EDUCATIONAL INTERESTS OF SECONDARY AGRICULTURAL EDUCATION TEACHERS IN GEORGIA: IMPLICATIONS FOR THE DELIVERY OF EDUCATIONAL PROGRAMMING AT A DISTANCE

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Abstract

This study described the interests of agricultural education teachers in receiving educational programming at a distance, and identified selected factors related to their interests with implications for program delivery. The survey population included all secondary agricultural education teachers in Georgia. Data collection involved a mixed mail/Internet approach. Responses were received from 148 teachers (43.5% response rate). Subjects responded to 13 items, including rating selected items: "3" = "Very Interested," "2" = "Somewhat Interested," and "1" = "Marginally Interested." Nearly two-thirds of the teachers expressed an interest in pursuing additional education at a distance. Level of interest for receiving programming leading to a graduate degree exceeded the midway point between "somewhat" and "very interested." A moderate, positive relationship existed for teachers between one's interest in pursuing a graduate degree or a certificate program at a distance and one's readiness to enroll. A college-wide, "coherent" distance education program should be developed to address the expressed interests of this audience.

Introduction and Conceptual Framework

Based on findings from a national Delphi panel, Murphy and Terry (1998) concluded, "Electronic communication, information, and imaging technologies will improve how we teach in agricultural education settings . . . allow[ing] us to reach more students, more effectively, with better information" (p. 34). Nearly one-half (44%) of the two-year and four-year degree-granting institutions in the United States offered distance education courses during the 1997-1998 academic year (U.S. Department of Education, 2001), a trend that continues to increase.

According to the National Association of State Universities and Land-Grant Colleges (NASULGC) (1999), two-thirds of its responding members reported varying degrees of involvement with 'virtual university' initiatives "or [with] an IT- [Information Technology] supported distance–learning project" (p. 15) of some type for the 1998-99 fiscal year. In addition, these institutions allocated "approximately 5 percent [on average]" (p. 9) of their operating budgets toward IT costs during that same year.

Although distance education is coming of age and is becoming commonplace (Roberts & Dyer, 2003), "Meeting the growing demand for distance education and determining policies to examine course delivery and evaluation are challenges facing administrators of higher education" (Lindner, Dooley, & Murphy, 2001, p. 25). This admonition includes strategic planning, program development, and future program delivery systems contemplated by colleges of agriculture at

land-grant institutions as well as departments of agriculture at other state universities and colleges.

Different colleges of agriculture have taken a variety of paths to offering educational programming at a distance. For example, Texas A&M University's Department of Agricultural Education and Texas Tech University's Department of Agricultural Education and Communications have been national leaders in developing and offering a Joint Doctor of Education in Agricultural Education at a distance—the "doc-at-a-distance" program (Texas A&M University, 2002).   In addition, Texas A&M University (2002) and similar institutions such as Iowa State University, Department of Agricultural Education and Studies, (Iowa State University, 2002) have created Master's of Agriculture degree programs that are delivered at a distance, either in part or entirely.   The Iowa State University degree program is offered "via distance education courses and [through] on-campus workshops" while the Texas A&M University Master's of Agriculture (MAG) degree program's "primary delivery system for course materials and student communication" (Texas A&M University, 2002) is the Internet.

The University of Georgia, College of Agricultural and Environmental Sciences (CAES), working in conjunction with the University System of Georgia Independent Study (USGIS) office and the Georgia Center for Continuing Education, offer the *Certification in Turfgrass Management* program at a distance (University of Georgia, 2002). Courses may be taken for college credit; or a non-credit certificate may be earned. Materials supporting the program's ten courses are made available to students through electronic and printed means. Moreover, researchers (Tennessen, PonTell, Romine, & Motheral, 1997) maintain that distance education, involving Internet- or Web-based delivery strategies, "can go beyond a specific course or seminar that is limited by time and by scope of the teacher or presenter and is well matched to needs of non-formal learners" (Cooperative Extension and the Internet section, 7).

Clearly, as the delivery of higher education at a distance has navigated its formative stages of development, institutions have taken a myriad of paths and approaches to planning, designing, and delivering courses, programs, and degrees. Further, a general consensus exists that educational resources are precious and must be committed judiciously and then used wisely. To this end, Witkin (1984) stated, "Effective needs assessment provides the basis for decisions on priorities either for program development or retrenchment" (p. x). Accordingly, identifiable areas of need (e.g., perceived interests of clients) can be used as decision rules for determining future resource allocation, including the development of new programs and the systems or mechanisms for delivering those programs.

Additionally, Waters and Haskell (1989) opined that "gathering data from potential clientele and actively involving them in the process of identifying potential educational programs increases the likelihood of implementing relevant educational programs; thus, increasing the likelihood of achieving appropriate outcomes" (p. 26). Further, Wickersham and Dooley (2001) concluded that, "Because teaching and learning on-line is a relatively new field of study, there was a need to determine learner characteristics and instructional design components that may or may not influence attrition rate [for programming offered at a distance]" (p. 510).

For example, "Most [adult learners] wish to study while remaining in paid employment and/or retaining responsibility for dependent children or adults" (Jones, Kirkup, & Kirkwood, 1993, p. 29). Concomitantly, Kelsey and Mincemoyer (2001, Discussion section, 1) identified "time as a major impediment to . . . participation in in-service training"; a barrier that was further exacerbated by long distance travel for the receipt of such training. Other researchers (Jackson, Raven, & Threadgill, 1995) have supported these findings.

Frequently, agricultural education teachers have robust schedules that extend

beyond a traditional "8 to 5" work day, and a workload that may include a significant number of job-related functions that occur on weekend days. Thus, their taking a "traditional" on-campus course is often a very difficult endeavor. Consequently, they may be "prime candidates" for participating in educational programs offered at a distance. These educators were identified as a target audience who may hold a high demand for higher education programming offered at a distance. The University of Georgia, College of Agricultural and Environmental Sciences (CAES) sought to identify future educational programming initiatives based on the expressed interests of this audience, i.e., programming that would rely heavily on distance education methodologies for its delivery. However, what were the educational interests of agricultural education teachers in Georgia, and what selected factors were related to their interests?

Purpose and Research Questions

The two-fold purpose of this study was to describe the interests of agricultural education teachers in Georgia for receiving educational programming offered at a distance, and to identify selected factors related to their interests with implications for program delivery. The following research questions guided the study: 1) What type(s) of educational programming, e.g., degree, certificate, or a specific course, were agricultural education teachers interested in receiving at a distance? 2) What level of interest did agricultural education teachers hold for receiving educational programming offered at a distance? 3) What selected personal and/or situational factors, e.g., perceived barriers, access, and competence, were related to interests held by agricultural education teachers for receiving educational programming offered at a distance?

Methods and Procedures

This was a descriptive-correlational study to describe the interests of agricultural education teachers in Georgia for receiving educational programming offered at a

distance, and to identify selected factors related to their interests with implications for program delivery. The survey population included all agricultural education teachers ($N = 340$) in the state of Georgia employed during the summer and fall of 2001. Staff members of the Survey Research Center (SRC) at the University of Georgia coordinated data collection and storage. Collection involved a mixed mail/Internet approach (Dillman, 2000). A cover letter contained within each questionnaire booklet explained the purpose of the survey; a similar "letter" introduced the on-line survey.

Members of the University of Georgia, College of Agricultural and Environmental Sciences, Information Technology Forum (ITF) work group reviewed the questionnaire items for content validity. The 13 items reported on in this manuscript were of two types: yes/no and multiple choice. Respondents were instructed to skip certain questionnaire items depending on their response to an antecedent question, thus the number of responses for a given question varied. For the questions addressing "level of interest," respondents were asked to rate the items using the following scale: "3" = "Very Interested," "2" = "Somewhat Interested," and "1" = "Marginally Interested."

Questionnaires were distributed to teachers through their region coordinators who requested that they return completed surveys either to their respective region offices or to postal mail them directly to the Survey Research Center (SRC) at the University of Georgia. North region teachers also had the option of completing the questionnaire on-line via a Web page designed and monitored by staff members of the SRC. Useable responses were received from 148 agricultural education teachers for a response rate of 43.5%, i.e., a self-selected sample from the original population. So, caution should be followed when generalizing the findings beyond those individuals who responded to the survey.

Research questions one and two were analyzed descriptively with frequencies and percentages. Research question three was analyzed using frequencies and percentages to describe factors and correlational analysis

to determine relationships (p ≤ .05) between selected variables.

Findings

Nearly two-thirds of the agricultural education teachers expressed an interest in pursuing additional education at a distance (Table 1). Approximately six-in-ten were interested in pursuing a graduate degree, while slightly more than one-third of the teachers expressed interest in pursuing a certificate program through similar means. Nearly one-half of the respondents also expressed interest in completing one or more specific courses at a distance (Table 1).

Table 1
Agricultural Education Teachers' (N = 148) Expressed Interests for Receiving Educational Programming at a Distance

Interests	*f*	*%*
Not Interested	9	6.1%
General interest in pursuing additional education at a distance	94	63.5%
Interested in pursuing a graduate degree at a distance	86	58.1%
Interested in pursuing a certificate program at a distance	52	35.1%
Interested in pursuing completion of specific courses	72	48.6%

Shown in Table 2 are the levels of interest for those teachers who indicated that they were in fact interested in pursuing a graduate degree at a distance or a certificate program at a distance. Mean scores ($M = 2.68$; $SD = .56$) revealed that teachers' levels of interest for receiving educational programming at a distance leading to a graduate degree exceeded the midway point between "somewhat" and "very interested." The expressed interest of teachers for receiving educational programming at a distance leading to completion of a certificate program approached the midway point between "somewhat" and "very interested" ($M = 2.42$; $SD = .57$).

Table 2

Agricultural Education Teachers' (N = 148) Expressed Interest and Levels of Interest for Receiving Educational Programming at a Distance

Expressed Interests and Levels of Interest	*f*	*%*
Pursuing a Graduate Degree at a Distance		
Not Interested	64	43.3%
Interested	84	56.7%
Levels of Interest in Pursuing a Graduate Degree (of the "Interested").		
Very Interested (3)	61	41.2%
Somewhat Interested (2)	19	12.8%
Marginally Interested (1)	4	2.7%
M^a	2.68	
SD	.56	
Pursuing a Certificate Program at a Distance		
Not Interested	96	64.9%
Interested	52	35.2%
Levels of Interest in Pursing a Certificate Program (of the "Interested").		
Very Interested (3)	24	16.2%
Somewhat Interested (2)	26	17.6%
Marginally Interested (1)	2	1.4%
M^a	2.42	
SD	.57	

Note. [a]3 = Very Interested, 2 = Somewhat Interested, and 1 = Marginally Interested.

Data in Table 3 show that a "salary increase" was most frequently identified by teachers (approximately one-third) as the factor that would motivate them to pursue additional education offered at a distance. Nearly three-in-ten teachers were ready to begin course work during the fall semester of 2001 (i.e., "readiness to enroll"). The remaining respondents either indicated a readiness to enroll for the spring semester of 2002 or later. "Geographic or scheduling conflicts" were most often identified as the greatest barriers to pursuing educational programming at a distance.

A majority of teachers indicated that they had access to computers and to the Internet at work and at home. About one-in-four teachers had access to the Internet only while at work. A majority of participants identified either "high speed" or "fast dial-up (> 56K)" as their type of Internet connection. Three-fourths of the teachers perceived that their "competence in the use of computers" was "average" or better. The other respondents rated their ability as "below average" or less.

Table 3
Selected Personal and/or Situational Factors Related to Distance Education as Reported by Agricultural Education Teachers (N = 148)

Selected Personal and/or Situational Factors	*f*	*%*
Motivators[a]		
Release time from job duties	19	12.8%
Salary increase	47	31.8%
Tuition remission/employer reimbursement	16	10.8%
Other	2	1.4%
No response	64	43.2%
Readiness to Enroll[a]		
Fall 2001	44	29.7%
Spring 2002	31	20.9%
After Spring 2002	7	4.7%
No response	66	44.6%
Barriers[a]		
Desired degree program not offered	11	7.4%
Already hold a terminal degree	21	14.2%
No desire or incentives to continue education	18	12.2%
Geographic or scheduling conflicts	53	35.8%
No response	45	30.4%
Technology		
Access to a Computer		
Work only	25	16.9%
Home only	3	2.0%
Work and home	104	70.3%
No response	16	10.8%
Access to the Internet		
Work only	34	23.0%
Home only	6	4.1%
Work and home	92	62.2%
No response	16	10.8%
Speed of Internet Connection		
High speed	35	23.6%
Fast dial-up (>56K)	54	36.5%
Slow dial-up (<56K)	8	5.4%
Uncertain	35	23.6%
No response	16	10.8%
Perceived Competence in Use of Computers		
Very experienced	9	6.1%
Experienced	36	24.3%
Average	66	44.6%
Below average	16	10.8%
Novice	1	0.7%
No response	20	13.5%

Note. [a]Participants were instructed to skip these items if they expressed no interest in distance education; thus, "no response" was coded.

Further analysis revealed a negligible relationship (Davis, 1971) between a teacher's interest in pursuing a graduate degree at a distance and one's perceived level of competence in use of computers (r = .06). However, a moderate, positive relationship existed (r = .46) between one's interest in pursuing a graduate degree at a distance and one's readiness to enroll for such programming. As interest increased so did readiness. Similarly, a moderate, positive relationship existed (r = .35) between a teacher's interest for pursuing a certificate program at a distance

and one's readiness to enroll for such programming. As interest increased so did readiness.

In the case of perceived level of competence in the use of computers and interest in pursuing a certificate program at a distance, the relationship was low and positive (r = .11) (Davis, 1971). No significant relationships were found for participants between one's interest in pursuing a specific course and one's perceived competence for using computers or one's readiness to enroll for educational programming at a distance.

Table 4
Relationships[a] Between Expressed Interests of Agricultural Teachers for Receiving Educational Programming at a Distance and Selected Personal Characteristics

	Perceived Competence in Use of Computers	Readiness to Enroll for Educational Programming at a Distance[b]
Level of interest in pursuing a graduate degree at a distance	.06	.46*
Level of interest in pursuing a certificate program at a distance	.11	.35*
Interest in pursuing completion of specific courses (yes = 1; no = 0)	-.16	.14

Note. [a]Pearson Product Moment or Point Biserial Correlation Coefficient. [b]Coding: "Fall 2001" = "3," "Spring 2002" = "2," and "After Spring 2002" = "1." *p < .05.

Conclusions

A substantial number of teachers were interested in pursuing education at a distance. Interest was greatest for programming leading to a graduate degree. More than forty percent of the teachers expressing an interest were "very interested" in doing so, while fewer were similarly interested in pursuing a certificate program.

About one-third of the respondents identified an increase in salary as a motivator for pursuing education at a distance; "geographic and scheduling conflicts" were viewed by many teachers as barriers. However, nearly 30 percent of the teachers were ready to enroll for courses offered at a distance during the fall semester of 2001. A majority of teachers had access to a computer and to the Internet at work

and at home; many had relatively fast Internet connections. Three-fourths of the participants perceived that their computer competence was average or better.

No significant relationships were found between a teacher's interests in pursuing a graduate degree or a certificate program at a distance and one's perceived competence for using computers. However, as a teacher's interest in pursuing a graduate degree at a distance increased so did one's "readiness to enroll" for educational programming. This association was statistically significant and positive. A similar relationship existed between one's interest in pursuing a certificate program at a distance and a teacher's "readiness" to enroll. No significant relationships were found between a teacher's interest in pursuing a specific course and one's perceived competence for using computers or with one's readiness to enroll.

Recommendations

A substantial number of teachers (84) indicated that they were interested in pursuing educational programming at a distance. Many instructors were ready to begin taking courses in the fall of 2001. Accordingly, the following recommendations are offered:

1) To meet the "immediate" need, graduate courses with appeal to agricultural education teachers that are being or have been taught previously at a distance, either in part or entirely, should be offered as an "initial" response.
2) Longer term, the College of Agricultural and Environmental Sciences should develop a "coherent" distance education program to address the expressed interest of agricultural education teachers (Lindner, Dooley, & Murphy, 2001; Nti & Bowen, 1998).
   (a) Similar to existing residential graduate degree programs, a coherent distance education program would have multiple program options as well as specified support courses and/or recommended electives (Iowa State University, 2002; Jackson et al., 1995; Nti & Bowen, 1998; Texas A&M University, 2002).
   (b) Inherent to the program options also should be "abbreviated" options (e.g., three to five related/supporting courses) for those students who are interested in earning specialized certification in a particular disciplinary area.
   (c) Moreover, sufficient "flexibility" should exist so that students, who are either undertaking or who finish a certificate program, could use their completed course work toward a degree in the future, if they so choose.
3) Nearly one-half of the teachers indicated an interest in taking one or more specific courses. So, additional inquiry should be conducted to identify specific courses that teachers have the greatest interest in taking.
4) Similar to the "doc-at-a-distance" program developed and offered jointly by Texas A&M University and Texas Tech University (Texas A&M University, 2002), CAES decision-makers should consider the feasibility of a "cohort approach" (Imel, 2002) when recruiting students who are interested in pursuing additional education at a distance.
5) Perceptions of other groups, such as university faculty and administrators (Born & Miller, 1999; Miller & Shih, 1999a; Miller & Shih, 1999b), clients of agricultural education teachers, industry representatives (Bowen & Thomson, 1995), and other stakeholders, should be elicited to "triangulate" better (Gall, Borg, & Gall, 1996) an understanding of, and then reach a consensus about, the development and delivery of educational programming at a distance for this audience.

Discussion and Implications

Does a similar demand exist for educational programming offered at a distance among other professionals in the agricultural, food, and environmental system? If it does, would these individuals' educational needs be similar to those expressed by agricultural education teachers? Or, if substantial interest for distance programming exists, but specific course and program needs differ, what are those needs? Additional research should be conducted to answer these questions.

A teacher's perceived computer competence was not related to his or her level of interest in pursuing a graduate degree. This may suggest that teachers were not sufficiently aware of the skills needed to receive educational programming at a distance. Further, teachers may not have understood fully the important "complementary" relationship between distance delivery of education and a recipient's competence in the information technologies needed to process on-line learning transactions effectively (Fletcher & Deeds, 1994; Kotrlik, Redmann, Harrison, & Handley, 2000). Arguably, this lack of understanding or "potential" deficit in one's computer-related competence could diminish a teacher's chance of completing a distance education program (Wickersham & Dooley, 2001).

Finally, even though distance education programming potentially negates the need for travel, thus "saving time," other researchers (Conroy, Layfield, & Hicks, 1997; Jackson et al., 1995; Kelsey & Mincemoyer, 2001; Miller & Miller, 2003) have asserted that scheduling time for on-line learning to occur is still a significant "barrier" to one's participation in distance education. Findings here supported that assertion (see Table 3). Yet, is it possible to mitigate this barrier for a target audience? If so, how?

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