet. Responses will
be rank-ordered.

3. Preferred Methods to Learn How to Use the Internet

**Constitutive definition:** Preferred methods to learn how to use the
Internet is defined as choosing as more desirable a means or
manner of procedure for accomplishing something. (American
Heritage, 1992)

**Operational definition:** For the purpose of this study, preferred
methods to learn how to use the Internet was defined as those
means by which teachers want to learn about the Internet for
teaching and/or learning purposes. Preferred methods was
determined by responses on a survey regarding professional
development opportunities. Responses will be rank ordered according to type of training, location of training, and compensation for training.

**Rationale for Study**

There are many new directions that Ohio's education system is pursuing. Venture capital, whole language, cooperative learning, curriculum model updates, and technology are at the forefront of change in Ohio's schools. (NWO-RPDC, 1995) While each direction has a thrust behind it, none is more prevalent in Ohio than use of technology. Because of the need for technology in education, millions of dollars of Ohio tax money have been designated for technology use and training. School Net and School Net Plus are the vehicles to deliver this technology, including Internet to Ohio's classrooms. Agricultural education programs are no exception to these efforts. Money sent to each school district is for use in all classrooms in all district buildings. Therefore, Ohio agricultural education teachers are at a point in time in which they have, or soon may be using the Internet as a teaching and learning tool. How well they are adapting to this change and their needs for success in these areas are significant reasons for this study.
CHAPTER II.

REVIEW OF RELATED LITERATURE

To determine previous studies relating to "Using the Internet as a Teaching and Learning Tool," a review of related literature was conducted. The purpose of the review was to find out information regarding how much agricultural education teachers use the computer as a telecommunications tool in their work. If the computer was not used as a telecommunications tool, find reasons why it was not used in this manner. If the computer was used as a telecommunications tool, determine to what extent it was being used and identify possible uses in education for the Internet.

**Using the Computer as a Telecommunications Tool**

Research has been conducted relating to using the computer as a teaching aid on several occasions. However, using a computer as a telecommunications tool is a rather new concept in education. Therefore, using the Internet as a teaching and learning tool is an area in which further study should be conducted to assist teachers with their development of Internet skills. Nine out of ten Kansas vocational agriculture teachers have used microcomputers to assist in instruction and management of instruction. (Raven, 1989) The percentage of modems reported in the study was higher than any percentage reported in previous studies reviewed by the writer. (Raven, 1989) This increased
use of computers and modems is an indication that interest is growing in microcomputer telecommunications and computer networks among teachers of agriculture.

Microcomputers are used in nearly every phase of agricultural business and industry. To properly equip graduates to work in agriculture, teachers have begun to incorporate microcomputers and related technology into the curriculum. Agriculture teacher educators and state supervisors continue to examine their roles in supporting the adoption of such new technologies in agricultural education. (Camp, 1991)

Research has shown that over 90% of all schools and 73% of all agricultural education programs in the United States have access to microcomputers, however mere access to equipment does not equate to utilization in teaching. (Birkenholtz, 1992) If teachers have access to computers for use in their programs, then why are these instructors failing to make use of this tool? There are several reasons why teachers do not use available computers in their everyday work with students.

**Why Computers Have Not Been Used as Telecommunications Tools**

Many agricultural education teachers have access to computers in their schools. Most teachers who have access have only one or two machines in their office or classroom. Agricultural education teachers do not make use of computer laboratories in schools for several reasons. First, computer labs may be unfamiliar territory. Second, computer labs are usually in someone else's classroom and most teachers do not like to use classrooms that are not their own. Third, scheduling and taking a class to a computer lab can be difficult. (Osborne, 1992)
Furthermore, agricultural education teachers do not use computers because they may have only one or two machines in their department. This lack of convenient access makes classroom management a concern and requires additional planning. Much of the work that agricultural education teachers do on computers involves managing instruction as opposed to actually teaching with computers. Many teachers also have a lack of knowledge of software programs. Teachers who use computer aided instruction must be careful not to place too much emphasis on the “how” of using computers. They should place their emphasis on using the computer as a medium in learning agricultural concepts and principles. (Osborne, 1992)

Eleven factors have been identified indicating why vocational agriculture teachers may not use computers as a teaching and learning tool. These perceptions may provide reasons why teachers do not use the computer as a telecommunications tool. The eleven factors included a lack of time, funding for hardware and software, availability of appropriate hardware and software, computer related pre-service and inservice training, computer literacy, knowledge of application to vocational agriculture, computer-based curriculum, and support from administration. (Raven, 1989)

**Telecommunication Uses for Computers in Agricultural Education**

Many opportunities exist to use computers in the agricultural education classroom as a telecommunication device. Some of these methods have obvious benefits while others may utilize more instructional planning and teaching time than the benefits they produce. Microcomputers may be used to replace portions of traditional
instruction for secondary agriculture students. Teachers who utilize this new technology should strive to identify opportunities and situations in which microcomputer assisted instruction produces superior gains in student achievement. (Birkenholtz, 1989)

A beneficial area to access using the computer as a telecommunications tool is ERIC-Educational Resources Information Center. ERIC is a nationwide network designed by the United States Department of Education. The purpose of ERIC is to collect educational information documents and make them available to teachers, administrators, researchers, students, and other interested persons. (Budke, 1994)

Electronic mail can provide another avenue for communications and student-teacher interaction. E-mail is one of the most convenient forms of communication available today. By encouraging students to use E-mail in the classroom, they are better prepared for business and industry. (Murphy, 1995) Students and teachers alike can use electronic mail to access information from breed associations, agribusiness corporations, or university officials. The immediate response of E-mail is economical, as well as efficient.

Agricultural educators have also used the Internet as a communications network where distance has been a barrier. METNET, the Montana state network, blends together advanced conferencing, electronic mail, and bulletin board message systems throughout this large state. When state legislators determined that there was a need for improving communications in Montana, METNET became reality. (Frick, 1995)
**Future Implications**

In outlining a vision for the 21st century, President Clinton and Vice President Gore said “access to the Internet and developing a high speed National Research and Educational Network (NREN) will be expanded to connect university campuses, community colleges, and K-12 schools to a high speed communications network, providing a broad range of information services. (Murphy, 1994) Benefits to teachers who go online include: gain access to almost unimaginable amounts of information, more efficient communication with text, graphics, and sound, and increased student interest.

More than half of U.S. homes will have computers in 1997, and by the year 2000 almost 25% will have computer networking capabilities. This unprecedented demand calls for more educators to begin using the “information superhighway” in their daily instruction. A new emphasis on School-To-Work will require teacher-employer collaborations for recommendations about curriculum, program plans, student placement sites, daily logs, and evaluations. These applications will make use of the Internet more essential. In addition, teachers will need to incorporate the Internet in their classroom as a learning tool for advanced placement, distance education, and classroom applications. (Layfield and Bowen, 1995)

As instructors of tomorrow’s work force in agriculture, agricultural education teachers should learn how the Internet can be used to prepare their students for the next generation of careers. Many barriers exist which may slow down the process of advancement into using the Internet as teaching and learning tool. If teachers are to be successful in
utilizing the computer as a telecommunications device, they must be willing to overcome these barriers and learn the skills necessary to advance their students into the careers of the 21st century.
CHAPTER III.

METHODOLOGY

The target population for this study was high school and adult agricultural education instructors in Ohio who were teaching in either Agribusiness, Agricultural Mechanics, Agriscience, Animal Care, Environmental Management, Farm Business Planning and Analysis (FBPA), Food Processing, Horticulture, Natural Resources, or Production Agriculture in the school year 1996-97. The accessible population for this study were those teachers listed in the Ohio Agricultural Education Directory published by the Ohio Department of Education. There were a total of 540 agricultural education instructors on this list. A random sample of 222 teachers was drawn from this population. This is an appropriate sample size for a population size of 540. (Krejcie and Morgan, 1970) A list of names was provided by the Ohio Department of Education which listed agricultural education teachers alphabetically by taxonomy. Each taxonomy was compared to the total population to reach an accurate sample based on the population. Names of teachers involved in the field test and pilot test were removed from the list. The names were randomly selected from the list with the following taxonomies being represented:

Agribusiness, n=23
Agricultural Mechanics, n=21
Agriscience, n=14
Animal Care, n=8
Environmental Management, n=3

FBPA, n=11
Food Processing, n=3
Horticulture, n=36
Natural Resources, n=9
Production Agriculture, n=94
Frame error for this study was controlled by obtaining a list from the Ohio Department of Education containing agricultural education instructors who had changed schools, or schools which were vacant as of July 1996. The purpose of this check was to make sure that no survey instruments would be sent out to teachers who had left a school or retired. Also, the check prevented sending survey instruments to schools which were vacant at the time of the mailing. Selection error was controlled by cross-checking the list with teachers who had made school moves, so that a teacher would not receive a survey twice. Sampling error was controlled by ensuring an adequate sample size and using random teacher selection based on information provided by The Ohio State University.

**Design**

The study utilized descriptive methods. The study asked questions regarding demographic information such as gender, age, and level of education. The study also asked questions to determine attitude toward the Internet, level of use, barriers to Internet use, and information regarding professional development preferences. In addition, the survey instrument asked miscellaneous questions regarding using the Internet as a teaching, reference, or learning tool. Because of the types of questions asked, this research is labeled descriptive.
Development of the Instrument

A written questionnaire was developed which consisted of six different parts. The first part had questions pertaining to gender, year born, and highest level of education. The second part used a scale to collect data regarding the teacher's attitude toward the Internet. The third part checked for different types of Internet access and then requested the participant to identify the level of usage of each type of access, if applicable. The fourth part of the instrument listed barriers to Internet use and asked the person to rate these potential barriers as they apply to their individual situation. The fifth part of the instrument sought out preferences for possible future professional development in this area. The sixth and final part of the instrument asked questions regarding using the Internet as a tool. This part provided ample opportunity for the teachers to answer open-ended questions. Each part of the survey instrument was designed to collect data pertinent to the research objectives of this study.

The instrument was designed by the researcher using other similar instruments as a guide. Part I measured demographic information about the person completing the questionnaire such as gender in which the person checked either male or female. The age of the person was recorded by writing in their date of birth. Highest level of education was determined by putting a check next to Industry Trained, Associate's Degree, Bachelor's Degree, Master's Degree, Doctor's Degree, or Other. If the participant marked “Other”, they were told to please specify.

Part II of the instrument was measured using a six-point semantic differential scale which ranked 10 negative and positive characteristics. By completing this part of the survey instrument, the researcher could
obtain a measure of the teacher's attitude regarding the Internet. Descriptive adjectives used on the scale were: bad-good, unimportant-important, ineffective-effective, boring-exciting, archaic-innovative, unnecessary-necessary, unessential-essential, doubtful-sure, unwanted-wanted, and worthless-valuable. On the scale, a strong positive feeling=6, positive feeling=5, slight positive feeling=4, slight negative feeling=3, negative feeling=2, and a strong negative feeling=1. The order of appearance of negative and positive adjectives was slightly altered (good/bad was followed by unimportant/important) to prevent pattern answers. By placing an "X" on this scale, the person completing the instrument described their attitude toward the Internet.

The level of use was determined in Part III of the survey instrument. First, the person completing this part used a combination of a dichotomous scale (Yes or No) for access and a modified four-point Likert scale for usage amount. Added to this scale was NA or Not Applicable if the respondent marked "No" for a certain type of access. There were 12 items to be considered for this section of the survey instrument. These items included: Home Internet Access, Office Internet Access, Teacher Lounge Internet Access, Library/Media Center Internet Access, Computer Lab Internet Access, Ag Ed Classroom Internet Access, Receiving Electronic Mail, Sending Electronic Mail, News Groups, World Wide Web, Gopher, and File Transfer Protocol (FTP). After determining access, the scale for usage amount was coded using N=Never, R=Rarely, S=Sometimes, and O=Often. These variables were later assigned numbers for statistical analysis.
A four-point Likert scale was also used for Part IV which was to identify barriers to Internet use. Teachers were asked about nine possible barriers that might prevent them from using the Internet as a teaching and learning tool. Teachers responded by circling 1 for strongly agree, 2 for agree, 3 for disagree, and 4 for strongly disagree. Barriers identified in this study were: Electrical Wiring, Finances, Administrative Support, School Board Support, Community Support, Time, Knowledge, Application to Agricultural Education, and Other. If the teacher marked "Other", they were to specify the perceived barrier.

Professional Development was the thrust of Part V of the survey instrument. A goal of this part of the study was to determine the possible interest in Internet training for agricultural education teachers. After determining interest, questions were designed to describe the type of training desired, where to have the training, when to have the training, and possible Continuing Education Units (CEU's) or graduate credit options. This part of the instrument was also set up using a four-point Likert scale with 1=Not At All, 2=Very Little, 3=Somewhat, and 4=To a Great Extent. This part of the study will be especially helpful for individuals planning inservice activities for Ohio ag ed instructors about the Internet.

Part VI of the survey instrument was designed to tell if the teacher had ever used the Internet as a teaching, reference, or learning tool. A dichotomous scale was used for each of these three questions. In addition, space was provided so that a teacher could describe how he or she may have used the Internet in each area. Finally, the last question on the instrument was simply an open-ended question to gather further
information relating to this study. The question asked how the teacher uses/used the Internet with their instruction at their local school. If they have not used it, a reason why was requested.

**Validity and Reliability of Survey Instrument**

Content validity was established by a panel of experts including two computer teachers and one faculty member of The Ohio State University. Face validity was established by a panel of experts including one guidance counselor and four agricultural education teachers. These field tests were conducted and changes were made to the survey instrument. A copy of the list of panel of experts can be viewed in Appendix D.

A group of 20 Ohio Agricultural Education teachers were selected for a pilot test to check reliability. A survey was sent asking the pilot group to complete and return the instrument. After two weeks, a second copy of the same survey was sent to the 20 pilot test teachers. Responses from the two administrators were compared and reliability (i.e., within one scale point) was established at an overall rating of 90.7% for close matches and 64.4% for perfect matches. A copy of the reliability study group correspondence can be viewed in Appendix E. Information received from the field test and pilot test was used to revise the instrument prior to sending out to the sample. A copy of the instrument is located in Appendix B, while correspondence related to the survey instrument is located in Appendix A.
Data Collection

Data for this study was collected by mail survey. Cover letters and questionnaires were sent out during the first week in August, 1996. A reminder was sent two weeks later using the electronic mailing list provided by the Ohio Department of Education Agricultural Education Service. Two weeks later, 10% of the non-respondents or 11 teachers were contacted by telephone to compare data with respondents to check for any significant differences. One hundred ten of the 222 teachers selected for the study returned their surveys for a 50% response rate. No significant differences were found between the respondents and non-respondents when comparing demographic data and responses. Therefore, the two groups are assumed to be similar. As a result, this study can be generalized to the target population.

Analysis of Data

Descriptive statistics were used to analyze data in this study. Responses were tallied and statistics were figured using a statistical calculator with the aid of a local math instructor. In addition to this quantitative data, qualitative data were also analyzed by the researcher. All qualitative responses are recorded in Appendix C. Some questionnaires were incomplete in some areas so different totals are used for calculating statistics. However, the numbers used in the analysis reflect the responses given by the participants in the study. Statistics used in this study include:
Objective 1: demographic information - frequency, percent, median, mean, standard deviation, and minimum/maximum.

Objective 2: attitudes about Internet - mean, grand mean, and standard deviation.

Objective 3: access to Internet - frequency and percent.

Objective 4: use Internet as teaching and learning tool - frequency and percent.

Objective 5: Internet component use - frequency and percent.

Objective 6: barriers to use of Internet - frequency, percent, mean, and standard deviation.

Objective 7: Internet professional development - frequency, percent, mean, and standard deviation.

Objective 8: Internet professional development delivery method - frequency, percent, mean, and standard deviation.
CHAPTER IV.
FINDINGS

The findings of this study are organized into six different areas: (a) description of the teachers in the sample in terms of selected demographic information, (b) determination of attitudes toward the Internet, (c) level of Internet access and use, (d) description of barriers to Internet use, (e) description of Internet training desired, and (f) description of agricultural education use of the Internet as a teaching, reference, and learning tool. Each major heading relates to an objective stated in Chapter 1.

Selected Demographic Information

The first objective was to determine demographic information about the teachers completing the survey as to their gender, educational status, and age. The selected demographic characteristics of the teachers in the sample are described in Tables 1, 2, and 3. The frequency of gender of the teachers in the sample was 13 women and 96 men. Five (4%) of the teachers in the sample were Industry Trained. Two (2%) teachers listed an Associate's Degree as the highest degree held. Fifty-one (47%) teachers listed a Bachelor's Degree as the highest degree held, and 50 (46%) teachers listed a Master's Degree as the highest degree held. The mean age of the teachers in the sample was 41 years, with a minimum age of 23 and a maximum age of 64.
Table 1

**Gender of Ohio Agricultural Education Teachers (n=109)**

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<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percent</th>
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<td>12</td>
</tr>
<tr>
<td>Male</td>
<td>96</td>
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</tr>
<tr>
<td>Total</td>
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Table 2

**Level of Education of Ohio Agricultural Education Teachers (n=109)**

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<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry Trained</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Associate's Degree</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>51</td>
<td>47</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>50</td>
<td>46</td>
</tr>
<tr>
<td>Doctor's Degree</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>109</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 3

**Age of Ohio Agricultural Education Teachers (n=106)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>Median</th>
<th>Min./Max.</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>40.91</td>
<td>43</td>
<td>23-64</td>
<td>8.57</td>
</tr>
</tbody>
</table>

*Note: Three teachers who completed the demographic information section of the survey did not list their year of birth.*

**Attitudes Toward the Internet**

The second objective was to describe the attitudes of Ohio Agricultural Education Instructors regarding the use of the Internet as a teaching, reference, and learning tool. These attitudes were measured by having teachers rate their beliefs on a scale with ten descriptive adjectives. The teachers placed a mark on the scale depending where they perceived their attitudes to fall. The data for the attitudes toward the Internet were summarized in Table 4. The grand mean calculated to 4.62 with a scale of 1 representing a negative attitude and 6 representing a positive attitude toward the Internet.
Table 4

**Internet Attitudes of Ohio Agricultural Education Teachers (n=110)**

<table>
<thead>
<tr>
<th>Attitude</th>
<th>mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad/Good</td>
<td>4.72</td>
<td>0.98</td>
</tr>
<tr>
<td>Unimportant/Important</td>
<td>4.69</td>
<td>1.14</td>
</tr>
<tr>
<td>Ineffective/Effective</td>
<td>4.44</td>
<td>1.00</td>
</tr>
<tr>
<td>Boring/Exciting</td>
<td>4.95</td>
<td>0.95</td>
</tr>
<tr>
<td>Archaic/Innovative</td>
<td>5.19</td>
<td>0.83</td>
</tr>
<tr>
<td>Unnecessary/Necessary</td>
<td>4.23</td>
<td>1.19</td>
</tr>
<tr>
<td>Unessential/Essential</td>
<td>4.19</td>
<td>1.22</td>
</tr>
<tr>
<td>Doubtful/Sure</td>
<td>4.42</td>
<td>1.19</td>
</tr>
<tr>
<td>Unwanted/Wanted</td>
<td>4.61</td>
<td>1.10</td>
</tr>
<tr>
<td>Worthless/Valuable</td>
<td>4.73</td>
<td>1.01</td>
</tr>
</tbody>
</table>

Grand Mean 4.62 0.29

*Note: Means reported on this table were rounded off to the nearest hundredth. Means used to calculate the grand mean were ten digit numbers. 1=strongly negative, 2=negative, 3=slightly negative, 4=slightly positive, 5=positive, 6=strongly positive.

**Level of Internet Access and Use**

The third objective was to determine the percentage of educators who have access to the Internet at home and school. The fourth objective was to determine the percentage of educators actually using the information superhighway as a teaching and learning tool. The fifth objective was to describe the use of various components of the Internet (i.e., electronic mail, news groups, world wide web, gopher, and file transfer protocol) by the teachers who presently use the Internet.
Results of this research indicated that 25 (24%) teachers have home Internet access. When asked the same question for Internet access at school, the responses varied depending on location within the school. Sixty-eight percent of the respondents reported that the library or media center was the place in the school in which teachers had access to the Internet. Fourteen percent of the respondents reported that they had Internet access in their agricultural education classrooms. To determine what percentage of the teachers actually use the information superhighway as a teaching and learning tool, teachers were asked to declare whether they had access to each component of the Internet (Table 6). Teachers were then asked their usage amount based on the scale of never, rarely, sometimes, or often. (Table 7) “Not applicable (NA)” was a choice for teachers who answered “no” the question about access.

Table 5
Internet Access by Ohio Agricultural Education Teachers

<table>
<thead>
<tr>
<th>Item</th>
<th>Access=Yes</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Library/Media Ctr. Access</td>
<td>70 (68%)</td>
<td>33 (32%)</td>
<td>103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Lab Access</td>
<td>52 (50%)</td>
<td>51 (50%)</td>
<td>103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Access</td>
<td>31 (31%)</td>
<td>70 (69%)</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Access</td>
<td>25 (24%)</td>
<td>79 (76%)</td>
<td>104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ag Ed Classroom Access</td>
<td>14 (14%)</td>
<td>89 (86%)</td>
<td>103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Lounge Access</td>
<td>10 (10%)</td>
<td>92 (90%)</td>
<td>102</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: The most popular Internet access location was the library, followed by computer lab, office, home, agricultural education classroom, and teacher lounge.
### Table 6

**Internet Component Access by Ohio Agricultural Education Teachers**

<table>
<thead>
<tr>
<th>Item</th>
<th>Access=Yes</th>
<th>Access=No</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Receiving Electronic Mail</td>
<td>72 (70%)</td>
<td>31 (30%)</td>
<td>103</td>
</tr>
<tr>
<td>Sending Electronic Mail</td>
<td>53 (51%)</td>
<td>50 (49%)</td>
<td>103</td>
</tr>
<tr>
<td>World Wide Web</td>
<td>46 (45%)</td>
<td>56 (55%)</td>
<td>102</td>
</tr>
<tr>
<td>Gopher</td>
<td>29 (29%)</td>
<td>71 (71%)</td>
<td>100</td>
</tr>
<tr>
<td>News Groups</td>
<td>28 (27%)</td>
<td>74 (73%)</td>
<td>102</td>
</tr>
<tr>
<td>File Transfer Protocol</td>
<td>13 (13%)</td>
<td>86 (87%)</td>
<td>99</td>
</tr>
</tbody>
</table>

*Note: The most popular Internet component access was receiving electronic mail, followed by sending electronic mail, World Wide Web, Gopher, news groups, and file transfer protocol.*
Table 7

Internet Usage Amount by Ohio Agricultural Education Teachers

<table>
<thead>
<tr>
<th>Item</th>
<th>n</th>
<th>N %</th>
<th>R</th>
<th>S</th>
<th>O</th>
<th>NA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Library/Media Center</td>
<td>103</td>
<td>22 (21%)</td>
<td>27 (26%)</td>
<td>16 (16%)</td>
<td>5 (5%)</td>
<td>33 (32%)</td>
<td></td>
</tr>
<tr>
<td>Computer Lab</td>
<td>103</td>
<td>15 (15%)</td>
<td>16 (15%)</td>
<td>15 (15%)</td>
<td>6 (6%)</td>
<td>51 (49%)</td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td>105</td>
<td>12 (11%)</td>
<td>6 (6%)</td>
<td>13 (12%)</td>
<td>4 (4%)</td>
<td>70 (67%)</td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>106</td>
<td>3 (3%)</td>
<td>4 (4%)</td>
<td>11 (10%)</td>
<td>9 (8%)</td>
<td>79 (75%)</td>
<td></td>
</tr>
<tr>
<td>Ag Ed Classroom</td>
<td>106</td>
<td>4 (4%)</td>
<td>3 (3%)</td>
<td>4 (4%)</td>
<td>7 (6%)</td>
<td>88 (83%)</td>
<td></td>
</tr>
<tr>
<td>Teacher Lounge</td>
<td>105</td>
<td>3 (3%)</td>
<td>5 (5%)</td>
<td>4 (4%)</td>
<td>1 (1%)</td>
<td>92 (87%)</td>
<td></td>
</tr>
<tr>
<td>Receiving E-mail</td>
<td>103</td>
<td>6 (6%)</td>
<td>10 (10%)</td>
<td>22 (21%)</td>
<td>34 (33%)</td>
<td>31 (30%)</td>
<td></td>
</tr>
<tr>
<td>Sending E-mail</td>
<td>105</td>
<td>10 (9%)</td>
<td>6 (6%)</td>
<td>27 (26%)</td>
<td>11 (10%)</td>
<td>51 (49%)</td>
<td></td>
</tr>
<tr>
<td>World Wide Web</td>
<td>105</td>
<td>8 (8%)</td>
<td>10 (10%)</td>
<td>20 (19%)</td>
<td>11 (10%)</td>
<td>56 (53%)</td>
<td></td>
</tr>
<tr>
<td>Gopher</td>
<td>104</td>
<td>3 (3%)</td>
<td>12 (12%)</td>
<td>13 (12%)</td>
<td>3 (3%)</td>
<td>73 (70%)</td>
<td></td>
</tr>
<tr>
<td>News Groups</td>
<td>105</td>
<td>7 (7%)</td>
<td>8 (8%)</td>
<td>11 (10%)</td>
<td>5 (5%)</td>
<td>74 (70%)</td>
<td></td>
</tr>
<tr>
<td>File Transfer Protocol</td>
<td>105</td>
<td>6 (5%)</td>
<td>6 (6%)</td>
<td>5 (5%)</td>
<td>0 (0%)</td>
<td>88 (84%)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: N=Never, R=Rarely, S=Sometimes, O=Often, and NA=Not Applicable.

This table rates the percent usage of the reported most common Internet access sites, and the percent usage of the reported most common Internet components. This table is a follow-up to Tables 5 and 6.

**Barriers to Internet Use**

Objective 6 of this study was to determine the barriers that prevent prospective online teachers from using this information communication system in their daily planning and teaching routines. In order to determine these possible barriers, teachers were asked to consider eight different barriers which might prevent them from using the Internet.
These eight different barriers were followed by a scale of 1 to 4, with 1 corresponding to "strongly agree," and 4 corresponding to "strongly disagree." Finances proved to be the number one barrier for Internet use among agricultural education teachers. The second most popular barrier was electrical wiring, followed by knowledge of how to use the Internet. Teachers also had the opportunity to write down other barriers which they believe are reasons why they may not use the Internet. Some of the responses included: "time to train," "available phone lines," and "I am still learning how to use and best apply to classroom use." See Appendix C for a complete list of responses.

Table 8

<table>
<thead>
<tr>
<th>Barrier</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>mean</th>
<th>s.d.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finances</td>
<td>48 (47%)</td>
<td>28 (28%)</td>
<td>18 (18%)</td>
<td>7 (7%)</td>
<td>1.84</td>
<td>0.95</td>
<td>101</td>
</tr>
<tr>
<td>Electrical Wiring</td>
<td>36 (35%)</td>
<td>24 (24%)</td>
<td>22 (22%)</td>
<td>19 (19%)</td>
<td>2.24</td>
<td>1.13</td>
<td>101</td>
</tr>
<tr>
<td>Knowledge</td>
<td>22 (22%)</td>
<td>40 (39%)</td>
<td>32 (31%)</td>
<td>8 (8%)</td>
<td>2.25</td>
<td>0.88</td>
<td>102</td>
</tr>
<tr>
<td>Time</td>
<td>18 (18%)</td>
<td>45 (44%)</td>
<td>31 (31%)</td>
<td>7 (7%)</td>
<td>2.27</td>
<td>0.83</td>
<td>101</td>
</tr>
<tr>
<td>Admin. Support</td>
<td>17 (17%)</td>
<td>21 (21%)</td>
<td>42 (41%)</td>
<td>22 (21%)</td>
<td>2.68</td>
<td>0.99</td>
<td>102</td>
</tr>
<tr>
<td>School Bd. Support</td>
<td>12 (12%)</td>
<td>27 (26%)</td>
<td>38 (37%)</td>
<td>25 (25%)</td>
<td>2.75</td>
<td>0.96</td>
<td>102</td>
</tr>
<tr>
<td>Application to ag ed</td>
<td>5 (5%)</td>
<td>26 (26%)</td>
<td>40 (39%)</td>
<td>30 (30%)</td>
<td>2.94</td>
<td>0.87</td>
<td>101</td>
</tr>
<tr>
<td>Community Support</td>
<td>5 (5%)</td>
<td>24 (24%)</td>
<td>49 (49%)</td>
<td>22 (22%)</td>
<td>2.88</td>
<td>0.80</td>
<td>100</td>
</tr>
</tbody>
</table>

*Note: The mean was calculated using the following scale: 1=Strongly Agree, 2=Agree, 3=Disagree, and 4=Strongly Disagree. The most common barrier to Internet use was finances and least was community support.
Professional Development Training

Whether or not Ohio Agricultural Education instructors are interested in professional development specific to the Internet in their content areas was Objective 7 of this research. If the teachers are interested in professional development in this area, what method would they prefer is the question asked by Objective 8 of this study. In order to find the answers to these two questions, teachers were asked to rate nine questions based on the descriptions 1="not at all,” 2="very little,” 3="somewhat,” and 4="to a great extent.” With a mean of 3.27, teachers desired hands-on training with the Internet. They preferred the training to happen with teacher trainers coming to regional sites during the school year, followed closely by training at the Tech Update in the summer. The preferred time for the training was in the afternoon, with the class granting Continuing Education Units (CEU’s) and/or graduate credit.
Table 9

**Internet Professional Development Training for Ohio Agricultural Education Teachers**

<table>
<thead>
<tr>
<th>Question</th>
<th>NAA n</th>
<th>NAA %</th>
<th>V1 n</th>
<th>V1 %</th>
<th>SW n</th>
<th>SW %</th>
<th>GE n</th>
<th>GE %</th>
<th>mean</th>
<th>s.d.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hands-on</td>
<td>6</td>
<td>6%</td>
<td>11</td>
<td>10%</td>
<td>37</td>
<td>35%</td>
<td>52</td>
<td>49%</td>
<td>3.27</td>
<td>0.86</td>
<td>106</td>
</tr>
<tr>
<td>Regional Sites</td>
<td>8</td>
<td>7%</td>
<td>6</td>
<td>6%</td>
<td>42</td>
<td>40%</td>
<td>50</td>
<td>47%</td>
<td>3.26</td>
<td>0.87</td>
<td>106</td>
</tr>
<tr>
<td>Tech Update</td>
<td>6</td>
<td>6%</td>
<td>13</td>
<td>12%</td>
<td>37</td>
<td>35%</td>
<td>50</td>
<td>47%</td>
<td>3.24</td>
<td>0.87</td>
<td>106</td>
</tr>
<tr>
<td>Prof. Day</td>
<td>8</td>
<td>8%</td>
<td>14</td>
<td>13%</td>
<td>36</td>
<td>34%</td>
<td>47</td>
<td>45%</td>
<td>3.16</td>
<td>0.93</td>
<td>105</td>
</tr>
<tr>
<td>Afternoon</td>
<td>14</td>
<td>13%</td>
<td>23</td>
<td>22%</td>
<td>46</td>
<td>43%</td>
<td>23</td>
<td>22%</td>
<td>2.74</td>
<td>0.94</td>
<td>106</td>
</tr>
<tr>
<td>Evening</td>
<td>20</td>
<td>19%</td>
<td>28</td>
<td>27%</td>
<td>40</td>
<td>39%</td>
<td>15</td>
<td>15%</td>
<td>2.49</td>
<td>0.96</td>
<td>103</td>
</tr>
<tr>
<td>Weekend</td>
<td>32</td>
<td>31%</td>
<td>33</td>
<td>32%</td>
<td>24</td>
<td>23%</td>
<td>15</td>
<td>14%</td>
<td>2.21</td>
<td>1.03</td>
<td>104</td>
</tr>
<tr>
<td>CEU's</td>
<td>24</td>
<td>23%</td>
<td>16</td>
<td>15%</td>
<td>29</td>
<td>28%</td>
<td>36</td>
<td>34%</td>
<td>2.73</td>
<td>1.16</td>
<td>105</td>
</tr>
<tr>
<td>Grad. Credit</td>
<td>21</td>
<td>20%</td>
<td>21</td>
<td>20%</td>
<td>29</td>
<td>28%</td>
<td>33</td>
<td>32%</td>
<td>2.71</td>
<td>1.12</td>
<td>104</td>
</tr>
</tbody>
</table>

*Note: The mean was calculated by using the following scale: 1=Not At All, 2=Very Little, 3=Somewhat, and 4=To A Great Extent. The most popular responses were: hands-on Internet training at regional sites using a professional day while earning CEU’s and/or graduate credit.*

**Using the Internet as a Teaching, Reference, or Learning Tool**

According to the results of this survey, Ohio Agricultural Education teachers have used the Internet primarily as a reference tool. However, written responses indicate that the teachers plan to use the Internet also as a teaching and learning tool in the classroom as they
become more proficient in its use and as access becomes more common for their students. The participants in the study were asked to give examples of how they have used the Internet as a teaching, reference, and learning tool if they indicated “yes” to any of these three questions. Table 10 describes the frequency and percent for each question. Following Table 10 is a list of written responses for each question.

**Table 10**

**Ohio Agricultural Education Teacher Use of Internet as a Teaching, Reference, and Learning Tool**

<table>
<thead>
<tr>
<th>Type of Tool</th>
<th>Yes</th>
<th>No</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Reference</td>
<td>48 (44%)</td>
<td>61 (56%)</td>
<td>109</td>
</tr>
<tr>
<td>Learning</td>
<td>19 (18%)</td>
<td>89 (82%)</td>
<td>108</td>
</tr>
<tr>
<td>Teaching</td>
<td>18 (17%)</td>
<td>91 (83%)</td>
<td>109</td>
</tr>
</tbody>
</table>

*Note: Reference tool was the most common teacher use of the Internet followed by learning tool and teaching tool.
Written Responses for Using the Internet as Teaching, Reference, and Learning Tool

Question: Have you ever used the Internet as a teaching tool? If yes, please indicate how.

Seventeen teachers responded to the written part of this question after answering "yes" on their survey. Typical responses were to locate information, conduct web searches, and student research. For actual written responses, see Appendix C.

Question: Have you ever used the Internet as a reference tool? If yes, please indicate how.

Thirty-five teachers responded to the written part of this question after answering "yes" on their survey. Typical responses were to look up information, class projects, and communications. For actual written responses, see Appendix C.

Question: Have you ever used the Internet as a learning tool with your students? If yes, please indicate how.

Nineteen teachers responded to the written part of this question after answering "yes" on their survey. Typical responses were specific class assignments, searching for information, and individual student research problems. For actual written responses, see Appendix C.

Using the Internet With Instruction

The final part of this study was an open-ended question that was to describe the use of various components of the Internet by these educators who presently use the Internet to determine the barriers that
prevent prospective online teachers from using this information communication system in their daily planning and teaching routines. Most of the responses to this question stated how teachers used the Internet as a reference tool and how they plan to use the system in the future. Many respondents gave answers such as "no access" and "will be available soon." A complete listing of these qualitative responses are found in Appendix C.
CHAPTER V.
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Purpose

The main purpose of this study was to find out what percent of Ohio Agricultural Education teachers were using the Internet as a teaching and learning tool. If the teachers were using the Internet, to what extent and in what ways? If the teachers were not using the Internet, what were the perceived barriers to use? Finally, were the teachers interested in professional development regarding the Internet and if they were, what type of training did they desire?

Research Objectives

The following research objectives were developed to conduct this study:

1. To describe Ohio agricultural education teachers on the following demographic characteristics: gender, level of education, geographic location, and program type.

2. To describe the attitudes of Ohio agricultural education teachers regarding the use of the Internet as a teaching, reference, and learning tool.
3. To determine what percentage of Ohio agricultural education teachers have access to the Internet at home and school.

4. To determine what percentage of Ohio agricultural education teachers actually use the Internet as a teaching and learning tool.

5. To describe the level of use of various components of the Internet (i.e., electronic mail, news groups, world wide web, gopher, and file transfer protocol) by Ohio agricultural education teachers.

6. To determine the barriers that prevent Ohio agricultural education teachers from using the Internet as a teaching and learning tool.

7. To determine the level of interest of Ohio agricultural education teachers in professional development specific to the Internet in their content areas.

8. To describe the method of professional development delivery preferred by Ohio agricultural education teachers regarding training on the use of the Internet.

**Methodology**

Population: The target population for this study was high school and adult agricultural education instructors in Ohio who were teaching in either Agribusiness, Agricultural Mechanics, Agriscience, Animal Care, Environmental Management, Farm Business Planning and Analysis (FBPA), Food Processing, Horticulture, Natural Resources, or Production
Agriculture in the school year 1996-97. The accessible population for this study were those teachers listed in the Ohio Agricultural Education Directory published by the Ohio Department of Education.

**Design:** The study utilized descriptive methods and asked questions regarding demographic information such as gender, age, and level of education. The study also asked questions to determine attitude toward the Internet, level of use, barriers to Internet use, and information regarding professional development preferences. In addition, the survey instrument asked miscellaneous questions regarding using the Internet as a teaching, reference, or learning tool. Because of these types of questions and the relationships between them, this research is labeled descriptive.

**Development of the Instrument:** A written questionnaire was developed which consisted of six sections. The first part had questions pertaining to gender, year born, and highest level of education. The second part used a scale to collect data regarding the teacher's attitude toward the Internet. The third part listed four different types of Internet access and then requested the participant to identify the level of usage of each type of access, if applicable. The fourth part of the instrument listed barriers to Internet use and asked the person to rate these potential barriers as they apply to their individual situation. The fifth part of the instrument sought out preferences for possible future professional development in this area. The sixth and final part of the instrument asked questions regarding using the Internet as a tool. Each part of the survey...
instrument was designed to collect data pertinent to the research objectives of this study. This instrument was developed by the researcher using other similar instruments as a guide.

**Data Collection**: Data for this study were collected by mail survey. Cover letters and questionnaires were sent out during the first week in August, 1996. A reminder was sent out two weeks later using the electronic mailing list provided by the Ohio Department of Education Agricultural Education Service. Two weeks later, 10% of the non-respondents or 11 teachers were contacted by telephone to compare demographic data and responses with those who sent the questionnaires back to the researcher in order to check for significant differences. One hundred ten of the 222 teachers selected for the study returned their surveys for a 50% response rate. No significant differences were found between the respondents and non-respondents when the two groups were compared. Therefore, the two groups are assumed to be similar. As a result, this study can be generalized to the population for which it represents.

**Analysis of Data**: Descriptive statistics were used to analyze data in this study. Responses were tallied and statistics were figured using a statistical calculator with the aid of a local math instructor. Statistics used in this study were frequency, percent, minimum-maximum, mean, grand mean, median, and standard deviation to make comparisons among the variables being analyzed. In addition to this quantitative data, qualitative data were also analyzed by the researcher. Some
questionnaires were incomplete in certain sections so different totals were used for calculating statistics. However, the numbers used in the analysis reflect the responses given by the participants in the study.

**Summary of Findings**

**Selected Demographic Information:** The frequency of gender of the teachers in the sample was 13 women and 96 men. Five (4%) of the teachers in the sample were Industry Trained. Two (2%) teachers listed an Associate's Degree as the highest degree held. Fifty-one (47%) teachers listed a Bachelor's Degree as the highest degree held, and 50 (46%) teachers listed a Master's Degree as the highest degree held. The mean age of the teachers in the sample was 41 years, with a minimum age of 23 and a maximum age of 64.

**Attitudes Toward the Internet:** Attitudes were measured by having the teachers rate their beliefs on a scale with ten descriptive adjectives. The teachers would place a mark on the scale depending where they perceived their attitudes to fall. The grand mean calculated to 4.62 with a scale of 1 representing negative and 6 representing positive. In order to calculate the grand mean, mean scores were taken on each response.

**Level of Internet Access and Use:** Results of this research indicated that 25 (24%) teachers have home Internet access, 31 (31%) teachers have office Internet access, 10 (10%) teachers have teacher lounge Internet access, 70 (68%) teachers have library/media center access, 52 (50%) teachers have computer lab Internet access, and 14 (14%) teachers have aged classroom Internet access. To determine what percentage of these
educators actually use the information superhighway as a teaching and learning tool, teachers were asked to declare whether they had access to each component of the Internet.

Seventy-two (70%) teachers have access to receiving electronic mail. Fifty-three (51%) teachers have access to sending electronic mail. 28 (27%) teachers have access to news groups, 46 (45%) teachers have access to the World Wide Web, 29 (29%) teachers have access to Gopher, and 13 (13%) teachers have access to file transfer protocol. Teachers who had access were then asked their usage amount of each access location. The most popular Internet location was the library/media center. The second most popular location was the computer lab. The third most popular location was the office. The fourth most popular location was at home. The fifth most popular location was the agricultural education classroom. The sixth most popular location was the teacher lounge.

Teachers who had Internet access were asked to rate their usage of each of the components of the Internet. The component of the Internet that the teachers used the most was receiving electronic mail. Receiving E-mail was followed by sending E-mail. The World Wide Web was the third most used component of the Internet. Gopher followed the web, while news group and file transfer protocol were the least used.

Barriers to Internet Use: In order to determine possible barriers, teachers were asked to consider eight different barriers which might prevent them from using the Internet. These eight different barriers were followed by a scale of 1 to 4, with 1 corresponding to "strongly agree," 2 corresponding
to "agree," 3 corresponding to "disagree," and 4 corresponding to "strongly disagree." Finances proved to be the number one barrier for Internet use among agricultural education teachers with a mean of 1.84. The second most restricting barrier was electrical wiring, followed by lack of knowledge and time, administrative support, school board support, application to agricultural education, and community support.

**Professional Development Training:** In order to find preferences regarding professional development training, teachers were asked to rate nine questions based on the descriptions "not at all," "very little," "somewhat," and "to a great extent." Overall, teachers preferred hands-on training. The teachers preferred regional sites as a location for training, followed closely by Tech Update sessions. Teachers preferred taking a professional day, compared to afternoon, evening, or weekend training. When asked about compensation, Continuing Education Units and graduate credit were very popular.

**Using the Internet as a Teaching, Reference, or Learning Tool:** According to the results of this survey, Ohio Agricultural Education teachers who have used the Internet primarily use the system as a reference tool. However, written responses indicate most teachers plan to use the Internet as a teaching, reference, and learning tool in the classroom as soon as they become more proficient in its use and as access becomes more available for their students.
Using the Internet With Instruction: The question was asked “How have you used the Internet with your instruction at your local school and what are some of the things you have used it for? If you have not used the Internet with your instruction, indicate why you have not used it.” Most of the responses to this question stated how teachers used the Internet as a reference tool and how they plan to use it in the future. Many responses gave answers such as “no access” and “will be available soon.”

Conclusions

In general, about 70% of Ohio Agricultural Education teachers have access to the Internet somewhere whether it be at home or at school. The most popular use of the Internet by these teachers is electronic mail, followed by World Wide Web, Gopher, news groups, and file transfer protocol. The most popular location for using the Internet is not the most convenient location. At the time of this study, a low percentage (14%) of the teachers surveyed responded that they had access to the Internet in their agricultural education classrooms.

The average teacher that responded to this study was a 41 year old with a Bachelor's Degree and had a positive attitude toward the Internet. If these teachers had a positive attitude toward the Internet, then why are few teachers using the system as a teaching and learning tool? Finances proved to be the number one barrier for not using the Internet with wiring problems also identified as a strong barrier. Wiring can be directly related to finances, but will soon be taken care of due to School Net. (NWO-RPDC, 1995) Because of this plan, all school buildings in
Ohio will have the opportunity to be wired for computers and Internet usage within the next few years. Some responses on this survey indicated that the schools involved with this study would soon be wired.

Professional development regarding the Internet among agricultural education teachers is in high demand. Teachers would prefer hands-on training at regional sites by other teacher trainers. They would like to have this training available by using a professional day as opposed to weekends, afternoons, or evenings. They would prefer compensation for their time in the form of Continuing Education Units and/or graduate credit.

Ohio's Agricultural Education teachers are aware of the Internet and how it can help them improve the quality of their daily instruction. They know that there are barriers to overcome and those who believe in its value, think that they will overcome these barriers in the near future. These teachers are looking for training to tackle this new technology. In order to receive this training, it should be offered by other teachers, regional professional development centers, colleges or universities, outside providers, or the Ohio Department of Education Agricultural Education Service.

**Recommendations**

**General Recommendations**: Leaders in Ohio should work with their agricultural education teachers to provide education about the Internet and how it can be used as a teaching and learning tool. These leaders should provide professional development opportunities for their clientele regarding use of the Internet. Efforts should be made to develop statewide communications networks utilizing electronic mail (E-mail).
Accurate existing E-mail addresses should be published and made available to teachers in order that they may communicate with each other. Teachers should be grouped into county, vocational educational planning district (VEPD), district, state, and legislative mailing lists. Teachers should be trained how to use these mailing lists to facilitate communication.

Teachers should be given information about Internet access opportunities and how to “connect” overcoming various possible barriers. Advisory committees, administrators, and school boards should be informed of the educational benefits of providing Internet access for an agricultural education department.

World Wide Web sites of agricultural interest should be published in print and in “hot list” form on disk. These sites should be shared with Ohio’s agricultural education teachers. Individual web sites of agricultural education departments, local school districts, joint vocational school districts, and other educational agencies should be publicized. Universities should lead the way in sharing their own Internet resources including web sites, Gophers, and E-mail addresses.

A teacher training program which uses teachers as mentor trainers should be pursued by inservice providers. These teacher trainers should be trained in leadership skills and content about use of the Internet. Workshops should be hosted at regional sites based on hardware accessibility using these teacher trainers as presenters.

Pre-service programs for agricultural education teachers need to be updated to reflect telecommunications use. Students at institutions of higher learning should be required to use technology in their daily
assignments just as teachers in the field should be expected to use technology in their daily work. Use of the Internet should be a main focus of this technology.

Recommendations for Further Research: Further research should be conducted in the near future about using the Internet in Ohio's agricultural education programs. This study should include the rate that agricultural education is advancing in this area compared with other disciplines. There should also be information regarding Internet use and amount of teaching experience. Because of the current nature of Internet emergence in schools and the implementation of School Net, the results may be much different than this researcher's work.

Further research should be conducted to find out if pre-service programs at colleges and universities are providing future teachers with the knowledge of how to utilize the Internet in their educational programs. A follow-up study should then be conducted to examine how many of these new teachers are using the Internet in their instruction.

Further research should be conducted to determine the need for developing Internet classroom activities for agricultural education teachers. Part of this research should focus on the perceived needs of the future work force in agriculture and what Internet training these workers will need to be successful.
Dear Agricultural Education Instructor,

We have entered the information age. The learner today has so many different sources of information to use that he or she cannot possibly utilize each bit for the process of learning. Lifestyles have changed over the past several years. The television, newspaper, magazine, and friend on the street are no longer the most relevant sources of information. Many of these sources are out of date by the time the person accesses them. Situations have changed in our classrooms also. Although a printed textbook serves as a good reference manual, the teacher must rely on other sources of information to teach the most current information.

As an agricultural education instructor, you have the task of teaching the most current information to your students in the most efficient way that you know how. A new tool that has recently became available to help us with this task is the Internet. As a part of my Masters research at The Ohio State University, I am conducting a survey to find out what percent of Ohio's Ag Ed instructors are using the Internet as a teaching or learning tool. Once I find out this number, I am interested in knowing what level of use we are at. If an instructor is not using the Internet, I want to find out what the barriers are. Finally, I am interested in asking the instructors questions regarding possible future professional development in this area.

Please take a few minutes to complete this questionnaire and return by Friday, August 16. Your individual responses will be kept confidential. The questionnaire has an identification number for mailing purposes only. The results of this survey will be shared this fall. If you have any questions about this survey, please call me at (419) 859-3337 or contact me at the above address. Thank you for your assistance with this study to help update technology in Ohio's Agricultural Education classrooms.

Yours for quality education,

Mark A. Badertscher
From: MARK A BADERTSCHER
Subject: Agricultural Education Teacher Survey
Date: 08/20 2:47 PM

Dear Ohio Agricultural Education Teachers,

Two weeks ago a survey was sent out by myself entitled “Using the Internet as a Teaching and Learning Tool.” The survey was sent to 222 of Ohio’s ag ed teachers. So far 36% of these surveys have been returned.

The purpose of the survey is to find out what percent of Ohio’s ag ed teachers use the Internet, identify possible barriers to use, and determine need for possible future development in this area. If you have received a survey but have yet to complete it, please take time to do this now and return it in the self-addressed postage paid envelope. I need to summarize data from this study and will send out results this fall.

Thank you for your time to help update technology in Ohio’s ag ed classrooms and have a fantastic school year.

Sincerely,

Mark A. Badertscher
Liberty-Benton High School
Findlay, Ohio
APPENDIX B

QUESTIONNAIRE
"Using the Internet as a Teaching and Learning Tool"

Directions: Please complete this questionnaire and return it in the self-addressed stamped envelope. Your responses will be helpful as a part of a study to determine and describe current use of the Internet as it applies to teachers of agricultural education and possible future professional development in this area.

Part I. Demographic Information

1. My gender is:
   ____ Male
   ____ Female

2. The year in which I was born was:
   ________

3. My highest level of education is:
   ____ Industry Trained
   ____ Associate's Degree
   ____ Bachelor's Degree
   ____ Master's Degree
   ____ Doctor's Degree
   ____ Other, please specify __________________________

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Part II. Attitude Toward Internet

Please place an "X" on the following scale for each descriptive adjective in the blank according to how strongly related the term is to the statement. If you feel the statement is strongly related to one end of the scale, place your check mark toward the end of the scale that seems most like the particular statement. Be sure to check every scale for each set of terms. Please put only one check mark per pair of terms. Make each pair of terms a separate judgment. Work at a fairly high speed in order to record your first impression about each statement.

Example: The overall temperature in the winter months is...
COLD ___: X:___:____:___:___: HOT

4. My opinion of the Internet as an educational tool for both student and teacher use is:

   GOOD___:____:____:____:____: BAD
   UNIMPORTANT ___:____:____:____:____: IMPORTANT
   EFFECTIVE ___:____:____:____:____: INEFFECTIVE
   EXCITING ___:____:____:____:____: BORING
   INNOVATIVE ___:____:____:____:____: ARCHaic
   NECESSARY ___:____:____:____:____: UNECESSARY
   ESSENTIAL ___:____:____:____:____: UNESSSENTIAL
   DOUBTFUL ___:____:____:____:____: SURE
   UNWANTED ___:____:____:____:____: WANTED
   WORTHLESS ___:____:____:____:____: VALUABLE
Part III: Level of Use

Please answer the following questions on the left hand side of the page with a yes or no, indicating whether or not your current access includes the item listed. Then after answering either yes or no, respond on the right hand side of the instrument with the level of usage for each item by circling N for never used, R for rarely used, S for sometimes used, O for often used, or NA for not applicable (if you answered “no” for access.)

5. Indicate yes or no and determine level of use as it applies to your use of the Internet for each statement.

<table>
<thead>
<tr>
<th>Access</th>
<th>Usage Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes  No Home Internet Access</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Office Internet Access</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Teacher Lounge Internet Access</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Library/Media Center Internet Access</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Computer Lab Internet Access</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Ag Ed Classroom Internet Access</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Receiving Electronic Mail</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Sending Electronic Mail</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No News Groups</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No World Wide Web</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No Gopher</td>
<td>N R S O NA</td>
</tr>
<tr>
<td>Yes  No File Transfer Protocol (FTP)</td>
<td>N R S O NA</td>
</tr>
</tbody>
</table>
Part IV: Barriers to Internet Use

Please answer the following using the scale 1-5 stating the extent in which you believe each statement reflects a barrier to Internet use for your situation.

If you **strongly agree**, circle 1
If you **agree**, circle 2
If you **disagree**, circle 3
If you **strongly disagree**, circle 4

6. Potential barriers to Internet use in my department include:

- Electrical wiring
- Finances
- Administrative support
- School Board support
- Community support
- Time
- Knowledge
- Application to agricultural education

Other, please specify

1 2 3 4
Part V: Professional Development

Please answer the following using the scale 1-4 stating the likelihood of your participation in professional development regarding the Internet.

**Not At All**, circle 1
**Very Little**, circle 2
**Somewhat**, circle 3
**To a Great Extent**, circle 4

7. The likelihood that I would be interested in...

- hands-on training for ag ed instructors regarding Internet use. 1 2 3 4
- training at the tech update in the summer. 1 2 3 4
- teacher trainers coming to regional sites during the school year. 1 2 3 4
- taking a professional day to acquire ag ed Internet training. 1 2 3 4
- having Internet training on a weekend. 1 2 3 4
- having Internet training in the afternoon. 1 2 3 4
- having Internet training in the evening. 1 2 3 4
- taking a class in Internet training for graduate credit. 1 2 3 4
- receiving Continuing Education Units (CEU’s) for Internet training. 1 2 3 4
Part VI: Miscellaneous Questions

8. Have you ever used the Internet as a teaching tool?
   ___ Yes
   ___ No
   If yes, please indicate how.

9. Have you ever used the Internet as a reference tool?
   ___ Yes
   ___ No
   If yes, please indicate how.

10. Have you ever used the Internet as a learning tool with your students?
    ___ Yes
    ___ No
    If yes, please indicate how.

11. How have you used the Internet with your instruction at your local school and what are some of the things you have used it for? If you have not used the Internet with your instruction, indicate why you have not used it.

Please return this questionnaire in the self-addressed stamped envelope by Friday August 16, 1996 to:

Mark Badertscher
8632 County Road 84
Findlay, OH 45840-9323

Thank you for helping with this study.
APPENDIX C
WRITTEN RESPONSES
The following is a list of written responses from question 6 of "Using the Internet as a Teaching and Learning Tool:"

- time to train, quality software not out there yet
- we are being wired now
- each room in Fall 96 will have Internet access
- we have Internet in our lab
- phone lines, same as wiring?
- available phone lines
- not willing to spend the money on ag
- as I have never used the Internet I find it hard to answer the questions...I am not sure how much material would be on it for Agr. Mechanics use
- I am still learning how to use and best apply to classroom use
- school phone system
- local access w/o long distance

The following is a list of written responses from question 8 of "Using the Internet as a Teaching and Learning Tool:"

- used some educational programs that were downloaded...also attempted to use reference material source for public speaking unit
- yes to look at breeds of livestock with pictures and how to do a net search on Netscape
- but will be this year
- only to get information to share with the class
- relating weather in other states to what crops students might consider planting in 1996
- I used it for a research paper assigned to the Jr. & Sr. Ag Ed students on the topic of “Mad Cow Disease”
- locate information for student reports & activities
- plan to this year
- to have the students find information on small engines and find fact sheets for landscaping
- previous place of employment had Internet in all classrooms
- to pull LP’s off & have students access info
- E-mail, web searches
- adult farmers
- research projects to find specific info related to study
- the Sr. Hort. students tracked the markets for fresh florals through 8 locations
- student research
- we had a YF meeting with our local phone co. explaining the Internet

The following is a list of written responses from question 9 of “Using the Internet as a Teaching and Learning Tool:”

- ag topics
- at home on papers
- to find lesson plans - ENC
- research topics (personal use)
- gathering correct animal info, clubs/sp. interest, lesson plans
- looking up statistics & information for class topics
- I have done a few searches for information on various topics
- I get info quite often for current projects off the net
- used many times to point out any single situation
- results of judging contest
- find out up-to-date info about horticulture
- seek information
- look up information
- locating sources of information relating to crops and livestock as well as record keeping
- good answers to technical questions
- I used it for a research paper assigned to the Jr. & Sr. Ag Ed students on the topic of "Mad Cow Disease"
- locate information for student reports & activities
- great for finding info on anything!
- college class
- I used the other Ag teacher’s computer at home
- information from overseas sites
- too many things to list in this small area, many of the sites are better than OSU’s
- graduate studies at OSU
- I attended a workshop through Ag Ed @ CSI on "Surfing the Net" and looked up reference material I was interested in
- to find out some information
- FFA Home page and other ag related info
- to pull LP’s off & have students access info
- current ag data
- problem based learning, information gathering
- Monday Memo
- just surfed occasionally
hort related topics were researched by Internet
looking for grant info
researched information on various topics
obtaining information

The following is a list of written responses from question 10 of
"Using the Internet as a Teaching and Learning Tool:"

-used only briefly programs that were downloaded...anatomy, fish ID
-I am just starting to show them how to use the Internet system
-but will be this year
-Gopher on N.O.W.E.C.A. for weather forecasting
-look up information
-marketing strategies
-I used it for a research paper assigned to the Jr. & Sr. Ag Ed students
on the topic of "Mad Cow Disease"
a search tool to see what is available
-plan to this year
to have the students find information on small engines and find fact
sheets for landscaping
-computer applications
-to pull LP's off & have students access info
-information gathering weather
-introduction to concept
-planned for 96, all classes taken to computer lab to explore the net
-a college search, topic search
-downloaded info at home to use with students at school
-research
-no availability - but soon

The following is a list of written responses from question 11 of “Using the Internet as a Teaching and Learning Tool:”

Part A: “How have you used the Internet with your instruction at your local school and what are some of the things you have used it for?

-A. tracked the flight (migration) of Monarch butterflies, B. projects via FFA web page, C. presented student-based questions to other hort students and recorded responses while answering those posed through the net
-e-mail, information gathering, weather
-our h.s. has a web page - our program is actively involved in sharing info on projects we do - i.e. industrial hygiene, (air monitoring, noise, etc.)
-computer application, ag research projects
-as required to receive Ohio Ag Ed Monday Memo's and to communicate with administrators as needed - usually receiving from them - not me to them
-reference and research for assignments, finding new info
-only use in receiving e-mail from the state office
-very brief use for information on trees
-the school has a computer lab and much of the learning about the web is done in that location, I will help the students find new sites or show them other areas of interest to get them excited about the computers and the www
-yes - 1. market information, 2. weather information, 3. agribusiness information, 4. new product information, 5. FFA web site
-I used it for a research paper assigned to the Jr. & Sr. Ag Ed students on the topic of “Mad Cow Disease”
-used mostly for reference work and get answers to questions

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-relating weather in other states to what crops students might consider planting in 1996, locating sources of information relating to crops and livestock as well as record keeping, marketing strategies
-ideas from others, current information
-just recently received internet access in every classroom including ag, this is very new and we are still experimenting

Part B: “If you have not used the Internet with your instruction, indicate why you have not used it.”

-not available yet
-do not have one in my area
-have not, not yet installed in my class, should be by the end of the summer
-never used it
-I haven’t any use for it
-I have not had access or time to use the Internet at our school
-access, access, knowledge, access, access not really at school yet!
-not available yet
-have not had the training
-it is not available in this building as of this date
-no access - $ & superintendent non-support!
-I haven’t used it mainly because of lack of time and also because our computer lab is on the opposite side of building from our vocational wing
-no have, sorry
-n/a
-knowledge of using it
-not used access to Internet located in central office off site, receive e-mail at another address
-have not used Internet because we have no computers available
-no - not yet available
-not enough time to learn how! access need to be in ag office - not other end of building!
-none
our school just got wiring this past spring, I haven't had the time to see how to use it and what I can use it for, I may try to do that this winter
-not available!

we only have one computer in our school that is hooked up to "Free net" & I have very limited access to it, also I would need more training on how to use it, there also seems to be a problem with our phone lines or theirs, because when I have tried to use it, can't get through because the lines are always busy, I think the Internet is very exciting & useful, I believe our students need to learn how to access information now more than ever, however I am very concerned that students might access inappropriate information from it & that their parents would hold me responsible

-it is not available to me at this time, I wish it was
-I have not used Internet because the computer part of our program is taught by the other instructor - he has used it to a limited degree - a lot of problems getting it hooked through our phone lines
-not available at our school because of administrator

-next year will be 1st year for Internet

-just received past year in media center, no training yet
-I have only used the Internet two times in summer workshops & at friends, no chance of even a phone modem in ag ed dept., office in school buildings have the only modems
-lack of computer stations for students

-we do not have access to the Internet at our school, unfortunately
-lack of training on application and use
-not available

-access

-I'm getting old, computer illiterate
-just acquired access over the summer
-lack of knowledge on its use, therefore a lack of motivation to pursue it to use as a teaching tool

-do not have access to Internet - only one machine to A-site

-have not currently used but plan to - have used at home and business acquaintance
-this school does not want to invest the money, but it is improving very slowly
-do not have access at school as of this date
-not available to use
-finance & support, convenience
-we are receiving a second computer this fall so there will be one computer in each class, what I plan to do is acquire an overhead attachment so that the screen can be projected onto a larger surface so all students may see the images
-my students do not have access to the Internet - only I do
-I don’t know how
-I have not used it - there is not access available for my...
-n/a
-need access...due to happen this year
-no - no access at the school
-use @ home, not @ school, no access yet
-we will be getting access this fall, then I plan to use it
-we just received our computers and have not hooked up to the Internet yet
-we only have one site in the school, it is in the media center & not convenient
-available phone lines and equipment expense have been a problem
-have not used it - no equipment is available to use it - people in charge place low priority on agriculture
-computers at our school did not go online with Internet in the media center until last spring, I have never used them and do not know the range of information available
-the classroom computer was just connected this summer and I am still learning to use it
-only 2 units in library/computer lab and these are restricted
APPENDIX D
PANEL OF EXPERTS
Edward Boutwell  Agricultural Education Instructor, Carey Exempted Village Schools.

Dr. Janet Henderson  Associate Professor of Agricultural Education, The Ohio State University.

Rhonda Hildebrand  Computer Science Instructor, Liberty-Benton Local Schools.

Ronald Keller  Vocational Guidance Counselor, Millstream Career Cooperative, Findlay City Schools.

Edward Marsman  Technology Coordinator, Liberty-Benton Local Schools.

James Pierce  Agricultural Education Instructor, McComb Local Schools.

David Reese  Agricultural Education Instructor, Liberty-Benton Local Schools.

James Tompkins  Agricultural Education Instructor, Cory-Rawson Local Schools.
APPENDIX E
PILOT TEST
AGRICULTURAL EDUCATION INSTRUCTORS PARTICIPATING IN PILOT TEST

Richard Addison-Northwestern High School
Jerry Boes-Hopewell-Louden High School
Richard Brill-Canal Winchester High School
William Cackler-Big Walnut High School
John Carl-Marysville High School
Chris Clark-Madison Plains High School
Tom Daiber-Wynford High School
Louis Damschroder-Oak Harbor High School
Ed Feasel-Elmwood High School
Collin Gierke-Greenon High School
Paul Heilman-Kenton High School
Tom Holton-East Knox High School
Kevin Kremer-Margaretta High School
Brad Moffitt-Ripley High School
Harold Niehaus-Preble Shawnee High School
James Pierce-McComb High School
Mike Rossfeld-Wayne Trace High School
Sharon Ruggles-EHOVE Joint Vocational School
Neil Swonger-Cardington-Lincoln High School
Andrew Wilson-Hardin Northern High School
DRAFT OF FIRST PILOT TEST LETTER

TO: Selected Agricultural Education Instructors
FROM: Mark Badertscher, Liberty-Benton High School
RE: Pilot Test of Internet Survey
DATE: April 3, 1996

Dear Agricultural Education Instructor,

I hope that this letter finds you enjoying the holiday season and/or possible spring break that you might have. You are one of 20 individuals that I have selected out of all agricultural education instructors in Ohio to help me with my research for my Masters Degree. I am doing research on "Using the Internet as a teaching and learning tool." I hope to find out to what extent the Internet is currently being used by Ohio Ag Ed Instructors, determine potential barriers of use, and find out what interest there is for professional development in this area.

You might ask, "why select me?" I have selected you because I believe that you you have valuable opinions that you would be willing to share and that you will complete the survey and send it back to me by Friday, April 12. You are a member of my pilot test group. I ask that you complete the survey and return it in the self-addressed stamped envelope. I will then send you the same survey later for you to complete again. The purpose of this is to establish reliability. Once you have helped me with this task, I will be able to make adjustments and then send the survey out for actual data collection.

Thank you for your participation in advance, and if you have any questions, I can be reached at:

(419) 424-5351 school
(419) 422-5108 fax
(419) 859-3337 home
jspk49a@prodigy.com email

Yours for quality education,

Mark A. Badertscher
DRAFT OF SECOND PILOT TEST LETTER

TO: Selected Agricultural Education Instructors
FROM: Mark Badertscher, Liberty-Benton High School
RE: Pilot Test of Internet Survey (part 2)
DATE: May 3, 1996

Dear Agricultural Education Instructor,

I hope that this letter finds you enjoying the spring season and looking forward to completing another successful year of school. I have received your survey that you have completed and tabulated the results. Because you are one of 20 members of my pilot test group, I am asking that you complete it again and mail to me by Monday, May 13.

If you recall, the purpose of a field test is to check an instrument for reliability. Therefore, I have sent you exactly the same survey which I will compare the answers with those received in the first round. It is equally important that you complete and send this survey back as well. Once this is complete, I will be able to ready my instrument for use in the entire sample group in Ohio. Please take a moment and complete this survey now and return it in the enclosed self addressed, stamped envelope.

Once again, thank you for your participation in advance and if you have any questions I can be reached at:

(419) 424-5351 school
(419) 422-5108 fax
(419) 859-3337 home
jspk49a@prodigy.com email

Yours for quality education,

Mark A. Badertscher
REFERENCES


