Information Technology Use and Effectiveness in the Texas-Mexico Initiative

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Abstract

Information technology use and effectiveness, although prevalent in developed countries, does not provide the same reliable resource in lesser developed or developing countries. The purpose of this study was to determine information technology uses and effectiveness in disseminating research results from the Texas-Mexico Initiative through the Center for Grazinglands and Ranch Management. Two of the three northeast Mexico campuses in this study possessed and used sophisticated information technologies to communicate with researchers outside state and country boundaries. The main method for this exchange has been through the Internet and computer-mediated technologies such as email and video-conferencing.

Texas and Mexico have experienced an increasing inter-dependence due to increased communication and knowledge exchanges. While universities have access to this information, rural communities do not. Rural farmers and producers must rely on agricultural schools to provide them with the information necessary to increase their income and land sustainability. To achieve real economic improvement for the agricultural sector, universities must continue to increase their effectiveness in disseminating information to local producers and farmers. Distance education could provide an economically sound method for reaching a larger percentage of rural communities, if properly employed.
Introduction

Over the past decade, agricultural development projects worldwide have been enhanced by the use and effectiveness of sharing information electronically. Research, education, and extension services in many countries now post the latest scientific information, teaching methods, and development program results on Internet sites, which are easily found from keyword searches. New technologies make possible innovative means to manage both domestic and international projects and encourage an exchange in knowledge between participating groups (Christiansen & Murphrey, 2002).

Recent research shows that major information technology mediums used to close knowledge gaps are audio/video cassette, satellite-based education, audio-conferencing, interactive video, and computer-mediated communications (Layfield, Nti, & Radhakrishna, 1997). However, the use and effectiveness of information technologies and Internet access may prevent certain groups from fully participating in international and/or cross-cultural distance education programs for many future decades.

Despite years of mass infusion of advanced technologies from developed countries, developing countries continue to experience socioeconomic problems that prevent daily use of information technologies (Akubue, 2000). Texas A&M University has participated in several collaborative projects aimed at disseminating agricultural research information to national and international agricultural centers. The purpose of these collaborative projects is to promote sustainable agricultural development and environmentally sound management of natural resources; the Texas-Mexico Initiative through the Center for Grazinglands and Ranch Management is an example one of these projects (M. Piña, Jr., personal communication, May 28, 2003). Five recommendations were created for successful collaboration in distance education: technology that works, specific topic focus, support staff and institutional support (Piña, 2002).

Technological advancements are enabling organizations to reach beyond the borders of their state and country to exchange innovations and share knowledge with diverse groups across the globe. A specific importance exists within Texas to foster partnerships with Mexico, due to the geographic proximity (Dooley & Murphrey, 1998).

Purpose and Objectives

The purpose of this study was to determine information technology uses and effectiveness in disseminating research results from the Texas-Mexico Initiative through the Center for Grazinglands and Ranch Management. Specific objectives of the study were to:

1. Identify information technology uses in northeast Mexico.
2. Identify effectiveness levels for disseminating agricultural research results.
3. Identify ways to improve the exchange of information using the existing technology within the Texas-Mexico Initiative.

Methods

In the summer of 2003, Texas A&M University conducted a two-week field study on the Texas-Mexico Initiative. The two-week long study was conducted at three principle Mexican universities in northeast Mexico that participate in the Texas-Mexico Initiative;
Universidad Autonoma de Tamaulipas (UAT), Universidad Autonoma Agraria Antonio Narro (UAAAN), and Universidad Autonoma De Nuevo Leon (UANL).

This study utilized a qualitative research method where data were collected via personal interviews and through field observations in the summer of 2003. The sample consisted of students, professors, and agricultural producers associated with the Texas Mexico Consortium. A tape recorder was used during the interviews. The same set of questions was asked during each individual interview.

Qualitative data obtained from interviews were analyzed using inductive data analysis, including two essential sub-processes: coding and categorizing. Coding allowed identification of information units or single pieces of information that stand by themselves that are interpretable in the absence of additional information. Categorizing is a process whereby previously coded data are organized into provisional categories on the basis of “look alike” characteristics (Lincoln & Guba, 1985).

Trustworthiness (similar as validity and reliability in quantitative research) of this study was established by using “thick description techniques” (Lincoln & Guba, 1985). “Thick description” involved providing enough direct citations from the interviews so that readers could see where the conclusions were drawn. Interviews were conducted in Spanish, and the researcher obtained translated scripts of the interviews for the study.

Findings

Universidad Autonoma de Tamaulipas (UAT)

The University of Tamaulipas is an average size campus of about 4000 students situated on a hilltop overlooking Ciudad Victoria, Mexico. Like most public universities in northeast Mexico, UAT relies heavily on governmental funds to offer affordable upper level education. The students pay $100-200 U.S. in tuition per semester and can select from a full range of studies. The campus offered Internet access through the computer lab free to the faculty members and students. Although students were familiarized with computers and had a competent understanding of them, computers were used more for personal uses such as email and Web-surfing at the undergraduate level. “I use email to keep in touch with my friends and to sometimes email my professor with questions” (UAT student).

Masters and doctoral students used Internet access to download information for projects and research papers. Server connection has been one of the complaints from students and faculty. Some faculty members estimated that their server malfunctions almost 50% of the time. Another obstacle in doing research is that only the abstracts are available for research, due to the institutions’ lack of “funds to pay for online journal subscriptions” (UAT professor).

Communication between UAT and universities like Texas A&M has changed dramatically over the past decade. Collaborative efforts in the past have been slow with occasional miscommunications. New forms of informational technology are helping speed the communication process. Teleconferencing, video conferencing, and the Internet are being used to cross geography and cultural barriers between Texas and northeast Mexico. These technologies have lead UAT to begin focusing on distance learning. It is hope that soon distance learning will allow more students to participate in cross-cultural exchanges with U.S. universities. Although the students and faculty have access to these technologies, the
average producer in the country has only the telephone. There is heavy reliance on personal contacts and relationships to disseminate new techniques and technology to agricultural producers.

Universidad Autonoma Agraria Antonio Narro (UAAAN)

Between the Sierra Madre Mountains on the outskirts of Saltillo lies the Coahuila State University, UAAAN. The high altitude and arid climate make it a suitable center for agricultural study. Computer-mediated technology was much more limited here as compared to UAT in Cuidad Victoria. Communication among other universities in Mexico and Texas was accomplished by telephone and email between faculty members. High speed Internet access was not available to most students.

Disseminating research results to the rural community has not changed much over the past few decades. Direct personal contact is the most common method. For farmers and ranchers, there has been very limited communication and technology diffusion within rural areas. Today, farmers and ranchers remain hesitant to try new technologies that would improve or increase production. Researchers and faculty members have to convince these farmers to try technologies, and this has been done through personal relationships with the farms and university. Since the abolishment of agriculture extension services it has been the burden of universities like UAAAN to provide agriculture development and disseminate useful information to rural communities.

Rural development requires a physical presence by researchers and change agents to disseminate information. On one development project, the UAAAN organized a group of 20 women into a flower producer cooperative. Providing these women with planting and proper management techniques made the cooperative profitable. In a culture where traditionally women do not work, the flower cooperative provides an example for others on ways to improve income and lifestyle. According to one university professor, the flower cooperative could not exist “without the hard work of the women and the technical assistance of UAAAN.”

Universidad Autonoma de Nuevo Leon (UANL)

The bustling modern city of Monterrey is the home of Universidad Autonoma of Nuevo Leon. The city has over four million inhabitants. The university’s main campus is a model of any modern university, with nearly every classroom having a high speed Internet connection. There are several computer labs, and some computer classrooms. Unlike Ciudad Victoria’s UAT, the students must pay for access to the Internet. The agriculture campus is located about 45 minutes from downtown Monterrey.

The agriculture campus as of summer of 2003 was currently under a one million dollar construction project funded by the government to upgrade their facilities. The campus depends heavily on technology because of their distance to the main campus in Monterrey. The agriculture school uses telephone, fax, and dial-up Internet to communicate with others. Currently, students must pay pesos for computer access, but access will become free after the construction project is completed. The college is also in the process of acquiring campus wide wireless Internet connectivity.

The UANL uses Blackboard software for providing online distance education to
potential students worldwide. A Washington D.C.-based company, Blackboard has become the leader in providing software for e-education. Unlike some schools in Texas, UANL teachers get extra-compensation for putting their courses online.

**Conclusion and Recommendations**

In recent years, Mexico has seen advances in information technology capabilities within higher education. Two of the three campuses in this study possessed and used sophisticated information technology to communicate with researchers outside state and country boundaries. The main method for this exchange has been through the Internet and computer-mediated technologies such as email and video-conferencing.

Texas and Mexico have experienced an increasing inter-dependence due to increased communication and knowledge exchanges. While the universities have access to this information, rural communities do not. Rural farmers and producers must rely on agricultural schools to provide them with the information necessary to increase their income and land sustainability.

To achieve real economic improvement for the agricultural sector, universities must continue to increase their effectiveness in disseminating information to local producers and farmers. Distance education could provide an economically sound method for reaching a larger percentage of rural communities, if properly employed. Texas has an historic opportunity to take part in this effort to advance cross-cultural distance learning technologies.

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**References**


