

Distance Education in the Agricultural Communications Realm: A Synthesis of Research

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Abstract

Distance education over the past decade has made great strides to reach place bound students via new communications technologies such as the Web and teleconferencing. The purpose of this study was to synthesize the research related to distance education done in the last 10 years by agricultural communications researchers. The *Journal of Applied Communications*, *Proceedings from the Southern Association of Agricultural Scientists Agricultural Communications Section*, and *Proceedings from the Association of Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE)* research session were utilized to provide a synthesis of current research in this area. Upon review, relevant research was synthesized into six major areas: faculty training, students, instructional design and technology, course implementation, department head and university perceptions, and evaluation. Findings from these studies indicate that technology skills training is needed for both faculty and students, while instructional designers, who were trained as communicators, are looking for training in asynchronous learning and instructional design practices. In addition, studies show that department heads are supportive of faculty developing and teaching distance courses and of opportunities for educators to collaborate with business to reach adult learners.

Keywords: Distance education, research synthesis, distance learning

Introduction

Over the past decade colleges and universities across the United States have made great strides to reach students via new and innovative delivery methods without requiring students to be on campus. According to the National Center for Education Statistics (NCES, 2004) during the 2000-2001 academic year, 56 % of all two-year and four-year institutions offered some form of distance education in order to reach a variety of students. An estimated 2,876,000 students were enrolled in 127,400 different college-level distance education courses during 2000-2001 (NCES, 2004).

Many of these students are enrolled in colleges of agriculture, and are currently being taught by faculty who employ Web-based tools and other communication technologies in ways never before thought possible. These new advancements allow for richer course material and access to experts than may be inaccessible otherwise. Bowen and Thompson (1995) concluded that agricultural communicators and colleges of agricultural sciences should examine these opportunities that technology is creating in the educational realm. In order to fully observe these opportunities, however, researchers must take inventory of the scholarly work that has been done thus far.

In 2002 Williams and Woods examined research previously published in the *Journal of Applied Communications* and called upon agricultural communicators to conduct further research in the specific areas of the special interest groups (SIGs) that are sponsored by the Association of Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE), in order to answer the challenges confronting the agricultural industry. In their study, Williams and Woods (2002) found that from 1992-2001, distance education was the sixth most researched area in the

Journal of Applied Communications. In order to advance research in this area by agricultural communicators, it is important to note what research has been done and where opportunities for further research may lie.

Distance education is comprised of many communication technologies with which agricultural communicators are familiar (Telg, 1995). The purpose of this study, therefore, was to draw a conceptual map of where agricultural communicators are in terms of distance education research, and to delineate where the future may lead us. Research syntheses are an effective research method to review and critically examine the current knowledge base in the field in an attempt to bring focus on future research opportunities (Williams & Woods, 2002).

Objectives

The main objective for this analysis was to synthesize the research related to distance education done in the last 10 years by agricultural communications researchers. A second objective of this study was to identify those areas of opportunities that might suggest directions for future research by agricultural communicators in distance education.

Procedures

Three sources were utilized to gather data for this study: 1) *Journal of Applied Communications*; 2) *Proceedings from the Southern Association of Agricultural Scientists Agricultural Communications Section*; and 3) *Proceedings from the Association of Communication Excellence in Agriculture, Natural Resources, and Life*

and Human Sciences research session. These sources were chosen since they specifically place emphasis on communications research. The *Journal of Applied Communications* has been perceived as the premier peer-reviewed journal in the field for many years. (Williams & Woods, 2002). All three sources are utilized not only by researchers, but also by agricultural communications professionals, such as those involved in distance education, who use research findings to help them in their everyday work. Studies presented in these refereed publications were located through the Southern Association of Agricultural Sciences (SAAS) Website, as well as the Agricultural Documentation Center. For the purpose of this study, only articles published from 1995-2003 that pertained to distance education or distance learning were selected. A beginning year of 1995 was chosen since this was the first year distance education was discussed in the *Journal of Applied Communications*.

Upon closer examination of the articles, six main themes emerged from the research that was reviewed: faculty training, students' comfort level with technology and perceptions thereof, instructional design and technology, course implementation, department head and university perceptions, and evaluation. Articles were then grouped by these themes to analyze the complete range of research being done by agricultural communicators represented in these publications.

Findings

A total of 24 articles were published that dealt with distance education. Of those, 11 articles appeared in the *Journal of Applied Communications*, eight appeared in the Proceedings of the Agricultural Communications Section of the Southern Association of

Agriculture Scientists, and five appeared in the proceedings of the ACE research SIG's annual research paper presentation sessions. Of the 24 articles synthesized, four dealt with faculty, eight dealt with students, five dealt with instructional design and technology, four dealt with course implementation, two dealt with department head and university perceptions, and one looked at evaluation (see Table 1).

Table 1
Group Topics Published in the Journal of Applied Communication (JAC), SAAS Research Proceedings, and ACE Research Proceedings 1995-2004

Group Topic	JAC	SASS	ACE	Total
Faculty	2	1	1	4
Students	4	2	2	8
Instructional Design/Technology	2	3	-	5
Course Implementation	1	1	2	4
Department Head/University Leadership Perceptions	1	1	-	2
Evaluation	1	-	-	1
Totals	11	8	5	24

Faculty Training

Several articles showed that instructors involved in distance education indicate a need for training (Irani & Telg, 2001a). Irani and Telg (2001b) found that most universities' education coordinators or training centers did not offer training for faculty across campus, but most individual colleges conducted training programs of their own. Miller and Carr (1997) found that agricultural faculty members have shown interest in training on teaching techniques, models of effective teaching, and designing instruction for their distance education courses over development and technical components. Irani and Telg (2001a) added that training content should cover instructional design and technology.

Studies report that training should exist in a formal format and be self-paced in order to better accommodate faculty needs (Irani & Telg, 2001a). These training

materials should be in a constant state of evolution due to the ever-changing world of technology (Irani & Telg, 2002c). Irani and Telg (2002c) called for a collaborative, cross-institutional effort to achieve quality and innovative training for distance education.

Irani and Telg (2001b) proposed a “distance education faculty training development model” that stressed institutional support as a foundation followed by two pillars of content and training surrounding program effectiveness. The top level of their model represented faculty motivation, which they described as dependent on the level and quality of the other four factors.

Students

While students appreciate the emergence of distance education, research shows that skill development training sessions would help them to better perform in the virtual classroom. Irani and Telg (2002a, 2002b) found that students in a college of agriculture are comfortable with various technologies in the classroom, but prefer the interactive nature of videoconferencing to other methods. Students who enroll in one or more courses via distance delivery methods indicated feeling less comfortable with the technologies than those who were enrolled for the first time, indicating that first time students may have been unaware of all that is involved in distance education course delivery (Irani & Telg, 2002a, 2002b).

Kelsey (2000) advised that skill training should be provided for all students involved in distance education at the beginning of distance-delivered courses. When students were aware of the technology, anxiety was reduced (Kelsey, 2000). In contrast, for students with communication apprehension, findings showed that no amount of training would increase their level of interaction in the course setting (Kelsey, 2000).

Whereas most students are not interested in taking a self-assessment of their skills before taking a course through distance education, they did indicate they would engage in technology training if such an assessment indicated a need (Irani & Telg, 2002a, 2002b).

Irani, Harrington, Telg, and Scherler (2000) suggested that a personality inventory assessment, like the Myers-Briggs Type Indicator, teamed with a test of perceptual/attitudinal indices might help to indicate the likelihood of success in a distance learning environment. Irani et. al stated that personality, as well as perception and prior experiences, could be diagnostic in terms of a student who will have a successful experience in a distance learning environment.

Niti and Bowen (1998) concluded that, for a course to be effectively taught via distance, it is important to understand the needs of learners. They found that a majority of agricultural science graduates were interested in taking courses via distance learning, but that many were not familiar with the technology. Due to this finding, Niti and Bowen noted that it is imperative that faculty and support personnel to prepare students for the distance education experience *a priori*.

Linder and Murphy (2001) found, in a study of student perceptions of WebCT, that the software used contributed to student's abilities to accomplish course objectives. However, many students did not take advantage of the student-centered on-line learning environments, making it necessary for instructors to encourage students to interact on-line through learning activities. Linder and Murphy also discovered that, while students enjoyed their WebCT experiences, they continued to rely on print-based course materials. Murphy and Linder (2001) reported similar findings and added that the WebCT function for tracking grades and progress was used by students more than any other function.

Knecht (1996) described three characteristics of a successful Web-based program for adult learners, citing the importance of programs designed to meet the learners' needs, programs engaging the learner with experiential opportunities, and programs offering rapid feedback to adult learners.

Instructional Design/Technology

The technology and instructional design components for most distance education courses are the forefront for instructors and staffers serving as technology experts.

Murphy, Dooley, Wickersham, and Parlin (1999) chronicled the perspectives of producers, instructors, and students engaged in a streaming media lesson. They concluded that for this type of delivery it was imperative to decide on an appropriate content matter, and that planning the script and visuals added to success. Students involved in the study reported enjoying the flexibility of the streaming media lesson, but missed the interaction typically present in on-campus courses.

Bielema (1997) stated that it is advisable to look for instructional design strategies to work with non-traditional distance learners in agriculture sciences. The researcher noted that computer-mediated communication can increase interaction on several levels, and helps students to practice electronic skills. Bielema found the need of the moderator essential in helping electronic discussions, and reported that a variety of learning preferences could be accommodated through using multiple media formats in distance education courses.

In order to help instructors improve the efficiency and effectiveness of technology in their distance education course, Owen (2000) proposed a matrix to help in making the decision of what technology is right for each situation. The matrix calls for educators to

examine the content of the course and the characteristics of the learners as they develop learning activities, educators must then use the criteria of teaching methods, interactivity, richness, and learning accessibility to find the technology that is appropriate for the course in question.

Instructional designers and technology specialists play an important role in design and implementation of distance delivered courses. Many communicators involved in these aspects bring prior knowledge into their jobs (Telg, 1995). Telg examined television production specialists and how they utilized prior production experiences while working on distance education courses. The researcher concluded that these specialists use previous experiences of communication models and audience analysis to base their instructional design techniques. Findings showed that respondents had no instructional design training, which encouraged a need for theoretical knowledge to help accompany the practical knowledge already possessed by these experts. Raulerson, Telg, Moore, and Dooley (2003) answered this need with the introduction of their program, “Roadmap to Effective Instructional Design,” to certify instructional designers and educational technologists who possess the technology experience, but may not understand the learning theories behind distance education. A needs assessment completed before implementation of the project to train distance education trainers showed that these professionals were interested in such a training program and felt they needed content in designing for asynchronous learning, engaging and designing content for adult learners, and best practices in distance education. The researchers reported that the project described will allow instructional designers to more effectively assist faculty who can then teach courses in a more prepared manner.

Course Implementation

Several researchers have shared their experiences with distance education, and offered conclusions from what they learned. Nehiley (1998a, 1998b) examined the use of distance learning with an agricultural writing course compared to an on-campus course taught by the same instructor. Nehiley found that on-campus students turned in work that was more complete and showed a better understanding of the material, while those students off-campus submitted papers that were not as organized or complete. Nehiley also noted difficulty for the instructor to control the timeliness of turning in assignments by distance students, as well as difficulty for the instructor in providing comments on papers submitted and returned electronically.

Lundy, Irani, Turner, Percival, and McPherson (2003) gave insight into how an agricultural science program partnered with business to provide distance learning for employees. Researchers found the need for future evaluation of the program to measure students' feelings after the program, but found that the program showed great promise for partnerships between business and education through distance education. Lundy, et al. also noted a need for teaching assistants who help instructors with distance courses to receive further technical training in order to better help students.

Riddick and Richardson (1997) analyzed the use of low-tech distance education methods to teach farmers organic farming practices. By combining printed materials with explanatory audio cassettes, Riddick and Richardson concluded learners were able to gain valuable information at their own pace and expressed appreciation to be able to review information as needed.

Department Head and University Perceptions

Research shows that heads of departments in colleges of agriculture are supportive of distance education. Bowen and Thompson (1995) assessed the perceptions of department heads in U.S. colleges of agricultural sciences regarding the delivery instruction using technologies. They found that many department heads were positive in their support for faculty involved in distance education, but saw a need for in-service education for faculty to enhance their abilities to effectively teach courses via distance.

Hayes (1997) reported that leadership of state higher education coordinating boards are aware of and interested in furthering the use of technology in the delivery of higher education. In most cases, Hayes described, the institutions have already made investments in telecommunication technology, in order to further improve systems.

Evaluation

Laughlin (1998) suggested that self-efficacy in perceived attainment of course objectives would be a useful model for those trying to assess student outcomes in distance education programs. Laughlin suggested that faculty must work together to agree on the specificity of objectives. Laughlin also suggested that this specificity would enhance the learner objectives and allow for more summative evaluations.

Conclusions

For distance education to be fully and effectively utilized, past research must be thoroughly reviewed and built upon. With this goal in mind, the following findings are noted and conclusions drawn. Research completed by agricultural communicators analyzing distance education has addressed many of the key components of distance education, including research related to faculty, students, and instructional design.

Findings show that students, faculty, and other communicators serving as instructional designers are all in need of more advanced training in their distance learning roles. Instructors have voiced a need for this training to be in a self-paced formal format. Department heads and university leadership continue to encourage and support faculty in their effort to deliver learning in this new technology rich format, and are aware of the need for training of these faculty members to be successful.

Students feel comfortable with technology. However, they would benefit by participating in skills training before a course begins. The research base shows that students enjoy taking courses via distance and are interested in interaction within their courses, but want the ability to have access to print material as well.

It has been suggested that self-efficacy in perceived attainment of course objectives would be a useful model for faculty when trying to assess student outcomes in courses delivered via distance.

Instructional design strategies must be at the forefront when courses are conceived. Many features and components can be added, such as digital video, chat rooms, and interactive tutorials. However, they need to be tailored to the students. Instructional designers and educational technologists designing these courses must continue to use their knowledge gained from their communication backgrounds, but are in need of training in educational theories and how to train faculty on these new educational tools.

Collaboration should exist among educational institutions and between institutions and business leaders in need of distance education programs for their staff. With the support of faculty and department heads, the opportunity for this educational

avenue to be pursued is broadening. Agricultural communicators and researchers can assist through their expert knowledge of technology, foundation in communication theory, and research capabilities.

Recommendations

This synthesis has identified several research deficiencies related to distance education in the agricultural communications research base. Future research should seek to answer the following questions in order to assist educators in preparing and implementing distance education courses in colleges of agriculture:

1. Do training programs adequately prepare faculty for course structure and technology-related problems?
2. What are the current collaborative faculty training programs among colleges of agriculture that are being used to answer the need for training?
3. Is the model set forth by Owen (2000) useful in assisting faculty and instructional designers involved in distance education to effectively choose the right type of technology for the specific teaching situation?
4. What are the actual components in a course that help students to learn?
5. Do components of visual communication have any measurable effect on distance learning in the electronic environment?
6. Does student training facilitate a more interactive and complete usage of courses developed in programs like WebCT?
7. What are the leading evaluation models of distance education that have been successfully employed in courses in colleges of agriculture?

While this list does not offer all possible research questions, it is believed that these are starting points to further develop the research base in distance education by agricultural communicators. As distance education continues to evolve, evaluation of

student, faculty, and instructional designers' needs should continue to be assessed. New educational tools will also require evaluation to determine how they assist in the educational process.

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