UNDERSTANDING OKLAHOMA AGRICULTURAL TEACHERS' USE OF AND ATTITUDES TOWARD USING THE INTERNET IN THE CLASSROOM

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CHAPTER I

INTRODUCTION

When the Smith-Hughes Vocational Education Act of 1917 enhanced agricultural education, there were approximately 6.4 million farms in the U.S. totaling 955 million acres (Department of Commerce, 1922). Today, there are less than 2.2 million farms in the U.S. with approximately 938 million acres, (National Agricultural Statistic Service, 2002). Agriculture has transitioned from having many small family farms to large, concentrated farming enterprises. This transition can be attributed at least in part to the increased use of technology. Technology is changing the face of agriculture and is providing more diverse opportunities. “Technological evolution…has transformed the nature and vastly broadened the range of agricultural occupations and professional careers” (National Research Council, 1988, p. 25). In the 90 years since the inception of the Smith-Hughes act, rural life has changed drastically. Agriculture also has evolved and, although the need for education in agricultural persists, the activities, projects, and curriculum should continually be updated to offer the most modern and innovative methods.

The Internet is one innovation in particular that has had a dramatic impact on the world and on agriculture. With it, businesses have become more efficient, worldwide communication has moved beyond telephones, and schools have access to resources

outside the walls of the library. The Internet's huge presence in the daily functions of schools and businesses makes it a positive addition to the agricultural classroom and the curriculum. It comes as no surprise, then, that the government allocated public funds in hope of bringing "every school and library in America into the information age" (http://www.fcc.gov/learnnet/, ¶ 1). By the fall of 2000, 99.5 to 100 percent of secondary schools had Internet access, and 99 percent of rural schools had Internet access (Cattagni, Farris, & Westat, 2001). For many schools, there is at least one computer with Internet access per student (Cattagni et al., 2001).

As the nation continues to progress, agricultural teachers and schools are challenged to integrate this progress in the classroom. As the Internet is available to students in nearly every agricultural classroom across the U.S., teachers are challenged to ask students to use it for educational projects, innovative problem solving, and scholarly research. This, however, presents a unique challenge to the already inundated agricultural educator. Agricultural education teachers are expected to teach a wide range of subjects, participate in livestock exhibitions, and guide students in extra-curricular leadership activities. These educators very likely do not have the time to research innovations and develop cutting-edge curriculum.

As with any form of public education, agricultural teachers are focused on developing high-achieving students who are prepared to proactively create a successful future. In order to ensure success, the curriculum being taught and the manner in which it is taught must be forward thinking, and encompass the most prevalent and up-to-date resources, which includes the Internet. Additionally, teachers must be comfortable with the curriculum and the Internet. This comfort level can be affected by many factors

including background and education, time restraints, technology support, Internet speed, etc. These factors must be understood and addressed to successfully integrate innovative technology into the agricultural classroom.

In order to offer these innovative lessons, agricultural teachers must stay "cutting-edge." The use of the Internet is already more widespread "among children and adolescents ages 5 through 17 than among adults" (Department of Commerce, 2003, ¶ 1). By utilizing the Internet in the classroom, agricultural education teachers can present information in a way that is familiar to the student. If this technology is incorporated into the curriculum, agricultural teachers are helping to bridge a gap between learning and applying knowledge in a real-life scenario. The Internet offers a way for agricultural educators to teach an innovation in a hands-on manner, thus perpetuating the experiential foundation of agricultural education.

Statement of the Problem

The need for this study arises from the relatively fast adoption of the Internet in agricultural classrooms and the relatively slow process in which curriculum and teaching methods traditionally evolve. While it is commendable for schools to provide computers and the Internet to nearly every student, it may not be enough to install this new technology and assume a student will use it productively. Teachers should lead students in their use of the Internet. Before the teacher feels comfortable leading somebody else, they must first feel comfortable with the Internet themselves. There may be barriers present that would hinder agricultural teachers to effectively integrate the Internet into their classroom lessons. Internet adoption may be limited by background and education,

comfort level, time restraints, and technology support. The problem lies in understanding barriers that would prevent agricultural teachers from effectively integrating the Internet into their classroom lessons. It is vital to identify and address these barriers in hopes of fostering a higher level of Internet integration in the agricultural classroom.

Purpose of the Study

The purpose of this study is to describe how Oklahoma agricultural education teachers use educational Internet-based resources in classroom and laboratory instruction.

Research Objectives

1. Describe the demographic characteristics of Oklahoma agricultural educators.
2. Describe the technological capabilities of the Oklahoma agricultural classroom.
3. Describe the different ways in which Oklahoma agricultural educators acquired their computer skills.
4. Describe agricultural educator's confidence in incorporating the Internet in their classroom.
5. Describe the attitudes Oklahoma agricultural educators have toward using the Internet in the classroom.
6. Describe how the Internet is being used in agricultural education classroom and laboratory.
7. Describe the level of support Oklahoma agricultural educators feel they receive from their administration.

8. Describe the correlation between age and the confidence level of using computer and the Internet in the agricultural classroom.
9. Examine the relationship between teachers' preparation for computer use and their level of confidence using the Internet effectively in the agricultural classroom.
10. Describe how Oklahoma agricultural educators' attitudes affect the use of Internet in classroom instruction.

Definition of Terms

For the purpose of this study, the following definition will be used:

Technology – A technological process, invention, or method. In this study, technology will include computers and the Internet.

Support system – A person or network of people and/or resources that gives aid or assistance and can help agricultural teachers make decisions regarding technology. For this study, a support system could consist of technical support personnel, fellow agricultural teachers, school administrators, parents, university teacher educators, and staff from the Oklahoma Department of Career and Technology Education.

Limitations of the Study

This study will be limited to a subset of agricultural teachers who attended a district end of year meeting and completed a questionnaire. The questionnaire response will be limited to the teachers' perception of their own behaviors.

Because the subject of technology will be appealing to some and not others, the

agricultural education teachers that are interested in technology may be more apt to respond to the questionnaire, potentially resulting in positively skewed data.

Pro-innovation bias could potentially occur throughout this research study. By definition, "the *pro-innovation bias* is the implication in diffusion research that an innovation should be diffused and adopted by all members of a social system, that it should be diffused more rapidly, and that the innovation should be neither re-invented nor rejected" (Rogers, 2003, p. 106). This study focuses on the adoption of computers and Internet in the agricultural classroom. In an effort to prevent pro-innovation bias, it also seeks to identify attitudes, perceptions, and organizational qualities that might prevent the adoption of technology in the agricultural education classroom.

Basic Assumption of Study

The major assumption of this study is that the Internet should be an integral part of the learning process in the agricultural classroom. It is assumed that the research is performed on honest and willing participants. It is assumed that all participants can interpret and describe their perceptions, read, write, and fill out a questionnaire.

Significance of Study

The information obtained in this study may be significant for a number of reasons. No studies have examined the integration or resistance of the Internet in Oklahoma's agricultural education classrooms. If major factors for the resistance are identified, the state can focus on overcoming these obstacles. If there are teachers successfully incorporating the Internet, much can be learned from and modeled after them.

This study may have far-reaching implications for the existing structure and curriculum of the traditional agricultural education classroom, and for the requirements and methods used by the agricultural education teachers. If the reasons behind resistance to integrate the Internet could be identified, steps could be taken to alleviate these problems. Teachers could then begin to successfully integrate the Internet into daily lessons.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Although there is a broad range of literature devoted to the use of "technology" in the classroom, few studies specifically focus on the Internet as an educational medium. It is generally accepted in the literature that there are many factors associated with the successful integration of technology in the classroom. These factors include the school's perceived role in technology adoption and diffusion, the agricultural teachers' technology education, the perceived barriers to adopting technology in the agricultural classroom, and the effects of technology on student and teacher attitudes.

Schools' Role in Technology Adoption and Diffusion

Public schools provide children with the tools they will need for life. Integrating technology into the classroom allows students to be more competitive in an ever-changing world. "Instructional technology, including computers, has the potential to help improve the education process" (Alston, Miller, & Williams, 2003, p. 38). To a certain extent, teachers have implemented technology, but have not embraced it. Only 39 percent of "teachers with access to computers or the Internet in their classroom or elsewhere indicated they used computers or the Internet a lot to create instructional materials"

(Rowand, 1999, ¶ 2). With less than 40 percent of teachers using computers/Internet in their curriculum "a lot," it is important to understand what limits the other 60-plus percent from trying to do the same. When close to 100 percent of schools have the ability to access the Internet, why aren't more teachers taking advantage of this technology? Why does it take so long for pedagogical methods to evolve?

"For nearly a century outsiders have been trying to introduce technologies into high school classrooms, with remarkably consistent results. After proclaiming the potential of the new tools to rescue the classroom from the dark ages and usher in an age of efficiency and enlightenment, technologists find to their dismay that teachers can often be persuaded to use the new tools only slightly, if at all. They find further that, even when the tools are used, classroom practice – the look-and-feel of schools – remains fundamentally unchanged" (Hodas, 1993, ¶ 1). Indeed, when comparing yesteryear's classroom with today's classroom, there is still a grouping of desks, a teacher usually instructs from the front of the room, and there is still some sort of presentation board on which lessons are presented. The method of delivering presentations has changed, but not drastically or quickly. Chalkboards have evolved into marker boards, and sometimes Smart Boards. The overhead projector has been replaced by PowerPoint presentations and the yardstick has been replaced with a laser pointer. Rarely is technology used to its fullest capacity.

For technology to have a place in the classroom, there must be some level of commitment from the teacher and the administration. There must be perceived benefits to utilizing technology and these benefits must outweigh the drawbacks. Indeed, many federal and state funds are contingent on developing and implementing plans to integrate

technology into schools. “Policymakers generally agree that schools need more instructional technology, but have not agreed on the best way to utilize it in the classrooms” (Alston, Miller, & Williams, 2003, p. 38). Nevertheless, one thing is certain. Without some sort of impetus from the government and the school district, most teachers would avoid changing their tried-and-true teaching methods and classroom curriculum.

Research performed by Alston et al., (2003) analyzed the perceived role of instructional technology in the future. Their findings suggest that teachers are undecided about the future role of technology in the agricultural classroom. “However, these teachers perceived an array of benefits from future use of instructional technology in their agricultural education programs, including teacher access to information resources” (Alston, 2003, p. 38). It appears that teachers can envision the future advantages of technology, but have not taken the initiative to reap its present-day benefits.

Agricultural Teachers’ Technology Education

To effectively utilize instructional technology, teachers must be comfortable with the equipment and their knowledge base. Comfort level can ultimately impact attitudes, which dictate what is being taught and the manner in which it is taught. “Positive teacher attitudes toward computers are widely recognized as a necessary condition for effective use of information technology in the classroom” (Christensen, 2002, p. 411). If teachers are leery of computers and the Internet, they will likely have a poor attitude about using them in their classrooms. Without a basic understanding of technology, teachers might feel anxious to use the Internet in front of a full classroom of inquisitive, technologically savvy high school students. According to Christensen, “future successful

implementations of technology will need to address teachers' attitudes toward computers" (2002, p. 412).

Students' growing expertise with the computer and the Internet can negatively influence teachers' attitudes. As teachers utilize the Internet in the classroom more and more, students quickly learn how to navigate the Web. Eventually, many students are operating at the same or higher level than the teacher, creating anxiety on behalf of the teacher. According to Christensen, "this implies that teachers need some mechanism at their disposal – ongoing education, for example – that continues to reduce their anxiety more rapidly than the advancing skill level of their students" (2002, p. 431). If a school is large enough, in-house training and support might be an option. Smaller schools could enlist the help of local vocational-technical professionals. Regardless of the size or location of the school, offering some form of technology education may positively influence teachers' attitudes about using the Internet in the agricultural classroom.

Certain skills and practices predispose a teacher to effectively utilize technology in the classroom. Teachers with Internet connections at home and teacher e-mail accounts adopt technology at a higher level (Kotrlik, Redmann, & Douglas, 2003). Also, "teachers who are self-taught, who have attended college courses, or who have received training from colleagues, adopt technology at a higher level" (Kotrlik et al., 2003, p. 72). Several factors were cited that were related to technology adoption, including sources of training – college, graduate work, professional development, and independent learning (Kotrlik, 2003). Research has shown that teachers who have been exposed to the Internet and use it on a daily basis are more likely to incorporate technology into the classroom.

It seems that the higher a teacher's level of exposure, the higher the likelihood of

that teacher comfortably using the Internet in the classroom. To capitalize on this, some schools have developed networking groups that allow teachers to discuss technology and share ideas. These groups, sometimes called Collaborative Communities of Learners, are designed "to support innovation, adoptions, and resources sharing" (Seels, Campbell, & Talsma, 2003, p. 91). When teachers gain an understanding about technology, they are building on their existing knowledge base and testing the results. For teachers to be able to share these new ideas and receive feedback offers another form of learning. "When educators collaborate and when they work on authentic problems in the manner that requires them to justify their practices, understanding is facilitated" (Seels et al., 2003, p. 92). To support technology integration in schools, Seels et al. suggest both an increase in the ability of teachers that are attempting to integrate technology in the classroom and the building of "Collaborative Communities of Learners that provide continuing support" (Seels, 2003, p. 101).

Many teachers are ill equipped to handle the constant demands of the technology-driven world. Indeed, "most teachers who graduate from teacher education programs do so with an inadequate knowledge of how they can implement technology into their teaching practices" (Pope, Hare, & Howard, 2002, ¶ 2). One study researched the difference between what pre-service teachers are taught to do and what they are expected to do as classroom teachers. This study required pre-service teachers to use various forms of technology throughout a semester and to incorporate the technologies into their student teaching. The result indicated an increased understanding of how to utilize technology in an educational setting. "Pre-service teachers must see the technology modeled by the university faculty, and they must be offered instruction and practice in integrating

technology into their instructional methods and practices" (Pope et al., 2002, ¶ 23). Essentially, the student teachers are learning how to teach using technology. This facilitates a better understanding of the technology and also positively impacts the student teacher's comfort level.

Barriers to Adopting Technology in the Agricultural Classroom

Although almost every secondary school in the U.S. is stocked with computers and equipped with the Internet, the technology is not being utilized as much as it could. "There is substantial survey evidence that, almost three decades after the computer was first introduced in schools, it has not brought about a wide-spread revolution in methods of teaching or in school structure and organization" (Ertmer, 1999, p. 47).

As Ertmer stated, "Early models of educational change implied that if teachers had access to enough equipment and training, classroom integration would follow" (Ertmer, 1999, p. 47). However, that has not proven to be the case. Simply providing the technology has not guaranteed adoption. This implies that other obstacles might need to be overcome. Several changes might be necessary in order for a teacher to effectively integrate the computer and Internet into the classroom. This includes personal, organizational, and pedagogical changes, not to mention curricular or time management changes (Ertmer, 1999).

Ermter listed two classifications of barriers: first-order and second-order. "First-order changes adjust current practice, in an incremental fashion, making it more effective or efficient, while leaving underlying beliefs unchallenged" (Ertmer, 1999, p. 48). These would be considered superficial barriers that do not challenge the teacher's belief system.

First-order barriers could include the lack of access to technology, time constraints, and lack of technical support (Ertmer, 1999). Second-hand barriers require a more drastic revolution and "confront fundamental beliefs about current practice, thus leading to new goals, structures, or roles" (Ertmer, 1999, p. 48). These barriers challenge a teacher's underlying beliefs, including beliefs about teaching, computers, and classroom practices (Ertmer, 1999). Because first-hand barriers are extrinsic to the teacher, they are somewhat easier to surmount. Second-hand barriers are revolutionary and require a decision by the teacher to change their methods and beliefs in order to encompass technology.

Technology Effects on Student and Teacher Attitudes

Student and teacher attitudes can be altered by the implementation of technology. Teachers can feel threatened and anxious when forced to adopt instructional technology, or they can feel motivated, useful, and hip. "Most people involved in education welcome the promise of a better education that technology brings" (McFarlane, Green, & Hoffman, 1997, ¶ 1).

Technology training can positively impact both teachers' and students' attitudes. "Training appears to foster meaningful use by teachers in the classroom, which, in turn, fosters student computer enjoyment and later a perception of importance of computers" (Christensen, 2002, p. 431). As teachers become more comfortable with technology, they likely will use it more in the classroom. This increased use portrays the computer as an important tool; a change that students will notice. One study proved that positive teacher perceptions, positive teacher computer enjoyment, and positive teacher enthusiasm

influenced student perceptions of computer importance in a positive manner (Christensen, 2002).

When an Internet-based learning medium is used effectively, students participate in a learning activity that positively portrays technology. For many students, this form of learning is enjoyable and useful, both of which play an important role in affecting student attitude (Lee, Cheung, & Chen, 2005).

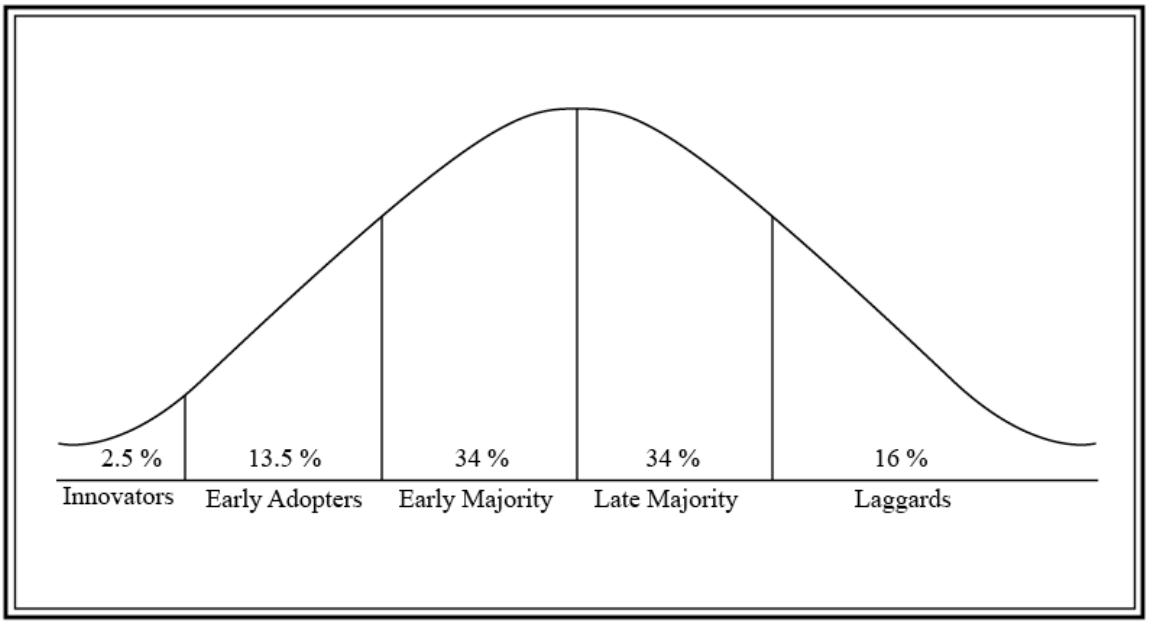
Age and Confidence About Technology Utilization

Although age would seem to be an obvious determinant of technological capacity, this is not always the case. One would think that young teachers, who had recently graduated college where technology is more prevalent, would have an advantage over older teachers. However, research has shown that age has little to do with confidence using technology. Even recent college graduates are not very knowledgeable in using technology for classroom instruction (Ertmer, Lewandowski, Osika, Selo, & Wignell, 2003). “Simply stated, few of our current or future teachers have either observed or experienced learning with or from computers.” (Ertmer et al., 2003, p. 96). Their study revealed no significant relationship between age and ratings of computer skills, ideas or self-efficacy (Ertmer, 1999).

Another study found that the “degree held, gender, ethnicity, age, years teaching experience, usefulness of instructional technology, participation in the state vocational convention, and participation in regional and national Association for Career and Technical Education did not explain the variance in the value vocational teachers place on information technology” (Kotrlik, Redmann, & Douglas, 2003, p. 80).

Theoretical Framework

The theoretical framework that will be used in this study is Rogers' diffusion of innovation theory. Rogers theorized that innovations would follow a normal curve as they spread through a population. Early adopters select the technology first, followed by the majority, and finished by laggards, until a technology or innovation is common (Rogers, 2003). See Figure 1.



Source: Rogers (2003, p. 281)

Figure 1. Roger's Adoption Categories.

According to Rogers, people's attitude toward a new technology is a key element in its diffusion (Rogers, 2003). He explains this with the innovation-decision process, which is defined as the process through which an individual passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision (Rogers,

2003). Its five stages are knowledge, persuasion, decision, implementation, and confirmation.

Innovations have shaped our past and continue to shape our future. An innovation is described as an idea, practice or object that is perceived as new by an individual (Rogers, 2003). The Internet is one innovation in particular that has had a dramatic impact on the world. Without it, schools and businesses would be less efficient, worldwide communication would be limited to telephones, research would be limited to books in a library, and e-mail would be eliminated. So, if the Internet has had such a huge influence in day-to-day living, why is it still considered an innovation? Shouldn't it have moved past being an innovation and become an expected part of living? The answer is no, not yet. As stated above, an innovation is characterized as a new idea to someone or a group of "someones." As long as the idea is still new to certain populations, it is still considered an innovation to them.

Agricultural educators may not be using computers and the Internet to their fullest potential. Although the majority of agricultural educators know what the Internet is, they may not have reached the second step, which is persuasion (Rogers, 2003). These non-adopters might never have heard about the advantages of the Internet. They might believe that the Internet does not pertain to an education about agriculture. On the other hand, they might have been persuaded about the benefits of the Internet and made a conscious decision to reject it. As the Internet becomes more and more mainstream, these non-adopters will likely re-evaluate the perceived characteristics of the Internet, or may actually be forced into adopting.

Expecting agricultural educators to adopt the Internet because it is useful is bordering on pro-innovation bias. Pro-innovation bias is the implication that an innovation should be diffused to and adopted by all members of a social system, that it should be diffused rapidly, and that the innovation should be neither re-invented nor rejected (Rogers, 2003).

Agricultural educators are resourceful, educated people who have their students' best interests at heart. If they have not adopted the Internet, they may have valid reasons and concerns that should be addressed, not ignored or attacked. By contemplating the five attributes of innovations, diffusion researchers might better understand agricultural teachers' resistance to the Internet. The five attributes of innovations include relative advantage, compatibility, complexity, trialability and observability (Rogers, 2003).

The relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 2003). If an agricultural teacher believes that their "tried-and-true" methods are more beneficial than the new, "risky" Internet, they will not be interested. The compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters (Rogers, 2003). Because agriculturalists are symbolically known for having a steadfast lifestyle in an ever-changing world, they might be very resistant to new ideas and to change. Another factor that might discourage the adoption of the Internet is complexity. Complexity is the degree to which an innovation is perceived as relatively difficult to understand and to use (Rogers, 2003). The complexity of the computer and Internet, as perceived by the agricultural educator, is negatively related to its rate of adoption.

On the up side, the Internet offers a relatively high level of trialability. Trialability is the degree to which an innovation may be experimented with on a limited basis (Rogers, 2003). If agricultural teachers are curious about the Internet, they can access and test-drive it, usually without having to leave their school. On the down side, the results offered by computers are not very observable. Observability is the degree to which the results of an innovation are visible to others (Rogers, 2003). If one teacher is using the Internet in his or her curriculum and sees the interest level and academic achievement of students increase, another teacher will not be able to tell very easily.

Adopter categories can be used to label agricultural educators' willingness to try the Internet and incorporate it into their curriculum. Adopter categories are the classifications of members of a system on the basis of their innovativeness (Rogers, 2003). The late majority group is described as skeptical. They adopt new ideas just after the average member of a system. In this case, the Internet is approached with skepticism and caution (Rogers, 2003). The laggards are described as very traditional people. They are the last in a social system to adopt an innovation. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done previously. Laggards tend to be suspicious of innovations. In this case, resistance to the Internet is rational in their opinion because they have limited resources. They must be certain that the computer and the Internet will not fail them or cause them any despair before they will adopt (Rogers, 2003). Soon, however, these late adopters and laggards may not have a choice. As the Internet becomes more prevalent throughout society, agricultural educators might be forced into adopting.

Summary of Literature Review

Public schools and government agencies are becoming increasingly proactive in their commitment to place technology into classrooms. “Since 1994, the National Center for Education Statistics (NCES) has documented the large increase in access to computers and the Internet in the nation’s public elementary and secondary schools” (Rowand, 1999, ¶ 1). However, the literature supports the idea that it is not enough simply to provide access to these technologies. “Policymakers generally agree that schools need more instruction in technology, but have not agreed on the best way to utilize it in the classroom” (Alston, Miller, & Williams, 2003, p. 38). Fundamental changes must occur in order for students and teachers to actually benefit from having access to the computer and the Internet. These changes can include removing extrinsic and intrinsic barriers, providing an increased level of commitment from school administration, making a conscious decision to incorporate technology in the curriculum, increasing technology training, and providing a support group for teachers.

Several studies suggest a link between the successful integration of the Internet in the classroom and schools’ perceived roles in technology diffusion, teachers’ educational background, perceived barriers to adopting technology, and the effects of technology on student and teacher attitudes. “Technology is not simply equipment, but a systematic treatment of information and instructional content in a specialized way to achieve a specific purpose” (Alston, Miller, & Williams, 2003, p. 39).

Because of their position in society, schools and its leadership can act as their own barrier when regarding technology. There must be an active decision to utilize technology and incorporate it into the existing culture, curriculum, and structure of the

traditional school. One study compares technology refusal and the organizational culture of schools. Schools "are systems for preserving and transmitting information and authority, for inculcating certain values and practices while minimizing or eliminating others, and have evolved over the past one hundred years or so to perform this function more efficiently" (Hodas, 1993, ¶ 2). Technology can threaten a school's level of efficiency. To successfully integrate technology, time and expense must be invested in equipment, infrastructure, teacher training, etc. These expenses challenge a school's tried-and-true method. Schools "experience change or the challenge to change most significantly as a disruption, an intrusion, as a failure of organismic defenses" (Hodas, 1993, ¶ 3).

Without support from school administration, teachers would not feel compelled to incorporate technology into the classroom. The teacher might even feel that changing the curriculum could threaten their position within the school's hierarchy and their job security. "The teacher's world is substantially limited by powerful social and administrative pressures to teach in a particular way" (Kotrlik, Redmann, & Douglas, 2003, p. 73).

Technology education and training also can impact Internet adoption in the classroom. Pre-service teachers are required to take an introductory computer course as part of their undergraduate coursework. They are not, however, required to incorporate that training into their student teaching experiences. This acts as a barrier to successfully integrating technology into the classroom. The literature supports the notion that teachers' technology knowledge should be improved through long-term classes, extended training, and continuing education classes. "Schools have made significant progress

in…helping teachers to use basic technology tools, but they still struggle with integrating technology into the curriculum" (Kotrlik, Redmann, & Douglas, 2003, p. 73). In this study, Kotrlik et al. indicated that teachers need five or six years of working with technology before they felt like they developed the appropriate expertise. "Once they were at this level, they modified instructional strategies and dramatically changed the classroom environment" (Kotrlik et al., 2003, p. 75).

Perceived barriers and technology anxiety also can limit the adoption of technology in the classroom. While technology has the potential to revolutionize teaching, a "number of obstacles could inhibit its implementation" (Alston, Miller, & Williams, 2003, p. 40). Extrinsic barriers might include equipment, time, training, and support. Intrinsic barriers, such as the teacher's underlying belief system, also can impede Internet adoption. Other barriers that were identified in the literature include time, availability of technology and support, and ability and training. These perceived barriers could ultimately predict the integration of technology in the agriscience classroom.

"Although we cannot predict the number, type, or order in which teachers will encounter these barriers, the fact that they will experience a wide range of barriers is almost guaranteed. Yet, by being aware of the various barriers they may face, teachers can begin to develop the skills and strategies needed to overcome each of the different types" (Ertmer, 1999, p. 50).

The attitudes of both teachers and students can influence Internet adoption in the classroom. "Positive teacher attitudes toward computers are widely recognized as a necessary condition for effective use of information technology in the classroom" (Christensen, 2002, p. 411).

If teachers display a positive attitude toward computers, students' attitudes will likely mirror their teachers' attitude. According to the literature, there also is the potential for students' attitudes to impact teachers' attitudes, especially in regards to anxiety levels. "Greater positive perception of Computer Importance among the students in a classroom also fosters higher Computer Anxiety in their teachers" (Christensen, 2002, p. 431).

In order for the Internet to have a place in the classroom, teachers and students must accept it as an effective medium for teaching and learning (Lee, Cheung, & Chen, 2003, p. 1095). This study underscores usefulness and perceived enjoyment as two factors that significantly impact the student's intention to use Internet-based learning. Surprisingly, perceived ease of use did not have a significant impact on student attitude or intended use. "Teachers are reluctant to invest their time and effort [into an Internet-based learning medium] if they are not confident that students will find the medium acceptable" (Lee et al., 2003, p. 1095).

Computers and Internet in the classroom offer the promise of a new advanced method of teaching and learning. In order for this new method to be successful, it must be supported by each entity involved in the education system, but specifically by the teacher. "A critical juncture in whether or not technology will successfully enhance the educational process is the attitude of the teacher using the technology" (McFarlane, Hoffman, & Green, 1997, p. 4).

The literature identifies key components regarding technology integration in the classrooms. An in-depth analysis of agricultural teachers and their use of computers and the Internet could lead to a better understanding of why technology is or is not being used, and could ultimately influence pedagogical reform and classroom learning.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to describe how Oklahoma agricultural education teachers use educational Internet-based resources in classroom and laboratory instruction. This chapter describes the methodology that was used to accomplish the objectives of the study.

Institutional Review Board

As set forth by national guidelines, all human subject research activities conducted by Oklahoma State University faculty, staff or students must be reviewed and approved by the Oklahoma State University Institutional Review Board. In compliance with this policy, an Institutional Review Board application was submitted and approved. It was assigned application number AG0828 (see Appendix A).

Research Design

This study was conducted using quantitative research methods. It utilized a mass-distributed questionnaire. The purpose of the questionnaire was to identify common themes and the scope of these themes in regard to Internet use in the agricultural

education classroom.

The variables of this study include teachers' attitudes, beliefs, and knowledge about the Internet and how these beliefs impact implementation. The objectives of this study address these variables.

Population

The population of this study included all Oklahoma agricultural educators who attended the Northeast, Southwest, Central, and Southeast Supervisory District meetings in the summer of 2008 (N=367).

Convenience sampling was used. Data was collected by distributing the questionnaire to all agricultural education teachers attending the Northeast, Southwest, Central, and Southeast Supervisory District meetings in the summer of 2008. Because of coinciding dates and times, teachers in the Northwest district were omitted from the study. The sample consisted of the agricultural education teachers who willingly completed and returned the questionnaire. The dates for each district meeting were as follows:

- Northeast District meeting: August 6, 2008
- Southwest District meeting: May 29, 2008
- Central District meeting: June 3, 2008
- Southeast District meeting: June 5, 2008

Instrumentation

Perceptions of Computers & Technology (Hogarty, Lang, & Kromrey, 2003) was the instrument used to gather attitudinal and perceptual data from participants. This instrument closely matches the research objectives because it was designed to measure teachers' reported use of technology in their classroom and their attitudes toward computers. It analyzes a handful of subcategories that envelop many facets of the research questions. These subcategories include: integration; support; preparation, confidence and comfort; and attitudes toward computer use. One of the most enticing aspects of this instrument was its freshness. With permission from the author, the instrument was slightly modified to better accommodate this specific population. The complete instrument can be found in Appendix C.

Validity and Reliability

Hogarty, Lang, and Kromrey (2003) conducted validity and reliability research on the instrument. "The primary goal of this research was to develop and validate an instrument that would provide data to foster a better understanding of how educators and students use technology in the classroom" (Hogarty, Lang, & Kromrey, 2003, p. 140).

> "A comprehensive instrument was developed, and multiple sources of evidence were examined with regard to the construct validity of scores derived from the survey. Exploratory factor analysis was conducted within each section of the instrument, and the composite scores showed acceptable levels of reliability (with coefficient alpha ranging from .74 to .92). Furthermore, relationships between instrument subscales and

relationships with external variables provide some initial support for the validity of the scores" (Hogarty, Lang, & Kromrey, 2003, p. 158).

In their validity research, the authors of the instrument administered both "alternate forms reliability" and "internal consistency reliability." They administered the same questionnaire in two different versions: a paper version and an online version. They analyzed the paper version versus the paper version, the online version versus the online version, and the paper version versus the online version.

"The investigation of differences between administration methods (paper vs. Web) suggests that a difference exists in the rates of response between the two modes (.39 for the paper version .10 for the Web version). This difference suggests that teachers who were given the paper version were more likely to return the questionnaire than those given the Web version. However, no statistically significant differences were observed between the paper mode and Web mode regarding either gender or racial representation in responding. In addition, an examination of responses on the 11 subscales suggests that the statistically significant differences in teachers' perceptions and attitudes by mode are relatively small in absolute magnitude" (Hogarty, Lang, & Kromrey, 2003, p. 158).

Data Collection Procedures

The modified instrument was distributed to each agricultural educator in the above-mentioned district meetings. In addition to the questionnaire, participants received a cover letter (see Appendix B) explaining the study and its purpose. Teachers also received the Institutional Review Board requirements and a consent form.

The first portion of the instrument addressed the demographic characteristics of the participants. The remaining sections of the instrument utilized a 5-point Likert scale, which is closely related to an interval scale. This instrument presented two forms of the scale. One of these Likert Scales ranges from “Strongly Disagree” to “Strongly Agree.” The other, which applies to technology use, ranges from “Not at All” to “Entirely.”

Collected data was visually inspected and cleaned in order to prevent the inclusion of errors, missing data, or data outside of the acceptable range. The data was sorted in ascending order.

Data Analysis

The collected data was analyzed using frequency and correlation statistics. It was assumed that the data will be normally distributed and, therefore, parametric. The Pearson product-moment correlation coefficient was applied to the data using the computer software program Microsoft Excel. The results are presented in various forms. The demographic information initially is presented in table form. The correlation data is presented in tables.

CHAPTER IV

FINDINGS

The purpose of this study was to describe how Oklahoma agricultural education teachers use educational Internet-based resources in classroom and laboratory instruction. An established instrument, which was slightly modified, was used to collect the data. This chapter presents an analysis of the data gathered from the 239 Oklahoma agricultural education teachers who participated in the study (response rate = 239/367).

The response rate statistics, presented in Table 1, were varied. One explanation for this variation was the difference in which the questionnaire was treated at each meeting. The Central District, which easily had the highest response rate, had allocated time specifically for the questionnaire. The other districts were trying to accomplish several tasks during the time the questionnaire was being distributed and completed.

Table 1

Response Rate of Oklahoma Agricultural Educators

District	# of Teachers	# of Respondents	Response Rate
Central	84	73	86.9%
Southwest	81	49	60.5%
Northeast	106	62	58.5%
Southeast	96	55	57.3%
Total	367	239	65.1%

Findings Related to Objective 1

Oklahoma Agricultural Educator Demographics

Objective 1 related to the demographic characteristics of Oklahoma Agricultural Educators. Of the educators that participated in the study, 221 (94.8 %) were male and 12 (5.2%) were female. Their ages ranged from 22 to 64, with a mean age of 39.3 years old. At the time of the study, the educators had spent, on average, 12.3 years in the agricultural classroom. The number of years teaching agriculture ranged from less than one year to 41 years, with a median of nine years of teaching. Demographic information for the Oklahoma agricultural educators is reported in Table 2.

Table 2

Demographics of Oklahoma Agricultural Educators

	N	Frequency	Percent
Gender	233		
Male		221	94.2
Female		12	5.8
Age	231		
20-29		57	24.8
30-39		67	29.1
40-49		57	24.8
50-59		42	18.3
60-69		7	3.0
Years Teaching Agricultural Education	226		
1-10 years		119	52.7
11-20 years		44	19.5
21-30 years		49	21.7
31-40 years		13	5.8
41-50 years		1	0.4

Note. Percentages may not equal 100% due to rounding

Findings Related to Objective 2

Technology Characteristics of Oklahoma Agricultural Classrooms

Objective 2 findings depict the technology characteristics of Oklahoma agricultural classrooms. The teachers' access to computers, video projectors, Internet, Smartboards® and computer labs were measured. A compilation of technology characteristics of Oklahoma agricultural classrooms is presented in Table 3. Teachers were asked to estimate their usage of each technology. The majority of teachers (93.2%) had computers in their classrooms available for student use. On average, there were 4.54 computers in each classroom. Essentially, almost every computer in the agricultural classroom had Internet access. On average, 4.47 classroom computers were connected to the Internet.

Also, video projectors were almost always connected to the Internet. Of the 189 classrooms with access to video projectors, 176 (93.1%) of the projectors were capable of accessing the Internet. The majority of agriculture teachers (85.6%) used their computer, projector and Internet together for instruction at least once a week (see Figure 2). Agricultural teachers also were asked about Smartboard® technology. Eighty-six (36.6%) of the respondents had a Smartboard® in their classroom. The majority of the teachers (87.8%) that had access to Smartboard® technology utilized it at least once a week (see Figure 3). Nearly all of the participants (88.9%) had access to school computer labs. However, few agricultural teachers (10.1%) utilized these computer labs more than once or twice a semester (see Figure 4).

Table 3

Technology Characteristics of Oklahoma Agricultural Classrooms

	N	Yes	No
Do you have computers in your classroom available for student use?	235	219	16
Does your classroom have a portable or permanently mounted video projector that is connected to a computer?	190	189	1
If "YES", does that computer have an Internet connection?	188	176	12

	N	Daily	Week	Semester	Never
If "YES," how often do you use the computer, projector and Internet connection together for instruction?	174	85	65	20	4

	N	Yes	No
Do you have a Smartboard® in your classroom?	235	86	149

	N	Daily	Week	Semester	Never
If "YES," how often do you use the Smartboard® in your classroom for instruction?	82	45	27	5	5

	N	Yes	No
Do you have access to a school computer lab?	234	208	26

	N	Daily	Week	Semester	Never
If "YES," how often do you take an entire class to use the lab?	198	3	17	119	59

Note. Daily = Once a Day, Week = Once a Week, Semester = Once or Twice a Semester, Never = Never

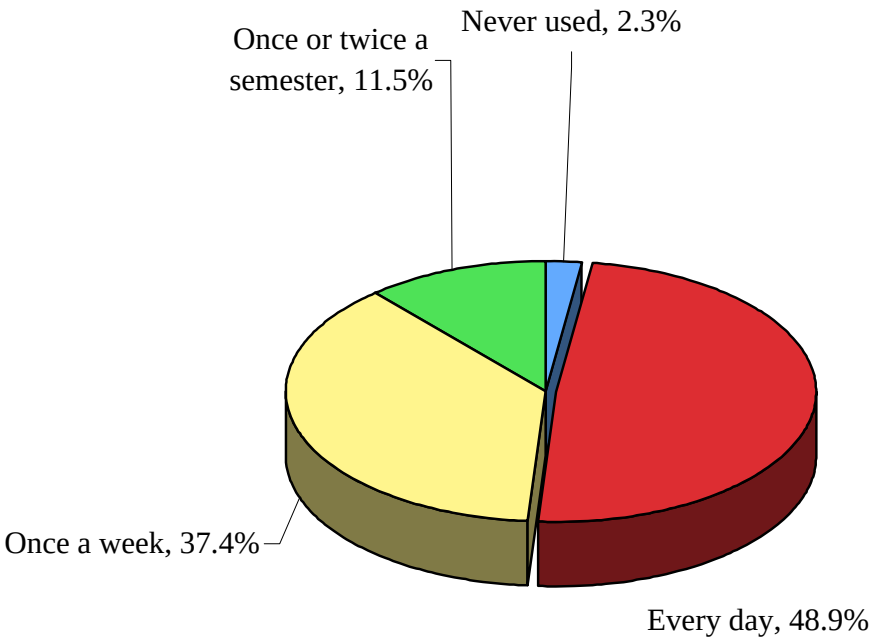


Figure 2. Frequency of instruction using computer, projector and Internet together.

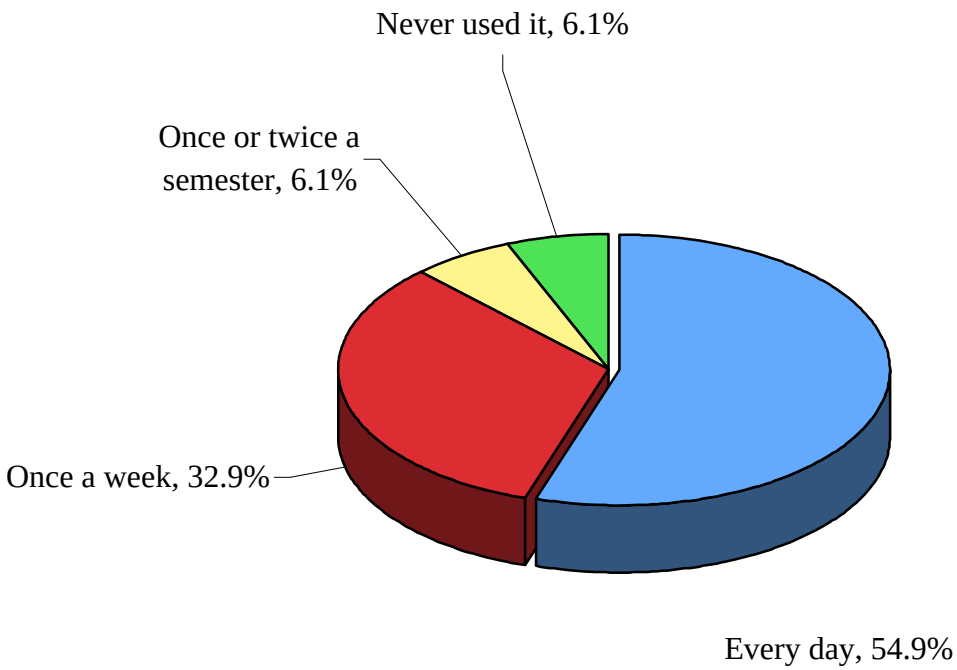


Figure 3. Frequency of Smartboard® use by teachers who have adopted the Smartboard® technology.

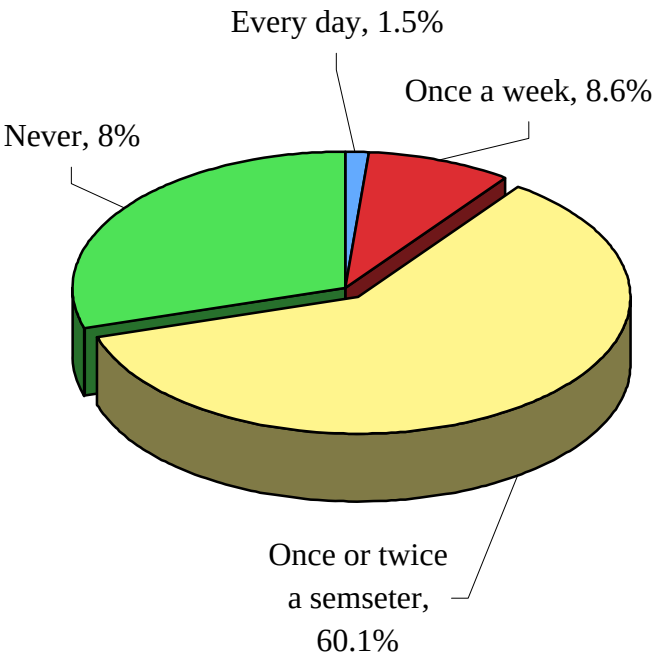


Figure 4. Frequency of computer laboratory use by Oklahoma agricultural education teachers.

Findings Related to Objective 3

Teachers' Acquisition of Computer Skills

Objective 3 findings describe the different ways in which Oklahoma Agricultural Educators acquired their computer skills. Teachers were asked to estimate the level of computer training they received from various sources. The responses ranged from "Not at All" to "Entirely." Each question had a possible score of one to five. A score of one would indicate that the respondent did not receive computer training from that method. A score of five would indicate the respondent received all of his/her computer training from that method. The instrument and scale can be found in Appendix C.

Teachers selected personal trial and error (with means in parentheses) to be the most prevalent form of computer training (3.69), followed by independent learning (3.21) and interaction with other faculty/staff (3.08). Teachers also learned computer skills from students in the secondary agricultural education program (2.83), from in-services or workshops (2.60), and as a part of their undergraduate teacher preparation coursework (2.34). To a negligible extent, teachers enhanced their computer skills by participating in distance learning courses (1.70) as shown in Table 4.

Table 4

Manner in which Oklahoma Agricultural Educators Acquired Computer Skills

	N	Not at All 1	Small extent 2	Moderate Extent 3	Great Extent 4	Entirely 5	μ	σ
Personal trial and error	230	3	13	70	110	34	3.69	0.84
Independent learning	231	23	32	72	82	22	3.21	1.11
Interaction with other faculty/staff	230	12	49	88	71	10	3.08	0.95
Students in the secondary ag ed program	230	30	58	75	54	13	2.83	1.10
In-services courses/workshops	231	22	85	93	25	6	2.60	0.90
Undergraduate coursework	232	88	35	60	40	9	2.34	1.25
Distance Learning courses	227	138	42	29	13	5	1.70	1.04

Findings Related to Objective 4

Teachers' Confidence Using the Internet in the Classroom

Objective 4 pertains to agricultural educators' confidence in incorporating the Internet in their classroom. Each question utilized a 5-point scale, ranging from "Strongly Disagree" to "Strongly Agree." A score of one indicated strong disagreement, while a score of five represented strong agreement. The instrument and scale can be found in Appendix C.

The questions related to confidence and comfort yielded means ranging from 3.3 to 3.89 as shown in Table 5. The means (featured in parentheses) favored a neutral to agreeable viewpoint. Adequate training (3.3) was the lowest scored item. Comfort giving computer assignments to students (3.45) and confidence in finding answers to students' computer and Internet-related questions (3.56) were the second and third lowest scored items, respectively. Comfort navigating the Internet (3.89) scored the highest mean, where the belief that computer enhances teaching (3.85) had the second-highest mean.

Table 5

Oklahoma Agricultural Educators Level of Confidence and Comfort Using Computers and the Internet in the Classroom

	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	μ	σ
		1	2	3	4	5		
I am comfortable navigating the Internet.	231	3	14	33	136	45	3.89	0.83
The computer enhances my teaching.	232	3	12	40	139	38	3.85	0.80
Incorporating the Internet into lessons enhances my teaching.	232	2	14	60	121	35	3.75	0.85
I am comfortable using computers during my classroom instruction.	232	4	25	38	135	30	3.70	0.89
My use of the computer/Internet enhances my students' performance.	232	5	9	60	136	22	3.69	0.78
I use the Internet effectively in my classroom.	232	5	22	55	127	23	3.61	0.87
I use computers effectively in my classroom.	232	5	19	62	124	22	3.60	0.85
I am developing my expertise on how to use computers and the Internet in the classroom.	232	5	17	63	128	19	3.60	0.83
I am confident that I can find answers to my students' computer and Internet-related questions.	232	11	22	59	106	34	3.56	1.01
I am comfortable giving computer assignments to my students.	231	10	33	55	108	25	3.45	1.01
I have had adequate training in using computers.	231	10	41	66	98	16	3.30	0.98

Findings Related to Objective 5

Teachers' Attitudes Toward Using the Internet in the Classroom

Objective 5 discusses how Oklahoma Agricultural Educators feel about using Internet in the classroom. These questions utilized a 5-point scale, ranging from "Strongly Disagree" to "Strongly Agree." These questions resulted in means ranging from 3.86 to 1.90 as shown in Table 6. The belief that Internet enhances classroom instruction (with means in parentheses) was the highest ranking (3.86). It was closely followed by the belief that the ability to effectively use the Internet is essential to students (3.82). More than half of the teachers surveyed agreed they would like their students to be able to use the Internet more (3.75). Many Oklahoma Agricultural Educators also agreed that the Internet should be incorporated into the classroom curriculum (3.58), more training would increase the teachers' use of the Internet in the classroom (3.23), and learning how to incorporate the Internet in the classroom requires a lot of professional time (3.13).

Many teachers disagreed with the statement that they feel pressure from others to integrate the Internet into their classroom (2.25). They also disagreed with the statements that they avoid the Internet whenever possible (1.96), that the Internet diminishes the role of the teacher (1.96), and that using the Internet in the classroom is just another fad (1.90).

Table 6

Positive or Negative Attitudes Associated With Using Internet in the Agricultural Classroom

		SD	D	N	A	SA		
	N	1	2	3	4	5	μ	σ
The Internet enhances classroom instruction.	230	1	11	39	147	32	3.86	0.72
The ability to effectively use the Internet is essential to my students.	231	0	11	51	138	31	3.82	0.72
I would like my students to be able to use the Internet more.	231	0	14	63	120	34	3.75	0.78
The Internet makes my job easier.	231	5	27	56	110	33	3.60	0.94
The Internet should be incorporated into the classroom curriculum.	229	5	19	66	116	23	3.58	0.86
More training would increase my use of the Internet in the classroom.	231	13	35	78	95	10	3.23	0.95
Learning how to incorporate the Internet in the classroom requires a lot of my professional time.	231	12	50	76	81	12	3.13	0.98
I feel pressure from others to integrate the Internet into my classroom.	230	37	79	81	27	6	2.50	0.98
I feel tense when people start talking about the Internet.	231	59	87	56	26	3	2.25	1.00
The Internet diminishes my role as a teacher.	232	80	98	35	15	2	1.96	0.92
I avoid the Internet whenever possible.	230	89	89	30	22	2	1.96	0.99
Using the Internet in the classroom is just another fad.	228	85	95	35	12	1	1.90	0.88

Note. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Findings Related to Objective 6

Internet Use in the Agricultural Education Classroom and Laboratory

Objective 6 sought to measure the agricultural educators' use of the Internet in the classroom. The educators were asked to estimate their Internet use using a 5-point scale ranging from "Not at all" to "Entirely." This scale also included a choice of "Not Applicable." A score of one indicated "Not at all," where a score of five represented "Entirely." A score of zero was applied to all "Not Applicable" responses. The instrument and scale can be found in Appendix C.

The questions related to Internet use in the agricultural classroom yielded means ranging from 2.77 to 3.65 as shown in Table 7. The means (featured in parentheses) indicated that agricultural educators were using the Internet in various teaching modes to a small or moderate extent. Using the Internet as a reward was the lowest scored item (2.54). Using the Internet to tutor (2.61) and small group instruction (2.77) had the second and third lowest means, respectively. Encouraging classroom use of the Internet as a research tool for students (3.65) received the highest mean. Using the Internet as a communication tool (3.2) received the second highest mean. The third, fourth and fifth highest means were closely scored. Having students use the Internet as an independent learning tool (3.14) and as a problem-solving, decision-making tool (3.13) scored the third and fourth highest mean, respectively. The mean for using the Internet for individual instruction was 3.12.

Table 7

Manner and Extent Oklahoma Agricultural Educators Use Internet in Classrooms and Labs

		Not at all	Small extent	Moderate extent	Great extent	Entirely	N/A		
	N	1	2	3	4	5	0	μ	σ
As a research tool for students	226	2	17	59	108	36	4	3.65	0.98
As a communication tool (e.g. e-mail, electronic discussion)	226	13	30	72	81	22	8	3.20	1.18
Independent learning	223	11	27	96	73	11	5	3.14	1.01
As a problem-solving, decision-making tool	225	7	31	96	73	11	7	3.13	1.02
Individual instruction	224	10	32	84	82	9	7	3.12	1.06
To promote student-centered learning	224	15	26	101	64	8	10	2.97	1.10
Small group instruction	223	15	40	112	38	7	11	2.77	1.07
To tutor	224	24	52	89	40	6	13	2.61	1.15
As a reward	224	44	48	74	44	6	8	2.54	1.19

Findings Related to Objective 7

Teachers' Perceived Support from School Administration

Objective 7 sought to measure the level of support Oklahoma Agricultural Educators feel they receive from their administration regarding the use of technology in the classroom. These questions also utilized a 5-point scale, ranging from "Strongly Disagree" to "Strongly Agree." The results are depicted in Table 8. This section was divided into three parts dealing with administrative support, the presence of an on-site computer support specialist, and the duties of an on-site specialist.

The resulting means (presented in parentheses) regarding administrative support ranged from 3.29 to 3.64, indicating a neutral to agreeable stance on the questions. The highest scored item supported the statement that the administration actively encourages teachers to use computers in the classroom (3.64). It was followed by the administrative support for computer-related training for teachers (3.62), and administrative support for teachers to use the Internet in the classroom (3.48). The slightly lower scored items included the teacher feeling like he /she received a sufficient level of support at his/her school (3.35) and the notion that teachers share ideas about how to use the Internet in the classroom (3.29).

The second part of the section deals with the presence of an on-site computer support specialist. About 72.7 percent of respondents indicated they had an on-site computer support specialist with the mean averaging approximately 1.63 on-site support specialists per school. The purpose of the third section was to discern the effectiveness of the on-site support specialist. The resulting means ranged from 2.76 to 3.38, again indicating a neutral to agreeable stance on the questions. The highest scored item indicated the computer specialist adequately assists the teacher in problem solving (3.38). This was followed by the dedication of the specialist to

helping teachers (3.34) and the ability to adequately access the on-site computer specialist (3.28). Respondents neither agreed nor disagreed with the statement that the specialist has to be contacted several times before assistance is provided (3.05). And, respondents mostly disagreed that the computer specialist shows new techniques to integrate technology into the classroom (2.76).

Table 8

Level of Support Oklahoma Agricultural Educators Receive From School Administration

	N	SD	D	N	A	SA	μ	σ
The administration actively encourages teachers to use computers in the classroom.	226	4	19	52	130	21	3.64	0.83
The administration supports computer-related training for teachers.	225	4	24	51	121	25	3.62	0.88
The administration actively encourages teachers to use the Internet in the classroom.	226	4	26	75	100	21	3.48	0.88
I receive a sufficient level of computer-related support at my school.	225	11	39	52	107	16	3.35	1.01
At my school, teachers share ideas about how to use the Internet in the classroom.	226	7	30	90	89	10	3.29	0.86

	N	Yes	No	D/K
Does your school have an on-site computer support specialist?	224	163	53	8

	N	SD	D	N	A	SA	μ	σ
The onsite computer specialist adequately assists me in problem solving.	160	10	27	30	79	14	3.38	1.06
The onsite computer specialist is dedicated to helping teachers.	160	11	23	39	75	12	3.34	1.04
I have adequate access to our onsite computer specialist.	158	11	30	36	66	15	3.28	1.09
I have to contact our specialist several times before I get assistance.	159	14	41	47	37	20	3.05	1.16
Our computer specialist shows me techniques to integrate computer technology into the classroom	160	25	42	46	41	6	2.76	1.11

Note. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Findings Related to Objective 8

Relationship Between Age and Confidence Using Technology in the Agricultural Classroom

Objective 8 sought to compare age with confidence levels of using computer and the Internet in the agricultural classroom. Table 9 shows the correlation coefficients for each comparison. All of the correlations were negative and ranged from -0.4 to -0.1. This indicates that as age increased, the confidence levels for utilizing computers and the Internet in the agricultural classroom decreased by varying degrees (correlation coefficients are presented in parentheses). One statement that was moderately and negatively correlated to age was the feeling of having adequate training in using computers (-0.4). Thus, as age increased, the feeling of having adequate training in using computers decreased. Another statement that was moderately and negatively correlated to age was the comfort of using computers during classroom instruction (-0.4). As age increased, the comfort level for using computers during classroom instruction decreased. Age was also moderately connected to the teachers' confidence in their ability to find answers to students' computer and Internet-related questions (-0.4). As age increased, teachers' confidence in their ability to answer students' questions decreased. Also, age was moderately and negatively associated with the agricultural educators' initiative to develop expertise on how to use computers and Internet in the classroom. Thus, as age increased, the desire to expand their knowledge and abilities with educational technology moderately decreased.

Age was not as closely tied to the remaining topics, in which the correlations were all negative. When correlated with age, the resulting correlations ranged from -0.3 to -0.1 (with correlations in parentheses). There was a low correlation between age and the perception of using computers effectively in the classroom (-0.3), the perception of using the Internet

effectively in the classroom (-0.2), being comfortable giving computer assignments to students (-0.2), the feeling that computers enhance teaching (-0.2), the feeling that incorporating Internet into lessons enhances teaching (-0.1), and being comfortable navigating the Internet (-0.1).

Table 9

Association Between Age and Confidence Using Computers and Internet in the Agricultural Classroom

X	Y	$Correlation_{XY}$	Correlation Strength
Age	Have had adequate training in using computers	-0.4	NEG, MOD
Age	Comfortable using computers during classroom instruction	-0.4	NEG, MOD
Age	Confident in ability to find answers to students' computer and Internet-related questions	-0.4	NEG, MOD
Age	Am developing expertise on how to use computers and Internet in the classroom	-0.4	NEG, MOD
Age	Use computers effectively in the classroom	-0.3	NEG, LOW
Age	Use the Internet effectively in the classroom	-0.2	NEG, LOW
Age	Comfortable giving computer assignments to students	-0.2	NEG, LOW
Age	Computer enhances teaching	-0.2	NEG, LOW
Age	Incorporating the Internet into lessons enhances teaching	-0.1	NEG, LOW
Age	Comfortable navigating the Internet	-0.1	NEG, LOW

50

Findings Related to Objective 9

Relationship Between Teachers' Computer Training and Their Confidence in Effectively Using Internet in the Agricultural Classroom

Objective 9 sought to examine the association between the teachers' preparation for computer use and their level of confidence using the Internet effectively in the agricultural classroom. Table 10 shows the correlation coefficients for each comparison. All correlations were positive and low. As teachers' education in various mediums increased, their confidence level of effectively using the Internet in the agricultural classroom also increased, but only to a very small degree. The correlations (shown in parentheses) ranged from 0.08 to 0.31. The strongest correlation (0.31) was between undergraduate coursework and effective use of Internet in the agricultural classroom. There was also a low correlation between the effective use of Internet in the agricultural classroom and independent learning (0.21), distance learning classes (0.15), learning from students in the Agricultural education program (0.15), personal trial and error (0.14), and interaction with faculty and staff (0.13). There was almost no correlation between in-services and workshops, and the teachers' confidence level in effectively using the Internet in the agricultural classroom (0.08).

Table 10

How Preparation for Computer Use Relates to Oklahoma Agricultural Educators Level of Confidence Using the Internet in the Classroom

X	Y	$Correlation_{XY}$	Correlation Strength
Effective use of Internet	Undergraduate coursework	0.31	POS, LOW
Effective use of Internet	Independent learning (e.g. online tutorials or books)	0.21	POS, LOW
Effective use of Internet	Distance Learning courses	0.15	POS, LOW
Effective use of Internet	From students in the Agricultural education program	0.15	POS, LOW
Effective use of Internet	Personal trial and error	0.14	POS, LOW
Effective use of Internet	Interaction with other faculty/staff	0.13	POS, LOW
Effective use of Internet	In-services/workshops	0.08	POS, LOW

Findings Related to Objective 10

Relationship Between Educators' Attitudes and the Use of Internet in Agricultural Classroom Instruction

Objective 10 findings describe the relationship between using the Internet in agricultural classroom instruction and teachers' attitudes toward Internet use. The results are shown in Table 11. The correlations (presented in parentheses) were all positive and low, ranging from 0 to 0.21. There was little correlation between using the Internet in small group instruction and the desire for students to be able to use the Internet more (0.21). There was also a low correlation between using the Internet in small group instruction and the idea that the ability to effectively use the Internet is essential to students (0.21), the belief that the Internet should be incorporated into the classroom curriculum (0.17), the feeling that the Internet enhances classroom instruction (0.14), the Internet makes the teacher's job easier (0.14), and that more training would increase the teacher's use of the Internet in the classroom (0.12).

There was almost no correlation between using the Internet in agricultural classroom instruction and the belief that learning how to incorporate the Internet in the classroom requires a lot of professional time (0.06), feeling tense when people talk about the Internet (0.05), feeling pressure from others to integrate the Internet into the classroom (0.05), the idea that the Internet diminishes the role of the teacher (0.04), and avoiding the Internet whenever possible (0.01). There was no correlation between using the Internet in agricultural classroom instruction and the belief that using the Internet in the agricultural classroom is just another fad (0).

Table 11

Correlation Between Agricultural Educators' Attitudes and Use of the Internet in Small Group Instruction

X	Y	$Correlation_{XY}$	Correlation Strength
Use of the Internet in small group instruction	I would like students to be able to use the Internet more	0.21	POS, LOW
Use of the Internet in small group instruction	The ability to effectively use the Internet is essential to my students	0.21	POS, LOW
Use of the Internet in small group instruction	The Internet should be incorporated into the classroom curriculum	0.17	POS, LOW
Use of the Internet in small group instruction	The Internet enhances classroom instruction	0.14	POS, LOW
Use of the Internet in small group instruction	The Internet makes my job easier	0.14	POS, LOW
Use of the Internet in small group instruction	More training would increase my use of the Internet in the classroom	0.12	POS, LOW
Use of the Internet in small group instruction	Learning how to incorporate the Internet in the classroom requires a lot of my professional time	0.06	POS, LOW
Use of the Internet in small group instruction	I feel tense when people start talking about the Internet	0.05	POS, LOW
Use of the Internet in small group instruction	I feel pressure from others to integrate the Internet into the classroom	0.05	POS, LOW
Use of the Internet in small group instruction	The Internet diminishes my role as teacher	0.04	POS, LOW
Use of the Internet in small group instruction	I avoid the Internet whenever possible	0.01	POS, LOW
Use of the Internet in small group instruction	Using the Internet in the classroom is just another fad	0	NO CORR

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter summarizes the purpose, the objectives, and the findings. The conclusions, recommendations, implications, and discussion are based on the results of the research study.

Purpose of the Study and Research Objectives

The purpose of this study was to describe how Oklahoma agricultural education teachers used educational Internet-based resources in classroom and laboratory instruction. This study was guided by the following research objectives:

1. Describe the demographic characteristics of Oklahoma agricultural educators.
2. Describe the technology characteristics of the Oklahoma agricultural classroom.
3. Describe the different ways in which Oklahoma agricultural educators acquired their computer skills.
4. Describe agricultural educator's confidence in incorporating the Internet in their classroom.
5. Describe the attitudes Oklahoma agricultural educators have towards using Internet in the classroom.

6. Describe how the Internet is being used in agricultural education classroom and laboratory.
7. Describe the level of support Oklahoma agricultural educators feel they receive from their administration.
8. Describe the impact age has on the confidence level of using computer and the Internet in the agricultural classroom.
9. Examine the association between teachers' preparation for computer use and their level of confidence using the Internet effectively in the agricultural classroom.
10. Describe how Oklahoma agricultural educators' attitudes affect the use of Internet in classroom instruction.

Summary of Conclusions

Conclusions related to Objective 1: Describe the demographic characteristics of Oklahoma agricultural educators

The agricultural educators in this study were primarily male and represented a diverse range of age and teaching experience. Teachers in the study could best be described as early career as over one half of the population had less than 10 years of teaching experience.

Conclusions related to Objective 2: Technology characteristics of Oklahoma agricultural classrooms

Schools have made different forms of technology available for the agricultural educator. However, the adoption and application of this technology varied wildly. Almost

every agricultural education classroom had computers with Internet access available for student use. Nearly all of the classrooms with video projectors connected to computers were capable of accessing the Internet. While only about one-third of agricultural teachers had Smartboards®, almost all of these teachers utilized the technology at least once a week. While computer labs were available to almost every agricultural educator, only a small percentage of teachers used these labs more than once or twice a semester. This was consistent with previous research, which suggested that although technology was readily available to almost every teacher and student, the presence of technology does not guarantee its use (Kotrlik, Redmann, & Douglas, 2003).

Conclusions related to Objective 3: Teachers' acquisition of computer skills

Overall, agricultural educators felt that they acquired much of their technology training from personal trial and error. They also believed independent learning and interaction with other faculty/staff played a significant role in their technology education. To a lesser extent, teachers felt they learned computer skills from students in the secondary agricultural education program, from in-services or workshops, and as a part of their undergraduate coursework. To a small extent, teachers enhanced their computer skills by participating in distance learning courses.

These results support previous research, which showed that even though teachers are required to take an introductory computer course as a part of their undergraduate coursework, most teachers who graduate from teacher education programs do not know how to implement technology into their teaching practices (Pope, Hare, & Howard, 2002). The literature also reported that participation in workshops and conferences does

not necessarily result in increased technology adoption (Kotrlik, Redmann, & Douglas, 2003). The literature also indicated the benefits of collaboration and having a set amount of time every day to explore technology and plan for using technology in the curriculum (Seels, Campbell, & Talsma, 2003).

Conclusions related to Objective 4: Teachers' confidence using the Internet in the classroom

The agricultural educators in this study held confident attitudes regarding the incorporation of Internet in the classroom. The teachers reported feeling comfortable navigating the Internet. Also, the majority of teachers believed that computers enhanced teaching, and incorporating computers and the Internet into lessons enhanced students' performance. Oklahoma agricultural educators were confident that they use computers effectively in the classroom, that they use Internet effectively in the classroom, that they are comfortable using computers during classroom instruction, that they are comfortable giving computer assignments to students, and that they are able to find answers to students' computer and Internet questions.

Conversely, less than half of the teachers surveyed agreed with the statement "I have had adequate training in using computers." These results contradict the literature that showed confidant attitudes are positively correlated with teachers' extent of experience with technology (Christenson, 2002).

Conclusions related to Objective 5: Teachers' attitudes toward using the Internet in the classroom

The educators believed that the Internet enhances classroom instruction, the teacher's ability to effectively use the Internet is essential to students, the teacher would like students to be able to use the Internet more, the Internet makes the teacher's job easier, and the Internet should be incorporated into the classroom curriculum.

Teachers were mostly neutral with the beliefs that more training would increase the use of Internet in the classroom, learning how to incorporate the Internet in the classroom requires a lot of professional time, and teachers feel pressure from others to integrate the Internet into the classroom.

Generally, teachers disagreed or strongly disagreed with the beliefs that the teacher feels tense when people start talking about the Internet, the teacher avoids the Internet whenever possible, the Internet diminishes the role of the teacher, and using the Internet in the classroom is just another fad.

The literature suggested that teachers foresaw future benefits of using technology in the classroom and although technology has perks, integration can be put off until later (Alston, Miller, & Williams, 2003). The results in this study are congruent with that research.

Conclusions related to Objective 6: Internet use in the agricultural education classroom and laboratory

Although the utilization of computers and Internet in the agricultural classroom varied, teachers indicated a moderate use for assorted teaching methods utilizing the

Internet. These methods (in descending order) included as a research tool for students, as a communication tool, for independent learning, as a problem-solving, decision-making tool, for individual instruction, to promote student-centered learning, for small group instruction, to tutor, and as a reward. This is in line with the literature, which lists research using the Internet as a prominent use of technology integration (Rowand, 1999). Indeed, one article reported that teachers did not see computers as a part of the normal classroom process and often used them for supplementary activities like research (Kotrlik, Redmann, & Dogulas, 2003).

Conclusions related to Objective 7: Teachers' perceived support from school administration

Overall, teachers were mostly in agreement that administration actively encourages teachers to use computers in the classroom. They also agreed that the administration supports computer-related training for teachers. The respondents were more neutral with the ideas that administration actively encourages teachers to use the Internet in the classroom, that teachers receive a sufficient level of computer-related support from the school, and that teachers share ideas about how to use the Internet in the classroom.

The majority of teachers had an on-site computer support specialist at their school and teachers were mostly neutral in regard to the effectiveness of the on-site specialist. Teachers were neutral in their beliefs that (in descending order) the onsite computer specialist adequately assists in problem solving, the onsite computer specialist is dedicated to helping teachers, the onsite computer specialist is easily accessible, the

teacher must contact the specialist several times before getting assistance, the computer specialist shows teachers how to integrate computer technology into the classroom. These results support the literature that suggests schools can act as their own barrier in regard to technology and that there must be an active decision to incorporate technology into the existing structure of a traditional school (Hodas, 1993).

Conclusions related to Objective 8: Relationship between age and confidence using technology in the agricultural classroom

As age increased, the confidence levels for utilizing computers and the Internet in the agricultural classroom decreased by varying degrees. Four statements were moderately and negatively associated with age: having adequate training using computers, being comfortable using computers during classroom instruction, teachers' confidence in their ability to find answers to students' computer and Internet-related questions, and agricultural educators' initiative to develop expertise on how to use computers and Internet in the classroom. These results contradict the literature, which found that age had no significant impact on teachers' confidence using technology (Kotrlik, Redmann, & Douglas, 2003; Ertmer, Lewandowski, Osika, Selo, & Wignell, 2003).

Conclusions related to Objective 9: Relationship between teachers' education of computers and their confidence of effectively using Internet in the agricultural classroom

In this study, there appears to be no relationship between teachers' education and their confidence of effectively using Internet in the agricultural classroom. This

contradicts the literature that suggests lack of education impedes the adoption and utilization of the Internet. It supports the idea that it is not enough to simply provide an education. An agriscience teacher must believe that technology will improve their teaching ability and the students' learning ability (Kotrlik, Redmann, & Douglass, 2003).

Conclusions related to Objective 10: Association between educators' attitudes and the use of Internet in agricultural classroom instruction

In this study, there appears to be no relationship between educators' attitudes and the use of Internet in small group instruction in the agricultural classroom. This is contradictory to the literature, which postulates that perceived usefulness and enjoyment would significantly and directly impact teachers' intention to use technology in the classroom (Lee, Cheung, & Chen, 2003). One article states that changing teachers' attitudes is a key factor in fostering technology integration, but this is not congruent with the findings of this study (Christenson, 2002).

Implications of the Study

The attitudes and perceptions of Oklahoma agricultural educators are imperative in understanding how and why technology is being adopted. By identifying major factors for resistance, the state could focus on overcoming these obstacles. If there are teachers successfully incorporating the Internet into the curriculum, much can be learned from and modeled after them. The goal ultimately is to encourage and help agricultural teachers successfully integrate the Internet into daily lessons.

Because technology is rapidly progressing, annual evaluation of agricultural educators regarding Internet-based instruction may provide enlightenment to any pedagogical or attitudinal changes occurring in the agricultural classroom. An annual evaluation might also help assess any organizational changes that were made. The goal could be to describe how Oklahoma agricultural education teachers use educational Internet-based resources in classroom and laboratory instruction, and whether there is any progression from year to year. The results of the evaluation could be used only for informational purposes, or they could be used as selection criteria in order to retain only the most technologically advanced educators.

Recommendations

Many agricultural teachers are ill equipped to handle the constant demands of the technology-driven world (Pope, Hare, & Howard, 2002). Indeed, survey respondents indicated a lack of undergraduate training in technology. Universities should utilize technology in their classroom methods, therefore teaching by example. Universities also should require students to incorporate technology in student teaching and lesson plan development. “Potential adopters of a new idea are aided in evaluating an innovation if they are able to observe it in use under conditions similar to their own” (Rogers, 2003, p. 389).

For many of the older teachers, computers were not widely available, and the Internet had not been invented at the time they received their education. Thus, no instruction in how to use computers and the Internet was available when they were in college. Because many agricultural educators are not recent college graduates, continuing

education classes in technology should be required of all teachers. These classes could accelerate Rogers' innovation-decision process, in which an educator would be exposed to the Internet, receive ideas on how to implement the Internet, and asked to implement it in the classroom (Rogers, 2003).

Agricultural educators who are interested in technology and excited about incorporating it in the classroom should be identified. Their interest could be nurtured and developed with support from the school administration and Oklahoma Department of Career and Technology Education. These teachers could receive special training, access to lesson plans, and classroom monetary or technological incentives. These teachers should be aware of one another and keep an open dialogue about using technology in the agricultural classroom. As shown in this study, interaction with other faculty/staff played a significant role in technology education. By identifying and helping interested teachers, there is more opportunity for collaboration. This collaboration and special training could help improve opinions and attitudes regarding the Internet, a key element in diffusion according to Rogers (2003). These teachers might also act as opinion leaders, who could "serve as a model for the innovation behavior of their followers" (Rogers, 2003, p. 27). In this study, 82 respondents had access to a Smartboard®. Forty-five of these teachers used it daily and 27 used it at least once a week. This group of technologically advanced teachers could potentially serve as opinion leaders.

Because nearly every school had access to an on-site computer specialist, these technology experts should play a more integral role in facilitating technology use in the classroom. The on-site computer specialist should be asked to provide ideas for

technology integration and various available resources. However, it is the duty of the agricultural educator to put these resources into the right context for their classroom.

Also, school administrations may consider switching from encouraging technology use to requiring technology use. “Teachers, unlike farmers and consumers, work in organizations, and so organizational structures are inevitably involved in educational adoption decisions” (Rogers, 2003, p. 61). A technology requirement might force late adopters and laggards to utilize technology in ways outlined by their administration (Rogers, 2003). In order for this to occur, school administration must be in favor of using Internet in the curriculum. The benefits must outweigh the drawbacks. In an effort to make Internet more favorable to school administrations, the government might offer incentives to persuade technology adoption. The government could also require schools to use educational Internet in the curriculum. “Generally, the fastest rate of adoption of innovations stems from authority decisions” (Rogers, 2003, p. 29).

If a school is very interested in becoming technologically advanced, it could use the questionnaire as a hiring mechanism. Schools could survey potential agricultural educators to discover their attitudes and predisposition to technology in the agricultural classroom. Through the questionnaire, schools could select only those individuals who made an optional innovation-decision to utilize educational technology that matches the authority innovation-decision of a particular school to implement technology in the classroom (Rogers, 2003). Schools also could assess agricultural teachers before they begin work in the classroom and after a desired time period to see if their perceptions and attitudes changed. This would allow for the collection of longitudinal data of Oklahoma agricultural educators. This survey could also be replicated with other states so as to

compare Oklahoma's technology placement in the agricultural classroom with that of other states.

In addition to surveying agricultural teachers in a quantitative manner, agricultural teachers should participate in focus group studies. This would allow for a better understanding of day-to-day frustrations, barriers, attitudes and perceptions about technology in the agricultural classroom. The suggestions and ideas could be expanded on and used to identify themes and reasons for integrating or not integrating technology in the agricultural classroom.

Recommendations for Further Research

Although a broad range of literature was found regarding technology in the classroom, few studies focused specifically on the Internet as a teaching medium in the agricultural classroom. The need for this study arose from the relatively fast adoption of the Internet in agricultural classrooms and the relatively slow process in which curriculum and teaching methods traditionally evolve. The literature cited barriers that could potentially hinder the adoption of technology in the classroom, including background and education, comfort level, and access to technology and technology support. The aim of this study was to identify these barriers in Oklahoma's agricultural classroom in hopes of someday fostering a higher level of Internet integration in the agricultural curriculum.

This study found that computer and Internet availability was widespread in the agricultural classroom. More than 90 percent of respondents had computers in their classroom available for student use and almost every computer had Internet access. Less

than half of the teachers felt they had adequate training in using technology in the classroom, with most respondents saying that personal trial and error was the most prevalent form of technology education. Most respondents held agreeable attitudes toward using Internet in the classroom and curriculum. However, the teachers were primarily using it just for research and communication.

One aspect that should be investigated further is what technology education is being offered to each agricultural educator. This study only measured where teachers felt they received their training, not what training was available to them. By measuring both factor – what effective training was received and what training was offered, the effectiveness of various forms of education could be measured.

It would also be insightful to play a "what-if" scenario with the agricultural educators. To ask questions such as "What if Internet-based curriculum was already available for agricultural education, would you use it?" or "What if your school offered monetary incentives for using Internet-based curriculum, would this motivate you?" This would allow for a greater understanding of which resources agricultural educators could see themselves using.

Another recommendation for further research is to follow up the quantitative questionnaire with a focus group setting to determine underlying perceptions and attitudes that might have been overlooked with the questionnaire. Also, it is recommended to repeat the questionnaire on a yearly basis to see if attitudes or perceived use change over time. Moreover, if any changes were made to administrations' technology requirements, undergraduate methods, etc., further research would identify the effects these changes had on technology in the agricultural curriculum.

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APPENDIX A

IRB APPROVAL

Oklahoma State University Institutional Review Board

Date:	Wednesday, May 28, 2008
IRB Application No	AG0828
Proposal Title:	Understanding Oklahoma Agricultural Education Teachers' Use of Educational Internet Materials in the Classroom
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved **Protocol Expires: 5/27/2009**

Principal Investigator(s):

Laura Kathleen Martin
3431 County St. 2780
Cement, OK 73017

William G. Weeks
448 Ag Hall
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☑ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

APPENDIX B

EDUCATOR COVER LETTER AND CONSENT FORM

Department of Agricultural Education, Communications and Leadership

448 Agricultural Hall
Stillwater, Oklahoma 74078-6031
405-744-8036
Fax: 405-744-5176
http://aged.okstate.edu

June 3, 2008

Agricultural Education Instructor:

My name is Laura Martin and I am a Master of Science candidate in Agricultural Education. My real job is working for the Cooperative Extension Service's Agweather program, which provides free, real-time weather information to Oklahomans involved in agriculture. Because my job involves technology, I am interested to know how Oklahoma Agricultural Education Teachers use computers and the Internet in their classrooms. My advisor is Bill Weeks.

You will be asked to complete a questionnaire regarding computers and the Internet in your classroom. The questionnaire includes sections addressing demographics, teacher preparation, levels of confidence, support, attitudes, and uses of the Internet in teaching. The questionnaire should take no more than 10 minutes to complete. There are no known risks associated with this project that are greater than those ordinarily encountered in daily life.

Your responses will be kept strictly confidential and individual responses will not be identified or reported. The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you or your school. Research records will be stored securely and only the researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

I am sorry, but I cannot offer you any compensation for participating in this research study.

If you have questions about the research, contact Laura Martin at 405-320-0809, laura@mesonet.org, or contact Dr. Weeks at 405-744-5129, bill.weeks@okstate.edu. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676, or irb@okstate.edu.

Your participation is voluntary. If you do not wish to participate simply return the blank questionnaire. You can discontinue the research activity at any time without reprisal or penalty. I have read and fully understand this consent form and I sign it voluntarily. A copy of this form has been given to me.

_____ _____

Signature of Participant Date

I certify that I have personally explained this document before requesting that the participant sign it.

_____ _____

Signature of Investigator Date

Okla. State Univ.
IRB
Approved 5/28/08
Expires 5/27/09
IRB # AS0828

APPENDIX C

INSTRUMENT

COMPUTERS & INTERNET USE IN THE AGRICULTURAL EDUCATION CLASSROOM

TEACHER DEMOGRAPHICS

What is the enrollment at your school? K - 12 _____ **or** 9 - 12 _____

Total # of years teaching Agricultural Education: _____

Gender: Male_____ Female _____

Age: _____

CLASSROOM

Do you have computers in your classroom available for student use? Yes _____ No _____

If "YES", how many? _____

How many are connected to the Internet? _____

Do you have a portable or permanently mounted video projector in your classroom?

Is the projector connected to a computer? Yes _____ No _____

If "YES", does that computer have an Internet connection? Yes_____ No _____

If "YES", on average, how often do you use the computer, projector and Internet connection together for instruction?

_____ Every day _____ Once a week

_____ Once or twice a semester _____ Have never used it for instruction

Do you have a Smartboard® in your classroom? Yes_____ No _____

If "YES", on average, how often do you use the Smartboard® for instruction?

_____ Every day _____ Once a week

_____ Once or twice a semester _____ Have never used it for instruction

Do you have access to a school computer lab? Yes_____ No _____

If "YES", on average, how often do you take an entire class to use the lab?

_____ Every day _____ Once a week

_____ Once or twice a semester _____ Have never used lab for instruction

TEACHER PREPARATION FOR COMPUTER USE

Circle the <u>one</u> response that best reflects the extent to which you've acquired computer skills from the following sources.	Not at all	Small extent	Moderate Extent	Great Extent	Entirely
As a part of your undergraduate coursework	1	2	3	4	5
In-services courses / workshops	1	2	3	4	5
Independent learning (e.g. online tutorials or books)	1	2	3	4	5
Interaction with other faculty / staff	1	2	3	4	5
Distance Learning courses	1	2	3	4	5
From students in the Agricultural Education program	1	2	3	4	5
Personal trial and error	1	2	3	4	5

CONFIDENCE AND COMFORT

Circle the <u>one</u> response that best reflects your level of agreement.	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I have had adequate training in using computers.	1	2	3	4	5
I use computers effectively in my classroom.	1	2	3	4	5
I use the Internet effectively in my classroom.	1	2	3	4	5
I am comfortable using computers during my classroom instruction.	1	2	3	4	5
I am comfortable giving computer assignments to my students.	1	2	3	4	5
The computer enhances my teaching.	1	2	3	4	5
Incorporating the Internet into lessons enhances my teaching.	1	2	3	4	5
My use of the computer and the Internet enhances my students' performance.	1	2	3	4	5
I am comfortable navigating the Internet.	1	2	3	4	5
I am confident that I can find answers to my students' computer and Internet-related questions.	1	2	3	4	5
I am developing my expertise on how to use computers and the Internet in the classroom.	1	2	3	4	5

ATTITUDES TOWARD INTERNET USE

Circle the <u>one</u> response that best reflects your level of agreement.	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I would like my students to be able to use the Internet more.	1	2	3	4	5
The ability to effectively use the Internet is essential to my students.	1	2	3	4	5
I feel tense when people start talking about the Internet.	1	2	3	4	5
I feel pressure from others to integrate the Internet into my classroom.	1	2	3	4	5
I avoid the Internet whenever possible.	1	2	3	4	5
Using the Internet in the classroom is just another fad.	1	2	3	4	5
The Internet diminishes my role as a teacher.	1	2	3	4	5
More training would increase my use of the Internet in the classroom.	1	2	3	4	5
The Internet should be incorporated into the classroom curriculum.	1	2	3	4	5
The Internet enhances classroom instruction.	1	2	3	4	5
The Internet makes my job easier.	1	2	3	4	5
Learning how to incorporate the Internet in the classroom requires a lot of my professional time.	1	2	3	4	5

USING THE INTERNET IN THE CLASSROOM

Listed below are teaching modes in which the Internet may be used. Indicate how often you use the Internet in each teaching mode. If you feel an item does not apply, then circle "NA.	Not at all	To a small extent	To a moderate extent	To a great extent	Entirely	Not applicable
Small group instruction	1	2	3	4	5	NA
Individual instruction	1	2	3	4	5	NA
As a reward	1	2	3	4	5	NA
Independent learning	1	2	3	4	5	NA
To tutor	1	2	3	4	5	NA
To promote student-centered learning	1	2	3	4	5	NA
As a research tool for students	1	2	3	4	5	NA
As a problem-solving, decision-making tool	1	2	3	4	5	NA
As a communication tool (e.g. e-mail, electronic discussion)	1	2	3	4	5	NA

COMPUTER SUPPORT

Circle the one response that best reflects your level of agreement.	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I receive a sufficient level of computer-related support at my school.	1	2	3	4	5
The administration supports computer-related training for teachers.	1	2	3	4	5
The administration actively encourages teachers to use computers in the classroom.	1	2	3	4	5
The administration actively encourages teachers to use the Internet in the classroom.	1	2	3	4	5
At my school, teachers share ideas about how to use the Internet in the classroom.	1	2	3	4	5
Does your school have an on-site computer support specialist? Yes _____ No _____ Don't Know _____ If "YES", how many computer support specialists does your school have? _____ *If "NO", or DON'T KNOW, then skip the rest of this section.*					
The onsite computer specialist adequately assists me in problem solving.	1	2	3	4	5
The onsite computer specialist is dedicated to helping teachers.	1	2	3	4	5
I have adequate access to our onsite computer specialist.	1	2	3	4	5
I have to contact our specialist several times before I get assistance.	1	2	3	4	5
Our computer specialist shows me techniques to integrate computer technology into the classroom	1	2	3	4	5

ADDITIONAL COMMENTS

VITA

Laura Kathleen Martin

Candidate for the Degree of

Master of Science

Thesis: UNDERSTANDING OKLAHOMA AGRICULTURAL TEACHERS' USE OF AND ATTITUDES TOWARD USING THE INTERNET IN THE CLASSROOM

Major Field: Agricultural Education

Biographical:

Personal Data: Born May 7, 1982, the daughter of Gary and Kathy McKay of Wichita, Kansas. Married Matt Aldrich Martin on April 28, 2007. Gave birth to daughter Grace Elizabeth Martin on September 8, 2008.

Education: Graduated from Maize High School, Maize, Kansas in May 2000, received Bachelors of Science in Agricultural Communications and Animal Science from Oklahoma State University, Stillwater, Oklahoma in December 2004. Completed the requirements for a Master of Science in Agricultural Education at Oklahoma State University, Stillwater, Oklahoma in May 2009.

Experience: Agricultural Extension Associate with the Oklahoma Mesonet and Oklahoma State University in Norman, Oklahoma from February 2006 to the present.

Professional Memberships: Phi Kappa Phi Honor Society, Gamma Sigma Delta Agricultural Honor Society, Golden Key International Honor Society

Name: Laura Kathleen Martin Date of Degree: May 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: UNDERSTANDING OKLAHOMA AGRICULTURAL TEACHERS' USE OF AND ATTITUDES TOWARD USING THE INTERNET IN THE CLASSROOM

Pages in Study: 80 Candidate for the Degree of Master of Science

Major Field: Agricultural Education

Scope and Method of Study:

The purpose of this study was to describe how Oklahoma agricultural education teachers used educational Internet-based resources in classroom and laboratory instruction. Research objectives included describing how agricultural educators used the Internet in their classrooms as well as describing teachers' attitudes toward using the Internet. The population included teachers from four out of the five Oklahoma agricultural education districts (N=367). This study was conducted using quantitative research methods and utilized the established instrument Perceptions of Computers & Technology (Hogarty, Lang, & Kromrey, 2003).

Findings and Conclusions:

In general, Oklahoma agricultural educators held agreeable attitudes toward utilizing technology in the classroom. Computers with Internet access were available to almost every teacher and student. However, teachers indicated they were only using the technology at a moderate level, and mostly for secondary activities like research and communication. Less than half the teachers felt they had adequate training in computers and they mostly had to train themselves through personal trial and error. Oklahoma agricultural educators felt their school district encouraged the use of computers.

ADVISER'S APPROVAL: Dr. William Weeks