How Well do We Relate: Media Professionals' Awareness and Perceptions of a Land Grant Institution

Research Paper Submission

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Abstract: In recent years, the land grant university has struggled with public awareness outside of its traditional audiences, indicating a potential disconnect between the general public and the media. The purpose of this study was to assess the perceptions and awareness of media with regard to the image and reputation of the University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS). A sample of 150 state and local media professionals was surveyed to assess perceptions and awareness of UF/IFAS. The results indicated that the media' perceptions of UF/IFAS image and reputation were positive, but their awareness of the institution's range of program areas was low. Media professionals consider the information provided by UF/IFAS to be credible, useable, and newsworthy. Respondents said the environment, followed by disaster preparation and recovery were the most important topics to their target audience, while the least important topics to their target audience were 4-H youth development and agriculture. Media professionals were more likely to use UF/IFAS as a source for agriculture and natural resource topics than other topics. Other universities should consider conducting similar research to develop a body of knowledge on media relations at land grant institutions.

Keywords: University image, public relations, university reputation, higher education, media professionals, media relations

How Well do We Relate: Media Professionals' Awareness and Perceptions of a Land-Grant Institution

Introduction

The mission of the land grant university is to provide education, research, and public outreach (extension) for the citizens in its state. Traditionally, the role of transferring the research information and technology generated via the land grant and its tripartite mission has fallen to the Cooperative Extension Service. The Smith-Lever Act of 1914 created extension to assist in diffusing useful and pragmatic information to the people of the United States (Rasmussen, 1989). Since the early 19th century, however, face-to-face transfer of information from the land grant has been augmented by mediated channels of communication, ranging from print and broadcast media to the Web. In response to the need to communicate effectively using multiple channels, land grants have developed "communications service units" staffed by public information specialists, writers, videographers, etc., whose job it is to help shape communications and information/education efforts. In county extension offices, agents contribute to this trend by increasingly making use of local media to promote their programs and events (Telg, Irani, Hurst, & Kistler, 2007), and in many cases are able to reach larger audiences through local newspaper columns, public affairs shows, Web sites and the like. While some of this communication is placed as advertising, the vast majority is targeted toward media outlets in the form of press releases, public service announcements, features, and news stories (Telg, Irani, Hurst, & Kistler, 2007). Although the literature has focused on land grant communications from the marketing and branding standpoint, little research exists that looks at the effectiveness of land grant public relations in general, and media relations in particular.

The modern land grant institution faces many challenges to define itself in terms of new and non-traditional audiences for its services. As more Americans move away from rural areas and agricultural production systems, land grants have kept up with the pace of societal changes by diversifying program areas to better serve urban and suburban citizens. Today, in addition to agriculture, land grant program areas are targeted to include the environment, families and consumers, home horticulture, sustainable living, disaster preparation and recovery, and youth development. As these institutions have diversified in terms of program areas and stakeholder demographics, however, awareness and understanding of the land grant mission has dwindled (Kellogg, 1999).

In response to decreased awareness and potential budget cuts, land grants have scrambled to demonstrate their value and accountability through the name branding and marketing of their services. For example, the University of Florida brands itself as the Institute of Food and Agricultural Sciences, or "IFAS", which was conceived in 1964 to demonstrate the link between the three parts of the land grant mission. Other land grant institutions have also created a brand name to develop a brand identity and establish an institutional reputation with new and existing publics. Oklahoma State University, for example, has its Division of Agricultural Sciences and Natural Resources (DASNR), Texas A&M University has AgriLIFE, and Louisiana State University has the AgCenter. Land grant branding is intended to mirror corporate marketing communication models by creating a brand to differentiate services and generate memorability and preference. But, given the lack of budgetary resources needed to generate brand awareness through marketing mechanisms, sole reliance on these efforts is likely to be of limited effectiveness without an approach that leverages the potential impact of public relations.

Literature Review

Excellence in Public Relations Theory

Certainly, public relations and marketing are both essential to organizations, but public relations scholars argue that although they may be complementary, they are separate functions, each bringing distinct perspectives to an organization (Grunig & Grunig, 1998; Grunig L. A., 1997).

When either public relations or marketing is emphasized more than the other, the organization may "end up 'speaking with one voice' (often a rationale for integrating marketing, advertising, and public relations), but it is able to listen with only one ear" (Grunig L. A., 1997, p. 291). Marketing primarily focuses on one-way communication, supplemented with two-way communication that occurs only with customers or clients. Effective public relations involves developing relationships not only with clients, but also with strategic constituents, called "publics," such as governmental agencies, the mass media and trade presses, financial publics, the employees, and special interest or activist groups (Grunig L. A., 1997). This description suggests that the ideal foundation of public relations is, and should be, rooted in two-way symmetrical communication between the organization and its publics. However, this is difficult to achieve, especially in the instance of public relations efforts on behalf of public institutions such as land grants.

Grunig and Hunt (1984) defined four models of public relations—press agentry; public information; two-way asymmetrical and two-way symmetrical. The two most relevant models to this study are the public information model and the two-way symmetrical model. The public information model is characterized by the use of press releases and other one-way communication techniques to distribute organizational messages through in-house journalists.

The two-way symmetrical model uses research with publics to facilitate understanding and communication, whereas a two-way asymmetrical model (highly characteristic of marketing) uses research to determine the messages most likely to persuade publics (as cited in Grunig & Grunig, 1992). The long-standing assertation in the field of public relations posited by Grunig and Grunig (1992) is that "organizations should practice two-way and symmetrical communication when their environments are complex and turbulent" (p. 298).

Because land grant institutions are public sector organizations with multi-faceted goals (teaching, research, and extension) and extremely diverse stakeholder groups, they are naturally inclined to rely more on the public information model. However, to improve outreach and increase accountability, as recommended by the Kellogg Commission (1999), land grant universities may need to more fully embrace two-way communication approaches based on needs-assessments with publics and issues-based program development (Donnellan & Montgomery, 2005).

Media Relations

A critical function of public relations is maintaining good relationships with relevant media organizations. Organizations utilize public relations in order to leverage the credibility of the news media to target publics with messages that promote goodwill. "Good press" arises as a result of an organization's engaging in media relations activities that enhance the potential for positive coverage in the news media. Schenkler and Herrling (2003) stated that these types of media relations efforts are vital for two reasons. The media can affect an organization's reputation positively or negatively. The reputation of an organization formed and held in memory by a stakeholder as informed through the media "serves as the 'reality' of the

organization for that individual" (Brown, Dacin, Pratt, & Whetten, 2006, p. 105). Additionally, the media can be the most direct and available channel to reach clientele, influence the opinions of legislators, motivate employees, and enhance/defend organizational reputation (Schenkler & Herrling, 2003). Conversely, while working to establish a strong reputation, an organization should also consider ways to enhance their brand name and credibility (Fill, 2002). Media professionals certainly desire to be viewed as credible, and thus consider the credibility of their sources when crafting a story. If they tie source credibility to a specific organization's brand name and reputation, they may return to that organization for credible information in the future.

Effective media relations involves knowing and anticipating the needs of the media. Media professionals have numerous "feelers" out to capture and convey information of interest to their target audiences. They speak with co-workers and trusted sources, observe news wires, and sort through numerous press releases (Schenkler & Herrling, 2003). "In theory, journalists and sources have a symbiotic relationship: sources require journalists to get their views or ideas into the news, while journalists require sources for direction, clarification, context, perspective, and commentary. In reality, … journalists rely more on sources than vice versa" (Conrad, 1999, p. 286). Historically, journalists have mistrusted public relations practitioners as sources, deeming that they selfishly push the goals of their respective organization or conceal negative information (Ryan & Martinson, 1988). To build positive relationships with the media, organizations must be honest and open, provide accurate information, be responsive and timely, reliable and consistent, and prepared (Desiere & Bey-Ling, 2007).

While much of the literature in the Journal of Extension (Donnellan & Montgomery, 2005; Kelsey & Mariger, 2003) and the Journal of Applied Communication (Day, 2003; Ruth, Bortree, Ford, Braun, & Flowers, 2005) have referenced the Land Grant's communication problem, there

is a lack of empirical studies to specifically document the disconnect between the media and the land grant institution. It is imperative to conduct this type of formative research in order to develop a marketing and communication plan for a land grant institution (Ho & Hung, 2008).

Purpose & Objectives

The potential media relations problem for land grant institutions is not that they do not have the characteristics recommended by Desiere and Bey-Ling (2007), but the media, like other stakeholder groups, may not be aware of the functions and range of issues covered by these institutions. The purpose of this study was, therefore, to access the perceptions and awareness of media with regard to the image and reputation of a land grant, the University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS). This institution was chosen for two reasons. First, UF/IFAS has engaged in a recent multi-year effort to improve its brand image and identity using primarily corporate marketing techniques (Meyers, Irani, & Eckhardt, (2006). Secondly, the data in this study was part of a larger data collection effort that assessed perceptions of brand image and awareness of producers and community leaders (Chodil, Meyers, Irani, & Baker, 2008). Although data was collected on some items common to all three groups, media professionals were additionally asked specific items related to source credibility and information channel preferences with a view toward understanding how these perceptions could potentially shape the media relations dynamic. Based on the above, the following research objectives were developed to guide this study:

- Determine state and local media professionals' awareness of UF/IFAS and its teaching, research, and extension components;
- Determine media professionals' preferred source and information channels with respect to agricultural and natural resources related news;

- Investigate local media professionals' perceptions of UF/IFAS as an information source.

Methodology

A descriptive telephone survey methodology was utilized to determine levels of awareness and perceptions of state and local media professionals. The sampling frame was developed to collect data from representative samples of media professionals statewide based on the type of media outlet in which they were employed. Lists of names were developed from several existing data sources and then sampled using a stratified random sampling technique. These data sources included multiple lists of media contacts and purchased media directory listings for print and broadcast news media.

Researchers utilized computer assisted telephone survey methodology to collect data from the samples. Interviews were conducted by the University of Florida's Survey Research Center using the CATI system. Trained telephone interviewers followed a researcher-developed questionnaire. Interviewers read the questions directly from the computer screen to ensure consistency. Interviewers contacted the media representatives between the dates of December 17, 2007, and January 9, 2008. There were 460 media professionals in the sample and 1527 calls were made, including up to six callbacks. The media professionals who completed the survey totaled 150 for a response rate of 32.6%.

To conduct the study, a 25-item survey questionnaire was developed using questions from previous surveys of UF/IFAS stakeholders and a national study of extension awareness (Warner, Christenson, Dillman, & Salant, 1996; Chodil, Meyers, Irani, Baker, 2008). Items included a series of questions focusing on awareness and perception of UF/IFAS. Questions were also asked regarding the image and reputation of UF/IFAS, and preferred method of receiving

information. The instrument took into consideration the uniqueness of the media and their interactions with their target audience to adapt the questions for this audience. The instrument was then reviewed by a panel of experts, which included representative media professionals who were not part of the survey population, for face and content validity. Data were analyzed in SPSS 16.0 to generate descriptive frequencies and means.

Media Demographics

Media Professionals

The majority of the media professionals were male (58.7%, n=88) and white (90.7%, n=136). The average age of study participants was 46. The majority of respondents (58%, n=87) attained a four-year bachelor's degree. The next highest percentage (19.3%, n=29) attained a graduate/professional degree. Nearly 17% (16.7%, n=25) of respondents were University of Florida alumni. Only 2% of the media professional were alumni from the university's College of Agricultural and Life Sciences.

Organizational Characteristics

The media professionals surveyed worked for a variety of types of media, and in some cases, for more than one type of media outlet (which caused the following percentages to total greater than 100%), with the largest percentage working for a newspaper at 74% (n=111) and the smallest percentage working in radio (7.3%, n=11). Nearly half of the respondents worked for an online publication (48%, n=72). Approximately 15% worked for a magazine (16.7%, n=25) or a television station (14.7%, n=22). The circulation size of the print media ranged from 1,800 to 700,000 (median=12,000). The majority of the printed publications were printed either daily or

weekly at 66% (n=99). The online publications had from 5 to 7,000 users, although only 4% (n=6) of the online publications required a membership to view them. Radio listeners ranged from 70,000 to 25,000,000 (median=110,000) and television viewers ranged from 36,000 to 596,000 (median=130,000). The primary coverage area of the media was either city or urban, which totaled 50% (n=75) and the smallest coverage area was suburban at 6.7% (n=10) (see Table 1).

Table 1.
Primary Coverage Area of Media Respondents

	n	Percent (%)
Rural	29	19.3
Small town	26	17.3
City	33	22.0
Urban	42	28.0
Suburban	10	6.7
Don't know	6	4.0
Refused	4	2.7
Total	150	100

Results

Objective One: Determine state and local media professionals' awareness of UF/IFAS and its teaching, research, and extension components

Respondents were asked a series of questions to determine their level of awareness of the University of Florida, then UF/IFAS, and finally the program areas on which UF/IFAS focuses. The majority of media respondents (58.7%, n=88) were either very or somewhat familiar with UF/IFAS' research, education, and extension work. When asked how many times in the past six months they covered a story in which they used UF/IFAS as a source, 43.3% (n=65) said they

used UF/IFAS as a source between one and seven times. Ten percent (n=21) said they used UF/IFAS as a source 10–24 times in the past six months.

When respondents were asked how generally informed they were about the research, education, and public service activities of the University of Florida, the majority, 58.7% (n=88) reported they were either somewhat or very informed. However, when asked unaided (not given a list of choices) what organizations in Florida conduct research and/or provide information about food, agriculture, and natural resources, only 14.7% (n=22) of media said the Institute of Food and Agricultural Sciences.

If respondents did not mention UF/IFAS unaided, they were then prompted as to if they had ever heard of UF/IFAS or the University of Florida's Institute of Food and Agricultural Sciences. This resulted in a greater percentage of awareness, with 35.3% (n=53) of media indicating they had heard of UF/IFAS.

Respondents who expressed aided awareness of UF/IFAS (35.3%, n=53) were then asked on what program areas UF/IFAS focuses (see Table 2). The greatest level of awareness was of agriculture and lawn and garden program areas.

Table 2.

Media Respondents' Awareness of UF/IFAS Program Areas (Unaided)

Topic	n	Percent (%)
Agriculture	74	49.3
Lawn & Garden	27	18
Environment	19	12.7
Families & Consumers	20	13.3
4-H Youth Development	5	3.3
Sustainable Living	12	8

Disaster Preparation & Recovery	3	2
Other/Don't Know	15	10

The media respondents were then asked how they cite people or information related to UF/IFAS when used as a source. Only 8.7% (n=13) said they typically cite the brand acronym UF/IFAS alone. Thirty percent (n=45) said they used the full name, University of Florida Institute of Food and Agricultural Sciences. The remaining respondents said "other" at 27.3% (n=41) or don't know (2.7%, n=4) (see Table 3). The majority of the responses in the "other" category said they used both the acronym and the full name together or just the University of Florida.

Table 3.
How Media Respondents Cite Information from UF/IFAS (Unaided)

	n	Percent (%)
UF/IFAS (Acronym)	13	8.7
University of Florida Institute of Food and Agricultural Sciences (full name)	45	30.0
Other	41	27.3
Don't Know	4	2.7

Objective Two: Determine media professionals' preferred source and information channels with respect to agricultural and natural resources related news

In order to assess this objective, media professionals were read a list of various communication channels for receiving information, and were asked their preferred method, followed by their second preferred method, and then their third preference. An overwhelming

majority of the media professionals preferred to be contacted by e-mail (86%, n=129), followed by phone (7.3%, n=11). Fax (2%, n=3), mail (2%, n=3), and Web (2%, n=3) as the next preferred choice; these were all of equal preference. The second preferred method of receiving information were more diverse. Fax (32%, n=48) was the first of the second preferred, followed closely by Web at 27.3% (n=41). See Table 4 below.

Table 4.
Media Professionals' Preferred Information Channels (Aided)

	Preferred Method		Second Choice		Third Choice	
	n	Percent (%)	n	Percent (%)	n	Percent (%)
E-mail	129	86	17	11.3	10	6.7
Phone	11	7.3	28	18.7	41	27.3
Fax	3	2	48	32	41	27.3
Mail	3	2	10	6.7	22	14.7
Web	3	2	41	27.3	19	12.7
Blog	1	.7	0	0	6	4
RSS	0	0	3	2	6	4
Other	0	0	2	1.3	0	0
Don't Know	0	0	1	.7	5	3.3

To further assess this objective, media professionals were asked which sources they used to obtain information for news stories or information presentation. The most used source were press releases at 85.3% (n=128), followed by the AP wire at 50% (n=75). 49.3% (n=74) of respondents reported use of the University of Florida News and Public Affairs. Nearly 50% of the media (48%, n=72) said they use another source; these other sources varied from local primary sources and community contacts to national media groups and/or wire services and commodity organizations (see Table 5).

Table 5.
Sources Used by Media Respondents (Aided)

	n	Percent (%)

AP	75	50.0
UPI	22	14.7
Reuters	40	26.7
RSS Feed	28	18.7
Press Release	128	85.3
UF News & Public Affairs	74	49.3
Other 1	72	48.0
Other 2	15	10.0
Don't Know	1	.7

Note: Respondents were read a list of options; "Other 2" was only recorded after a respondent gave a response in "Other 1"; n=number of respondents in each category.

Objective Three: Investigate local media professionals' perceptions of UF/IFAS as an information source

To assess this objective, respondents were asked a series of questions about information provided by UF/IFAS. Respondents who had used UF/IFAS information in the past indicated they view the information provided by UF/IFAS as credible, useful to their work, and newsworthy for their audience, with credible receiving the highest rating (see Table 6).

Table 6.
Media's Opinions of Information Provided by UF/IFAS

	n	mean	SD
Credible	110	3.55	.49
Useful	116	3.22	.63
Newsworthy	112	3.14	.58

Note: 1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree; n=number of respondents for each item.

When asked unaided how willing they would be to use UF/IFAS as a source for a story on a certain topic, respondents were only able to name four program areas where they would turn to UF/IFAS as a source. Of these four program areas, media respondents indicated they were least likely to use UF/IFAS as a source for disaster preparation and recovery (2.71), on a five point

likelihood scale. The media respondents were most likely to use UF/IFAS as a source for agriculture and natural resources programs (3.93) (see Table 7).

Table 7.
Media Respondents' Willingness to use UF/IFAS as a Source on Specific Program Areas (Unaided)

	n	mean	SD
Agriculture & Natural Resources	139	3.93	1.34
Families & Consumers	139	3.04	1.36
Sustainable Living	134	3.07	1.36
Disaster Preparation & Recovery	137	2.71	1.46

Note: scale was from 1 to 5, where 1 is "not at all likely" and 5 is "very likely"; n=number of respondents for each item.

Media respondents were then read a list (aided) of UF/IFAS program areas. Using a scale from 1 to 5 (1="very unimportant" and 5="very important"), respondents were asked how important the UF/IFAS program areas are to their target audience. Respondents said the most important program area to their target audience was the environment (4.15). The second most important was disaster preparation and recovery (3.90) and the least important was 4-H youth development (2.91) (see Table 8).

Table 8.
Media Respondents' Importance of UF/IFAS Program Areas to Their Target Audience (Aided)

	n	mean	SD
Agriculture	141	3.58	1.31
Environment	141	4.15	1.08
Families & Consumers	141	3.86	1.06
Lawn & Garden	141	3.09	1.27
Sustainable Living	138	3.44	1.15
Disaster Preparation & Recovery	139	3.90	1.16
4-H Youth Development	139	2.91	1.40

Note: scale was from 1 to 5, where 1 is "very unimportant" and 5 is "very important"; n=number of respondents for each item.

In order to further assess media professionals perceptions of UF/IFAS' image and reputation, respondents who were familiar with UF/IFAS were asked to list three words that best describe UF/IFAS. In accordance with Glaser's constant comparative method, categories were created and grouped according to themes based on responses (Glaser, 1965). Seventy-three media representatives provided at least one word or phrase. All responses were positive in nature. The largest number of responses fell into the category of positive image responses. Common responses were "consumer friendly," "informative," and "agriculture." These responses are analyzed in Table 9 below.

Table 9.
Media Responses When Asked for Three Words that Best Describe UF/IFAS

Response Category	Examples of Answers	No. of Responses in Category
Positive Image Responses	informative, competent, knowledgeable, professional, respected, accurate, facility, attentive, leadership, leading institute, dedicated, classic, cutting-edge, connected, dynamic, convenient, expert, enlightened	85
Education Responses	education, educational, academic, dedication to education, authoritative, eclectic	20
Research Responses	research, research institute, experimental, researched, scientific	20
Positive Need Responses	resource, useful, important, helpful, necessary	17

Agriculture & Food Responses	agriculture, food, citrus, O.J., agricultural	12
Positive Emotive Responses	excellent, great, consumer friendly, personable, good people, good, very good, self promoting in the best sense	10
Community & Service Responses	community oriented, public service, local, grass roots, public interest, helping the community with ag issues	9
Outreach Responses	outreach	4
Communication Responses	media savvy, media, spread message well	4
Negative Monetary Responses	under funded, worried about funding, fund needing	3
Lawn & Garden	plants, garden, Master Gardener	3
Extension Responses	extension	2

Conclusions and Discussion

The results of this study indicate that, as a land grant institution with a focus on branding its identity, UF/IFAS has a strong image and reputation among those media professionals who are aware of it. However, overall awareness of the institution on an unaided basis among media professionals is low, despite efforts to develop a brand name identity through marketing alone. On the other hand, respondents who were familiar with UF/IFAS did perceive information from UF/IFAS as credible, useable, and trustworthy, which indicates these respondents perceived UF/IFAS as having a positive reputation. In comparison to findings from the study conducted

with producers and community leaders (Chodil, Meyers, Irani, & Baker, 2008), media respondents were less informed about research, education, and public service activities at UF/IFAS than producer and leader stakeholder groups.

The media professionals surveyed in this study perceived IFAS to be focused on agriculture; yet, the respondents indicated other program areas and information topics that UF/IFAS also covers are seen as more important to their audience. This finding corroborates the previous study with producer and leader stakeholder groups (Chodil, Meyers, Irani, & Baker, 2008). Because effective media relations involves knowing and anticipating the needs of the media (Schenkler & Herrling, 2003), UF/IFAS should place more emphasis on targeting key messages to media that coincide with the importance of subject areas in media professionals' target audiences.

Despite a recent increase in tropical storm activity and disaster preparation activities by UF/IFAS, media respondents indicated they are the least likely to use UF/IFAS as a source for disaster preparation and recovery information. This indicates a potential disconnect between what the media thinks UF/IFAS can provide in the way of information and services and what it actually does provide.

The majority of media respondents indicated they would prefer to be contacted by e-mail with news-related information or press releases. The top ranking second preferred method of receiving information was fax, followed closely by Web. Previous research has shown that although the Web has "irreversibly taken a place in the media relations mix used by public relations practitioners" (Hachigian & Hallahan, 2003, p. 59), media professionals prefer more direct methods of receiving information such as e-mail or fax. Because the preferred information channels of the media professionals surveyed were primarily one-way communication devices,

UF/IFAS may need to find a new way of shaping more two-way communications efforts with media professionals. Two-way and symmetrical communication models are ideal for communication between land grant institutions and media professionals because of the ever-changing, complex environment in which the land grant exists (Grunig, 1992).

The qualitative open-ended response answers offer a deeper understanding of the way media professionals view UF/IFAS. Media professionals' responses indicated that their perceptions of UF/IFAS' image and reputation are positive, but not strongly valenced. Common responses among the media were "consumer friendly," "informative," and "agriculture." The traditional mission of the land grant includes being responsive to the needs of the state; however, extension, which is traditionally the outreach portion of the land grant's mission, was barely mentioned, In fact, "outreach" and "communication" themes were among those themes with the lowest number of responses. Results of this study are of limited generalizability, based on the population of state and local media professionals from which the sampling frame was drawn and the application context of a single land grant institution as the focus of the study. However, the findings do suggest limited transferability and some potential future directions for research in this area with other land grants in other states.

Implications and Recommendations

Overall, results of this study provided support for the argument that land grants, even those engaged in branding and marketing efforts, can stand to gain from leveraging the impact of public relations. Strategically developing strong, positive relationships with the media can build the reputation of the land grant as a credible and trustworthy source of news and information with nontraditional and nonagriculturally based publics. In this study, media professionals saw the land grant as primarily a source for traditional agricultural news and information, and were

less likely to be aware of other programs areas on which UF/IFAS focuses, including the environment, which respondents rated as being most relevant to their audiences. Developing strategic two-way communications approaches that target state and local media can enhance and potentially extend the reputation of the land grant as serving the interests of all citizens. This "PR problem" may represent an opportunity for land grants like UF/IFAS to embrace more of a two-way symmetrical PR model so as to better attune communications about what the land grant does to the needs and interests of the news media's audiences which it intends to serve.

Recommendations

Recommendations based on the results of this study include recommendations for both theory and practice. From a practitioner standpoint, results of this study suggest the merit of agricultural communicators' developing a two-way communication strategy with media professionals. This strategy should include research to determine the key messages most likely to influence media and their target audiences (Grunig L. A., 1997). Land grant institutions should focus on communicating the programs/topic areas that are of the most importance to key audiences – not what we do, but what has value for our stakeholder audiences, especially those not in traditional production agriculture.

Additionally, land grant institutions should employ the most cost effective communication technologies (Web, search engine optimization, customer relationship marketing, etc.) to increase exposure and build impressions with media professionals. This is especially relevant because this and previous research indicates that these communication technologies are the preferred communication channels for media (Irani, Ruth, Telg, & Lundy, 2006).

To develop a body of knowledge on media relations at land grant institutions, other land grant institutions should consider conducting similar research. This body of knowledge will open

the door for land grant institutions to continue building positive relationships with the media. The focus of these relationships should be on building trust (Fill, 2002) by providing accurate information in a responsive, timely, reliable, and consistent manner (Desiere & Bey-Ling, 2007). Through continued research and media relations focused communication, land grant institutions' potential "PR problem" may evolve into an admired public relations strategy.

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Research Paper

Citation Structure: An Analysis of the Literature Cited in the *Journal of Applied Communications* from 1997 to 2006

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Citation Structure: An Analysis of the Literature Cited in the *Journal of Applied Communications* from 1997 to 2006

Abstract

The Journal of Applied Communications (JAC) *has been a primary outlet of agricultural communications publishing and research dissemination. The purpose of this study was to assess ten years of* JAC *to determine literature cited. The study used a quantitative content analysis design. Analyzed in the study were 91 research and/or professional articles with research methodologies published from 1997 through 2006. There were 1,732 cited literature works identified in the journal. The average number of citations per article was approximately 19. Cited works from premier agricultural education journals were tracked for citation frequencies, in terms of author(s) and year of publication. A total of 143 references were made to journals identified as premier in agricultural education. The most frequently cited journals were from journalism, communications and mass communications sources. Additional cited works are defined. Citation analysis indicates that* JAC *relies heavily on books, journals, conference proceedings and other literacy works outside agricultural communications.* JAC *does not exhibit compactness, indicating that it reaches past its citation boundaries and into interrelated areas of other disciplines. However, it does exhibit weak self-identity meaning it does little to build upon research previously cited in* JAC.

Keywords: *Journal of Applied Communications,* cited literature, content analysis, citationology, interrelatedness to agricultural education, interrelatedness to journalism and communications

Introduction

The *Journal of Applied Communications (JAC)* has undergone numerous changes since its conversion from a newsletter to a journal in 1990. Some of those modifications have included a change in format and frequency of publishing and content. During *JAC's* lifespan, a number of researchers have examined various publishing and research aspects of the agricultural communications and agricultural education professions. One focus has been place on previously cited literature (Miller, Stewart, & West, 2006; Moore, 1991; Radhakrishna, 1995; Radhakrishna, Eaton, Conroy, & Jackson, 1994).

In 1994, research indicated the explicit need to analyze citation characteristics in agricultural education (Radhakrishna et al.). The research further noted "a number of researchers in various scientific disciplines have considered citation structure as a good indicator of the nature of scientific activity" (p. 61). Furthermore, quoting additional experts whom indicated analyses of citation structures "characterize a field of study, define its boundaries, and explain how a discipline is interrelated with other fields of study" (p. 61). Citations can be used as an indicator of scholars' behavior because it reflects an author's debt to earlier works. The frequency of cited literature can provide a framework of important references and can be a means by which authors anchor their work and relate it to earlier research (Garfield, 1998).

In 2006, Miller, Stewart, and West's research identified the need to review literature and track citations to maintain a clear sense of the disciplines research agenda. In a reply to Doerfert's (2003) essay, Tucker (2004) made further comments to support the need for those in agricultural communications to take notice of research citations. As the discipline progresses forward with research, after the development of a *National Research Agenda [NRA]: Agricultural Education and Communication 2007-2010* (Osborne, n.d.), it is important to

understand how agricultural communications has moved forward with citations within the discipline. Are we primarily citing works created in our field, or do we rely on other disciplinary areas as literary staples? In 1994, a content analysis of the *Journal of Agricultural Education* indicated that the agricultural education discipline appeared to have a strong self-identity (building on other researchers work within the discipline of agricultural education) and compactness (citing from few "core" journals) (Radhakrishna et al.). However, a 1995 study indicated agricultural education should expand their focus to include other areas of research interests for professionals in the field (Radhakrishna). Little research has focused on literature citations in agricultural communications specifically how agricultural communication literature feeds into the broader umbrella of agricultural education. There is a need to determine the level self-identity and compactness represented in literature cited in *JAC.*

As agricultural communications continues to expand in knowledge pursuit, development, and examination, it is important to analyze the dimensions and frequencies of citations in its premier journal, the *Journal of Applied Communications* (Edgar, Edgar, Briers, & Rutherford, 2008). *JAC* should also be examined to determine the level and depth of literature citations being made to previous *JAC* articles, to other premier journals identified in the agricultural education discipline, and to other journals that support the field such as mass communications and journalism. Besides *JAC*, premier journals in agricultural education include: the *Journal of Agricultural Education*, the *Journal of International Agricultural and Extension Education*, the *North American Colleges and Teachers of Agriculture* Journal, the *Journal of Extension*, and the *Journal of Leadership Education* (Edgar et al., 2008). With the development and embracing of the *NRA* it is important for the agricultural communications field of study to understand how other established premier journals are being utilized within the field. Citation structure has been

used to characterize a field of study and explain how a discipline is interrelated to other fields (Narin, Carpenter, & Berlt, 1972).

Analyzing literature citations adds to understanding and the identification of the literature base of agricultural communications. In an effort to better understand where the agricultural education discipline is securing information to support the contexts of the broad disciplinary areas identified in the *NRA*, content analysis can be used to analyze literature cited. To better understand the scope and impact of agricultural communications on the agricultural education discipline, the journal identified as premier for the agricultural communications disciplinary area (*JAC*) should be analyzed (Edgar et al., 2008).

In 1994, one of the first attempts to quantify cited literature in agricultural education was conducted (Radhakrishna et al.). Since that time little to no research has focused on cited works within the field. It appears that Miller, Stewart and West's (2006) research was one of the first attempts to track literature citations in agricultural communications. Prior to and after that time, little to no research was conducted to determine cited works within agricultural communications. However, analyzing cited science literature has been important since the 1950s (Garfield. 1998). In 2006, Funkhouser completed a citation analysis of twenty-seven communication journals published during 1990. This research introduced the Journal Impact Rating system (a measure for use in comparing journals impact on the basis of citations). This rating system can be used to determine the scope and impact of literature on a field of study and to create leverage when attempting to place a scholarly communication journal into the Social Sciences Citation Index (SSCI). It is crucial for agricultural communications to examine cited works used in its premier journal in an effort to determine how it's previous works are supporting current works, how

research is supported by other premier journals in agricultural education, and identify *JAC*'s self-identity and compactness levels.

Conceptual Framework

The future of agricultural education and communications depends on many variables and application and acquisition of new knowledge via research is extremely important (Dyer, Haase-Wittler, & Washburn, 2003). The conceptual framework of the study was grounded in work by numerous scholars in agricultural education and agricultural communications. Several researchers have completed various components of journal analyses in agricultural education: familiarity and quality of journals and importance of faculty publishing (Radhakrishna, 1995; Radhakrishna & Jackson, 1993); research theme areas (Buriak & Shinn, 1993; Dyer et al., 2003; Edgar et al., 2008; Miller et al., 2006; Moore, 1991; Radhakrishna & Xu, 1997; Silva-Guerrero & Sutphin, 1990); prolific authors (Harder & Roberts, 2006; Radhakrishna & Jackson, 1995; Radhakrishna, Jackson, & Eaton, 1992); statistical methods used (Bowen, Rollins, Baggett, & Miller, 1990; Dyer et al., 2003; Mannenbach, McKenna, & Pfau., 1984), and cited literature (Moore, 1991; Radhakrishna et al., 1994; Radhakrishna, 1995; Miller et al., 2006). Conceptually this study focused on cited literature. Citationology, the theory and practice of analyzing citations, allows a discipline to determine reference topology (Garfield, 1998, p. 69).

Purpose and Objectives

The purpose of this study, which was a part of a larger study, was to review research published in the *Journal of Applied Communications* from 1997 to 2006 and examine the historical record of the journal to provide insight into its cited works. The specific objective was to describe and synthesize frequent literature cited in *JAC* during the ten year period by: (a)

premier journal articles (represented by author(s) and year) (premier journals were identified in previous research by Edgar et al., 2008); (b) books/texts; (c) journals; (d) proceedings, conferences, and meetings; (e) other works (dissertations, extension and university manuscripts, magazines, newspapers, etc); and (f) Web pages.

Research Methods and Procedures

This study employed a quantitative content analysis design. Content analysis as a research method has existed for decades (Weber, 1990). Content analysis can be used to give researchers insight into problems or hypotheses that can then be tested by more direct methods. Content analysis is a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Berelson, 1952; Krippendorf, 1980; Weber, 1990).

Content validity was maintained using previous research as a guide. Research journal articles from 1997 to 2006 in the *Journal of Applied Communications* were used as the frame for the study. The principal investigator and a peer independently reviewed the material and formed a checklist of information required during the review of each journal article. The researchers compared notes and reconciled differences on their initial checklists via negotiations. Researchers used a consolidated checklist to independently apply coding. The researchers then checked for agreement in coding; if reliability was not acceptable, then the previous steps were repeated. Once reliability had been established, coding was applied on a large-scale basis. The final stage was a periodic quality control check (Weber, 1990). Inter-coder reliability was completed with at least 10% overlap for the reliability test. Final reliability was calculated using a random sample of 5% of the analyzed articles. Reliability was assessed using Spearman's rho statistical analysis. Spearman's rho is a statistical calculation that takes two rankings and

produces a numerical relation from 1 to -1 (A score of 1 means that the lists are identical, a -1 means that the lists are reversed, and 0 (zero) score means that there is no relation whatsoever between the two lists). Reliabilities met or exceeded the minimum standard of .70 (Bowen et al., 1990; Tuckman, 1999).

Findings

All research and/or professional articles with research methodologies (*N*=91) published in *JAC* from 1997 to 2006 were analyzed for cited literature. A total of 1,732 cited works were identified. The average number of citations per article was approximately 19. Premier agricultural education journals were tracked for their literature cited in *JAC,* in terms of author(s) and year of publication. A total of 143 references were made to premier journals in agricultural education. Representing approximately 8.25% of the total cited literature in *JAC.* There were 36 cited works from previous publications of the *Journal of Agricultural Education* (*JAE*). Lindner, Murphy and Briers (2001) were the most frequently referenced *JAE* authors identified in the 10-year analysis of *JAC*. Their article was cited in more than 8% of the referenced *JAE* articles. Additional frequently referenced *JAE* articles, identified by the author(s) and year of publication, cited 5.6% or more are identified in Table 1.

Table 1

Frequently Cited Journal of Agricultural Education *Authors Referenced in* JAC *1997–2006 (n=36)*

Journal Author(s) and Year of Publication	*f*	*P*
Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001)	3	8.3
Birkenholz, R. J., Harbstreit, S. R., & Law, D. A. (1990)	2	5.6
Cano, J., & Martinez, C. (1991)	2	5.6
Clason, D. L., & Dormody, T. J. (1994)	2	5.6
Rollins, T. J. (1990)	2	5.6

Table 1 (continued)

Journal Author(s) and Year of Publication	*f*	*P*
Rudd, R., Baker, M., & Hoover, T. (2000)	2	5.6
Torres, R. M., & Cano, J. (1995)	2	5.6
Vestal, T. A., & Briers, G. E. (2000)	2	5.6
Whittington, S. (1995)	2	5.6
Whittington, S. (2000)	2	5.6

The 10-year content analysis of *JAC* yielded one citation to the *Journal of International Agricultural and Extension Education* (*JIAEE*). The cited article was authored by Rivera (1996).

There were 37 citations referencing to works from the *Journal of Extension* (*JOE*) represented in *JAC*. Miller and Smith (1983) article was the most frequently cited. Their article was referenced in 16.2% of the identified *JOE* articles. Table 2 contains a list of frequently cited *JOE* articles, identified by the author(s) and year of publication, referenced 5.4% or more.

Table 2

Frequently Cited Journal of Extension *Authors Referenced in* JAC *from 1997–2006 (n=37)*

Journal Author(s) and Year of Publication	*f*	*P*
Miller, L. E., & Smith, K. L. (1983)	6	16.2
Caffarella, R. S. (1982)	2	5.4
Jackson, D., & Smith, K. (1999)	2	5.4
Obahayujie, J., & Hillison, J. (1988)	2	5.4
Tennessen, D. J., PonTell, S., Romine, V., & Motheral, S. W. (1997)	2	5.4

There were five citations referencing works from the *North American Colleges and Teachers of Agricultural* (*NACTA*) Journal identified in *JAC*, for the 10-year content analysis. Each of the five *NACTA* articles was referenced once. The referenced author were: Diebel, P. L.,

McInnis, M. L., & Edge, W. D., 1998; Miller, G., 1997; Nehiley, J. & Sutherland, J., 1995; O'Kane, M. & Armstrong, J. D., 1997; and Woirhaye, J. L. & Menkhaus, D. J., 1996 (20%).

There were 64 citations referencing works from previous *JAC* articles. Reisner's (1990) article was the most frequently cited *JAC* publication in *JAC*. The article was cited in slightly more than 6% of the referenced articles. Table 3 contains a list of frequently cited *JAC* articles, identified by the author(s) and year of publication, cited 3.1% or more.

Table 3

Frequently Cited Journal of Applied Communications *Authors Referenced in* JAC *from 1997–2006 (n=64)*

Journal Author(s) and Year of Publication	*f*	*P*
Reisner, A. (1990)	4	6.3
Banning, S. A., & Evans, J. F. (2001)	3	4.7
Miller, G., & Carr, A. (1997)	3	4.7
Ten Eyck, T. A. (2000)	3	4.7
Bielema, C. L. (1997)	2	3.1
Boone, K. M., Tucker, M., & McClaskey, J. M. (2002)	2	3.1
Bruening, T. H. (1991)	2	3.1
Caldwell, A. E., & Richardson, J. G. (1995)	2	3.1
Connors, J. J., Elliot, J., and Heinze, K. (1991)	2	3.1
Donaldson, J. L., & Thompson. J. S. (1999)	2	3.1
Reisner, A. (1991)	2	3.1
Richardson, J. (1999)	2	3.1
Richardson, J. G., & Mustian. R. D. (1994)	2	3.1
Richardson, J. G., Clement, D. M., & Mustian, R. D. (1997)	2	3.1
Sprecker, K. J. & Rudd, R. D. (1998)	2	3.1
Suvedia, M., Campo, S., & Lapinski, M. K. (1999)	2	3.1
Sweeney, S., & Hollifield, C. A. (2000)	2	3.1
Thomas, R. E. (1996)	2	3.1
Trede, L. D., & Whitaker, S. (1998)	2	3.1

The 10-year content analysis of *JAC* yielded no citations to the *Journal of Leadership Education*.

In *JAC*, there were 143 citations referencing the six premier agricultural education (AGED) journals as identified by Edgar et al. (2008). An important component of this research was identifying how *JAC* was citing other journals within the large umbrella of the agricultural education discipline. The most frequently cited referenced premier AGED journal article was produced by Miller and Smith (1983) for their work published in the *JOE*. Of all the referenced work from premier AGED journals, their work was cited more than 4%. Table 4 contains a list of frequently cited premier AGED journal articles, by author(s) and year, cited 2.1% or more.

Table 4

Frequently Cited Premier AGED Journal Authors Referenced in JAC *from 1997–2006 (N=143)*

Journal Author(s) and Year of Publication	Premier Journal	*f*	*P*
Miller, L. E., & Smith, K. L. (1983)	*JOE*	6	4.2
Reisner, A. (1990)	*JAC*	4	2.8
Banning, S. A., & Evans, J. F. (2001)	*JAC*	3	2.1
Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001)	*JAE*	3	2.1
Miller, G., & Carr, A. (1997)	*JAC*	3	2.1
Ten Eyck, T. A. (2000)	*JAC*	3	2.1

The 10-year analysis of *JAC* identified 584 cited books and texts. Books with multiple edition and publication dates are noted in the following table. The most frequently cited book was Dillman's (2000) *Mail and Internet Surveys: The Tailored Design Method*, which was cited in 2.74% of the total book references. Additional frequently cited books and texts identified 0.51% or more, in *JAC* from 1997-2006, are identified in Table 5.

Table 5

Frequently Cited Books and Texts Referenced in JAC *from 1997–2006 (N=584)*

Book and Text	*f*	*P*
Dillman, D. A. (2000; 1978). Mail and Internet surveys: The tailored design method (2nd ed.). New York: John Wiley & Sons, Inc.	16	2.74
Rogers, E. M. (1995; 1983). Diffusion of innovations (4th ed.; 3rd ed.) New York, NY: The Free Press.	8	1.37
Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis (2nd ed.). Thousand Oaks, CA: Sage Publications.	7	1.20
Ary, D., Jacobs, L., & Razavieh, A. (2001; 1990; 1985; 1979). Introduction to research in education. (6th ed.; 5th ed.; 4th ed.; 3rd ed.). Wadsworth Publishing.	4	0.68
Boone, K., Meisenbach, T., & Tucker, M. (2000). Agricultural communications: Changes and challenges. Ames, IA: Iowa State University Press.	4	0.68
Merriam, S. B. (1998). Qualitative research and case study applications in education. San Francisco: Jossey-Bass Publishers.	4	0.68
Mueller, D. J. (1986). Measuring social attitudes. New York: Teachers College Press.	4	0.68
DeFleur, M. L., & Ball-Rokeach, S. J. (1989; 1982; 1975). Theories of mass communication (4th ed.; 3rd ed.; 2nd ed.). New York: Longman.	3	0.51
Evans, J. F., & Salcedo, R. (1974). Communications in agriculture: The American farm press. Ames, Iowa: Iowa State University Press.	3	0.51
Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and-research. Reading, MA: Addison-Wesley.	3	0.51
Gallup Organization (2000). Trends in agriculture study: Large producer scorecards. Princeton, New Jersey: Gallup Organization.	3	0.51
Gitlin, T. (1980). The whole world is watching: Mass media in the making and unmaking of the New Left. Berkeley, CA: University of California Press.	3	0.51
Glaser, B. (1978). Theoretical sensitivity. Mill Valley, CA: The Sociology Press.	3	0.51
Morgan, D.L. (1997; 1988). Focus groups as qualitative research. Newbury Park, CA: Sage.	3	0.51
National Research Council. (1988). Understanding agriculture: New directions for education. Washington D.C.: National Academy Press.	3	0.51
Newcomb, L. H., McCracken, J. D., & Warmbrod, J. R. (1993). Methods of teaching agriculture (2nd ed.). Danville, IL: Interstate.	3	0.51
Pedhazur, E. J. (1982). Multiple regression in behavioral research. Fort Worth: Holt, Rinehart and Winston, Inc.	3	0.51

JAC cited additional journals, other than those identified as premier AGED journals, 608 times. The most frequently cited journals were from journalism, communications and mass communications sources. *Journalism Quarterly* was the most frequently cited journal of all journal citations in *JAC*, this journal was referenced 4.11%. A list of frequently cited journals identified 0.66% or more (excluding the premier AGED journals) are identified in Table 6.

Table 6

Frequently Cited Journals Referenced in JAC *from 1997–2006 (N=608)*

Other Journal	*f*	*P*
Journalism Quarterly	25	4.11
Journal of Communication	14	2.30
Journalism and Mass Communication Quarterly	13	2.14
Public Opinion Quarterly	13	2.14
Public Relations Review	13	2.14
Science Communication	12	1.97
The American Journal of Distance Education	12	1.97
Agriculture and Human Values	11	1.81
ACE Quarterly	9	1.48
American Journal of Agricultural Economics	9	1.48
Educational Communications Technology Journal	6	0.99
American Journal of Clinical Nutrition	5	0.82
BioScience	5	0.82
Public Relations Quarterly	5	0.82
The Chronicle of Higher Education	5	0.82
AgBioForum	4	0.66
American Behavioral Scientist	4	0.66

JAC cited proceedings, conferences, and/or meetings 104 times. The most frequently referenced proceeding, conference, and/or meeting was the *Agricultural Communicators in Education Conference.* The conference was referenced 13.5% in all of the proceedings cited. Table 7 contains additional frequently cited proceedings, conferences, and/or meetings identified 2.9% or more, in *JAC* from 1997 to 2006.

Table 7

Frequently Cited Proceedings, Conferences, and/or Meetings in JAC *from 1997–2006 (N=104)*

Proceeding, Conference, and Meeting	*f*	*P*
Agricultural Communicators in Education Conference	18	17.3
National Agricultural Education Research Conference	14	13.5
Southern Association of Agricultural Scientists Conference	10	9.6
International Conference of the International Federation of Science Editors	8	7.7
Southern Agricultural Education Research Conference	6	5.8
The Association for Education in Journalism and Mass Communication	4	3.8
International Consortium on Agricultural Biotechnology Research (ICABR) Conference	3	2.9
International Meeting of Association for Communications Excellence	3	2.9

The 10-year analysis of *JAC* identified other works cited 171 times. The most frequently cited works were newspapers referenced 15.8%. Additional other works cited 1.8% or more, in *JAC* from 1997-2006, are identified in Table 8.

Table 8

Frequently Cited Other Works Referenced in JAC *from 1997–2006 (N=171)*

Other Work	*f*	*P*
Newspapers	27	15.8
University Manuscript	21	12.3
Unpublished Doctoral Dissertation	21	12.3
Unpublished M.S. Thesis	20	11.7
Unpublished Manuscripts or Reports	18	10.5
Annual or Final Reports	10	5.8
ERIC Documents	9	5.3
Magazines	9	5.3
Census/Government Documents	8	4.7
Newsletter/bulletin	6	3.5
Extension Manuscript	3	1.8
Policy and Laws	3	1.8
Raw Data	3	1.8

JAC from 1997 to 2006 cited Web pages 122 times. *JAC* relies heavily on citations from non-profit (.org) (32%) and education (.edu) (22.1%) Additional cited Web sites referenced in 4.1% or more are identified in Table 9.

Table 9

Frequently Cited Web Pages Referenced in JAC *from 1997–2006 (N=122)*

Web page	*f*	*P*
.org	39	32.0
.edu	27	22.1
.gov	26	21.3
.com	25	20.5
Other (.ie .int, .html, .net)	5	4.1

Conclusions, Discussion and Implications

"Journal analysis can provide a means of assessing key factors that usually indicate the research and publishing characteristics of a profession" (Radhakrisha et al., 1994, p. 64). This study was an attempt to identify the characteristics of literature cited in the *Journal of Applied Communications*. As stated by Miller et al. (2006), there is a need to track citations and review literature to gain a clear sense of the disciplines research agenda. This study showed an in-depth look into a premier research outlet for agricultural communications in terms of literature cited during a ten year period. Radhakrishna et al. (1994) and Garfield (1998) indicated that by identifying a discipline's cited literature base a framework could be developed to characterize the field of study, define its boundaries and explain how a discipline is interrelated with other fields of study. This study was an attempt to identify the cited literature base in *JAC* and determine its self-identity and compactness.

All research journal articles (*N*=91) published in the *JAC* from 1997 to 2006 were analyzed for cited literature. There were a total of 1,732 cited works identified. The average number of citations per article was approximately 19. In articles published in the *JAC*, from 1997 through 2006, it is evident that the discipline pulls from an expansive pool of research works. This study identified 8.26% of the total literature cited was from works published in identified premier agricultural education journals (Edgar et al., 2008). However, journals such as *JIAEE, NACTA* and *JOLE* were extremely under-represented or not cited in the literature. Of the 143 literature citations to premier agricultural education journals, *JAC* represented 3.7% of the total citations. This study concludes that *JAC* exhibits weak self-identity, meaning it does little to build upon research previously cited in *JAC*. However, it does not exhibit compactness, indicating that it reaches past its citation boundaries and into interrelated areas of other disciplines.

JAE was identified, in previous research, as the premier journal in agricultural education. Within cited literature represented in *JAC*, *JAE* was referenced about half as much as *JAC*. Does this have implications for the agricultural communications profession? It does imply that *JAC* authors rely most heavily on itself and *JAE* for literary works (when we are looking specifically are identified premier journals). Although previously identified as the second most premiere journal in the agricultural education discipline (Edgar et al., 2008), *JIAEE* research was only cited once in referenced literature in the *JAC*. Because of *JIAEE*‘s standing, should we as agricultural communication authors strive to cite for this source and published articles in this venue? Similarly, *NACTA* and *JOLE* were also minimally cited in articles published in the *JAC*. It is further concluded that research published from these journals are not used with emphasis or, perhaps, thought. *JOE* was cited more (25.9%) than *JAE* (25.2%) in analyzed *JAC* articles.

Approximately 16% of the total number of citations from *JOE* stem from a single article by Miller and Smith (1983) regarding non-response research methodology. This same article was identified as the most frequently cited premier agricultural education journal article represented in *JAC* citations. When looking at *JAC* citations of its own published works, there are not predominate works identified. This may be due to relatively few faculty members producing research in multiple contextual areas associated with agricultural communications.

Books and text citations are dominated by research methodologies with eight of the seventeen most frequently cited books focusing on research methodologies. Coinciding with this finding, the most common citations from *JAE* and *JOE* were research methodology citations. A large percentage of cited books also focus on communication and mass communication theory and/or media (four of the seventeen most cited books). Conversely, there is a tremendous amount of variety in cited books within *JAC*. This variety is an indication that there are multiple books being cited on a single construct of knowledge. The majority of cited books were from the 1990s or earlier and this may be affecting the literature relevance of agricultural communications.

Another journal (not identified as premier in agricultural education) referenced in research published in *JAC* was *Journalism Quarterly*, which represents more than 4% of the total journals being cited. References to the *Journal of Communications* (2.3%), *Journalism and Mass Communication Quarterly* (2.14%), *Public Opinion Quarterly* (2.14%), and *Public Relations Review* (2.14%) indicate research authors of *JAC* are using multiple communications and journalism journals to build on knowledge constructs. Not a surprise to most since agricultural communications can be seen as a sister discipline to journalism and communications.

In contrast, citations referring to conference proceedings and/or meetings are relatively diverse. With the most frequently cited conference being the Agricultural Communicators in

Education Conference (17.3%); followed by the National Agriculture Education Research Conference (13.5%). Similarly, newspapers (15.8%) and university manuscripts and unpublished doctoral dissertations (12.3% respectively) were the most referenced other works indentified in this study (26.9%). It is unclear whether the university manuscripts and doctoral dissertations are being published later as research articles. There were 122 citations to Web pages. The discipline relies heavily on citations from non-profit (.org) (32%) and education (.edu) (22.1%) Web pages. How these Web pages are being used has not been determined; however it is encouraging that the majority of sites are utilizing extensions associated with trustworthy information.

Literature citations characterize a field of study. Furthermore, they define a discipline's limits and clarify the interrelatedness with other fields of study (Radhakrisha et al., 1994). *JAC* exhibits an expansive cited literature (citationology) reach focusing on multiple disciplinary areas and fields of studies. It also exhibits connectedness to most of the identified premier journals in agricultural education. Because of the nature of agricultural communications, it is often necessary for researchers to expand into multiple research outlets, in an effort to find the best "suitable" outlet for their diverse works. This necessity to publish in other venues may be helping to eliminate compactness in agricultural communications literature (specifically in *JAC*). It can be assumed, due to the lack of compactness, that agricultural communications is offering discovery in other fields of study. However, the non-compactness of the citation structure in *JAC* reveals limited published works from within itself and creates weak self-identity. Expanding the quantity of research articles produced annually in *JAC,* and encouraging agricultural communicators to cite from previous articles in JAC could help with this issue.

Recommendations

Based on the findings of this study recommendations include:

1. Further research should be completed to determine the depth of *JAC* citations in other identified premier journals in agricultural education in an effort to further identify the scope and influence of *JAC* on the agricultural education discipline and its literary works.
2. Further research should be completed to better determine how various cited books influence agricultural communications. It would also be important to determine if cited books are seminal or out-of-date works.
3. It may prove valuable to determine if conference proceedings, university manuscripts, and doctoral dissertations progress to permanent literature.
4. Additional research should be completed to determine if this (premier) journal is being cited in other fields of study.
5. This study should be replicated at a ten year cycle to assess progress the *Journal of Applied Communications*.
6. Additional research should focus on determining what drives citations in agricultural communications. Is it primarily *who* citers know (social structure) or *wha*t they know (intellectual structure)?

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Sharing Resources and Expertise for Regional Communications Projects

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PROFESSIONAL PAPER SUBMISSION

Sharing Resources and Expertise for Regional Communications Projects

Abstract – In February 2009 the University of Georgia College of Agricultural and Environmental Sciences and University of Florida IFAS/Extension will introduce a regional gardening television program. The program will air on public broadcasting stations in north Florida and across Georgia and will pull from expertise and talent in both states. This new show is an expansion of a 10-year-old Georgia show that is highly successful and proven. The project offers the opportunity for neighboring states to acquire this known-commodity at relatively low risk. For a 26-week fully produced package that requires minimal time commitment from partner institutions, the cost is extremely low and cost recovery opportunities are ample.

This program gives us a chance to showcase land-grant universities in the region as a cooperative system of teaching, research and extension that can capitalize on the strengths of each institution to provide the broadest education for the region and the nation.

Key Words: television, gardening, partnership, cooperation, maximizing, resource-generation

Sharing Resources and Expertise for Regional Communications Projects

As landgrant communications budgets continue to face challenges, sharing resources and expertise is one way to get the most for our communications dollars. That is the idea at the heart of a regional project started this year by the University of Georgia and the University of Florida.

In February 2008, the UGA College of Agricultural and Environmental Sciences and University of Florida IFAS/Extension began talks about working together on a regional public television gardening show. In February 2009, the show will begin airing in Florida and Georgia.

How'd we do that so fast? We had a 10-year head start.

History of the show

In 1998 the UGA College of Agricultural and Environmental Sciences introduced a new television show "Gardening in Georgia" in partnership with Georgia Public Broadcasting. Over the past 10 years, the show has consistently been one of GPB's top rated, locally produced shows.

Between 2002 and 2006 show production was put on hiatus due to state budget cuts. Yet, even in reruns "Gardening In Georgia" remained at the top of GPB's ratings.

The show banks its success on two key components: the expertise provided by college experts and the exceptional production quality and talent of the crew.

Show host Walter Reeves retired from UGA Extension in 2002 after 30 years as a county extension agent. His vast horticultural knowledge, report with UGA Extension specialists and connections with gardeners around the state make him a respected resource. Reeves also is host on one of Atlanta's highest rated call-in radio shows, "The Lawn & Garden Show with Walter Reeves," which airs on clear channel WSB-AM and is a weekly columnist in the *Atlanta*

Journal-Constitution which give him instant and wide name recognition. The chance for cross promotion is enormous.

The show production is handled by Bob Molleur, who also retired from UGA Extension in 2002 after 30 years as a video producer. Having these capable, known commodities handle the production of the show makes it possible for us to have 26-weeks of programming taped, edited and aired with minimal commitment of time or resources from the college.

The show is supported by funds from UGA, GPB and corporate underwriters. As we approached local companies for support we were told time and again that they could offer must larger financial support if the show were regional and not state-specific. As we approached our 10-year anniversary, it was clear the time was right to expand the show to a regional audience.

Audience

Demographics for PBS viewers show that audience members tend to be 35 and older, highly educated, and upper income. According to the National Gardening Association, these demographics also fit the gardening audience. With Reeves's personality and approach to the show, he relates directly to this audience.

Research conducted by the University of Florida (Meyers, Irani, & Eckhardt), showed that "through mass media, Extension can provide more information to more people, but the programs must attract attention and fulfill audience members' needs." *Your Southern Garden* (working title) will provide all of these things through a fun and informative format, as well as providing public value to Extension and the land-grant system.

Other long-time PBS shows, such as *The Victory Garden*, are popular with home horticulturists. But, these shows do not address regional or localized gardening needs and

information. Meyers, Irani, and Eckhardt found that gardeners prefer to receive customized information that will help them in their own backyard. *Your Southern Garden* (working title) will address gardening concerns and issues for USDA hardiness zones 7, 8, and 9 providing a much more applicable approach for our audiences. They also found that gardeners are information seekers and prefer to receive their gardening information in multiple methods – television, radio, web, etc. Because of this a coordinated integrated marketing campaign will be developed to benefit both University of Georgia and University of Florida.

Expansion

In February we pursued talks with University of Florida, Auburn University and Clemson University about joining us as partners in expanding the program to a regional production. In June, we signed a Memorandum of Understanding with University of Florida IFAS/Extension and shooting in Florida began immediately.

As partners, each institution works with the production team to identify segment ideas, provide specialists to appear on camera and help set up pre-arranged shoots. The total time commitment is usually 10 to 12 days a year. In return, each partner institution gets 15-second promotional spots at the open and close of each episode and is featured in weekly promotion materials, exhibits and printed materials. The show has a corresponding Web site that is very popular and provides interesting feedback on what spurs viewers to action.

We hope to continue expanding production of the show into neighboring states in 2010.

Advantages

There are clear advantages to this partnership. First, we are able to pool our resources to provide a high-quality program with tremendous educational value to citizens of our states. We

are able to provide that programming with relatively low financial input that offers ample opportunity to be self-supporting through outside support of the institutions' portion of the cost.

Second, it widens the potential pool of corporate underwriters which lessens the financial responsibilities of the participating institutions further.

Third, the experienced production staff is fully aware and committed to the land-grant mission. They know the types of segments that need to be aired and are able to do much of work without requiring time commitment from university communication staff.

Challenges

Writing and getting consensus on MOUs is not easy. Once we got the agreement signed and enacted, the production work flowed easily. To date, our two biggest challenges have been working through Florida's difficult configuration of public broadcasting. Many states have a single public broadcasting system that provides programming for all of the state's public broadcasting stations. Florida has many independent stations. We have been fortunate in that many of the stations we want to target with this program have a single programming broker.

Another challenge is finding a name. So far, every name we audience tested and sought was already trademarked. We still looking.

Summary

Expanding a highly successful, proven gardening television show from state specific to regional offers the opportunity for neighboring states to acquire a known-commodity at relatively low risk. For a 26-week fully produced package that requires minimal time commitment from partner institutions, the cost is extremely low and cost recovery opportunities are ample.

This program gives us a chance to showcase land-grant universities in the region as a cooperative system of teaching, research and extension that can capitalize on the strengths of each institution to provide the broadest education for the region and the nation.

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Appendix

1. MOU sample
2. Promotional DVD with show preview available at presentation

Appendix 1 – Sample MOU

APRIL 2008

MEMORANDUM OF UNDERSTANDING

BETWEEN

INSTITUTION NAME

AND

UNIVERSITY OF GEORGIA COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

Regarding regionalization of CAES-produced gardening television program.

MEMORANDUM OF UNDERSTANDING

FOR

REGIONAL TELEVISION GARDENING SHOW

Whereas, urban agriculture continues to be a fast growing segment of the economy across the Southeast; and,

Whereas, home gardening is a vibrant part of the economy with great demand for educational information and training from our colleges; and

Whereas, 'Gardening In Georgia' has proven over the past 10 years to be a highly rated, successful program across the region where it has aired; and

Whereas, the educational material delivered through the program is applicable beyond the borders of Georgia and present the opportunity to create a more diverse show that appeals to gardeners in the Southeast region;

The University of Georgia College of Agricultural and Environmental Sciences and Georgia Public Broadcasting as coproducers of the show and the production team of Bob Molleur of Mfocus Consulting LLC and host Walter Reeves seek to expand the reach and benefits of a regional gardening show to neighboring land-grant institutions.

Institutional commitment:

UGA CAES will continue to work with the production team to produce a high-quality, educational program based on sound science. Each season consists of 26 30-minute episodes. The show will be customized to include segments tailored to supporting landgrant institutions. Each episode will include recognition appropriate to the level of funding provided as agreed in Sponsorship Document A.

Supporting landgrant institutions will work with designated UGA CAES communication faculty to identify, train and organize faculty and other guests who will appear on the show.

Supporting landgrant institutions will coordinate local arrangements with the production team to make maximum use of available facilities, guests and time during prearranged video shoots.

Supporting landgrant institution will designate a faculty member to serve as a liaison with the show's production team to identify and arrange potential segments each year.

Supporting landgrant institution will coordinate with their state public broadcasting outlet(s) to secure airing time. The CAES, GPB and the production team will provide support as appropriate.

Supporting institution, with support from the UGA production team liaison, will publicize the show weekly and will coordinate an annual premiere media push with originating institution.

Publication rights:

All copyright and duplication rights remain as stipulated agreed under terms of preceding contract.

Effective date:

June 1, 2008

Partners:

Each institution represented will contribute funds annually based on terms of involvement. Budget is subject to renegotiation every 36 months or as airing system requires.

Approvals:

J. Scott Angle, Dean and Director
University of Georgia College of Agricultural and Environmental Sciences

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PERSON, TITLE
INSTITUTION

Document A

RE: Funding for proposed regional gardening TV show

Listed below are levels of partnership offered to appropriate land-grant institutions for production of a regional gardening television show.

Co-producer level – Funding institution will appoint a liaison to the production team who will contribute to content decisions and facilitate opportunities to have their college specialists featured as appropriate. Funding institution is recognized in opening credits as a co-producer and has one 15-sec. spot at either the opening or closing of an equal distribution of shows based on the number of funding partners. Funding institutions not airing in underwriter segments will have a mention in closing credits. Funding institution's logo is included on all publicity materials, links on web sites, etc. The funding needed at this level for 26 shows per season is $75,000. (Subject to increase with required change to HD in 2010.)

Underwriter – There are two levels of underwriter status:

$50,000 – Funding institution will be noted in closing credits and publicity materials as a sponsor and will get 13 state-specific segments included in show content over the 26-week season. (Subject to increase with required change to HD in 2010.)

$25,000 - Funding institution would be recognized in the closing credits of each show and will be included in all promotional and publicity materials, and would have 7 state-specific segments included in the show content over the 26-week season. (Subject to increase with required change to HD in 2010.)

At any level we expect a communication representative from the funding institution to help coordinate locations, talent and topics suggested to the production team.

Ohio Grain Farmers' Attitudes toward Organic and Non-Organic Farming Methods

Research Paper

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Abstract

American and international studies have compared the farming methods, attitudes, and demographic characteristics of non-organic and organic farmers. Other studies have revealed the barriers to using organic farming by non-organic farmers. This study was unique since researchers have not used the theory of planned behavior to describe the attitudes of organic and non-organic farming by non-organic Ohio corn and wheat growers. Additional components in this study were the barriers toward adopting organic farming and the relationship between demographic characteristics of Ohio grain farmers and their attitude formation. Data was collected through a questionnaire sent to 320 members of the Ohio Corn Growers Association or the Ohio Wheat Growers Association. Respondents reported a positive attitude toward using non-organic farming methods, while a more negative attitude toward using organic farming was reported. Ohio grain farmers in this study believed that organic farming would have more negative outcomes and identified barriers toward adoption. The researcher suggested that Extension professionals could use the findings about Ohio grain farmers' attitudes toward organic farming and their barriers toward adoption to help farmers understand agricultural innovations. Commodity organizations could use the same findings for determining ways to overcome barriers to adopting farming practices and design communication tools to educate farmers. Recommendations were made for further research and curriculum development by agricultural communication faculty.

Keywords: organic farming, non-organic farming, attitude, theory of planned behavior, grain farmers, adoption barriers, survey research

Introduction

The increased demand for organically grown food has reflected consumers' concern with food safety, genetically modified foods, pesticide residues, and the environmental impact of conventional agriculture (Fresh Trends, 1996; La Trobe, 2001; Misra, Huang, & Ott, 1991; Zepeda, Chang, & Leviten-Reid, 2006). This change in food purchases has encouraged the expansion of organic foods at farmers markets, natural product supermarkets, conventional supermarkets, and club stores (Dimitri & Greene, 2002).

The U.S. organic food business has reported $13.8 billion in consumer sales in 2005, roughly 2.5% of the total U.S. food sales (Organic Trade Association, 2006). While the organic agriculture industry has experienced a 20% increase in demand for raw materials each year, farmers' supply of organic raw materials, especially organic soybeans and grains, increases roughly 1% annually (Villagran, 2008). Given the supply and demand for organic foods, it would be valuable to communicators, educators, and Extension professionals to understand non-organic farmers' attitudes toward organic and non-organic agriculture and their barriers to adoption.

Barriers toward Adopting Organic Farming

Previous studies have revealed possible economic, health, and technical barriers that influenced non-organic farmers' attitudes about adopting organic farming practices (Hattam, 2006; Schneeberger, Darnhofer, & Eder, 2002). Such studies explained why non-organic farmers did not consider organic production as economically feasible (Darnhofer, Schneeberger, & Freyer, 2005; Fairweather, 1999; Niemeyer & Lombard, 2003). Austrian farmers, for example, did not adopt organic practices for the following reasons: no compensation payments for organics and no willingness to forego net income for benefits of environmentally friendly farming (Darnhofer et al., 2005). The loss of return on organic products would have affected

British farmers' ability to pay their mortgages (Fairweather, 1999). Large-scale, non-organic farmers in South Africa considered fewer marketing opportunities, no premium prices, and the lack of subsidies as economic factors keeping them from adopting organic practices (Niemeyer & Lombard, 2003).

Research has shown that chemical use is a health related barrier toward adopting organic farming. In New Zealand, 54 out of 62 farmers were not interested in organic farming because they were not concerned with chemicals in food (Fairweather, 1999). Another health barrier was that neither farmers nor their family members have personally experienced illness from the use of such chemicals (Fairweather, 1999).

Research has shown that technical feasibility was another factor farmers consider when forming their attitudes toward organic farming. According to Schneeberger et al. (2002), Austrian cash-crop producers hesitated to adopt organic production due to problems with weeds, diseases and insects, and additional labor requirements. In a study done in South Africa, large-scale non-organic farmers listed yield reductions, higher weed and pest infestations, and more disease damage on crops as problems associated with the conversion process (Niemeyer & Lombard, 2003). One technical problem for non-organic farmers in New York was their preference of pest and disease resistant crop varieties as compared to natural seeds (Buttel & Gillespie, 1988). Farmers expressed their anxiety about crop diseases when farming organically because they considered the information about organic farming insufficient (Padel & Lampkin, 1994).

Demographic Characteristics of Organic and Non-Organic Farmers

Studies have analyzed various demographic characteristics to determine how they relate to attitudes toward organic farming methods. The most frequently studied characteristics were

years of farming experience, family farming tradition, age, education level, and gender (Duram, 1999; Egri, 1999; Fairweather, Campbell, Tomlinson, & Cook, 2001; Midmore et al., 2001; McCann, Sullivan, Erickson, & De Young, 1997; Niemeyer & Lombard, 2003). Studies in Canada and New Zealand have revealed that non-organic farmers have more years of farming experience than organic farmers. Egri (1999) reported that Canadian non-organic farmers have been farming on an average of 22 years compared to 17 years by organic farmers. Similarly, New Zealand non-organic farmers had roughly 38 years of experience, while organic farmers had 34 (Fairweather et al., 2001).

Research suggested that differences exist in family tradition of farming between non-organic and organic farmers. Michigan non-organic farmers tended to be from a family that was involved directly with agriculture, while only 3 out of 12 organic farmers came from similar backgrounds (Naemi, 1996). Most Michigan organic farmers were fairly new to the agricultural profession. Only 44% of 26 organic farmers in Colorado were raised on farms, all of which were conventional farms (Duram, 1999).

The age difference between organic and non-organic farmers was explored in a few studies as well. Niemeyer and Lombard (2003) reported that South African organic farmers were younger than the non-organic, commercial farmers. The largest age group for non-organic farmers (n=118) was more than 41 years old. Michigan organic and non-organic farmers had a mean age of 46 and 50, respectively (McCann et al., 1997).

Studies have explored the level of education obtained by non-organic and organic farmers (Duram, 1999; Fairweather et al., 2001; McCann et al., 1997). Of 23 organic farmers in Colorado, only 8% did not finish high school, 4% were high school graduates, 22% had some college, and 52% were college graduates (Duram, 1999). A small percentage (9%) of organic

farmers in Colorado earned an agricultural degree while in college, while the remaining participants studied history, literature, biology, theology, or another discipline. This data about educational major suggests that alternative views of agriculture exist between farmers with agriculture degrees and non-agricultural degrees. In one study conducted by Fairweather et al. (2001), results showed that all New Zealand organic and non-organic farmers had a high school education, while roughly 38% of organic and 37% of non-organic farmers had completed some form of higher education (trade certificate or diploma, bachelor's degree, or postgraduate studies). McCann et al. (1997) reported that the typical Michigan organic or non-organic farmer had some college education, but not a degree.

Numerous studies have documented the gender differences between organic and non-organic farmers. Davidson and Freudenburg (1996) and Filson (1993) found that female farmers had higher levels of concern for the environment, especially in respect to specific environmental issues. According to Beus and Dunlap (1994), women farmers in Washington state were more likely to use alternative or organic farming practices.

Theoretical Framework

This study is guided by the theory of planned behavior, which is a widely accepted way to study human behavior. Researchers have applied the theory of planned behavior in studies related to interpersonal communication, health communication campaigns, advertising, and marketing. Ajzen (1991) developed the theory of planned behavior (TPB) as a means to comprehend and predict individuals' behaviors in which humans do not have complete control. Attitude is a direct measure of the theory of planned behavior (Francis et al., 2004). Attitude toward a behavior pertains to an individual's favorable or unfavorable judgment of completing a behavior. Two factors indirectly influence an individual's attitude toward a behavior: a belief

that a certain behavior would lead to an outcome and the evaluation of that outcome. Behavioral beliefs, another component of TPB, are the likely probability that a behavior would lead to the expected outcome (Hrubes, Ajzen, & Daigle, 2001). An individual who believes that acting out a certain behavior would result in a positive outcome would have a favorable attitude toward acting out the behavior. However, an individual who believes that acting out a certain behavior would result in a negative outcome would retain a negative attitude toward completing the behavior.

Attitude

Eagly and Chaiken (1993) defined attitude as a tendency revealed through varying degrees of favorable or non-favorable judgments. Attitudes are expressed in three categories – cognitive, affective, and behavioral (Eagly & Chaiken, 1993). The cognitive category includes all ideas that individuals hold about attitude objects (Eagly & Chaiken, 1993). The behavioral category involves individuals' actions regarding attitude objects (Eagly & Chaiken, 1993). Researchers could expect that individuals' attitudes positively relate to their apparent behavior (Eagly & Chaiken, 1993). This concept of attitude in the behavioral category relates to the theory of planned behavior because Azjen and Fishbein (1980) noted that individuals have favorable attitudes toward behaviors when they think the behavior leads to a positive outcome.

Purpose & Research Objectives

The purpose of this study was to explore Ohio grain farmers' attitudes toward organic and non-organic farming by applying constructs from the theory of planned behavior. This study determined whether demographic characteristics related to their attitudes toward organic and non-organic farming. Knowing non-organic farmers' attitudes toward organic and non-organic agriculture and their barriers to adoption would help communicators, educators, and Extension

professionals who develop communication tools and programming that promotes organic farming. Specific research objectives guiding this study were:

1. To describe Ohio grain farmers' attitudes toward using non-organic and organic farming practices on their farms
2. To explain the demographic characteristics, which are related to Ohio grain farmers' attitudes toward organic and non-organic farming.

Methods

This study randomly sampled 320 farmers who were members of the Ohio Corn Growers Association (OCGA) or the Ohio Wheat Growers Association (OWGA). The OCGA and OWGA are member-based, non-profit trade organizations that provide education and support to farmers, industry representatives, and legislators to increase marketing and profit in their industries (Ohio Corn Growers Association, 2007; Ohio Wheat Growers Association, n.d). Ohio was ranked 8th in corn production for grain and 9th in winter wheat production in the United States in 2005 (Ohio Office of U.S. Department of Agriculture's National Agricultural Statistics Service, 2005). Similarly, Ohio was ranked 6th and 16th for the amount of acreage in certified organic corn and wheat, respectively in 2005 (Greene, 2006).

A researcher-developed questionnaire consisting of 29 items was adapted from previous studies (Egri, 1999; Fairweather et al., 2001; Midmore et al., 2001; Niemeyer and Lombard, 2003; Schneeberger et al., 2002). A 7-point Likert-type scale constituting of ten items measured attitude toward organic farming methods and attitude toward non-organic farming methods (Ajzen, 2002). Six outcome evaluation statements measured respondents' positive or negative opinions about farmers' behavioral beliefs for organic farming (Ajzen & Fishbein, 1980; Francis et al., 2004). The questionnaire asked participants what barriers influenced their decision to not

adopt organic farming practices. This study compared Ohio grain farmers' attitude toward organic and non-organic farming with their demographic characteristics: gender (Beus & Dunlap, 1994; Egri, 1999), family farming history, age (Fairweather et al., 2001; McCann et al., 1997; Niemeyer & Lombard, 2003), education (Duram, 1999; Fairweather et al., 2001; McCann et al., 1997), political party affiliation, and gross farm sales.

After a panel of experts reviewed the questionnaire items to establish validity, the questionnaire was pilot tested by each association's board members. The five items measuring attitude toward non-organic farming had a Cronbach's alpha of .859. For the five items in the attitude toward organic farming scale, a Cronbach's alpha of .856 was calculated. Six items in the outcome evaluations scale had a Cronbach's alpha of .86.

The researcher implemented survey procedures as described by Dillman's Tailored Design Method (Dillman, 2007). Recipients received a pre-notice letter, a packet, and a thank you/reminder postcard. A revised letter, replacement questionnaire, and a stamped, self-addressed envelope was sent to non-responders. A total of 243 surveys out of 320 were returned for a response rate of 76%. According to Ary, Jacobs, Razavieh, and Sorensen (2006), a researcher who has a response rate between 75 to 90% may stop collecting data. The researcher handled non-response to the survey by comparing early to late respondents (Ary et al., 2006). No significant differences were found.

Findings

All respondents indicated that they farmed using conventional methods. The majority of respondents (n=156, 76.1%) indicated that they have never even considered organic production on their farms, while 42 respondents (20.5%) have considered organic production and did not adopt. Only 45 respondents (22%) have purchased organic food within the last two years, while

160 respondents (78%) have not purchased it.

The respondents were unevenly distributed by gender, with 98.5% (n=202) male and 1.5% (n=3) female. Respondents' age was also unevenly distributed with a slight majority, 28.9% (n=59), older than 62 years, followed by 24% (n=49) ranging in age from 52-56, 16.2% (n=33) ranging from 47-51, and 12.3% (n=25) ranging from 57-61. Eighteen (8.8%) respondents ranged in age from 42-46, and 10 respondents (4.9%) ranged in age from 37-41. Only 4.9% (n=10) reported being younger than 36.

The majority, 55.9% (n=114), earned a high school education, followed by 26.5% (n=54) with a bachelor's degree, 11.8% (n=24) with an associate's degree, and 5.4% (n=11) with a master's degree. Only one individual obtained less than a high school education. The majority of bachelor's degree or graduate degree programs were in agricultural business and economics, agricultural education, agronomy, animal science, dairy science, or agricultural production.

Most respondents (67.2%, n=133) affiliated themselves with the republican political party, while 8.6% (n=17) identified themselves with the independent political party, and 7.1% (n=14) identified themselves as democratic. Thirty-four respondents (17.2%) preferred to not identify with a political party.

Farming was the main occupation for 170 of the respondents (82.9%), while 35 respondents (17.1%) held other occupations off the farm. Roughly, 89% (n=183) of the respondents had at least one of their parents who farmed.

The majority of respondents (n=68, 36.6%) earned gross farm sales of $500,000 or greater in the last year, while the next group (n=53, 28.5%) earned between $100,000-$249,999. Forty-four respondents (23.7%) earned between $250,000-$499,999 gross farm sales, and 14

respondents (7.5%) earned between $40,000-$99,999. Only seven respondents (3.8%) earned less than $39,999 gross farm sales.

Objective 1: To Describe Ohio Grain Farmers' Attitudes toward Using Non-Organic and Organic Farming Practices on Their Farms

Attitude toward using non-organic farming practices was directly measured with five items using a 7-point attitudinal scale. A high overall mean (5-7) represents a positive attitude, and a low overall mean (1-3) represents a negative attitude. Results indicated that Ohio grain farmers had an overall mean of 5.20 (n=196, SD=1.52) for the direct measure of attitude toward non-organic farming practices (see Table 1). The mean was also provided for each individual item in the scale. Ohio grain farmers held a slightly good attitude (M=5.61, n=180, SD=1.43), a slightly favorable attitude (M=5.49, n=191, SD=1.74), and a slightly useful attitude (M=5.43, n=184, SD=1.68) toward using non-organic farming practices on their farms. Ohio grain farmers viewed non-organic farming practices as neither reliable nor unreliable (M=4.91, n=184, SD=1.98) and neither pleasant nor unpleasant (M=4.85, n=180, SD=1.89).

The same scale was used to measure attitude toward using organic farming practices. The overall mean of Ohio grain farmers' attitude toward using organic farming practices was 2.95 (n=194, SD=1.23). The mean was also calculated for each item in the scale. Ohio grain farmers felt organic farming practices were unreliable (M=2.99, n=181, SD=1.67), useless (M=2.96, n=179, SD=1.40), and unfavorable (M=2.56, n=191, SD=1.37) on their farms. Ohio grain farmers felt slightly that organic farming practices were unpleasant (M=3.39, n=180, SD=1.63) and bad (M=3.13, n=178, SD=1.43).

Table 1
Items Measuring Attitude toward Using Non-Organic and Organic Farming Practices

	Organic Farming			Non-Organic Farming		
	n	M	SD	n	M	SD
Reliable	181	2.99	1.67	180	5.61	1.43
Useful	179	2.96	1.40	191	5.49	1.74
Favorable	191	2.56	1.37	184	5.43	1.68
Pleasant	180	3.39	1.63	184	4.91	1.98
Good	178	3.13	1.43	180	4.85	1.89
Overall Mean	**194**	**2.95**	**1.23**	**196**	**5.20**	**1.52**

Outcome evaluations, a component of behavioral beliefs, were measured on a 7-point Likert-type scale ranging from extremely bad to extremely good. The overall mean for outcome evaluations was 2.72 (SD = 1.15), indicating an unfavorable evaluation of organic farming. The mean is reported for each individual item on the outcome evaluations scale. As seen in Table 2, the elimination of synthetic chemicals by farming organically was viewed as slightly bad (M=3.80, SD=1.76) by the respondents. They also had the opinion that increasing production costs because of organic farming was slightly bad (M=3.05, SD=1.29). Ohio grain farmers thought organic farming was bad if it would increase their workload (M=2.57, SD=1.34), result in higher weed infestations (M=2.15, SD=1.53), increase pests and diseases (M=2.33, SD=1.49), and reduce yields (M=2.42, SD=1.48).

Table 2
Items for Measuring Outcome Evaluations of Adopting Organic Farming

Outcome Evaluation	n	M	SD
Eliminating the use of synthetic chemicals by farming organically is:	197	3.80	1.76
Increasing production costs because of organic farming is:	194	3.05	1.29
Increasing my workload from farming organically is:	198	2.57	1.34
Encountering reduced yields from farming organically is:	186	2.42	1.48
Encountering more pests and diseases from farming organically is:	198	2.33	1.49
Receiving higher weed infestations from farming organically is:	196	2.15	1.53
Overall Mean	**198**	**2.72**	**1.15**

Scores based on Likert-type scale with 1 = extremely bad and 7 = extremely good.

Ohio grain farmers indicated barriers toward growing organic crops, which could explain their attitude toward using organic farming methods on their farms. As seen in Table 3, the expectation of higher weed infestations was the most frequently mentioned barrier (n=171, 71.0%). The second most frequently mentioned barrier was the expectation of lower yields (n=162, 67.2%), followed by higher pest infestation (n=136, 56.4%), and too much additional work (n=124, 51.5%). Roughly, 46% of the Ohio grain farmers (n=111) considered organic farming to not be economically viable. The expectation of more disease was a concern for 42.3% (n=102) of the respondents, and 40 respondents (16.6%) thought the lack of information about organic farming practices was a barrier toward adoption. Twenty-eight respondents (11.6%) mentioned "other" barriers including market availability, shortage of organic fertilizer, concern for bugs and weeds, lack of organic standards, and the lack of a uniform definition of organic. Others mentioned that organic farming increased soil erosion, run-off, and water quality problems because it reduced the option of no-till or minimum till farming.

Table 3
Barriers toward Growing Organic Crops

Barrier	n	%
Higher Weed Infestation	171	71.0
Lower Yields	162	67.2
Higher Pest Infestation	136	56.4
Too Much Additional Work	124	51.5
Not Economically Viable	111	46.1
More Disease	102	42.3
Lack of Information	40	16.6
Not Technically Feasible	38	15.8
Organic Seed Harder to Obtain	36	14.9
Organic Certification Is Too High	29	12.0
Other	28	11.6

Objective 2: To Explain the Demographic Characteristics, which are Related to Ohio Grain Farmers' Attitudes toward Organic and Non-Organic Farming

Crosstabs showed the frequency of responses among the direct measure of attitude and the demographic characteristic of level of education and political party affiliation (Ary et al., 2006). No chi square test for significance could be run due to cell sizes less than five (Ary et al., 2006).

The majority of respondents from different levels of education (n=147) had a negative attitude toward organic farming (see Table 4). There were 40 respondents from the different levels of education who indicated a neutral attitude toward organic farming.

Table 4
Level of Education Related to Attitude toward Organic Farming

	What is your highest level of education?				
Attitude toward Organic Farming	High School	Associate's	Bachelor's	Master's	Total
Extremely Negative	25	3	11	5	44
Quite Negative	23	4	10	1	38
Slightly Negative	34	11	18	2	65
Neutral	23	3	11	3	40
Slight Positive	3	0	1	0	4
Quite Positive	1	0	0	0	1
Extremely Positive	0	1	0	0	1
Total	109	22	51	11	193

Despite the different levels of education, the majority of respondents held a positive attitude toward non-organic farming (n=117) (see Table 5). Forty-nine respondents reported a neutral attitude toward non-organic farming. A negative attitude toward non-organic farming was indicated by 29 respondents.

Table 5
Level of Education Related to Attitude toward Non-Organic Farming

Attitude toward Non-Organic Farming	What is your highest level of education?				
	High School	Associate's	Bachelor's	Master's	Total
Extremely Negative	5	0	0	2	7
Quite Negative	3	2	3	0	8
Slightly Negative	11	2	1	0	14
Neutral	28	8	13	0	49
Slight Positive	14	5	14	4	37
Quite Positive	27	4	9	4	44
Extremely Positive	22	2	11	1	36
Total	110	23	51	11	195

As seen in Table 6, the majority of respondents who affiliated with the republican political party (n=95) held a more negative attitude toward organic farming. There were 27 respondents affiliated with the republication party who reported a neutral attitude toward organic farming. Sixteen independent and 10 democratic affiliated respondents also held negative attitudes toward organic farming.

Table 6
Political Party Affiliation Related to Attitude toward Organic Farming

Attitude toward Organic Farming	With which political party do you identify?				
	Democratic	Independent	Republican	Prefer to not Respond	Total
Extremely Negative	2	7	31	5	45
Quite Negative	2	5	24	4	35
Slightly Negative	6	4	40	13	63
Neutral	3	1	27	8	39
Slight Positive	0	0	2	1	3
Quite Positive	0	0	1	0	1
Extremely Positive	0	0	0	1	1
Total	13	17	125	32	187

The republican political party had the most respondents (n=73) who indicated a positive attitude toward non-organic farming practices (see Table 7). Seven out of 13 democratic affiliated respondents and 11 out of 17 independent affiliated respondents also reported a

positive attitude toward non-organic farming. Despite the different political party affiliations, 48 respondents held a neutral attitude toward non-organic farming.

Table 7
Political Party Affiliation Related to Attitude toward Non-Organic Farming

Attitude toward Non-Organic Farming	With which political party do you identify?				
	Democratic	Independent	Republican	Prefer to not Respond	Total
Extremely Negative	0	1	5	2	8
Quite Negative	1	1	5	1	8
Slightly Negative	2	0	10	2	14
Neutral	3	4	33	8	48
Slight Positive	2	2	22	7	33
Quite Positive	4	5	27	6	42
Extremely Positive	1	4	24	7	36
Total	13	17	126	33	189

Spearman's rho was calculated to look for a relationship between demographic characteristics of age and gross farm sales and attitude. Age (r=-.092) and gross farm sales (r=-.032) had low, negative correlations with the respondents' attitude toward organic farming. As the age or gross farm sales increase, the attitude toward organic farming would become more negative.

The researcher used Spearman's rho to report that age (r=-.216) has a low, negative correlation with attitude toward non-organic farming. The correlation was significant at the .01 level. Spearman's rho showed that gross farm sales (r=-.015) had a negligible, negative correlation with respondents' attitude toward non-organic farming.

Conclusions

Objective 1: To Describe Ohio Grain Farmers' Attitudes toward Using Non-Organic and Organic Farming Practices on Their Farms

An overall mean of 5.20 (n=196) indicated that Ohio grain farmers have a positive attitude toward using non-organic farming practices. This was not surprising since the Ohio grain

farmers mentioned numerous barriers toward growing crops organically, and they are farming in a traditional Midwestern state known for its corn, soybeans, and wheat. Similar to Austrian non-organic farmers (Darnhofer et al., 2005), Ohio grain farmers were not willing to use organic farming methods since there was a lack of organic farming standards. Ohio grain farmers also had the same views toward organic farming as Austrian cash-crop producers who were hesitant to grow crops organically due to expected problems with weeds, diseases, pests, and additional work. Niemeyer and Lombard (2003) revealed the risks and problems associated with organic farming by large-scale conventional farmers in South Africa. Both South African and Ohio farmers listed yield reductions, higher weed, pest, and disease infestations, and marketing opportunities as barriers toward organic farming. Since these barriers may be controlled more easily by non-organic farming practices, it could explain why Ohio farmers in this study have a more favorable attitude toward non-organic farming.

This study also indicated Ohio grain farmers' attitude toward using organic farming practices. Overall, Ohio grain farmers held a negative attitude toward using organic farming practices on their farms (M=2.95). This finding was not surprising since no participants in the study were organic farmers. Only 42 respondents (20.5%) have ever considered organic production on their farms, but all have decided not to convert at this point. It is also important to note that a majority of respondents (78%) do not purchase organic food. Findings indicated that respondents think using organic farming would lead to negative outcomes (M=3.35). Negative outcomes from farming organically included the elimination of synthetic chemicals, and an increase in production costs, workload, pests and diseases. Respondents also reported that converting to organic farming practices would result in a negative outcome if they had higher weed infestations and reduced yields.

The list of barriers toward growing crops organically confirmed that Ohio grain farmers hold a negative attitude toward organic farming. The barriers to adopting organic farming were reduced yields, increased workload, more pest and disease problems, and higher weed infestations. As stated earlier, many of these barriers such as reduced yields, pest and disease problems, and higher weed infestations may indicate that farmers feel organic methods would cause them to have problems with managing their fields. This negative image of organic farming may negatively affect Ohio grain farmers' attitude toward organic farming. The Ohio Corn Growers Association has concentrated its legislative efforts and major initiatives on corn-based ethanol production and the farm bill (Ohio Corn Growers Association, 2007). It could be assumed that if a majority of members in the Ohio Corn Growers Association is producing corn for ethanol production then the majority would be less interested in adopting organic farming practices because organic corn is not needed for this product. Similarly, the initiatives for the Ohio Wheat Growers Association have focused on improving wheat production and breeding. Since these trade associations have initiatives that do not address organic farming, respondents may have little pressure to farm organically.

Objective 2: To Explain the Demographic Characteristics, which are Related to Ohio Grain Farmers' Attitudes toward Organic and Non-Organic Farming

This study explored the demographic characteristics of Ohio non-organic grain farmers in relationship to their attitudes toward organic and non-organic farming. The majority of farmers (n=59, 28.9%) were 62 or older, followed by respondents who were between the ages of 52-56 (n=49, 24%). The average age of U.S. farm operators in 2002 was 55.3 years, which is similar to farmers in this study (National Agricultural Statistics Service, 2004). However, the Ohio grain farmers in this study were older than non-organic farmers in Michigan and South Africa. South African conventional, large-scale farmers were older than 41 (Niemeyer & Lombard, 2003), and

Michigan non-organic farmers had a mean age of 50 (McCann et al., 1997). These Ohio grain farmers may have little interest in adopting organic farming practices since they are older and may be focusing on saving for retirement. Alternatively, it could be argued that these Ohio grain farmers have been using non-organic practices for a long period of time and may not want to change their farming style.

Studies about organic and non-organic farmers in Colorado, New Zealand, and Michigan have documented differences in education level. Regarding college education, Colorado organic farmers were unlikely to study agriculture production; only 9% of these organic farmers earned an agriculture degree (Duram, 1999). The remaining organic farmers in Colorado studied liberal art disciplines, such as biology, literature, or history. The majority of Ohio grain farmers in this study who earned a bachelor's degree or graduate degree indicated they studied agricultural business and economics, agricultural education, agronomy, animal science, dairy science, or agricultural production. This difference in college majors may explain the difference in attitude toward organic farming between organic and non-organic farmers. However, it is important to note that the majority of Ohio grain farmers in this study (n=114, 55.9%) indicated high school as their highest level of education. Perhaps the respondents with a high school education were not exposed to organic farming practices in their general curriculum or vocational agriculture opportunities. Similarly, more New Zealand and Michigan non-organic farmers had obtained a high school education than college education (Fairweather et al., 2001; McCann et al., 1997).

Previous studies have indicated a difference in the history of family farming between non-organic and organic farmers (Duram, 1999; McCann et al., 1997). Unlike non-organic farmers in Michigan and Colorado, organic farmers frequently did not come from traditional farming families. Similar to these non-organic farmers, the majority of Ohio non-organic grain

farmers were from traditional farming families. It is possible that Ohio grain farmers from families that grew traditional crops would also grow non-organic crops since they have the knowledge and experience to continue.

Differences in gender between organic and non-organic farmers may also explain attitude toward using organic farming in this study. Studies have found that women had a higher concern for the environment and are more likely to use alternative or organic farming practices (Beus & Dunlap, 1994; Davidson & Freudenburg, 1996; Egri, 1999; Filson, 1993). While women indicated a more favorable attitude toward environmental practices and organic farming, this study of Ohio grain farmers only had 3 female participants. The majority of respondents (n=202, 98.5%) were male. The higher rate of males responding to the study could also attribute to the negative attitude toward using organic farming in Ohio found through this study.

Gender was not the only demographic characteristic that could explain attitude toward organic farming. Research between Michigan organic and non-organic farmers suggested differences in attitude exists based on whether a family member was involved in farming or not (McCann et al., 1997). Non-organic farmers in Michigan frequently came from a family that was involved in traditional agriculture practices. Similar to Michigan farmers, 89% of Ohio grain farmers had at least one of their parents who farm. Due to this, Ohio grain farmers may have used only non-organic farming practices while growing up and would continue these practices when farming as adults.

In this study, the majority of respondents affiliated with the republican political party also reported a negative attitude toward organic farming. With roughly 55% of the respondents (n=133) aligned with the republican political party, it could be argued that these republican grain farmers may hold conservative views and would not consider adopting organic farming.

Gross farm sales could also be a factor Ohio grain farmers consider when forming their attitude toward non-organic farming practices. Gross farm sales were over $500,000 for 68 respondents (36.6%), while 53 respondents (28.5%) reported gross farm sales of $100,000 to $249,000, and 44 respondents (23.7%) earned between $250,000-$499,999. If Ohio grain farmers are satisfied with gross farm sales earned from non-organic production, they may have a favorable attitude toward non-organic farming practices.

Recommendations

The research suggests that Ohio grain farmers consider technical and economic concerns as barriers toward using organic farming practices. It is recommended that further research be conducted regarding the social and moral reasons for why farmers may or may not adopt organic farming, and what can be done to overcome identified barriers to adoption. Additionally, further exploration of organic farmers in Ohio may reveal other barriers that have had to be overcome. Researchers could further explain whether Ohio grain farmers' attitudes toward organic farming and the barriers to adopt influence learning and retention of new organic farming information.

Subjective norms, one component of the theory of planned behavior, apply pressure on individuals to perform a certain behavior. Further research might address subjective norms by focusing on the individuals who would influence farmers to adopt organic farming. Additional research should be conducted to describe the communication channels farmers would use when considering the adoption of a farming practice such as organic farming. The theory of planned behavior also has perceived behavioral control as one component. Perceived behavioral control relates to the ease or difficulty in performing a behavior. Further research could identify the resources, information, or opportunities that farmers need to have confidence in performing a behavior such as farming organically. Other studies could explore farmers' self-efficacy to adopt

a farming practice like organic farming.

This study found that certain demographic characteristics of Ohio non-organic grain farmers might influence their attitude toward organic farming. Researchers could investigate Ohio organic farmers who grow corn and wheat to uncover their attitude toward non-organic farming, attitude toward organic farming, and their demographic characteristics. This new information would allow researchers to compare the results of Ohio non-organic and organic farmers. Other commodity organizations should be studied to see if these findings about attitude toward organic and non-organic farming are specific to these traditional crop farmers.

Findings in this study may have implications on the curriculum agricultural communication faculty would teach. Agricultural communication faculty could teach students how to write persuasive messages or design campaigns that influence farmers' attitudes toward adopting a farming practice such as organic farming. Knowing the barriers to adopting a farming practice would help students tailor the messages. Extension professionals would also benefit from knowing farmers' attitudes and barriers to adopting organic farming when presenting new farming techniques. Commodity professionals could use the data about barriers to adopting organic farming to improve the farming technique. A campaign could focus on changing the attitudes toward organic farming and deliver messages about ways to overcome the barriers.

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Employers' Perceptions of Recent Agricultural Communications Graduates' Workplace Habits and Communications Skills

Research Paper

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Abstract

Agricultural communications programs should frequently review their curriculum to ensure students receive the highest quality of education possible (Akers, 2000). This research is a nationwide look at recent agricultural communications graduates' employers and/or co-workers. The purpose of this study is to determine which workplace habits and communication skills are satisfactory and which need improvements in the opinion of co-workers or employers.

Members of several professional agricultural communications organizations were surveyed (N = 88) in the summer of 2008. A 34.1% response rate was received. The study found that employers and co-workers of recent agricultural communications graduates on average rated trustworthiness, easy to work with, and reliability as the top workplace habits while creativity, common sense, and organization need improvement. When asked to rate graduates communications skills, photo editing, page layout, and public relations skills received the highest mean scores while sales, Web design, and news editing were the communications skills that could use some work.

Keywords: Agricultural communications, curriculum development, student improvement, education.

Employers' Perceptions of Recent Agricultural Communications Graduates' Workplace Habits and Communications Skills

This study was inspired during an agricultural communications mega-breakout session at the 2008 national meeting of the American Association for Agricultural Education in Reno, Nevada. The session was discussion-based and included agricultural communications professors and graduate students, as well as other academics that could potentially launch an agricultural communications program at their universities. One of the topics of discussion was a general wondering if these educators of tomorrow's agricultural communications professionals were adequately preparing students for the demands of the industry.

In 2006, Doerfert and Miller studied agricultural communications professionals to determine what emerging themes will be important for the industry's future employees. They found four themes emerging in the agricultural communications industry: (1) communication needs, wants, and expectations change rapidly, (2) agricultural producers change and have differing communications wants, needs, and preferences, (3) the response time for communication is shortening, (4) the image of agriculture is of growing importance for agricultural communications professionals. These four themes present a great challenge for graduating students, and they need to be equipped with the knowledge, skills, and attitudes to effectively communicate agriculture's message to its stakeholders as well as the general public.

However, the Doerfert and Miller (2006) research did not specifically look at skills and workplace attitudes of recent agricultural communications graduates. This research sought the opinions of agricultural communications practitioners to determine if gradating students are equipped with all the skills and work habits the industry needs and if graduates are well prepared in some certain areas but need improvements in others. This fits into the National Research

Agenda for Agricultural Education and Communication: Agricultural Communications Research Priority Area Four, which is to develop effective agricultural workforces for a knowledge-based society (American Association for Agricultural Education, 2007).

Doerfert and Miller (2006) claim that it is "the responsibility of higher education and agricultural communications programs to observe and keep pace with the ever-changing workplace to ensure that they can provide the preparation and skills that produce high-quality graduates" (p. 21). In addition, Akers (2000) stated that agricultural communications programs should frequently review their programs and graduates to ensure existing curriculum effectively prepare students for the communications industry.

Review of Literature

The generation of students currently enrolled in and now graduating from American colleges and universities are called the Millennial generation and are sometimes referred to as Generation Y, Generation Why, the Nexters, and the Net-Geners (Wendover, 2005). Millennials were born between 1982 and 2005 and are often seen as spoiled, too close to their parents, afraid of risk, and dependent (Howe & Strauss, 2007). Many say this generation has a "sense of entitlement" or is "cocky" (The scoop on recruiting: Generations, 2007, p. 11).

The Millennials were the first generation to be seen as "special"; their parents were extremely protective—the "Baby on Board" sign first appeared in minivan windows during this generation's infancy (Howe & Strauss, 2007), thus creating a unique breed of students for university faculty to train for the workforce. Millennials are very careful and like to plan and prepare for major events, especially their careers; many expect their career planning to guarantee future success (Howe & Strauss, 2007). Howe and Strauss (2007) noted that employers complain about recent graduates' need for constant feedback, problems with punctuality, and

improper dress. They are often restless employees, especially if work assignments are repetitive (Wendover, 2005). Reinforcing that point, Hastings (2008) stated that only one in five Millennials plan to stay at their current job for more than six years, and they expect higher pay, decent perks, and benefits.

Although Millennials, like each generation, have their drawbacks, they are extremely upbeat and team-oriented (Howe & Strauss, 2007). They are "confident, trusting, and teachable in the workplace" (Howe & Strauss, 2007, p. 50), and many employers marvel at Millennials' ability to perform very well on a team as long as there is a clear set of goals.

Yet Corner and Cole (2008, February) found a serious problem with the writing abilities of recent graduates/Millennials. Corner and Cole researched employers of recent public relations graduates and found a general disappointment with the inability to handle simple tasks such as memos, reports, budget requests, and e-mail. The writing skills of recent graduates are typically practiced via e-mail, text messages, and blogs, usually at a fast paces without editing (Corner & Cole, 2008, February). "They don't know what sentences, verbs or nouns are, nor how to properly use punctuation" (Corner & Cole, 2008, February, p. 18). Corner and Cole (2008, February) blame the lack of writing skills on this generation's lack of reading—instead, Millennials listen to music, surf the Internet, and watch television. As Wendover (2005) states "the culture wants to point and click to every answer" (p. 36).

Sprecker and Rudd (1998) determined writing was the most important skill a college graduate should have, yet Corner and Cole (2008, June) found that 72% of public relations professionals believed that entry-level employees are only 'a little' or 'somewhat' prepared for this writing role (p. 9). Their research also found that 70% of public relations veterans stated

that new employees are not well prepared to write "persuasive appeals of any kind—pitches, formal letters to clients, fund raising appeals or proposals" (Corner & Cole, 2008, June, p. 9).

Corner and Cole's two research studies in 2008 were not specific to agricultural communications; however, a study by Sitton, Cartmell, and Sargent (2005) suggested that agricultural communications curriculum focus on writing. Editing, presentations, time management, conflict resolution, and teamwork were other recommended focus points for curriculum. Also in agricultural communications students, Telg and Irani (2005) found that communications programs should help students with critical thinking skills, citing an "inability to read critically or to read well, a lack of analytical skills, and a lack of curiosity" (p. 13). They recommended real-world projects, emphasizing research, richer writing assignments, and exposure to various viewpoints to increase critical thinking.

Purpose and Research Questions

Doerfert and Miller (2006) state that the "relationship between industry and academia is discordant at times" (p. 18), noting that each entity may have different ideas as to what skills and/or workplace habits a recent graduate should possess. Literature indicated a lack of preparedness in college graduates' writing skills, persuasive skills, and general business communications abilities; however, most of the literature is not specific to agricultural communications graduates. The purpose of this research is to determine what the agricultural communications industry wants to see improved upon in agricultural communications graduates. The over-arching theme or question during the discussion at the AAAE conference was "are we teaching what the industry needs us to teach? Therefore, four specific research questions guided this study:

1. Which workplace habits of recent agricultural communications graduates are satisfactory and which need improvement in the eyes of their employers and/or co-workers?
2. Which communications skills of recent agricultural communications graduates are satisfactory and which need improvement in the eyes of their employers and/or co-workers?
3. Do employers of recent agricultural communications graduates think a master's degree helps their communications skills or workplace habits?
4. Are there relationships between participants' perceptions of their recently graduated employees' workplace habits and the participants' age, gender, or education level?

The operational definition of recent graduate means they graduated with a bachelor's or master's degree in the last three years. For this study, workplace habits include maturity, professionalism, self-motivation, work ethic, common sense, ease to work with, trainability, creativity, organization, reliability, and trustworthiness. Communications skills are defined as writing, news editing, photography, photo editing, graphic design, page layout, Web design, Web writing, public relations, sales, radio production, and television production.

Although existing literature indicated that communications graduates need to improve simple communications tasks as well as writing skills, this research also addressed workplace habits.

Methodology

The researchers used an online survey instrument utilizing Zoomerang.com, an online survey administrator to host the instrument. The researchers purposively selected survey participants from several national agricultural communications industry organizations: Livestock Publications Council and American Agricultural Editors Association, both have an

agricultural print journalism membership base; National Agri-Marketing Association, industry professionals that focus on marketing agricultural products; and National Association of Farm Broadcasters, a group of radio and television agricultural broadcasters. After eliminating non-working e-mail addresses, 88 individuals were targeted for the study.

The instrument was researcher-created based upon the needs of the department that conducted the study. A panel of experts in agricultural communications reviewed the instrument for content validity. The instrument was divided into four sections. Section One dealt with the participant's background in working with a recent graduate and sought to determine if the participants hired, supervised, or worked with a recent graduate(s). Section Two asked participants to rate, on a scale of one to four (with one being poor and four being excellent), their recently graduated employees' workplace habits, which included professionalism, maturity, self-motivation, work ethic, common sense, trainability, creativity, reliability, trustworthiness, and organization. Section Three asked participants to rate, on a scale of one to four, their recently graduated employees' communications skills, which included writing, news editing, photography, photo editing, graphic design, page layout, Web design, Web writing, public relations, sales, radio production and television production skills. Section Four asked demographic questions to determine what specific field of the agricultural communications industry the participants worked in, age, education level, and gender.

A pilot test was conducted for validity and reliability. Ten communications professionals participated in the pilot test; none of them were included in the sample. Following the pilot test, structural changes were implemented to make the instrument more user-friendly. A Chronbach's alpha was calculated on the pilot test for the workplace habits section and revealed a reliability coefficient of .79. The post-hoc reliability coefficient was .81.

All participants were sent an introductory e-mail informing them that they had been selected to participate in this study, and a link to the instrument would be e-mailed the following day, as suggested by Dillman (2000). The survey remained active for 30 days; non-respondents were sent two reminder e-mails.

Data were analyzed using Statistics Package for Social Sciences software Version 16.0. Data collection occurred from July 24, 2008 to August 15, 2008. The online instrument was sent to 88 agricultural communicators. The researchers collected 45 responses for a 51.1% response rate. The first question of the questionnaire asked the respondents to select all that apply: I hire(d) or help(ed) hire a recent college graduate; I supervise(d) a recent college graduate; I work(ed) with a recent college graduate; or none of the above. Of those completing the questionnaire, 15 selected "none of the above." Since 15 participants claimed that they did not work with, hire, or supervise a recent college graduate, the researchers determined that their responses did not apply to this study and were eliminated from the data set, therefore reducing the response rate to 34.1%.

Findings

Sixty percent of the respondents (n = 18) were female; 30% of the respondents (n = 9) were in the 30-39 age range, the mean age was 36.66 (SD = 16.25). Sixty-three percent had a bachelor's degree (n = 19), 26.7% held a master's degree (n = 8), and 3.3% had a doctoral degree. In a check-all-that-apply format, participants were asked what type of communications business they worked in. Exactly half worked in the magazine business (n = 15); 10% (n = 3) worked for a newspaper; 10% (n = 3) worked for an advertising agency; 13.3% (n = 4) worked for a public relations agency; 6.7% (n = 2) worked for a radio station or network; 10% (n = 3) worked for a television station, show, or network; 13.3% (n = 4) worked for a Web site or

Internet-based communications business; and 16.7% (n = 5) worked for a trade or breed association; 13% (n = 4) selected "other." Some of these categories could have overlapped.

In a check-all-that-apply format, 22 (73.3%) of the respondents selected that they hired or helped hire a recent graduate; 50% (n = 15) supervised a recent graduate; and 26 (86.7%) worked with a recent graduate. Two participants reported that recent graduates make less than $20,000 at their organization; exactly half (n = 15) claimed their recently graduated employees made between $21,000 and $30,000 per year; and 23.3% (n = 7) made between $31,000 and $40,000 a year. Six participants chose not to answer this question because they were unfamiliar with salary information, paid their employees hourly, or had other reasons.

Workplace habits

For the most part, the participants marked that recent graduates' workplace attitudes and attributes fell in the good to excellent range. The highest rated attribute was trustworthiness, which on a scale of one to four received a mean score of 3.43 (SD = .57). According to the data, graduates were easy to work with (M = 3.29, SD = .53) and exhibited satisfactory reliability (M = 3.14, SD = .65). Participants rated creativity the lowest with a mean score 2.68 (SD = .61) on a four point scale. The data also showed that common sense (M = 2.86, SD = .69) and organization (M = 2.96, SD = .58) could use improvement. Table 1 is a list of all means and standard deviations of workplace habits.

Table 1. Mean scores of recent graduates' workplace habits as rated by employers and co-workers (n = 29).

Workplace attitude or attribute	Mean	*SD*
Trustworthiness	3.43	.57
Easy to work with	3.28	.53
Reliability	3.14	.65
Trainability	3.11	.63
Self motivation	3.11	.63
Maturity	3.11	.63
Work ethic	3.10	.72
Professionalism	3.00	.68
Organization	2.96	.58
Common sense	2.86	.69
Creativity	2.68	.61

Note. On a four point Likert-type scale, 1 = poor/low, 2 = fair, 3 = good, and 4 = excellent.

One of the last questions on the instrument asked participants to list other areas of needed improvement that was not covered on the instrument; 15 participants left comments. Several themes for improvement emerged from the comments: getting along with colleagues; expectations about pay and advancement; and business etiquette. Two participants specifically mentioned that recent graduates did not seem to understand "paying dues." Two others wrote that new employees seemed to rely excessively on e-mail rather than face-to-face communication. Negotiations were mentioned several times; however, only one participant specified salary negotiations. Other answers were working in an office environment, time management, professional ethics, and critical thinking.

Communications skills

Communications skills questions allowed the participants to mark "not applicable" if their business did not involve a particular communication skill. Almost all participants rated their recent graduates' writing skills; however, only two participants rated television production, which was the highest rated communication skill (M = 3.50, SD = .71). The researchers suggest taking caution when generalizing these findings because of the low n. Excluding television production, photo editing (M = 3.09, SD = .30), page layout (M = 3.09, SD = .54), and public relations (M = 3.09, SD = .73) were the highest rated skills of recent graduates. Sales was the lowest rated skill (M = 2.68, SD = .98); Web design received the second-lowest score (M = 2.77, SD = .60).

Because of the variety of communications skills practitioners utilize, some of the skills listed in the instrument may not have applied to the participants. Each question allowed the participant to mark "not applicable" and thus the variety of participants answering each question. Table 2 lists the communications skills scores, and since the number of participants answering these questions varied widely from skill to skill, the number of participants per question is also listed.

Table 2. Mean scores of communications skills of recent college graduates.

Communication skill	Mean	*SD*	*n*
Television production	3.50	.71	2
Photo editing	3.09	.30	11
Page layout	3.09	.54	11
Public relations	3.09	.73	23
Graphic design	3.07	.60	15
Radio production	3.00	.71	5
Writing	2.93	.47	27
Web writing	2.89	.46	19
Photography	2.83	.71	18
News editing	2.77	.87	22
Web design	2.77	.60	13
Sales	2.67	.98	12

Note. On a four point Likert-type scale, 1 = poor, 2 = fair, 3 = good, and 5 = excellent.

In the additional comments section, four participants stated that writing skills of recent graduates needed to be improved. One participant specifically stated that Associated Press style knowledge was lacking, while another participant stated that spelling and grammar needed improvement. Other comments included a need for more education in the areas of survey design, the printing process, agency/client relations, and marketing campaigns/projects.

Master's degrees

Following the workplace attributes and attitudes and the communications skills sections, the instrument asked if the participants thought a master's degree helped the aforementioned attributes. For workplace attitudes and attributes, 26.7% thought a master's degree helped;

36.7% thought a master's degree improved communications skills. Since only 30% of the participants held a master's degree, a Pearson's Product Moment correlation test was conducted to determine if there was a relationship between level of education and answers to the questions about master's degrees. A relationship between a master's degree helping with workplace attitudes and attributes and level of education of the participant revealed an r^2 value of -.35 (n = 27); a relationship between a master's degree helping with communications skills and level of education of the participant revealed an r^2 value of -.17 (n = 26). Neither correlation is significant.

Relationship between employer demographics and workplace attitudes and attributes

There were low relationships between the overall mean score of workplace attitudes and attributes and the participants' age groups (r^2 = .13), level of education(r^2 = -.29), and gender (r^2 = -.22).

Conclusions

Those participating in this research indicated that recent graduates tend to be trustworthy, easy to work with, and reliable. These are positive workplace habits that are difficult to teach. This shows that the participants imply that the recent agricultural communications graduates they work with somewhat defy the literature that is written about their generation. Howe and Strauss (2007) discussed problems with punctuality, yet these data indicated that agricultural communications students are reliable. Howe and Strauss (2007) also state that Millennials are trusting and teachable; these data confirm that statement.

However, some of the negative aspects about Millennials were consistent with the data gathered from this research. When looking specifically at agricultural communications students, Telg and Irani (2005) found students lacking curiosity, critical thinking, and analytical skills;

likewise, creativity and common sense were the lowest-ranked workplace habits in this study. Granted, graduates' creativity received a mean score of 2.68 (*SD* = .61) and common sense received a mean score of 2.86 (*SD* = .69), both on a four point scale, which was not horrible; however, improvements could still be made. In the additional comments box, one of the respondents stated that universities should be teaching critical thinking skills. There are some methods to adjust college courses to increase critical thinking and creativity skills. Telg and Irani (2005) recommended practical projects, richer writing assignments, and utilizing various points of view to help improve critical thinking skills.

Some of the additional comments left by participants also aligned with literature. Several participants commented that recent graduates have unrealistic expectations about pay and promotions. Literature said that Millennials often have false senses of entitlement (The scoop on recruiting: Generations, 2007) and they expect higher pay and better benefits (Hastings, 2008). Howe and Strauss (2007) stated that some co-workers complained about Millennials lack of punctuality and proper dress, and Sitton et al. (2005) stated that more lessons should be dedicated to teamwork and conflict resolution. This could fall in the business etiquette category that several participants wrote in their comments. One participant stated that graduates needed better training in mealtime ettiquette and dealing with alcohol in a professional setting, while another said that e-mail skills need improvement. Several comments fit into the theme of office behavior, interaction with co-workers, and working with colleagues of different generations. The Sitton et al. (2005) research found that agricultural communications students need improvement in time management—one survey participant echoed this finding.

In the construct of communications skills, based on the data collected in this research, it appears that recent graduates entered the workforce with many skills that are satisfactory to

employers: photo editing, page layout, public relations, graphic design, and radio production all had mean scores above a 3.00 on a four-point scale. However, some core communications skills—writing, photography, news editing, and Web design—had mean scores below 3.00. According to the data, an emphasis on basic communications skills is needed. This connects with Cole and Corner's (2008) research that found communications professionals' strong dissappointment with writing skills of recent college graduates. Sitton et al. (2005) also argued that agricultural communications faculty should focus on writing.

Additional comments left by participants confirmed the literature. Of the 15 participants who left comments, four listed comments about poor writing exhibited by recent college graduates. One specifically mentioned that a course dedicated to Associated Press style was needed, while another stated that basic knowledge of grammar and spelling was lacking. Another person left a strongly worded statement: "somewhere, students who want to go into 'communications'—PR, marketing and related fields, but not 'hard news' journalism—erroneously concluded that they don't need excellent writing skills."

Recommendations

For faculty

The researchers recommend that agricultural communications faculty incorporate more activities or assignments that promote critical thinking and creativity. Professional developent lessons that teach about salary and benefits negotiations, business etiquette, general business communications, proper office behavior, and time management could also be incorporated throughout the agricultural communications curriculum, based upon the responses and comments of the participants.

During the discussion at AAAE, several faculty wondered if agricultural communications programs needed to add classes to address emerging technologies and other needs from the agriculture or communications industries. According to this research, a re-focus on the basic communications skills—writing, news editing, photography, and Web design—is needed. Again, Sprecker and Rudd (1998) stated that good writing is one of the most important skills a college graduate should have, and the industry expects agricultural communications graduates to be good writers.

For future research

Akers (2000) stated that agricultural communications programs should frequently review programs and graduates to ensure existing curriculum effectively prepare students for the work force. Each agricultural communications program is different and each has its own strengths and weaknesses. The researchers recommend that each agricultural communications program conduct a study focused its own students to determine which workplace habits and communications skills are strong and which need improvement.

In addition, these researchers intend to conduct further research on their program's graduates to determine what they would have liked to have learned and what lessons they would like to have had expanded upon.

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Sources and Framing in Print News Coverage of a Water Quality Dispute in Oklahoma and Arkansas

(Research Paper)

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Abstract

This content analysis focused on state and local newspaper coverage of a water quality dispute in Arkansas and Oklahoma. The dispute, which became a lawsuit, centered on water pollution in the Illinois River watershed and involved government officials in Oklahoma and several poultry companies with growers in both Arkansas and Oklahoma. The purpose of this study was to characterize print news coverage in an effort to provide practical feedback for communications professionals on all sides of the issue who were responsible for public communications and media relations. Trained coders evaluated 134 articles from two state and two regional newspapers for sources quoted and key frames. The findings of this study revealed that the attorneys general from both states and employees of the Oklahoma state government were the most successful in getting their statements and, most likely, their key messages published in print news coverage. Conspicuously absent as sources in the coverage were experts from the scientific and academic communities. In addition, most of the articles published were framed as *education* (typically a more neutral frame), though *responsibility* (typically a polarizing frame) was the second most common frame. The *safety* frame (a more neutral frame) was not common in the coverage. Results have important implications for communicators involved in this issue as well as for practitioners and researchers alike who desire to improve media coverage of water quality and other agricultural and environmental issues.

Sources and Framing in Print News Coverage of a Water Quality Dispute in Oklahoma and Arkansas

Introduction

In an age of lawsuits and threats of lawsuits, for an organization to protect its image and reputation in the media is key. Those responsible for protecting organizations' images in the face of highly publicized disputes and lawsuits are normally public relations professionals. These communicators are trained for their primary duty of educating journalists, and journalists rely on timely and accurate information provided to them by PR professionals to do their job each day—that is, write about the news.

Each day, journalists have a multitude of news about which to write. Their decisions about what to cover and how to cover it are important, affecting nearly every aspect of American society by identifying and describing issues of public importance. Additionally, while journalists are bound by ethics to have their readers' best interests in mind, their decisions are often made rather quickly under the pressures of deadlines. Watson (2007, p. 108) succinctly characterized this pressure and the resulting problematic effects on journalistic decisions and media framing: "Deadlines cut things short. Deadlines drop things out."

In making journalistic decisions, journalists exercise their ability and power to "frame" the coverage of particular issues. Framing, in simple terms, is the overall theme of news coverage; it is the angle journalists use to present information to readers (Valkenburg, Semetko, & de Vreese, 1999), and it is journalists' representation of reality (Watson, 2007), filtered by their own schemas.

Public relations in the agriculture industry is significantly affected by media framing, especially because print media plays such a key role in educating the public about agriculture-related issues. One study by O'Laughlin, McGuire, and Carlson (1998), showed that 85% of

residents used a newspaper “sometimes” or “often” to learn about water quality issues. Though that number may be dwindling with the rise of new electronic media, PR professionals in agriculture, as with any other industry, still must develop media relations efforts for print journalists, such as news releases, fact sheets, and press conferences, to encourage journalists to make well-educated decisions as they frame their stories in a way that is most positive for agriculture.

One way to add more reliability to the decision-making process is the examination of case studies of previous agricultural communications efforts. Case studies can provide PR professionals with practical, anecdotal knowledge that could be applied in similar situations in creating more successful campaigns and media relations efforts. By reviewing studies that examine the relationships between information sources and frames in news coverage, public relations professionals can be better prepared to influence journalists’ decisions about how to present the news.

A particularly interesting legal case involving a water quality dispute between Oklahoma government officials and several Arkansas-based poultry companies operating in the Illinois River watershed began in 2005 and continues today. Environmental, political, and legal news related to this case continues to make headlines in state and regional print news sources in Arkansas and Oklahoma. By examining the media coverage in this case, communicators on all sides of the issue, especially those employed by the poultry companies, could benefit from a better understanding of how journalists have framed the coverage to this point.

The Case and Its Context

The Illinois River is designated by the State of Oklahoma as a scenic river. It has significant recreational benefits to the region. Float trips on the river provide about $9 million

per year in direct economic impact, and Lake Tenkiller, fed by the Illinois River, is a popular destination for fishing, boating, and scuba diving (Soerens, Fite, & Hipp, 2003).

Somewhat in contrast, the portion of the Illinois River watershed lying in Arkansas encompasses an area that is among the leading poultry production regions in the United States. It also exists in of one of the fastest growing metropolitan areas in the United States, which includes the cities of Fayetteville, Springdale, Bentonville, and Rogers, plus many smaller communities. Though municipal wastewater treatment plants in the area have been proven to be contributing to high phosphorus levels in the watershed, public attention has focused on the spreading of poultry waste on fields as fertilizer as a major contributor to high phosphorus levels in the Illinois River and its tributaries (Oklahoma Attorney General's Office, 2005). This overabundance of phosphorus, a nutrient necessary for plant growth in water and on land, can cause rampant algae growth in streams and reservoirs if the level is too high. Too much algae can lead to poor water quality and can kill off other aquatic life (Moore, 2005).

To combat this problem, in 2002, Oklahoma adopted a numerical water quality standard for phosphorus in surface water. The standard – 0.037 mg/ L – was adapted from published data by Clark, Mueller, and Mast (2000), who studied the nutrient content of 85 streams across the U.S. and found the highest concentrations and yields of phosphorus in the western and southeastern U.S. Unfortunately, even since the development of the standard, some data suggest that there has been a continuing decline in the quality of water in the Illinois River, and discussions have focused on developing and implementing a similar phosphorus standard in Arkansas (Willet, Mitchell, Goodwin, Vieux & Popp, 2006). Some in the poultry industry believe Oklahoma's standards are unachievable and that the industry is already doing enough to solve the phosphorus problems by following strict nutrient management plans.

Oklahoma Attorney General Drew Edmondson still argued that the poultry industry was not doing enough. In a news story in the *Tulsa World* (Barber, 2005), Edmondson was quoted as saying, "The poultry companies can conduct their business in compliance with the law and remain viable, if they choose to do so, but they have refused to accept responsibility for adequate expenditure to clean up this basin" (p. A1). On June 14, 2005, Edmondson sued eight poultry companies and six of their subsidiaries. Edmondson blamed the companies for polluting the Illinois River watershed with an excessive amount of nutrients found in poultry litter. The resulting print news coverage and public debate has continued to grow, and several groups with much at stake in the debate have used media relations and public relations efforts to establish their public positions.

Purpose of the Study and Research Objectives

This content analysis focused on news stories published in a selection of regional and state newspapers. The goal was to describe characteristics of the print news coverage of the Arkansas-Oklahoma water quality dispute, including sources used, framing, and the interrelationships between these characteristics. The results of this study provide public relations professionals with research-based information that could be used in planning future media relations and media education efforts.

Specifically, the study addressed the following research questions: (1) What sources did print journalists commonly use to get information for a story? (2) What frames were evident in the news coverage? and (3) What interrelationships are evident between the sources quoted and the frames emphasized in the coverage?

Review of Literature

The key literature related to this study focuses on media framing and source credibility, which have been a part of academic dialogue in journalism for more than 40 years. These long-standing theoretical concepts served as the theoretical foundation of this study.

Framing

Journalists use media frames to report news. McCombs, Shaw, and Weaver (1997) explained that framing describes the particular ways news and information are presented to public. Framing motivates an audience to think about the issue in a particular way. According to Goffman (1974), journalists use "frames (to) organize strips of the everyday world, a strip being an arbitrary slice or cut from the stream of ongoing activity" (p. 10-11). Furthermore, Gamson and Modigliani (1987) offer a similar definition for media frames: a media frame is "a central organizing idea or story line that provides meaning to an unfolding strip of events" (p. 143).

In a study by Valkenburg, et al. (1999), researchers identified how journalistic news frames affected readers' thoughts and perceptions on two different issues. During the study, participants read two different newspaper stories concerning two socially important issues in Europe. While all of the stories had the same core body of text, the title, opening paragraph, and closing paragraph were edited to reflect a desired frame. Several types of frames emerged, and these frames have now become common constructs in content analysis research. *Conflict* frames emphasize disagreement between individuals, groups, or institutions. *Human interest* frames are personal to the reader or evoke emotion by emphasizing drama. When a news article placed blame or gave credit to a specific individual, group, or institution, it is considered to be framed as *responsibility*. The *economic consequences* frame applies to news stories that frame the news in

terms of the actual or potential economic impact. According to framing theory, these frames have a significant effect on readers' opinions of the news.

Source Credibility

The people in organizations providing information to journalists play key roles in how news is framed. The perceived credibility of key individuals may determine the likelihood that journalists will rely upon them to build their stories (Dunwoody & Ryan, 1987). Galtung and Ruge (1965) (and many researchers since) have shown that journalists affect other journalists' ideas of what is newsworthy. For example, if a journalist decided to write a story about the effects of poultry litter on a river, other journalists might read this story and decide the topic is newsworthy enough to warrant another story in their publications; thus, the topic could be rendered newsworthy for a long time. The same concept could easily be applied to sources journalists quote in news stories. A source's initial appearance in the media – in association with a specific topic – may be enough to establish that person as credible on that subject and lead other journalists to contact that individual and quote him or her.

Methods

This study involved examination of articles published in each state's largest newspaper: *The Daily Oklahoman* and the *Arkansas Democrat-Gazette.* In addition, each regional news publication used in the study was selected based on proximity to Arkansas poultry companies and citizens living in the Illinois River watershed: the *Tulsa World* in Oklahoma and the *Springdale Morning News* in Arkansas. Using Lexis Nexis and individual newspaper archives, researchers collected full-text articles concerning the water quality dispute from each of the newspapers. Two keyword searches were conducted for each of the publications: "Arkansas," "water quality," and "lawsuit"; and "Oklahoma," "water quality," and "lawsuit." Only news or

feature stories addressing the Arkansas-Oklahoma water quality dispute over the Illinois River watershed were eligible for the study, and only articles published after June 13, 2005, and before January 1, 2007, were used in this study. (June 13, 2005, was the day Oklahoma Attorney General Drew Edmondson filed the lawsuit against the poultry companies.)

Six coders – three Oklahoma residents and three Arkansas residents, characterized as educated lay readers – were recruited to evaluate the news stories. The coders were trained to code the news stories them according to a codebook adapted from previous framing studies on agricultural news by Miller, Annou, and Wailes (2003) and Heuer (2005). A definition sheet was developed during training sessions, and the codebook was updated to reflect the definitions. The coders were trained using similar articles from a different case related to water quality, and they worked to reach an acceptable level of intercoder reliability, a Cohen's index (K) level of .77 (Cohen, 1960). According to Landis and Koch (1977), a range of .61 to .80 is of "substantial" strength on Cohen's index.

Finally, the actual Illinois River watershed articles pertaining to this study were distributed at random to each coder. Seven to ten articles were assigned each week for three weeks, and coders used the codebook to evaluate the articles. Sources were characterized by organizational affiliation, and type of position (e.g., job title). Frames, as suggested by Valkenburg et al. (1999), included *economic, education, safety, human interest, responsibility,* and *inconclusive/multiple*. The frames were clearly defined for coders during training. After the coding was complete, the researcher analyzed the qualitative data reported in the codebooks and identified themes and relationships based on the frequencies of the codes reported.

Results

Journalists' Sources

A total of 150 unique sources were quoted in 134 stories. The most frequently quoted sources are listed in rank order in Table 1, along with the sources' positions (e.g., job titles) and affiliations. The most commonly quoted source was Drew Edmondson, Oklahoma Attorney General (42.3%). Janet Wilkerson, the vice president of Peterson Farms and a spokesperson for the poultry industry (25.5%), and Mike Beebe, Arkansas Attorney General (21.2%), were also quoted frequently. Other less frequently quoted sources' positions (not included in Table 1) were educators, politicians, and other.

The types of sources quoted by journalists were categorized into 10 groups by position as demonstrated in Table 2. These specific groups were developed to better illustrate what types of sources (in terms of professional position or job title) journalists used when getting information for a news story. Government executives (79.1%) were the most frequently quoted sources. The attorney generals from each state (64.2%) were the second most quoted sources, followed by spokespeople from various affiliations (58.2%).

The sources quoted by journalists were categorized into 16 groups by affiliation as demonstrated in Table 3. The specific groups were developed to better illustrate the different types of institutions journalists turn to when gathering information for a news story. Sources from the Oklahoma Attorney General's Office (59.7%) were quoted the most frequently in the 134 news stories. Sources from the poultry corporations (49.3%) and sources from the Oklahoma State Government (41%) were also frequently quoted.

Table 1

Frequency of news stories (N=134) in which the top 16 sources were quoted

Source	Position	Type of Position	Type of Affiliation	Affiliation	*f*	%
Drew Edmondson	Attorney General	Oklahoma Attorney General	Oklahoma Attorney General's Office	Oklahoma Attorney General's Office	58	42.3
Janet Wilkerson	Spokesperson	Spokesperson	Poultry Advocacy Organization	Poultry Industry	35	25.5
Mike Beebe	Attorney General (Government Executive)	Arkansas Attorney General (Governor of Arkansas)	Arkansas Attorney General's Office	Arkansas Attorney General's Office	29	21.2
Charlie Price	Spokesperson	Spokesperson	Oklahoma Attorney General's Office	Oklahoma Attorney General's Office	16	11.7
Bev Saunders	Spokesperson Producer	Manager Producer	Poultry Advocacy Organization Poultry Farm	Poultry Partners Poultry Farm	13	9.5
Jerry Hunton	Government Executive	Judge	Arkansas County Government	Washington County	11	8.0
Matt DeCample	Spokesperson	Spokesperson General's Office	Arkansas Attorney	Arkansas Attorney General's Office	11	8.0
Ed Fite	Special Interest Executive	Administrator	Watershed Advocacy Organization	Oklahoma Scenic Rivers Commission	10	7.3
Rick Stubblefield	Special Interest Executive	Commissioner	Watershed Advocacy Organization	Oklahoma Scenic Rivers Commission	10	7.3
Bill Blackard	Special Interest Executive	Chairman	Watershed Advocacy Organization	Oklahoma Scenic Rivers Commission	6	4.4
Mark Simmons	Corporate Executive	President	Poultry Corporations	Simmons Foods	6	4.4
Sam Joyner	Government Executive	Magistrate	U.S. Government	U.S. District Court	6	4.4
Scott McDaniel	Attorney	Attorney	Poultry Corporations	Peterson Foods	6	4.4
Gerald Hilsher	Special Interest Executive	Commissioner	Watershed Advocacy Organization	Oklahoma Scenic Rivers Commission	5	3.6
John Elrod	Attorney	Attorney	Poultry Corporation	Simmons Foods	5	3.6
Mike Huckabee	Government Executive	Governor of Arkansas	Arkansas State Government	State of Arkansas	5	3.6

Table 2

Frequency of news stories (N=134) quoting sources categorized by position (or job title)

Position	*f*	%
Government Executives	106	79.1
Attorney Generals	86	64.2
Spokespeople	78	58.2
Attorneys	38	28.4
Special Interest Executives	31	23.1
Corporate Executives	25	18.7
Producers	25	18.7
Educators	11	8.2
Politicians	11	8.2
Other	7	5.2

Table 3

Frequency of news stories (N=134) using sources categorized by organizational affiliation

Affiliation	*f*	%
Oklahoma Attorney General's Office	80	59.7
Poultry Corporations	66	49.3
Oklahoma State Government	55	41.0
Arkansas Attorney General's Office	39	29.1
Arkansas State Government	29	21.2
Other	28	20.9
Poultry Advocacy Organizations	28	20.9
Poultry Farms	21	15.7
Watershed Advocacy Organizations	18	13.4
Arkansas County Government	16	11.9
U.S. Government	14	10.4
Academia	9	6.7
City Government in Oklahoma	8	6.0
City Government in Arkansas	7	5.2
Political Candidate Headquarters	6	4.5
Other State's Government	4	3.0

Note. Percentages total more than 100% because often more than one source was quoted in a news article.

Journalists' Frames

Through an initial literature review of Valkenburg et al. (1999), the researcher determined five original frames to use in the study: responsibility, economic, education, safety, and human interest. An additional frame, inconclusive/multiple, was added for stories that a frame was not easily recognized or the story represented more than one frame. During coder training, coders determined these six frames were sufficient to describe the frames in this case. This, in itself constitutes a finding. The following frames (presented with their operational definitions for this case) were clearly evident in the print news coverage:

Responsibility – looks for blame or takes blame. It causes the reader to believe someone or something is at fault.

Economic – discusses the profitability or losses caused by the water quality issue or the lawsuit. Economic resources may be in the form of dollars, jobs, or product.

Inconclusive/multiple – the story has more than one dominate frame.

Human interest – takes a humanistic approach. It may include an interview with someone who was sick from the water quality in the Illinois or a producer who is worried about the future of the poultry industry in his/her area.

Education – objectively teaches the audience facts. The story may include informative facts promoting general knowledge for the public.

Safety – informs the reader of safety information regarding the water quality of the Illinois River. It may tell the readers the water quality is safe/unsafe in the river or the measures each side of the issue is taking to ensure the safety of the river.

Describing the prevalent frames of the print news coverage was the first objective of this study. The types of frames appearing in the news stories and their frequencies are reported in Table 4.

Table 4

Frequency of news stories using various frames (N=134)

Frame	*f*	%
Education	55	41.0
Responsibility	43	32.1
Human Interest	14	10.4
Economic	12	9.0
Inconclusive/Multiple	5	3.7
Safety	5	3.7

The news stories examined most frequently contained the *education* frame (41%). The *responsibility* frame (32.1%) was the second most common frame. These two were clearly the most popular by a wide margin.

Interrelationships between Sources and Frames

Table 5 shows the relationships between the affiliation of a source and the frame used to present the story.

Table 5

Percentages of news stories (N=134) using various frames, categorized by organizational affiliations

	%					
	Economic	Education	Human Interest	Inconclusive	Responsibility	Safety
Oklahoma Attorney General's Office	2.5	38.8	5.0	3.8	50.0	0
Poultry Corporations	10.6	43.9	6.1	3.0	34.8	1.5
Oklahoma State Government	10.9	49.1	5.5	0	27.3	7.3
Arkansas Attorney General's Office	5.1	38.5	15.4	7.7	33.3	0
Arkansas State Government	0	48.3	24.1	0	27.6	0
Other	7.1	50.0	5.4	7.1	14.3	10.7
Poultry Advocacy Organizations	10.3	34.5	3.4	0	44.8	6.9
Poultry Farms	28.6	9.5	14.3	4.8	33.3	9.5
Watershed Advocacy Organizations	11.1	61.1	5.6	5.6	5.6	11.1
Arkansas County Government	6.3	25.0	31.3	12.5	25.0	0
U.S. Government	7.1	64.3	0	0	28.6	0
Academia	22.2	77.8	0	0	0	0
Cities in Oklahoma Government	0	37.5	0	0	62.5	0
Arkansas City Government	57.1	28.6	0	0	0	14.3
Political Candidate Headquarters	0	83.3	0	0	0	16.7
Other States' Government	0	0	0	0	100.0	0

Note. Percentages may not total 100% because of rounding.

When an article contained a quote from the Oklahoma Attorney General's Office, the article was framed *responsibility* 50% of the time, and *education* 38.8% of the time. When an article contained a quote from the State of Oklahoma it was framed *education* 49.1% of the time

and *responsibility* 27.3% of the time. When articles contained quotes from the poultry corporations, 43.9% of them were framed *education* and 34.8% were framed as *responsibility*.

Conclusions and Implications

What sources did journalists use to get information for a story?

As one might expect, among the most commonly quoted sources were the sources at odds in this public dispute—namely the Oklahoma Attorney General's Office, the poultry corporations, and the Arkansas Attorney General's office. An interesting note to this conclusion is that sources representing the Oklahoma Attorney General's Office (59.7%) and Oklahoma state government (49.3%) were quoted in considerably more articles than sources associated with the Arkansas Attorney General's Office (29.1%) or Arkansas state government (21.2%). If O'Laughlin et al.'s (1998) explanation still holds true, and the general public does, indeed, gather most of its information about water quality issues from newspapers, then the Oklahoma Attorney General's office likely benefited in terms of publicity from communicating its side of the issue in more stories than any of the other organizations involved in the dispute.

The positions of the quoted sources are equally noteworthy. Government officials were the favorite sources of reporters, followed by the attorneys general. It seems significant that the high-level officials were quoted even more often than their appointed spokespeople in this case. Whether this was a result of various media relations efforts or not can not be determined. It is possible journalists used these particular sources so frequently because they were the best sources of information and recognizable to the public, or perhaps these high-profile figures purposefully made themselves available to journalists. Either way, the attorneys general from both states and employees with the Oklahoma state government were the most successful in getting their names – and most likely their key messages – published.

Even more conspicuous was the absence of expert scientific sources in this coverage. Educators, including university faculty members, Extension employees, and researchers, whose opinions on agricultural issues are generally valued by journalists for their expertise, credibility, and objectivity (Vestal and Briers, 2000) were among the least frequently quoted sources in this case. This seems to contradict Dunwoody and Ryan's (1987) assertion that perceived credibility influences the likelihood of sources being quoted. It is possible, but not verifiable by this study, that the emotional nature of this issue led journalists away from the more objective scientific sources toward the more volatile political sources.

Because this lawsuit involved many different types of organizations and people and because this lawsuit was still occurring during an election year, it is necessary to discuss how the roles and aspirations of a few of the key players might have impacted their being a prominent source in the lawsuit's media coverage.

Mike Beebe, now Governor of Arkansas, was, during the time frame of this case study, serving as Arkansas Attorney General when Drew Edmondson filed the lawsuit. Although the suit was not directed at the State of Arkansas, Beebe's role was to protect the rights of the Arkansas producers. In June 2005, during the same time Edmondson was engaging the lawsuit against the poultry industry, Beebe announced he would enter the 2006 Arkansas gubernatorial race (Blagg, 2005). While still fulfilling his duties as Arkansas Attorney General, Beebe surely had to be concerned about his image in the media, and a logical explanation is that this concern prevented him from being as vocal as other key players. While Beebe was quoted in 21.2% of the news articles, his quest for governor could have hindered his ability to become more involved in the lawsuit.

Another key player not directly involved in the lawsuit but still associated with the issue was Oklahoma Farm Bureau, an agricultural advocacy organization that protects the interests of farmers and ranchers. Since some of the farmers who work for the poultry companies named in the lawsuit reside in Oklahoma, one would expect this agricultural organization to be a lead force in settling this lawsuit. However, OFB most likely had to be politically cautious about feuding with the Oklahoma Attorney General's Office because of other issues involving agriculture and natural resources in Oklahoma depended on the Attorney General's support. This could possibly account for the absence of quotes from OFB officials in this case.

What frames were evident in the news stories?

Following the lead of Valkenburg et al. (1999) and Heuer (2005), six frames were identifiable by coders in the news stories: *education*, *responsibility*, *economic*, *human interest*, *safety*, and *inconclusive/multiple*. The education and responsibility frames were the most common. Combined, they accounted for 73.1% of the news stories. Safety and inconclusive/multiple were the least commonly reported frames (3.7%).

Because this study examined news coverage surrounding a water quality dispute and lawsuit, in which at least three groups of people were placing blame on one another, one would expect the most frequent frame to be *responsibility*. However, the most frequent frame found by coders was *education* (41%). This is likely the result of both fair reporting and quality public relations efforts on all sides of the issue. Heuer (2005) found that the frames most commonly found in stories with neutral articles were education and safety. Therefore, public relations officers should have been providing information promoting these frames to assist journalists in writing fair and neutral articles. The other frame commonly associated with neutral reporting – *safety* – was conspicuously absent in many stories. Public relations professionals on all sides of

the issue may have been more concerned about making sure the facts of the lawsuit were reported in the news stories than informing the public about the safety of the water. Also, it can be inferred that since there were no reports of people getting sick from the water, public safety was not an urgent topic for public relations professionals to focus on.

On the other hand, *responsibility* was the second most commonly coded frame. The Oklahoma Attorney General's Office, which filed the lawsuit, was quoted in 59.7% of the news stories. The poultry corporations, the defendants in the lawsuit, were quoted in 49.3% of the news stories, and each made arguments about where the blame for elevated phosphorus levels in the Illinois River should lie. Likewise, because representatives of these two opposing sides of the issue were the top two sources quoted in news stories, it is understandable why the second most frequent frame was responsibility (32.1%). In a case study about a lawsuit, it would be surprising *not* to find articles that placed blame on one side because of the accusations made in the lawsuit. It is no secret that controversy sells, and since selling publications is a driving factor in determining the news each day, some editors and journalists may feel it is necessary to depict this turmoil in their stories and newspapers to engage readers.

As McCombs et al. (1997) have noted, public opinion of specific issues has been linked to the media coverage of those issues. If this is true in this study, then the public may be accurately informed and able to form educated opinions about the issue. Furthermore, public perception of an issue can be cognitively influenced by how the issue is covered in the media, so if *responsibility* was the second most frequent frame, it may be likely that much of the public has already taken a stance on who is to blame.

What interrelationships existed between sources and frames?

Sources affiliated with three main groups were quoted most often in the news stories: the Oklahoma Attorney General's Office, poultry corporations, and Oklahoma state government. When someone affiliated with the Oklahoma Attorney General's Office was quoted, 50% of the news stories were coded as having a *responsibility* frame and 38.8% of the news stories were coded as having the education frame. However, when someone affiliated with the poultry corporations was quoted, 43.9% of the news stories were framed *education* and 34.8% were framed *responsibility*. Likewise, when someone affiliated with the Oklahoma state government was quoted, 49.1% of the news stories were framed *education* and 27.3% were framed *responsibility*. These comparisons are highly telling and may indicate the communications goals of those involved in the dispute. The Oklahoma Attorney General's Office seemed to have been successful at influencing coverage to focus on who was responsible for Illinois River pollution and on educating the public about the issue. The presence of quotes from representative of poultry companies was somewhat less effective at influencing framing in the stories, but *education* and *responsibility* were the most common frames associated with quotes from this type of source.

Recommendations for Practice

The findings in this study provide practical implications that could improve the success of public relations efforts of poultry companies and organizations. One main point this study makes is that journalists in this case turned to knowledgeable and first-hand sources for information. As seen in the data, no two sources had more information (and more quotes) about the suit than the two parties involved in the suit. Since Galtung and Ruge's (1965) concept that journalists affect other journalists' ideas of who is credible is probably still true today, then public relations professionals must plan ahead to make sure the first sources to talk to the media

are the faces they want associated with their side of the issue because these few people have a good chance of being interviewed by other journalists and becoming connected to the issue. It is inferred from the data that the Oklahoma Attorney General's Office and the poultry corporations succeeded in referring credible sources to the media. Because 14 entities were named in the lawsuit, the poultry industry apparently made a wise decision in naming a spokesperson – Janet Wilkerson – and letting her speak for the poultry industry as a whole instead of each company employing an individual representative to get its messages in the media.

The public relations professionals involved in this particular lawsuit should reexamine the objectives they began with when introducing this issue to the media. The data provided in this study may provide some insight regarding whether they succeeded in getting their stories framed in a particular way. The analysis certainly demonstrates the presence of certain frames in the coverage, namely *education* and *responsibility*, as well as one important frame that was missing from the coverage—*safety*. This characterization should be useful for journalists and public relations professionals alike in making future decisions about media relations and journalistic coverage of similar issues.

Additionally, the conclusions of this study indicate which sources journalists covering this issue considered valuable, credible, and newsworthy. Dunwoody and Ryan's (1987) assertion that journalists search for such sources demonstrates why findings related to sources used in this case are invaluable for public relations strategic planning among poultry companies and government agencies. Specifically, the ability to refer journalists to the sources they desire is important to ensure fair, objective coverage, but also the ability to affect the tone of coverage by referring journalists to certain sources is an important aspect of good public relations. Furthermore, this study showed that public relations professionals in the poultry industry may be

missing an opportunity by not referring journalists to expert scientists and educators in university settings, who may be able provide more objective, less emotion-laden information about the issue and therefore affect the framing and tone of the coverage.

Recommendations for Further Research

Based on the conclusions and implications of this study, the researchers feel further investigation is needed. A replication of this study in other animal agricultural industries facing environmental lawsuits and public scrutiny would be beneficial. Also, evaluating news releases and other public relations efforts distributed by each of the sides involved in the dispute could help determine which public relations practices were most successful. A survey of readers of the four newspapers used in this study could help determine how print media has actually influenced these people's opinions of the water quality dispute. Finally, a similar study could be conducted using different forms of media including web sites, television, and blogs to determine if different media frame stories differently or consider other sources more credible.

Final Commentary

Media influence will only become stronger as more types of media evolve. With the advent of blogs and RSS, public relations practitioners have already seen the need to evaluate their communications efforts and to change with the times. While media outlets may change, it is likely that a newsworthy issue, a credible source, and the right angle on the story will always be a sound combination to get journalists' attention.

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Competencies Needed by Agricultural Communication Undergraduates: An Industry Perspective

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Competencies needed by agricultural comunication graduates to meet industry needs are dynamic, with new technohnologies being integrated into the communication industry annually. Over the past 35 years, several studies have reviewed agricultural communication curriculum by inquiring of students, graduates, faculty, and industry to determine what coursework, competencies, and objectives should be included to prepare undergraduates. Yet, the literature recommends reviewing curriculum every 2-5 years. This Delphi study was conducted to determine what competencies are desired by industry for bachelor of science graduates so existing curricullm at The University of Gerogia could be revised. Thirty-seven participants from industry came to consensus on 85 statements. Statements were categorized using curriculum categories from Terry et al. (1995). The ten statements receiving the highest level of agreement were "Conduct activities in an ethical manner," "Ability to meet deadlines," "Dependability," "Strong work ethic," "Reliable," "Organizational skills," "Demonstrate professional/business etiquette in workplace," "Ability to multi-task," "Time management skills," and "Ability to be a productive member of a team." This study sought to address a portion of Agricultural Communications National Research Priority Area 4: "What are the skills, competencies, and resources necessary to prepare professional agricultural communicators for success in various aspects of agricultural knowledge management."

Introduction/Purpose

Courses in agricultural communication have been taught for over 100 years and during that time the discipline has expanded beyond writing for print media (Doerfert & Miller, 2006). Today's graduates can pursue a wide range of career options; from advertising to sales and policy to photography, providing agricultural communication graduates with skills valued by many sectors of agriculture (University of Georgia, 2007). The development of these skills may be due to the intersection of disciplines found in this academic major, as students have traditionally taken courses in basic science, agricultural science, and communications (Tucker, Whaley, & Cano, 2003) which encompass many competencies to be developed by graduates.

Agricultural communication programs have grown over time while gaining popularity as a discipline (Weckman, Witham, & Telg, 2000). At the same time, the communication needs and preferences of agricultural industry professional and agricultural communication stakeholders are changing at a rapid pace (Doerfert & Miller, 2006). Over the past 35 years several studies have reviewed agricultural communication curriculum by inquiring of students, graduates, faculty, and industry professionals to help determine what coursework, competencies, and objectives should be included to properly prepare undergraduates for successful careers (Bailey-Evans, 1994; Kroupa & Evans, 1973; Sprecker & Rudd, 1997; Terry, Lockaby, & Bailey-Evans, 1995; Terry et al., 1994). These studies are valuable assets to the discipline, but

due to the dynamic nature of the agricultural communications profession and the technologies that continue to emerge, frequently evaluation of curriculum is recommended to determine industry needs. Indeed, agricultural communication programs have a responsibility to provide students with curriculum that equips them for the work-place. To accomplish this, curriculum must be periodically reexamined by seeking input from students, instructors, graduates, and professionals (Doerfert & Miller, 2006).

Likewise, industry encourages the profession to review the curriculum every 2-5 years to "reassess and readdress the agricultural communications curriculum" (Terry et al., 1994, p. 24). To accomplish this, a model was sought for curriculum revision. Finch and Crunkilton (1999) developed a systems curriculum model which requires feedback from graduates and industry to improve the curriculum. Incorporating input from professionals in the field will help programs mirror the needs of industry (Sprecker & Rudd, 1998).

Beyond professionals, input from stakeholders has been recommended as well (Crowder, 1997; Wolf, 2007). Alumni committees and advisory boards can provide input and recommendations about the curriculum and "desired competencies of graduates" (Tucker et al., 2003, p. 27). Including stakeholder input in this process will strengthen curriculum and graduate competencies, and "is likely to concentrate heavily on the program's performance in providing practical skills perceived as necessary for entry-level employment in the field" (p. 27).

Similarly, the National Research Agenda encourages evaluating curriculum. Within Agricultural Communications Research Priority Area 4 is the charge to determine "What are the skills, competencies, and resources necessary to prepare professional agricultural communicators for success in various aspects of agricultural knowledge management" (Osborne, 2007, p. 11).

Past studies have evaluated curriculum from a variety of perspectives. Cooper and Bowen (1989) solicited feedback from program graduates and found they perceived the five most important courses completed were agricultural communications, agricultural economics, food science, animal science, and natural resources. Within the communications curriculum, the five most important courses to graduates were writing, editing, public relations, advertising, and photography. When looking back on their overall program experience, graduates stated the most beneficial required course was writing or editing. If they could plan their degree program over again, 40% of the respondents stated they would add more journalism or communication courses, while 34% would enroll in management, marketing, or other business courses. Interestingly, 71% of the participants stated they felt unprepared for the management, marketing, and business responsibilities encountered in their careers.

In a study of agricultural communication faculty members from 30 institutions, Reisner (1990) found the communication courses most commonly required were writing skills, photography, and communications law. The schools studied offered specific discipline options which varied between schools: general agricultural communications, news-editorial, public relations, broadcast, and advertising that allowed students to build skills specific to each option area. Regarding agricultural course electives, agricultural economic courses were recommended by industry professionals. A criticism was that the curriculums accessed did not require students to take courses relating to "cross-cultural global perspectives, agricultural systems analysis, values and ethics in agriculture, public policy, or leadership" (p. 15).

In a 1994 study, Terry et al. assembled a panel of leaders from seven agricultural communication professional organizations who determined that agricultural communication coursework should consist of courses from 28 disciplines consisting of 89 specific concepts. The following concepts received 100% agreement: grammar, government policies, history of American agriculture, communicating agriculture to the public-domestic , communicating agriculture to the public-international, agricultural policy, geography, word processing, creative strategies, campaign planning, graphic design, news writing, reporting, editing, ethics, design and layout, problem solving, speech writing, oral communications, scripting writing, and an internship that allows the student to apply learned concepts.

Sprecker and Rudd (1997) interviewed faculty, practitioners, and alumni of agricultural communication and found all three groups agreed the most valuable skill for graduates was writing, as this is the "foundation for success" in communication (p. 9). Overall, four themes emerged among the groups studied. First, a broad overview of agriculture, especially as it applies to the respective state, including policy, law, economics, and trade. Second, students' communication skills were more important than having agricultural knowledge. This was emphasized in further statements by interviewees such as "first and foremost" agricultural communication students are communicators, rather than agriculturalists (p. 9) and a graduate's communication skills will allow them to land a job, not their agricultural knowledge. Next, students need to possess a wide variety of communication skills and apply them proficiently. Finally, the ability to network is a foundational component in agricultural communication.

When analyzing statements among the groups studied, the following themes were found: instructors and practitioners highly valued internships, yet many practitioners that had worked with interns found student's writing skills inadequate. Similarly, alumni felt that students should take courses in which they must take on a project "from inception to completion" (p. 9), emphasizing the application of communication skills. Beyond agriculture courses, coursework focusing on policy, agricultural issues, economics, politics, and international trade were recommended by the participants. In addition, those interviewed felt students should be able to manage issues in the areas of environmental regulation and activism, and predicted that most future graduates would be employed in public relations (Sprecker & Rudd, 1997).

Although many professionals believe the agricultural coursework should be a significant portion of the curriculum, most stated that a solid foundation of communication coursework is critical for undergraduates (Cooper & Bowen, 1989; Sprecker & Rudd, 1997). Indeed, previous research revealed that "communication skills should be the basis of an agricultural communication curriculum" (Ettredge & Bellah, 2008, p. 7).

Purpose/Objectives

The purpose of this study was to determine the competencies needed by agricultural communication graduates as perceived by industry professionals. With this information curriculum may be modified or developed to provide students with current knowledge and skills found in today's workplace. The objective of the study was to identify the agricultural communication competencies that had the greatest level of consensus.

Methods/Procedures

Because consensus of opinion was desired, the Delphi method was chosen for this study (Stitt-Gohdes & Crews, 2004) and has been used successfully in previous curriculum studies (Martin & Frick, 1998; Morgan, Rudd, & Kaufmann, 2004; Terry et al., 1994). The Delphi method is an efficient method of gathering opinions as it requires only that participants respond to a questionnaire rather than attend a series of meetings or write a paper (Dalkey, 1969). An 80% level of agreement was established *a priori* as the level required for statements to move from Round 2 to Round 3 and for statements in Round 3 to achieve consensus (Moreno-Casbas, Martin-Arribas, Orts-Cortes, & Coment-Cortes, 2001; Morgan, Rudd, & Kaufmann, 2004; Simon, Haygood, Akers, Doerfert, & Davis, 2005; Stitt-Gohdes & Crews, 2004).

Participants were chosen using the snowball method of sampling (Ary, Jacobs, & Razavieh, 1996). Alumni from The University of Georgia communication program (N=78) were contacted via email and asked to provide three names of experts in the field of communication and 15 alumni responded with names of experts. Using a modified Tailored Design Method (Dillman, 2000) these experts (n=45) were then invited to participate in the study. Of the 45 contacted, 32 responded to Round 1 of the study by providing responses to the statement, "What competencies are needed for agricultural communication bachelor of science graduates?" yielding a response rate of 71.1%.

Statements from Round 1 were analyzed and condensed using the constant comparative method (Glaser & Strauss, 1967). One-hundred forty-eight statements were derived from this process and presented to the participants in Round 2 where they were asked to rank their level of agreement to them using a five-point Likert-type scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. Participant demographic information was also collected.

In Round 2, 26 participants responded providing a 57.8% response rate. Means of participant responses to the statements were determined and statements having an 80% or higher level of agreement ($M \geq 4.00$) were used in Round 3 (n=110). These statements were sorted by level of agreement and presented to the participants using a four-point Likert-type scale to force a positive or negative response to the statement: 1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree. Five additional statements that participants wrote in from Round 2 were included as well.

Thirty participants responded in Round 3, providing a 66.7% response rate. Means of participant responses to the statements were determined and statements having an 80% or higher level of agreement ($M \geq 3.20$) were determined to have consensus (n=85). Throughout the course of the study, a total of 37 individuals participated, with some completing only one or two rounds. Twenty-two participants completed all three rounds. Dalkey (1969) stated that a response rate of n=13 yielded a reliability of 0.80.

To categorize participants' statements the divisions established by Terry, Lockaby, and Bailey-Evans (1995) of Core Area, Discipline, and Competencies were used. In some cases, no Discipline or Competency properly categorized the statement, so the researcher labeled the statement with the term Miscellaneous, especially when the statement appeared to address more than one category.

Statements were assigned a ranking based on overall participant level of agreement from 1 to 85. Statements with the same level of agreement were assigned the same rank. For example, the highest level of agreement was found with three statements. Each of these statements received the rank of "1" and the statement with the next highest level of agreement received the ranking "4" because three statements preceded it.

Results/Findings

Participants ranged in age from 25-55 years old, with a mean of 35.7 years, and consisted of 30 females and seven males. Years spent in the career field of communication ranged from 0-35, with a mean of 11.8. Participants had been in their current position 5.6 years on average, with a range of 0-18 years. Level of education ranged from bachelor degree (*n*=21) to doctorate (*n*=1) with 15 having a master's degree. High school career and technical education included agriculture (*n*=19), journalism (*n*=8), business (*n*=7), marketing (*n*=2), information technology (*n*=1), and none (*n*=10) (participants were allowed to indicate more than one category). Regarding academic discipline in college, most participants majored in agricultural communication/agricultural journalism (*n*=26), agriculture (n=7), marketing (n=6), journalism (n=5), and various other disciplines (*n*=3) (participants were allowed to indicate more than one category). When asked, "What is the primary focus of your position?" most stated administration or management (*n*=24) followed by public relations (*n*=22) and print publication (*n*=15) (participants were allowed to indicate more than one primary focus).

Participant statements were categorized into three Core Areas of study: Agriculture, Communication, and General Education. Within these Core Areas are Disciplines as identified by Terry et al. (1995). Within Disciplines Terry et al. recognized Competencies. For this study, the Competencies stated by the participants were categorized into one of the Competency categories identified by Terry et al.

The Core Area of Agriculture contains 28 statements on which participants came to consensus (Table 1). The statements ranked highest in the study were, "Conduct activities in an ethical manner" (1), "Ability to meet deadlines" (1), and "Dependability" (1). The competencies of "Strong work ethic" (4) and "Reliable" (6) had the next highest level of agreement. Following these were "Organizational skills" (7), "Demonstrate professional/business etiquette in workplace" (7), "Ability to multi-task" (7) and "Time management skills" (11).

Table 1
Agriculture Core Area Disciplines and Competencies

Statement	Discipline	Competency	Level of Agreement	Rank
Conduct activities in an ethical manner	Agricultural Leadership	Ethics	94.7%	1
Ability to meet deadlines	Internships	Development of Personal Skills	94.7%	1
Dependability	Internships	Development of Interpersonal Skills	94.7%	1
Strong work ethic	Internships	Employee Responsibilities	93.2%	4
Reliable	Internships	Development of Interpersonal Skills	90.9%	6
Organizational skills	Agricultural Leadership	Personal Development	90.2%	7
Demonstrate professional/business etiquette in workplace	Internships	Employee Responsibilities	90.2%	7
Ability to multi-task	Internships	Development of Personal Skills	90.2%	7
Time management skills	Agricultural Leadership	Personal Development	89.4%	11
Ability to be a productive member of a team	Internships	Development of Interpersonal Skills	89.4%	11
Flexibility in day to day tasks	Internships	Development of Personal Skills	88.6%	15
Detail oriented	Internships	Development of Personal Skills	88.6%	15
Ability to listen	Internships	Development of Personal Skills	87.5%	23
Interpersonal skills. The ability to have genuine one on one conversation/discussion with people	Internships	Development of Personal Skills	86.4%	30
Dedicated	Internships	Development of Interpersonal Skills	85.6%	34
Positive attitude that is most concerned with finding answers	Internships	Problem Solving	85.6%	34
Social skills,	Agricultural Leadership	Interpersonal Relations	84.8%	38

Statement	Discipline	Competency	Level of Agreement	Rank
An understanding of professional dress	Internships	Employee Responsibilities	84.8%	38
Ability to identify current issues in the agricultural industry	Miscellaneous	Miscellaneous	84.8%	38
Leadership skills	Agricultural Leadership	Miscellaneous	84.4%	43
Graduates need the ability to think on their feet	Internships	Problem Solving	84.1%	46
Beyond all else an ability to listen	Internships	Development of Personal Skills	83.6%	51
The ability to think on their feet and using the technical knowledge they have gained [in their bachelors program] to apply that info solve real-world workplace dilemmas. This includes the following: Leadership skills, team building skills, and organizational skills	Internships	Application of Ag Communications Concepts	83.1%	58
An understanding of the business aspects of the major industries of agriculture	Agricultural Economics	Gen Concepts and Principles	81.8%	73
Real experience in problem solving	Internships	Problem Solving	81.8%	73
Solid project management skills in diverse and complex situations	Internships	Development of Personal Skills	81.3%	76
Exceptional interpersonal communication skills	Internships	Development of Personal Skills	81.3%	76
Understanding of the agriculture industry and terminology	Miscellaneous	Miscellaneous	81.1%	79

The Core Area of Communication contained 27 statements on which the participants came to consensus (Table 2). "Effectively communicate verbally" was the competency with the highest level of consensus and ranked fifth among all of the competencies. This was followed by "Communications Principles- understanding the media mix and how to use them effectively and efficiently" (23), "Ability to identify barriers to communication" (26), and "Communications Principles- understanding the media mix and how to use them effectively and efficiently" (26).

Table 2
Communication Core Area Disciplines and Competencies

Statement	Discipline	Competency	Level of Agreement	Rank
Effectively communicate verbally	Public Speaking	Oral Communication	91.7%	5
Communications Principles-understanding the media mix and how to use them effectively and efficiently	Miscellaneous	Miscellaneous	87.5%	23
Ability to identify barriers to communication	Public Relations	Problem Solving	87.5%	23
Ability to create and edit newsletter articles	Journalism	Design and Layout of Publications	87.1%	26
Communication skills beyond 'listening' - being able to understand what the person is saying. Repeat back what you understand to make sure you are hearing what truly has been (at least attempted to be) communicated.	Journalism	Reporting	87.1%	26
My ideal employee would need to be able to write, design, strategize and come up with concepts for clients	Advertising	Miscellaneous	86.7%	29
Creative	Advertising	Creative strategies	85.9%	32
Superior tactical communication skills and instincts	Miscellaneous	Miscellaneous	85.9%	32
Identify their own strengths and learn how to develop/enhance their strengths from a communications perspective	Miscellaneous	Miscellaneous	85.2%	37
Ability to create and edit press releases	Journalism	Miscellaneous	84.8%	38
Translate technical information for lay people	Journalism	Dissemination Systems	84.4%	43
Reporting skills - formulate and ask meaningful questions	Journalism	Reporting	84.4%	43
Ability to understand individuals at various educational levels	Journalism	Miscellaneous	84.1%	46

Statement	Discipline	Competency	Level of Agreement	Rank
Ability to work with clients to understand their public relations needs and goals	Public Relations	Campaign Planning	84.1%	46
Properly select and edit photos for publication	Photography	Composition	83.9%	50
The ability to differentiate between different styles of writing such as news writing vs. feature writing	Journalism	Miscellaneous	83.6%	51
How to organize and write viable communications plans. These plans need to "run parallel" with the business/marketing plans	Public Relations	Campaign Planning	83.6%	51
Knowledge of graphic design / page layout	Advertising	Graphic Design	83.1%	58
Ability to interview sources	Journalism	Reporting	82.8%	61
Ability to identify sources	Journalism	Reporting	82.8%	61
Superior strategic communication skills and instincts	Miscellaneous	Miscellaneous	82.8%	61
Graduates need to have a holistic view of communications	Miscellaneous	Miscellaneous	82.8%	61
How to develop, write and execute a crisis management plan	Public Relations	Problem Solving	82.8%	61
How to develop a public relations marketing campaign	Public Relations	Campaign Planning	82.6%	67
Telephone skills	Public Speaking	Oral Communication	82.6%	67
The ability to manage people	Public Relations	Personnel Management	81.3%	76

The final Core Area was General Education which encompassed a broad spectrum of 30 competencies, with the first four focusing on language arts skills: “Correct use of grammar” (7), “Effectively communicating using the written word” (11) and “Correct use of spelling” (11) (Table 3). Once again, competencies which may be difficult to teach and assumed to be included in the student’s skill set found consensus: “Motivated” (19), “hard worker” (19), “willingness to roll up their sleeves to ‘Get things done’ versus thinking that to fully accomplish a task one must assign this to others” (19), and “self-starter” (19) were ranked in the top half of the statements.

Following the categories established by Terry et al., the Discipline of computer applications is included in General Education Core Area. “Working knowledge of PC computers” (38), “web based skills” (51), and “basic competencies in office software” (57) were all found to be important. Likewise, a working knowledge of communication-oriented software was important as well. “Enough exposure to graphics software to get them into an office and

ability to learn/adapt quickly" (58), "Working knowledge of Microsoft Word" (67), "Graduates should have a basic knowledge of the industry standard design programs" (81), and "How to integrate market research and various database tools available" (85). Similarly, many business-type competencies were found in this Area such as "Managing a budget" (46), "understanding budgeting" (67), and "general business—an understanding of business models" (81).

Table 3
General Education Core Area Disciplines and Competencies

Statement	Disciplines	Competency	Level of Agreement	Rank
Correct use of grammar	English	Grammar	90.2%	7
Effectively communicate using the written word	English	Grammar	89.4%	11
Correct use of spelling	English	Grammar	89.4%	11
Excellent writing skills, which I'm convinced is still one of the most lacking areas in business today	English	Miscellaneous	88.6%	15
Networking skills,	Sociology	None	88.3%	18
Correct use of punctuation	English	Grammar	87.9%	19
Motivated	Miscellaneous	Miscellaneous	87.9%	19
Hard worker	Miscellaneous	Miscellaneous	87.9%	19
Willingness to roll up their sleeves to "Get things done" versus thinking that to fully accomplish a task one must just assign this to others	Miscellaneous	Miscellaneous	87.9%	19
Grammar and writing skills are not enough - must understand the environment, including business, science and law.	Miscellaneous	Miscellaneous	86.3%	31
Self-starter	Miscellaneous	Miscellaneous	85.6%	34
Working knowledge of PC computers	Computer Applications	Miscellaneous	84.8%	38
Managing a budget	Business	Gen Concepts and Principles	84.1%	46
Web based skills	Computer Applications	Electronic Communication /Networking	83.6%	51
Love of learning	Lifelong Learning	Miscellaneous	83.6%	51
Intuitive	Miscellaneous	Miscellaneous	83.6%	51
Basic competencies in office software	Computer Applications	Miscellaneous	83.3%	57

Statement	Discipline	Competency	Level of Agreement	Rank
Enough exposure to graphics software to get them into an office and ability to learn/adapt quickly.	Computer Applications	Graphic Design	83.1%	58
Ability to identify appropriate file formats for printed documents	Computer Applications	Miscellaneous	82.8%	61
Understanding budgeting	Business	Gen Concepts and Principles	82.6%	67
Working knowledge of Microsoft Word	Computer Applications	Word Processing	82.6%	67
Principles of marketing-understanding and communicating the differences between a goal, an objective, a strategy and a tactic	Marketing	Marketing Principles	82.6%	67
Optimistic	Miscellaneous	Miscellaneous	82.0%	72
Knowledgeable with company/product business/marketing plans	Marketing	Marketing Principles	81.8%	73
General business - an understanding of business models.	Business	Gen Concepts and Principles	80.5%	81
Graduates should have a basic knowledge of the industry standard design programs	Computer Applications	Graphic Design	80.5%	81
Understanding consumer trends	Marketing	Buyer Behavior	80.5%	81
Utilize proper research techniques	Miscellaneous	Miscellaneous	80.5%	81
How to integrate market research and various database tools available	Computer Applications	Database Management	79.8%	84
Experience with current graphic design programs	Computer Applications	Graphic Design	79.7%	85

Discussion/Conclusions

Participants were in early to mid career, with none near traditional retirement age. They had been in the profession a substantial number of years (11.8), and in their current position for half as long (5.6 years). All participants were well educated, having earned a bachelor degree or higher. Most were involved with agriculture in high school (*n*=19). Similarly, a majority of participants majored in agricultural communication/journalism (*n*=27), journalism (n=3), and various other disciplines (*n*=5). Likewise, most participants' current position focused heavily on administration or management (*n*=24) rather than communication skills. This emphasizes the need for students to be prepared for management and leadership roles and may prompt agricultural communication programs to include coursework to address these needs. Nearly the same number stated their focus was public relations.

Several of the competencies identified by the participants may be indirectly taught in a college courses. For example, the competency "ability to meet deadlines" is not usually taught in a course, but is assumed to be a component of courses based on assignment due dates and penalties for late assignment submissions. Yet, this is not a traditional objective in a course. Similarly, the competencies of "dependability" and "strong work ethic" are not usually subjects addressed in courses. Yet, many of these competencies are not specifically addressed in course work, but through the structure of the university environment it is as if there is an assumption that students will develop these competencies before graduating. Due to the frequency of these competencies stated in this study, perhaps more effort should be devoted to incorporating these competencies into courses.

Included in the Area of Communication was a breadth of competencies for graduates to achieve. While verbal communication topped the list, effective listening was also held in high esteem by the participants along with skilled journalistic writing. Competencies that may be more difficult to define emerged such as "Superior tactical communication skills and instincts."

Overall, it appeared a holistic approach to communications emerged. Statements such as ability to "understand the media mix and use them effectively," "create and edit a newsletter," "write, design, strategize, and come up with concepts for clients" and "Graduates need to have a holistic view of communications" lend themselves to the notion that students must be capable to undertake all aspects of a project. It appears students do not have the luxury of narrowing their focus to one area of communications and becoming proficient, but that they need to incorporate all of the elements of communication successfully for clients.

The competencies with the highest level of consensus pertained to English, and in particular grammar. Competencies such as "correct use of grammar," spelling, writing effectively, and punctuation, which are competencies expected of any college graduate, were ranked high in this study by participants. However, students must go beyond writing and grammar to succeed. The statement "Grammar and writing skills are not enough - must understand the environment, including business, science and law" links to the earlier "holistic" comment in the communications section, emphasizing students are expected to understand how all the disciplines interlink.

Interestingly, rankings related to technology were included with General Education. Having a "working knowledge of PC computers" was ranked higher than knowing how to use Mac computers (which received less than 80% level of agreement). When addressing competency in software use, participants came to consensus on only one specific program: Microsoft Word®. Regarding graphics programs, consensus showed that having a familiarity with graphics programs was valued, but more important was the ability to learn any program the graduate is required to use.

A general understanding of business principles emerged as well. Although few specific disciplines of business received consensus, managing and understanding a budget was found to be important, as well as a general understanding of business models. Similarly, many dimensions of marketing were valued. Principles of marketing, understanding marketing plans and consumer trends received consensus.

As with the Competencies found in the Agriculture Core Area, many of the competencies in the General Education Core Area may be taught indirectly in many courses. Statements such as "Motivated," "Hard worker," "Willingness to rollup sleeves and get things done," "Intuitive," "Optimistic," and "Self-starter" may be more difficult to teach and assess, and perhaps are more associated with one's personality rather than a concept to be taught in class.

The fact that so many of these "indirect" competencies were stated in Round 1, and then gained consensus in subsequent rounds makes one question the qualities employers are finding in new employees today. With statements such as "willingness to roll up their sleeves to 'Get things done' versus thinking that to fully accomplish a task one must assign this to others, " and "self-starter" ranking in the top half of the statements, could it be that graduates are not meeting employer's expectations? And if this is the case, is it possible to structure courses in such a way that these characteristics are developed in students?

Additional research should be conducted to determine if graduates possess these competencies that industry participants have identified and if these competencies are learned in the university environment or are they learned after graduation once the graduate enters their career field? A follow-up study should be conducted to determine the specific objectives to be associated with each competency found. In addition, the discipline should pursue feedback from graduates and industry so programs can be periodically reviewed, revised, and improved.

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Kansas beef feedlot managers' trusted sources of information concerning an agroterrorism event: A descriptive study

Category: Research paper

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Kansas beef feedlot managers' trusted sources of information concerning an agroterrorism event: A descriptive study

Abstract

Managers of Kansas beef feedlots were surveyed to determine managers' preferred sources of information about agroterrorism as a foundation for law enforcement programs to disseminate information about protecting American animal agriculture. Developing producers' awareness of and support for proposed law enforcement initiatives is vital to successfully implementing those strategies. Effective communication with producers depends on identification of producers' preferred and trusted sources of information related to agrosecurity and agroterrorism. Feedlot managers' preferences for veterinarians as sources of information were consistent with the results of previous studies (Ashlock, 2006; Extension Disaster Education Network, 2002) and indicated the importance of veterinarians as channels for dissemination of information from law enforcement agencies. Managers' preferences for veterinarians as a source of information also reflected behaviors associated with the persuasion stage of the innovation-decision process. Inclusion of veterinarians and other preferred sources of information in county extension meetings and county extension publications could add value to these channels for dissemination of agroterrorism information to Kansas beef feedlot managers. Feedlot managers' adoption of agroterrorism preparedness programs may be enhanced by educational programs about preventive protocols.

Keywords: agroterrorism, feedlot, biosecurity, beef cattle, innovation, law enforcement, information sources

Kansas beef feedlot managers' trusted sources of information concerning an agroterrorism event: A descriptive study

Introduction

"The deliberate introduction of an animal or plant disease with the goal of generating fear over the safety of food, causing economic losses, and/or undermining social stability" is how agroterrorism has been defined for members of the United States Congress (Monke, 2007). Since 1912, 12 acts against agriculture involving biological agents have been reported and confirmed, including two acts that fit within the definition of agroterrorism (Carus, 2002). In addition, other acts of bio- and agroterrorism have been reported, including acts by interest groups that have been estimated to cost industries more than $200 million (Animal Agriculture Alliance, 2006).

Characteristics of U.S. agriculture that contribute to its susceptibility to agroterrorism incidents include geographical disbursement in unsecured environments, concentration of livestock in confined locations, the number of biological agents that may pose a threat to animals and plants, transportation and blending of agricultural inputs and products, the influence of disease-free status on international trade, and veterinarians' lack of direct experience with foreign diseases (Monke, 2007). Despite these vulnerabilities, agriculture was largely ignored by various government entities until recently in plans to ensure homeland security. As agriculture has been increasingly included in homeland security initiatives, research, and response plans, biological weapons have received much attention as they are considered to be more significant threats to agriculture than chemical weapons (Monke). In animal agriculture, foot-and-mouth disease has been identified as the most serious biological threat to animals, followed by bovine spongiform encephalopathy (Kohnen, 2000).

An intentionally introduced disease resulting in a nationwide outbreak could cost from $750,000 to $1 million per minute of each operating business hour (Kosal & Anderson, 2004).

The livestock industry may be particularly susceptible to costly interruptions in operations as farms, feedlots, and fields often are exposed. Beef cattle feedlots have been identified as probable agroterrorism targets (Knowles et al., 2005) along with feed mills that serve as point sources for distribution of products to large numbers of livestock (Kosal & Anderson).

Knowles et al. (2005) defined five categories of (agroterrorism) threats: international terrorists, such as al-Qaeda; domestic terrorists; militant animal rights groups; economic opportunists who would benefit from changes in market prices; and disgruntled employees. Of these five types of threats, international terrorists pose the most likely threat for introduction of a foreign animal disease to the United States (Knowles et al.). Three levels of socioeconomic costs could result from an agroterrorism event of any type. These costs include direct revenue losses from the elimination of diseased animals, indirect revenue losses sustained by other industries following quarantines, and losses in exported agricultural products from protective embargoes imposed by other countries (Chalk, 2004).

In response to the potential for agroterrorism events and subsequent impacts, four preventive levels for countering agroterrorism have been identified: organism, such as resistance of animals or plants to diseases; farm, including facility management techniques and security measures to prevent introduction or transmission of disease; sector, including disease detection and response procedures of government agencies such as the United States Department of Agriculture or the National Institute of Justice; and national, such as policies to minimize the social and economic costs of potentially catastrophic disease outbreaks (Kohnen, 2000). In this study, attention was focused on improving the role of law enforcement in prevention of and response to agroterrorism events.

The typical response of law enforcement agencies to criminal activities is reactive, occurring after the crime and encompassing follow-up investigations, arrests, and prosecutions of the person or people who conducted the crime (Knowles et al., 2005). During the response to an introduction of a foreign animal disease, law enforcement agencies also would play a major role in the quarantine of the infected area and as on-site security for an average of 60 days (Knowles et al., 2005). However, law enforcement's role may be increased and criminal activities such as agroterrorism events may be prevented in part through the distribution of information about community policing programs and local partnerships with law enforcement (Knowles et al., 2005).

To help meet this need, the National Institute of Justice has developed preventive strategies and initiatives for law enforcement officials to strengthen defenses against agroterrorism threats, although implementation of these strategies has been impeded by a lack of financial resources and manpower available to law enforcement agencies (Knowles et al., 2005). The strategies proposed by the National Institute of Justice include Agro-Guard, which is a partnership between law enforcement and livestock producers to identify suspicious activities and threats to agriculture; establishing specialized regional response teams; providing training to local law enforcement officers in the identification and seizure of illegally imported food products; establishing interaction between state and federal intelligence databases to assist in managing potential threats; and developing baseline data to increases law enforcement's readiness capabilities (Knowles et al.).

Developing producers' awareness of and support for the proposed strategies for amplifying law enforcement's role in agroterrorism prevention and response is a key step to the successful implementation of those strategies, and reaching producers effectively is dependent on

identification of producers' preferred and trusted sources of information related to agrosecurity and agroterrorism. Knowledge of producers' preferred and trusted sources of information also reflect the stage of the innovation-decision process in which producers may be, and the innovation-decision process then may be used to determine which communication channels will best serve in distributing information to producers to advance law enforcement programs.

According to Rogers (2003), an innovation is an idea, practice, or object perceived as new by an individual (p. 12). For example, the innovation of interest in this study is preventive protocols to be used by feedlot managers and law enforcement officials. Such innovations are communicated through social systems by diffusion through specified channels, and four elements play a role in diffusion: the innovation, communication channels, time, and the social system (Rogers, p. 11). The innovation-decision process is a series of stages through which an individual determines whether an innovation should be adopted (Rogers, p. 167). The five modern stages of the process are: knowledge, which includes an individual's first exposure to an innovation and understanding of how it functions; persuasion, which occurs when an individual forms a favorable or unfavorable attitude toward the innovation; decision, which occurs when a choice is made to adopt or reject the innovation; implementation, which occurs when the innovation begins to be used; and confirmation, during which the decision is reinforced and may be reversed (Rogers, p. 169).

Adoption decisions are influenced by numerous factors including perceived advantages of the innovation; perception of the consistency of the innovation with existing values or needs; and complexity of the innovation, which varies inversely with adoption rate (Oskam, 1992; Rogers, 2003, pp. 168-179). In the case of agriculture and potential tragedies, people involved in agriculture may believe tragedy will not happen to them and disregard the necessity of

preventive protocols (Oskam, 1992), resulting in rejection of programs and strategies such as those proposed by the National Institute of Justice. In addition, the channels through which information about the innovation is received and personal preferences for information channels influence decisions about whether to adopt agricultural innovations (Rogers, 2004).

This study sought to determine Kansas feedlot managers' preferred sources of information about agroterrorism events as a foundation for law enforcement programs to disseminate timely information about protecting American animal agriculture from agroterrorism events. The study was guided by three research questions:

1. What sources of information do feedlot managers use to seek information regarding security issues?
2. How do the managers' preferred sources of information differ based on location and capacity of the feedlot?
3. What are the demographic characteristics of Kansas beef feedlots and feedlot managers?

Methods

Managers or owners of beef feedlots registered with the Kansas Department of Health and Environment were selected for this study. The population included 259 registered beef feedlots, 228 of which had working telephone numbers. Feedlot managers without telephone information or with disconnected numbers were excluded from the study.

Descriptive survey methodology was used to determine feedlot managers' preferred sources of information about agroterrorism. Survey responses were gathered via telephone survey. Questions about preferred sources of information about agroterrorism and demographic characteristics of feedlot managers were adapted from Ashlock (2006) and a literature review of agroterrorism preparedness and information sources. The survey was reviewed by a panel of

experts to establish face and content validity. A post-hoc reliability analysis performed on the scaled items in the instrument produced a Cronbach's alpha of 0.895.

The telephone surveys were conducted during a one-week period by one interviewer. Responses were obtained from 175 feedlot managers, resulting in a response rate of 76.8 percent.

Quantitative data were analyzed using the Statistical Package for Social Sciences. Descriptive data, including frequencies, percentages, means, and standard deviations, were used to interpret the data and describe feedlot managers' responses.

Findings

Preferred sources of information about feedlot security

Feedlot managers indicated from which sources they would seek information when reacting to a feedlot animal health issues (Table 1) and in what format they would prefer to receive information about preventive measures for agroterrorism events (Table 2). A majority (69 percent) of managers reported they would prefer to receive information from a consulting veterinarian or nutritionist. Additional preferred information sources included state authorities (10.7 percent), livestock association (9.5 percent), university researchers (7.1 percent), and word of mouth (1.2 percent). About two percent of managers did not indicate a preferred information source. Managers were asked to indicate their first, second, and third choices of information formats. Overall, e-mail was preferred by 61.9 percent of managers, followed by 52.4 percent who preferred association meetings, 44 percent who preferred newsletters, 39.4 percent who preferred county Extension meetings, and 25 percent who preferred standard mail.

Feedlot managers were asked to indicate their perceptions of reliability of (Table 3) and levels of trust in (Table 4) specified information sources using five-point scales. Managers viewed local/consulting veterinarians as most reliable, followed by university specialists,

Table 1

Feedlot Managers' Preferred Sources of Information about Animal Health Issues

Information source	%	n
Consulting veterinarian/nutritionist	69.0	58
State authorities	10.7	9
Livestock association	9.5	8
University researchers	7.1	6
Word-of-mouth	1.2	1
No answer	2.4	2

livestock associations, magazines, the U.S. Department of Agriculture, periodicals, the Internet, radio, agricultural Extension agents, and local daily newspapers. Managers reported having the highest level of trust in local/consulting veterinarians, followed by the USDA, university specialists, livestock associations, area law enforcement, magazines, agricultural Extension agents, periodicals, the Internet, radio, and local daily newspapers.

Managers were asked to indicate their first, second, and third choices for information source they trusted the most (Table 5). Overall, local/consulting veterinarians were trusted the most, followed by university specialists, livestock associations, the USDA, area law enforcement, agricultural Extension agents, the Internet, magazines, periodicals, local daily newspapers, and radio.

Table 2

Feedlot Managers' Preferred Formats of Information about Preventive Measures for Agroterrorism Events

Format	First (%)	n	Second (%)	n	Third (%)	n	Total %	Total n
E-mail	47.6	40	3.6	3	10.7	9	61.9	52
Association meetings	11.9	10	23.8	20	16.7	14	52.4	44
Newsletter	6.0	5	17.9	15	20.2	17	44.0	37
County extension meetings	14.3	12	15.5	13	9.5	8	39.4	33
Mail	4.8	4	9.5	8	10.7	9	25.0	21
Other	1.2	1	2.4	2	21.5	18	15.0	21
Internet	4.8	4	14.3	12	4.8	4	23.8	20
Magazine articles	4.8	4	4.8	4	2.4	2	11.9	10
County extension publications	3.6	3	4.8	4	2.4	2	10.7	9
Daily newspaper	0.0	0	3.6	3	1.2	1	4.8	4

Table 3

Feedlot Managers' Perceptions of Reliability of Information Sources

Source	Not reliable	Slightly reliable	Neutral	Reliable	Very reliable	Other	M
Local or consulting veterinarian	0.0	6.0	3.6	19.0	71.4		4.56
University specialists	1.2	0.0	25.0	45.2	27.4	1.2	3.99
Livestock association	1.2	3.6	21.4	44.0	29.8		3.98
Magazine	2.4	4.8	38.1	40.5	14.3		3.60
USDA	3.6	13.1	34.5	31.0	17.9		3.46
Periodicals	3.6	9.5	42.9	35.7	8.3		3.36
Internet	2.4	17.9	42.9	21.4	14.3	1.2	3.28
Radio	8.3	22.6	39.3	23.8	6.0		2.96
Agricultural extension agent	13.1	20.2	33.3	23.8	8.3	1.2	2.94
Local daily newspaper	25.0	35.7	23.8	11.9	3.6		2.33

Table 4

Feedlot Managers' Perceptions of Trustworthiness of Information Sources

Source	Not trustworthy	Slightly trustworthy	Neutral	Trustworthy	Very trustworthy	M
Local or consulting veterinarian	0.0	1.2	4.8	25.0	69.0	4.62
USDA	0.0	8.3	28.6	42.9	20.2	4.46
University specialists	1.2	1.2	13.1	53.6	28.6	4.21
Livestock association	0.0	3.6	13.1	52.4	31.0	4.11
Area law enforcement	1.2	8.3	34.5	40.5	15.5	3.61
Magazine	1.2	11.9	54.8	23.8	8.3	3.26
Agricultural extension agent	10.7	14.3	28.6	32.1	13.1	3.23
Periodicals	3.6	15.5	45.2	33.3	2.4	3.15
Internet	3.6	21.4	41.7	22.6	9.5	3.13
Radio	4.8	28.6	51.2	11.9	3.6	2.81
Local daily newspaper	14.3	39.3	34.5	9.5	2.4	2.46

Table 5

Feedlot Managers' Rankings of Preferred Information Sources

Format	First choice	n	Second choice	n	Third choice	n	Total %	Total n
Local or consulting veterinarian	66.7	56	13.1	11	4.8	4	84.5	71
University specialists	4.8	4	36.9	31	17.9	15	59.5	50
Livestock association	14.3	12	26.2	22	16.7	14	57.1	48
USDA	3.6	3	3.6	3	16.7	14	23.8	20
Area law enforcement	4.8	4	7.1	6	8.3	7	20.2	17
Agricultural extension agent	0.0	0	4.8	4	10.7	9	14.3	12
Internet	0.0	0	1.2	1	6	5	7.1	6
Magazine	0.0	0	1.2	1	6	5	7.1	6
Periodicals	3.6	3	1.2	1	1.2	1	6	5
Local daily newspaper	0.0	0	1.2	1	1.2	1	2.4	2
Radio	0.0	0	0	0	1.2	1	1.2	1

Relationship between preferred sources of information and capacity and location of feedlots

Feedlot managers' preferred sources of information about preventive measures for agroterrorism events were compared to the capacities and locations of the feedlots they managed. For all capacities and locations of feedlots, managers indicated preferring local/consulting veterinarians as a source of information, followed by state authorities, livestock associations, and university specialists. All managers also reported the local/consulting veterinarian to be the most trusted source of information. Managers of small and medium feedlots indicated university specialists were their second-most trusted source of information, while managers of large feedlots ranked livestock associations second. For the third-most trusted source of information, managers of small and medium feedlots selected livestock associations, while managers of large feedlots selected university specialists.

Demographics of feedlot managers

Demographic characteristics of the feedlots and managers were collected, including the number of cattle represented, ownership of feedlot, location of feedlot, gender, ages, levels of education, affiliations with beef industry organizations, computer access, and Internet access.

The total number of cattle represented by the respondents was 1,554,450, with an average feedlot capacity of 18,700 and range of 300 to 120,000. The types of ownership of the feedlots included family owned (51.2 percent), incorporated (40.5 percent), corporately owned (26.2 percent), and privately owned (22.6 percent). The most feedlots and cattle were located in southwest Kansas, followed by south-central, northwest, north-central, northeast, and southeast.

The managers were 91.7 percent male, with an average age of 51 years. All managers had completed high school, while 19 percent had completed two years of college, 46.4 percent held bachelor's degrees, 13.1 percent held master's degrees, and 3.6 percent were veterinarians.

About 89 percent of the managers reported affiliations with at least one beef industry organization.

Of the managers reporting organizational affiliations, 98.6 percent were members of the Kansas Livestock Association or Kansas Cattlemen's Association. The one respondent who did not report involvement with one of those two organizations was a member of the American Association of Beef Practitioners. Other organizational affiliations reported included the National Cattlemen's Beef Association, Ranchers-Cattlemen's Action Legal Fund, Red Angus Association of America, Oklahoma Cattlemen's Association, Oklahoma Club Calf Association, Texas Cattle Feeders' Association, United States Cattlemen's Association, and Cattlemen's Beef Council.

All managers except one reported owning a computer. Of those managers who reported having access to the Internet at home (89.3 percent), 97.3 percent had a high-speed Internet connection and the remaining managers did not know what type of Internet connection they had. In addition, 87.8 percent of managers had office computers with Internet access, with the majority (83.8 percent) having high-speed Internet connections.

Discussion

The preference of feedlot managers for local/consulting veterinarians as sources of information is consistent with surveys of producers conducted by the Extension Disaster Education Network [EDEN] (2002) and Ashlock (2006), indicating veterinarians are vital channels for disseminating law enforcement agency information about preventive measures for agroterrorism events. The preference for veterinarians as a source of information also is consistent with behaviors associated with the persuasion stage of the innovation-decision process. In the persuasion stage, individuals form a favorable or unfavorable attitude about an

innovation (Rogers, 2003, p. 169), such as preventive protocols to be used by feedlot managers and law enforcement officials. During this stage, producers will actively seek information about the protocols, determine if the information received is credible, and interpret the information, all of which require more detailed information that may be better provided by interpersonal sources than channels of mass communication (Rogers, p. 175).

Respondents in this study did not rank county extension educators highly among their most preferred, reliable, or trusted sources, which disagrees with producers surveyed by EDEN (2002) and Utah producers (Miller, Israelsen, & Jensen, 2008). However, county extension meetings were listed among the top five information formats preferred by Kansas beef feedlot managers, which is consistent with the recommendation of Miller et al. (2008) to use educational events to address characteristics of highly transmissible diseases. Including veterinarians and other preferred sources of information in county extension meetings and county extension publications to provide information about preventive measures for agroterrorism events could add value to these formats for Kansas beef feedlot managers.

Additionally, the preventive protocols at the center of this study fit within Rogers' (2003) definition of preventive innovations: "a new idea that an individual adopts in order to avoid the possible occurrence of some unwanted event in the future" (p. 176). As the desired consequences of preventive innovations are uncertain, a slower rate of adoption may be expected than for nonpreventive innovations (Rogers, p. 176). Oskam (1992) pointed out that the implications of potential tragedies in agriculture may be disregarded by producers, creating a need that may be filled by cues-to-action from an agency (Rogers, p. 176), such as educational programs about preventive protocols. Such programs may be particularly needed in southwestern Kansas, where the highest concentration of beef feedlots is located.

Recommendations

To better provide agroterrorism information to feedlot managers, law enforcement agencies and other agencies providing educational information should focus on meeting feedlot managers' preferences for information sources and formats. Specifically, law enforcement officials should use managers' preferred interpersonal sources, such as local/consulting veterinarians, to disseminate agroterrorism information to feedlot managers. In addition, law enforcement officials should use peer sources, such as the Kansas Livestock Association and the Kansas Cattlemen's Association to disseminate information about policies and procedures. Information dissemination also could be improved through the use of managers' preferred sources of information in conjunction with their preferred formats of information.

To expand this study, an assessment should be conducted to determine veterinarians' sources of agroterrorism information and preferred formats for receiving agroterrorism information. In addition, a replication of this study with a larger base of producers to determine preferred source of agroterrorism information should be completed, with consideration for the effects of seasonal demands on managers' availabilities to respond.

Implications

Educating managers of feedlots about protection from agroterrorism could result in evolution of those managers to change agents in the community regarding adoption of preventive measures for agroterrorism. However, veterinarians, as the primary sources of information for feedlot managers and other producers, must be informed about agroterrorism issues. In addition, industry organizations should be cognizant of their roles in disseminating information and educating producers about agroterrorism, particularly best practices and policies for preventing agroterrorism events.

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Research Paper

The Effect of an Agricultural Communications Workshop on Urban High School Student Career-related Self-efficacy Levels

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The Effect of an Agricultural Communications Workshop on Urban High School Student Career-related Self-efficacy Levels

Abstract

The agriculture industry is facing a need for qualified workers during a time when many colleges of agriculture are experiencing declining enrollments. The purpose of this study was to document potential changes in self-efficacy towards specific communications tasks and potential college obstacles as a result of participating in an agricultural communications related workshop. During the five-day workshop program, student received instruction and experiences in agriculture and communications careers, risk and crisis communications, photography, video production, news writing, and web design. The workshop was conducted in three cities across the nation during the summer of 2008. In one location students had received formal secondary-level agriculture instruction while students at two other locations had not been exposed to agriculture and related careers through a structured school program. In the two locations without an agriculture program, students were recruited to the workshop through the cooperation of local science teachers. The results indicate that the workshops were most effective at increasing self-efficacy for the two sites that featured non-agricultural students, while the workshop for the agricultural students saw many areas of self-efficacy actually decline. Among the recommendations was for future workshops that serve as an introduction to agricultural communications to be conducted for students who weren't already involved in agriculture. While urban agricultural programs should still be further developed as a permanent means of increasing minority involvement in agriculture, the possibility of recruiting agricultural communications students through science programs may prove to be a viable solution to resolving industry employment needs.

Keywords: self efficacy, agriculture, agricultural communications, college recruitment, urban students

The Effect of an Agricultural Communications Workshop on Urban High School Student Career-related Self-efficacy Levels

Introduction

The agriculture industry is facing a need for qualified workers while Colleges of Agriculture (COAs) are awarding less degrees at the baccalaureate level (Goecker, Gilmore, Smith, & Smith, 2005; U.S. Department of Education, 2007). A possible reason for this decline may be COAs' historical and steadfast reliance on the rural, white populations for their recruiting base during a time when national rural populations are dwindling (Department of Economic and Social Affairs Population Division, 2002). Further, state and national demographics are also shifting away from a White majority population including states such as Texas and California, which have both experienced a shift to a minority majority. (Brady, Hout, Stiles, Gleeson, & Hui, 2005; Caldwell, 2005)

Increasingly, COAs have begun to explore alternatives to their traditional recruiting base. Esters (2007) suggested that urban agriculture education programs are a good source for COAs to increase diversity. Russell (1993) suggested that COAs focus recruiting efforts on students in 4-H and FFA because they are receiving a positive perspective of agriculture through their participation. But until formal agriculture instruction can be established in urban secondary schools and programs, innovative efforts are needed to recruit urban students who don't have access or exposure to agriculture and its career possibilities. Williams (2007) recommended that "opportunities should be explored that might increase numbers of students who are female, from ethnic minorities, non-traditional age groups, and who are from out-of-state," (p. 110) and that current programs should be improved and new programs be developed that introduce students of all age groups to expose them to more majors and careers in agriculture.

A specific area of recruitment research that has seldom been examined is the area self-efficacy and its effect on whether a student will consider pursuing an agriculture-related major and eventual career. Designing workshops for students that could increase their confidence in completing an agriculture-related degree may be the type of innovative workshop called for by Williams. Research has shown that workshops with agriculture and biotechnology content could have sustained results when taught by individuals with expertise (Fritz, Ward, Byrne, Namuth, & Egger, 2005; Wiley, Bowen, Bowen, & Heinsohn, 1997). However, it is uncertain if these same results can be realized for a workshop focused on agricultural communications. Research needs to be done to assess what effects a workshop intervention that introduces participants to agricultural communications has on urban, minority students in terms of self-efficacy toward specific tasks in communications and towards overcoming obstacles in pursuing an agricultural communications degree.

Related Literature

Self Efficacy

Bandura (2006) stated that self-efficacy affects behavior directly and indirectly from its effects on goals, outcome expectation, and perception of obstacles and opportunities. This helps explain Compeau and Higgins' (1995) observation that use and enjoyment of computers was higher and anxiety was lower with those who had high self-efficacy toward using computers than those with low self-efficacy. Bednar and Petersen (1995) suggested that those who anticipate success are more likely to persevere through obstacles and therefore were also more likely to be successful in their task.

Esters and Knobloch (2007) concluded, "self-efficacy and outcome expectations were strong predictors of interest and intentions to pursue careers in agriculture" (p. 729). Degenhart

et al. (2006) also found that self-efficacy affected career interest in science, technology, engineering, and mathematics for middle school students. When the results by Degenhart, Wingenbach, Mowen, Lindner, and Johnson (2008) that interest affects attitude is considered with the results by Atwater, Wiggins, and Gardner (1995) that attitude affects career choice, the idea that self-efficacy can affect career choice can be logically concluded.

Lent, Hackett, and Brown (1999) found that the best avenue for increasing self-efficacy was personal experiences. The researchers concluded that students who received the most benefit from a self-efficacy intervention were those lacked self-efficacy but still had the required skills to complete the task. The researchers went on to state that as experience shapes self-efficacy, interest becomes more stable.

McGuire (1968) suggested that it's easier to adjust the attitude of subjects with intermediate levels of self-esteem, which is consisted partly of self-efficacy. Individuals with low self-esteem would suffer too much anxiety to intake the message while those with high self-esteem would be more confident in their views and less susceptible to change. It has also been suggested that individuals are more likely to take in a message and experience a lasting change if they are motivated to do so (Griffin, Neuwirth, Giese, & Dunwoody, 2002).

Workshop Effects

Krumboltz and Worthington (1999) suggested creating well designed, simulated occupational experiences for students to increase their interest in specific areas. Fritz et al. (2004) found that professionals who communicated biotechnology showed positive information gains one year after a workshop was conducted by university faculty with expertise in biotechnology. Similarly, Wiley et al. (1997) found that students who participated in a summer

food and agricultural sciences workshop maintained positive attitude changes one year after the workshop.

Minority Recruitment in Agriculture

Boumtje and Haase-Wittler (2007) suggested that minority students need to be made aware of the opportunities available in agriculture so that they can make career decisions based upon their own interests and not those of others. Newsom-Stewart and Sutphin (1994) stated that interventions were necessary to improve minority perceptions of agriculture. Workshops could serve this purpose. But the workshops also need to be conducted in an effective, ethical manner. Smith, Park, and Sutton (2007) stated that promotion should be sought for more accurate representations of the agriculture industry rather than the typical cows, sows, and plows picture. Though researchers found that students felt that agriculture was important (Holz-Clause & Jost, 1995; Newsom-Stewart & Sutphin, 1994), the researchers also found that students tended to hold those same stereotypes and were also not interested in agriculture as a career. Russell (1993) similarly indicated that agriculture needed to be shown in a positive light in order to increase the number of students in 4-H and FFA. Holz-Clause and Jost (1995) found that students, urban and rural alike, held stereotypical views of farmers and of agriculture only being about manual labor.

Purpose and Objectives

The purpose of this study is to document levels of self-efficacy toward overcoming obstacles for pursuing an agricultural communications degree and toward specific tasks in communications for 2008 participants of a workshop in agricultural communications before and after the workshop. Specifically, the objectives of this study are

1. Describe levels of self-efficacy toward agricultural communications tasks and obstacles for completing an agricultural communications degree for workshop participants before and after the intervention.
2. Describe the changes in level of self-efficacy for workshop participants.

Methods and Procedures

This study consisted of pre- and post-workshop evaluations of self-efficacy levels for participants of a five-day agricultural communications workshop in risk/crisis communications, photography, video, Web design, and news writing. The workshop also included three related tours per site to provide an experiential component to the content as well as an opportunity for career exploration.

The population for this study consisted of all workshop participants with the exception of one who started the workshop but left prior to its conclusion (N = 24). Workshop participants were 44% Hispanic, 36% African-American, 16% White, and 4% Native American.

The instrument for this study was adapted from the one used by Compeau and Higgins (1995) to assess computer-use self-efficacy and was modified using suggestions from Bandura (2006). The scale ranged from 1 = "Cannot do it at all" to 10 = "Highly certain that I can do it."

Reliability was assessed *post hoc* by calculating Cronbach's alpha for each self-efficacy section of the instrument. The reliability scores were as follows: 0.89 for the pre-workshop assessment of self-efficacy toward specific tasks, 0.86 for the pre-workshop assessment of self-efficacy toward overcoming obstacles, 0.86 for the post-workshop assessment of self-efficacy toward specific tasks, and 0.84 for the post-workshop assessment of self-efficacy toward overcoming obstacles. By adhering to recommendations made by Bandura (2006) and basing the instrument on the one used to assess computer self-efficacy by Compeau and Higgins (1995), as

well as having faculty from an agricultural education and communications department review the instrument, content and face validity were established.

The study was carried out during three separate workshops conducted in the summer of 2008. Sites 1 and 2 were comprised of urban students who had little-to-no direct experience with agriculture. Site 3 was comprised of urban students who attended an agricultural magnet school and were all members of FFA. Data was collected for the pre-workshop evaluation before participants began the first lesson of their respective weeklong workshop. The post-workshop data was collected on the final day of the workshop. Online questionnaires were used for both data collections.

SPSS 16.0 for Windows was used to analyze the data with frequencies and measures of central tendency. Microsoft Office Excel 2007 was used to analyze the change in means between assessments.

Results/Findings

Self-efficacy Towards Specific Tasks – Combined Results

In reporting the results from the 10-point self-efficacy scale from the combined three sites (Table 1), several items were rated in the top quartile of the scale. The highest levels of pre-workshop self-efficacy toward tasks belonged to photographing agriculturally related people, places, or events (M = 8.6); completing a news story (M = 8.1); filming agriculturally related people, places, or events (M = 8.0); understanding who the audience is (M = 8.0); and assessing who was most at risk during a risk/crisis situation (M = 8.0). The lowest levels of self-efficacy pre-workshop toward tasks were creating a Web site that incorporated photos/videos and computer-generated images (M = 7.0), constructing a Web site (M = 7.4), and interviewing at least 10 people for a news story about water shortages (M = 7.4).

Table 1

Measures of Central Tendency for Self-efficacy Toward Tasks for All Participants from the Combined Locations (N = 24)

	Mean		*Median*		Mode		*SD*	
Task	pre	post	pre	post	pre	post	pre	post
Photoshop	7.6	7.9	8.0	8.0	10	10	2.0	2.2
Completing news story	8.1	8.0	9.0	9.0	10	10	2.2	2.4
Ag-related	7.5	8.1	7.5	9.0	10	10	2.3	2.1
Constructing Web site	7.4	6.8	8.0	7.0	10	[a]	2.5	2.8
Photographing ag-related people, places, or events	8.6	8.9	10.0	10.0	10	10	2.3	1.5
Creating Web site with outside images	7.0	6.8	8.0	7.0	8	10	2.6	2.9
Filming ag-related	8.0	8.6	9.0	9.0	10	10	2.6	1.6
Audience analysis	8.0	8.6	8.5	9.0	10	10	2.5	1.6
Assessing risk/crisis situation	8.0	8.7	8.0	9.0	9	9	1.5	1.5
Required interviewing ten individuals about water	7.4	8.9	8.0	10.0	10	10	2.5	1.7

Note. Answers ranged from 0 = "Cannot do it at all" to 10 = "Highly Certain that I can do it."
[a] Multiple modal scores indicated.

When examining the post-workshop self-efficacy levels, similar results were found, with the tasks of photographing agriculturally related people, places, or events (M = 8.9) and assessing who was most at risk during a risk/crisis situation (M = 8.7) again rated as the highest area. Notably, interviewing at least 10 people for a news story about water shortages (M = 8.9) joined these two areas as being top rated. Also similar to the pre-workshop results, creating a Web site that incorporated photos/videos and computer-generated images (M = 6.8) and constructing a Web site (M = 6.8) were among the lowest rated areas.

The largest positive changes in self-efficacy towards specific tasks were in the tasks of interviewing at least 10 people for a news story about water shortages (+1.5) and assessing who was most at risk during a risk/crisis situation (+0.7). The tasks that experienced the greatest decrease in self were constructing a Web site (-0.6), creating a Web site that incorporated photos/videos and computer generated images (-0.2), and completing a news story (-0.1).

Self-efficacy Towards Specific Tasks – Individual Site Results

Variance was found between locations in the self-efficacy task scores. The highest Site 1 pre-workshop self-efficacy scores toward tasks was completing a news story and assessing who was most at risk during a risk/crisis situation (M = 8.4) (Table 2). This differed from the highest Site 2 self-efficacy task scores of photographing agriculturally related people, places, or events (M = 9.0) and understanding who the audience is (M =8.7). For Site 3, the site with formal agriculture instruction, photographing agriculturally related people, places, or events (M = 8.8) and filming agriculturally related people, places, or events (M = 8.7) were the highest self-efficacy task scores.

The lowest self-efficacy pre-workshop for Site 1 were creating a Web site that incorporated photos/videos and computer-generated images (M = 5.9) and the task being related to agriculture (M = 6.3). The lowest pre-workshop areas for Site 2 were creating a Web site that incorporated photos/videos and computer-generated images and filming agriculturally related people, places, or events (M = 6.8, each). Site 3's lowest pre-workshop areas were interviewing at least 10 people for a news story about water shortages (M = 7.2) and completing a news story (M = 7.7).

Similar variance between sites was found when examining the post-workshop self-efficacy task scores. The highest Site 1 tasks scores were in photographing agriculturally related

people, places, or events (*M* = 9.4) and interviewing at least 10 people for a news story about water shortages (*M* = 9.1). For Site 2, the highest post-workshop self-efficacy tasks were filming agriculturally related people, places, or events (*M* = 9.7) and understanding who the audience is (*M* = 9.3). The highest post-workshop self-efficacy tasks scores for Site 3 were interviewing at least 10 people for a news story about water shortages (*M* = 8.7) and photographing agriculturally related people, places, or events (*M* = 8.6).

Table 2

Summary of Mean Self-efficacy Toward Tasks for Individual Locations (N = 24)

	Site 1 (n = 7)			Site 2 (n = 6)			Site 3 (n = 11)		
Task	pre	post	+/-	pre	post	+/-	pre	post	+/-
Photoshop	6.7	8.0	1.3	8.0	9.2	1.2	8.0	7.1	-0.9
Completing news story	8.4	8.0	-0.4	8.3	8.7	0.4	7.7	7.5	-0.2
Ag-related	6.3	7.7	1.4	7.1	8.3	1.2	8.6	8.2	-0.4
Constructing Web site	6.9	6.7	-0.2	7.0	8.3	1.3	8.0	5.9	-2.1
Photographing ag-related	8.0	9.4	1.4	9.0	9.0	0.0	8.8	8.6	-0.2
Creating Web site with outside images	5.9	6.7	0.8	6.8	8.3	1.5	7.9	6.1	-1.8
Filming ag-related	7.9	8.3	0.4	6.8	9.7	2.9	8.7	8.3	-0.4
Audience analysis	7.4	9.0	1.6	8.7	9.3	0.6	7.9	8.0	0.1
Assessing risk/crisis situation	8.4	8.7	0.3	7.2	9.2	2.0	8.2	8.4	0.2
Required interviewing ten individuals about water	8.0	9.1	1.1	7.2	8.8	1.6	7.2	8.7	1.5

Note. Answers ranged from 0 = "Cannot do it at all" to 10 = "Highly Certain that I can do it." +/- indicates change from pre-workshop level to post-workshop level.

For Site 1, the lowest post-workshop self-efficacy tasks were constructing a Web site and creating a Web site that incorporated photos/videos and computer-generated images (*M* = 6.7,

each). The lowest Site 2 post-workshop self-efficacy task scores were the task being related to agriculture, constructing a Web site and creating a Web site that incorporated photos/videos and computer-generated images (*M* = 8.3, each). For Site 3, the lowest self-efficacy task scores were for constructing a Web site (*M* = 5.9) and creating a Web site that incorporated photos/videos and computer-generated images (*M* = 6.1).

The tasks with the largest positive change in self-efficacy scores for Site 1 were understanding who the audience is (+1.6), the task being related to agriculture (+1.4), and photographing agriculturally related people, places, or events (+1.4). For Site 2, the largest task score increases were filming agriculturally related people, places, or events (+2.9) and assessing who was most at risk during a risk/crisis situation (2.0). The largest positive increases in tasks scores for Site 3 were interviewing at least 10 people for a news story about water shortages (+1.5) and assessing who was most at risk during a risk/crisis situation (+0.2).

The tasks with the greatest decrease in self-efficacy at Site 1 were completing a news story (-0.4) and constructing a Web site (-0.2). The only task not see an increase in self-efficacy for Site 2 was photographing agriculturally related people, places, or events (0.0). The tasks with the greatest self-efficacy decrease for Site 3 were constructing a Web site (-2.1) and creating a Web site that incorporated photos/videos and computer-generated images (-1.8).

Self-efficacy Towards Potential College Obstacles – Combined Results

When students considered the obstacles they may face when considering college (Table 3) the highest pre-workshop self-efficacy scores toward obstacles and thus the ability to overcome them was attending school for four years (*M* = 9.2) and attending an out-of-state school (*M* = 8.8). With the post-workshop scores, confidence in overcoming these two obstacles remained high and were joined by high self-efficacy scores for there being a university within

200 miles of the participants school that offered the degree (*M* = 8.5) and needing a master's degree to earn more than $40,000 per year (*M* = 8.5).

Table 3

Measures of Central Tendency for Self-efficacy Toward Obstacles For All Participants (N =24)

	Mean		*Median*		Mode		*SD*	
Obstacle	pre	post	pre	post	pre	post	pre	post
Four-year degree	9.2	9.2	10.0	10.0	10	10	1.3	1.3
Out-of-state school	8.8	8.5	9.0	10.0	10	10	1.6	2.2
Paid < $30,000	6.5	6.3	7.0	7.0	[a]	10	3.0	3.5
Required ag literacy	7.5	7.4	8.0	8.0	[a]	8	2.3	2.1
Knowing multiple communication techniques	8.6	8.4	9.0	9.0	10	10	1.6	1.9
University within 200 miles	8.1	8.5	9.0	9.0	10	10	2.3	1.8
Family against getting Ag. Communications degree	6.3	7.2	7.0	8.5	10	10	3.7	3.1
Attending private university	7.2	7.3	7.5	8.0	10	10	3.0	2.8
No people of same ethnicity	7.3	8.0	9.0	9.0	10	10	3.3	2.3
Master's degree required for +$40,000	8.2	8.5	9.0	9.0	10	10	2.0	2.3

Note. Answers ranged from 0 = "Cannot do it at all" to 10 = "Highly Certain that I can do it."
[a] Multiple modal scores indicated.

The lowest pre-workshop self-efficacy scores toward college-related obstacles were none of the participant's family members wanting the participant to pursue the degree (*M* = 6.3) and that the career may pay less than $30,000 per year (*M* = 6.5). These two obstacles remain the lowest rated in the post-workshop assessment. The obstacles that realized the greatest positive change in self-efficacy scores were that none of the participant's family members wanting them

to pursue the degree (+1.1) and the potential of there not being any people of the same ethnicity as the participant in agricultural communications (+0.7). The obstacle with the greatest self-efficacy decrease was attending an out-of-state school (-0.3).

Self-efficacy Towards Potential College Obstacles – Individual Site Results

When examining self-efficacy towards potential college obstacles by location (Table 4) the highest pre-workshop self-efficacy score toward obstacles for Site 1 were going to school for four years (M = 9.4) and attending an out-of-state school (M = 9.0). Site 2's highest self-efficacy levels were also going to school for four years (M = 9.5) and attending an out-of-state school (M = 9.3). For Site 3, the highest pre-workshop areas were going to school for four years (M = 8.9) and a required knowledge of multiple communications techniques (M = 8.6).

The lowest rated pre-workshop self-efficacy obstacles scores for Site 1 were none of the participant's family members wanting them to pursue an agricultural communications degree (M = 5.3) and careers typically paying less than $30,000 per year ($M$ = 6.3). For Site 2, the lowest pre-workshop self-efficacy levels was none of the participant's family members wanted them to pursue the degree (M = 7.0) and there not being any people of the same ethnicity as the participant in agricultural communications (M = 7.0). Site 3's lowest pre-workshop levels of self-efficacy toward obstacles were careers typically paying less than $30,000 per year ($M$ = 6.0), and none of the participant's family members wanting them to pursue the degree (M = 6.6) and attending a private university (M = 6.6).

The obstacles with the highest post-workshop levels of self-efficacy toward the obstacles for Site 1 were going to school for four years (M = 10.0) and there being a university within 200 miles of the participant's hometown that offered the degree (M = 9.6). For Site 2, the areas with the highest self-efficacy were attending an out-of state school (M = 9.7) and going to school for

four years (M = 9.5). Site 3's highest post-workshop self-efficacy were going to school for four years (M = 8.6) and a required knowledge of multiple communications techniques (M = 8.1).

Table 4

Summary of Mean Self-efficacy Toward Obstacles for Individual Locations (N = 24)

	Site 1 (n = 7)			Site 2 (n = 6)			Site 3 (n = 11)		
Obstacle	pre	post	+/-	pre	post	+/-	pre	post	+/-
Four-year degree	9.4	10.0	0.6	9.5	9.5	0.0	8.9	8.6	-0.3
Out-of-state school	9.0	9.1	0.1	9.3	9.7	0.4	8.3	7.6	-0.7
Paid < $30,000	6.3	5.6	-0.7	7.7	8.5	0.8	6.0	5.6	-0.4
Required ag literacy	7.3	6.9	-0.4	7.2	7.8	0.6	7.7	7.4	-0.3
Knowing multiple communications techniques	8.6	8.6	0.0	8.8	8.8	0.0	8.6	8.1	-0.5
University within 200 miles	8.7	9.6	0.9	7.3	8.7	1.4	8.2	7.7	-0.5
Family against getting Ag. Communications degree	5.3	7.9	2.6	7.0	8.2	1.2	6.6	6.2	-0.4
Attending private university	7.6	8.4	0.8	7.7	7.8	0.1	6.6	6.3	-0.3
No people of same ethnicity	7.4	8.6	1.2	7.0	9.2	2.2	7.4	7.1	-0.3
Master's degree required for +$40,000	8.9	9.1	0.2	8.8	9.0	0.2	7.6	7.7	0.1

Note. Answers ranged from 0 = "Cannot do it at all" to 10 = "Highly Certain that I can do it." +/- indicates change from pre-workshop level to post-workshop level.

For Site 1, the lowest areas of post-workshop self-efficacy toward obstacles were careers typically paying less than $30,000 per year ($M$ = 5.6) and a required basic knowledge of all facets of agriculture (M = 6.9). The areas of the lowest self-efficacy for Site 2 were a required basic knowledge of all facets of agriculture and attending a private university (M = 7.8, each). Site 3's lowest areas of post-workshop self-efficacy toward obstacles were careers typically

paying less than $30,000 per year ($M$ = 5.6) and none of the participant's family members wanting them to pursue the degree (M = 6.2)

The areas of the most increase for Site 1 in terms of self-efficacy toward obstacles were none of the participant's family members wanting them to pursue the degree (+2.6) and there not being any people of the same ethnicity as the participant in agricultural communications (+1.2). The areas of the biggest increase for Site 2 were there not being any people of the same ethnicity as the participant in agricultural communications (+2.2) and there being a university within 200 miles of the participants hometown that offered the degree (+1.4). For Site 3, the only area to increase was a master's degree being required to earn more than $40,000 per year (+0.1).

The areas of decrease for Site 1 in terms of self-efficacy toward obstacles were careers typically paying less than $30,000 per year (-0.7) and a required basic knowledge of all facets of agriculture (-0.4). The only areas not to increase for Site 2 were going to school for four years and a required knowledge of multiple communication techniques (0.0, each). The areas of the biggest decrease for Site 3 were attending an out-of-state school (-0.7), and a required knowledge of multiple communication techniques and there being a university within 200 miles of the participant's hometown that offered the degree (-0.5, each).

Conclusion/Implications/Recommendations

Overall, there were mixed results for the workshops' ability to increase self-efficacy toward specific tasks. The greatest increase in self-efficacy was in the specific task of interviewing at least 10 people for a news story about water shortages and the task of understanding who the audience is for agriculture-related communication.

When linking the specific tasks self-efficacy scores back to the workshop design and delivery, the lessons on risk and crisis communication and video production were the most

effective lessons at increasing specific task self-efficacy with the least effective lesson areas being Web design and news writing. When examining by the individual workshop sites, variance was found with the most effective lesson areas being photography (Site 1), video (Site 2) and risk and crisis communications (Sites 2 & 3). Similar variance between sites was found when examining the least effective lessons with news writing (Site 1) and Web design in general (Site 1 & 3) being identified.

When assessing self-efficacy towards overcoming obstacles toward majoring in agricultural communications or securing a related career, two areas realized the greatest positive change as a result of the workshop at sites 1 and 2 (no formal agriculture instruction): (a) the participant's family members wanting them to pursue the degree found and (b) there not being any people of the same ethnicity as the participant in agricultural communications. This change was not realized at the school with formal agriculture instruction.

The results for sites 1 and 2 provide support for the successful workshops achieved by Fritz et al. (2004) and Wiley et al. (1997) that saw improvements when individuals with expertise led the workshops. It needs to be determined why Site 3 was not successful at increasing self-efficacy. If the agricultural background of the students was a contributor, future agricultural communications workshops for this demographic need to be tailored to suit the needs for agriculture students. If ineffective lessons were the cause for the disparity, then it needs to be determined what was done differently, and instructors should strive for consistency.

Looking at both the specific tasks and career-related obstacles areas of self-efficacy, differences between the workshop locations were found. While the results of this study may indicate a potential relationship between the workshop's effectiveness in improving self-efficacy towards agricultural communications and the presence/absence of formal agriculture instruction,

the results are not conclusive. Variance in participant demographics, workshop structure (setting, order of lessons, tours, instructors, etc.), number of participants at each site, and the time of year may also be contributing factors to the variance in scores. While additional workshops and research are required, these findings are encouraging to those seeking to increase urban, minority involvement in agriculture.

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Critiquing the Contest: Assessing the Benefits of a Collegiate Academic Competition

Research Paper Submission

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Abstract: Academic competitions in the field of agriculture and natural resources encourage students to pursue an industry-related career, enhance the host company's future prospects for employment, and raise funds for the contest facilitator. As such, organizations expend time, money (costs and incentives), and manpower to facilitate academic contests. However, little evidentiary support exists, regarding reasons students choose to participate in them. The purpose of this study was to assess the benefits of the National ACT Critique and Contest, sponsored by the National Agricultural Communicators of Tomorrow (ACT), in terms of contest participation. Census data was obtained from dues-paying members, including both undergraduate and graduate students, of the National ACT organization. The ACT roster consists of 13 chapters in the United States and one in Canada. Survey participants were asked a series of questions regarding contest cost, structure and application procedures, perceived and actual benefits, opportunity for public recognition, and incentives. Respondents who had never participated in the contest or did not do so in 2008 were also asked about barriers to participation. The results show that perceived value does not necessarily translate to actual contest participation. It is through benefit maximization that students are encouraged to participate. Results indicate this can be done through continuous contest revision and needs assessment. Other academic and professional organizations that host competitions should consider evaluating the preferences and interests of potential contest participants to determine if their contests should be continued, altered, or eliminated.

Keywords: academic competition, contest, participation, benefits, perceptions, value, agricultural communicators

Critiquing the Contest: Assessing the Benefits of a Collegiate Academic Competition

INTRODUCTION

Academic competitions in the field of agriculture and natural resources are a way to encourage students to pursue an industry-related career in the future. The National Agricultural Communicators of Tomorrow's Critique and Contest (ACT Critique and Contest) is one such academic competition that targets college students actively interested in pursuing agricultural communications as a career (National Agricultural Communicators of Tomorrow, 2005b). According to the National ACT Web site (National Agricultural Communicators of Tomorrow, 2005a):

> The National Agricultural Communicators of Tomorrow is a collegiate organization that establishes close relationships with all professional agricultural communication organizations. The purpose of this organization is to (1) stimulate interest in the profession of agricultural communication on the local, national, and international levels; (2) promote the interchange of ideas among students, faculty members at colleges and universities offering professional education in agricultural communication; and (3) provide parties with opportunities for personal and professional growth between students and agricultural communication professionals. Membership is composed of undergraduate and graduate students actively interested in agricultural communication.

National ACT conducts the Critique and Contest, an annual spring event that recognizes exceptional student work (National ACT, 2005a). It also provides students with critiques from agricultural communication professionals. Contestants must be active, dues-paying ACT members to participate. Prizes are awarded to category and division winners. Winning entries in each category are eligible to win the Excellence Award in that division, which has a cash prize (National ACT, 2005a). For the 2008 Critique and Contest, students paid a $5 cost-per-entry fee to enter the competition. National ACT covers the cost of the first entry, and university chapters have the option to cover the cost of additional entries.

Similar to academic competitions, professional organizations also coordinate these contests to enhance their future prospects for employment by focusing on participants with the highest achievement levels. In the agricultural communication field, such organizations as the Livestock Publications Council; the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences; and the North American Agricultural Journalists conduct contests. Additionally, several of these professional agriculture and natural resources communication organizations conduct academic competitions for students. Moreover, these organizations expend time, money (costs and incentives), and manpower to facilitate academic contests. However, little evidentiary support exists regarding reasons students choose to participate in them. Therefore, it is vital to discover if there is value, with respect to student benefits, in such competitions. Similarly, few studies exist regarding professional contest participation.

As such, the purpose of this study was to assess the benefits of the National ACT Critique and Contest, sponsored by the National Agricultural Communicators of Tomorrow, in terms of contest participation. By assessing the benefits of academic contests, in terms of student participation, the following three questions were addressed: (1) Is there value in hosting academic contests in the field of agricultural and natural resources? (2) What are the specific benefits students receive from contest participation? (3) How can contest benefits be maximized to encourage student participation?

Consequently, this study was based upon Social Exchange Theory, as student participation in the National ACT Critique and Contest represents a cost-benefit relationship (DeLamater, 2006). According to Homans (1961), Social Exchange Theory is “the exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two

persons" (DeLamater, 2006, p. 54). Therefore, students will be more likely to participate in academic contests if they are perceived as valuable. In other words, the perceived benefits of participation must be greater than the threats.

The objectives of this study were to assess student value in terms of contest participation, as well as the actual benefits students receive from participation, and to determine how to maximize benefits to encourage participation. To achieve the aforementioned objectives, this study analyzed the following factors affecting contest participation under the Social Exchange framework: (1) cost to students, (2) application procedures and contest structure, (3) perceived benefits, (4) contest threats, (5) actual benefits, (6) opportunity for public recognition, and (7) contest incentives.

LITERATURE REVIEW

Bishop and Walters (2007) stated, "Competitions have been a part of school activities for generations of American students and have served as a means to encourage academic development of students." Academic competitions may also foster a sense of capability in its participants (Bishop & Walters, 2007). As a result of competing, students' practical problem-solving skills emerged, were challenged, and were refined (Bishop & Walters, 2007). Bishop and Walters (2007) also stated, "These skills seemed to enhance a sense of personal competence. This perception of personal capability translates as a very high factor influencing career choice." As such, the results of their study indicated that contest participation influenced career choice for more than 40% of respondents, as well as developed their interests in the competition area (Bishop & Walters, 2007).

Smith and Kahler (1987) stated that in order for academic competitions to be successful, "They must be continuously evaluated and revised" (Johnson, 1991, p. 23). Ozturk and Debelak

(2008) noted that revising the nature and format of existing competitions is favorable. Academic competitions "serve as strong motivators for students by providing an incentive to study and work hard so they can compete at a certain level" (Ozturk & Debelak, 2008, p. 2). The researchers addressed actual benefits gained from contest participation, such as a smooth transition and acquired work habits for sustained accomplishment (Ozturk & Debelak, 2008). They also stated that "positive feedback should be provided throughout the competitive process" and that "rewards in academic competitions should be directly relevant to the nature of the work," as they "nourish continued interest and motivation," and help participating students to "pursue long-term achievement in similar activities or fields" (Ozturk & Debelak, 2008, p. 3).

Likewise Grote (1995) and Mann (1984) wrote that academic contest participation is beneficial, as it helps students to further develop knowledge, skills, and interests in the contest area (Abernathy & Vineyard, 2001). In addition, Johnson (1991) addressed student achievement in a state FFA Agricultural Mechanics contest. While he examined contests from the perspective of demographics and their relationship to achievement, he also made the point that such contests are designed to complement classroom instruction.

In contrast, Bergin and Cooks (2000) supported mastery learning situations over competition with respect to cognitive development, as they can lead to increased use of effective learning strategies and deeper processing. In a competitive scenario, success "may be defined as doing better than others rather than as mastering a task or achieving understanding" (Bergin & Cooks, 2000). Specifically, they addressed competition in academic terms, and their study was limited to students of color (Bergin & Cooks, 2000). However, they also stated, "Many people tend to view competition as a good and natural motivating factor. They believe that when people are placed in competitive situations, they are motivated to do their best and to achieve greater

success than if they relied simply on their own desire for mastery and accomplishment" (Bergin & Cooks, 2000).

As such, results indicated that it is natural for students to compete, as most students in the study competed for grades (Bergin & Cooks, 2000). Bergin and Cooks (2000) said, "As long as there is any basis for comparison, American students seem likely to compete spontaneously." Thus, "In contrast to motivation researchers, students in our study generally thought competition was beneficial. Most seemed to like it" (Bergin & Cooks, 2000).

Students were motivated to compete based on the ability to compare their achievement levels to those of others (Bergin & Cooks, 2000). In addition, they stated that in competitive situations some students do not engage in competition, while others quit during the process (Bergin & Cooks, 2000). Therefore, they recommended that competition goals be "optimally challenging" or "perceived as being within reach but not easy reach" (Bergin & Cooks, 2000). Moreover, "Competition fostered effort and striving and for at least one student, prevented boredom" (Bergin & Cooks, 2000).

Abernathy and Vineyard (2001) investigated the experiences of students who participated in science fairs and the Science Olympiad. In this study, the researchers examined the value reported by students who participate in such contests because "we rarely hear the student's point of view" (Abernathy & Vineyard, 2001, p. 3). They evaluated the different reward perceptions of students, as well as the varying reasons for participation (Abernathy & Vineyard, 2001). Abernathy and Vineyard (2001) discussed the need for educators to motivate, reward, and encourage students through such contests. Here, the challenge is creating new opportunities that will "entice the greatest number of students while maintaining the level of participation observed" (Abernathy & Vineyard, 2001, p. 8).

Regarding the benefits of professional contest participation, Tiene (1993) examined the various advantages of competing for the Japan Prize, an international award for television programming. The author cited several benefits to competition, including recognition and respect among peers (Tiene, 1993). “In addition to encouraging excellence in instructional television production, the contest serves a second significant professional function. It is a stimulating experience for the educational television professionals who attend, serving as a kind of high level workshop for leaders in the field” (Tiene, 1993). The author also stated that participants who place in the competition or win the overall Japan Prize could potentially gain the ability to secure financial and other resources, thereby improving the quality of subsequent work (Tiene, 1993). Finally, the Tiene (1993) cited participants’ exposure to the work of their competitors as a benefit of competition. In other words, viewing similar programming of excellent quality can facilitate idea formation and provide insight into different instructional styles and production techniques (Tiene, 1993).

METHODOLOGY

This study consisted of a descriptive design, utilizing a five-point, summated rating scale (Likert-type) to assess the benefits of the National ACT Critique and Contest in terms of student participation. It was facilitated through a researcher-developed online survey instrument, created using the Dillman Tailored Design Method (2007). The researchers obtained census data from dues-paying members, including both undergraduate and graduate students, of the National ACT organization (N=301). The ACT roster consists of 13 chapters in the United States and one in Canada.

The researchers divided the 55-question survey instrument into nine parts: (1) cost to students, (2) application procedures and contest structure, (3) perceived benefits, (4) additional

instructions, (5) contest threats, (6) actual benefits, (7) opportunity for public recognition, (8) contest incentives, and (9) demographic information. Questions focused on member perceptions and values. The demographic information section also included one open-ended question, which allowed respondents to provide additional comments and suggestions, regarding the ACT Critique and Contest.

The consent form and online survey were posted on Survey Monkey (http://SurveyMonkey.com). A panel of experts, including ACT advisers and national officers, reviewed the instrument for face and content validity. Additionally, the survey instrument was pretested by graduate students and professors in the Department of Agricultural Education and Communication at the University of Florida to improve reliability of the instrument. The survey was available between April 23, 2008, and May 30, 2008.

As previously stated, data collection was electronic. Participants were recruited through an e-mail merge system, which creates a uniform distribution list of individual e-mail addresses. National ACT adviser Deb Dunsford, Ph.D., provided all e-mail addresses from the national membership roster. The population list had 282 usable e-mail addresses.

Following the ACT Critique and Contest deadline of April 15, 2008, an instructional e-mail (similar to a cover letter for a direct-mail survey) was sent to each member on the national roster via Survey Monkey (Miller & Smith, 1983). Participants were given a period of one week to take the survey before follow-up e-mails were sent. Follow-up e-mails were sent to non-respondents once per week for three additional weeks (Miller & Smith, 1983). This led to a response rate of 34.0% with 96 respondents, 76 of which were complete respondents. Non-response error was addressed by comparing early to late respondents (Miller & Smith, 1983). Ordinal data were analyzed in SPSS 16.0 to generate descriptive frequencies and means.

Frequency tables and cross tabulations were also utilized. Internal consistency was calculated using Cronbach's alpha ($\alpha = .722$).

RESULTS

Respondent demographics were predominantly female (86.1%, n=68) and agricultural communication(s) or agricultural journalism majors (88.6%, n=70). Students from 13 of the 14 schools with ACT chapters participated in the survey. Respondents varied, in terms of year in school, with 68.0% (n=56) in their junior year or above (see Table 1). Of total respondents, 46.8% (n=37) had never participated in the National ACT Critique and Contest; also, 36.7% (n=29) had been dues-paying members of ACT for one year or less when they completed the survey.

Table 1.

Respondents' Student Classification (Year in School)

Classification	N	Percent (%)
Freshman	7	8.9
Sophomore	16	20.3
Junior	20	24.1
Senior	29	38.0
Master's Student	6	7.6
Doctoral Student	1	1.3
Total	79	100

Of the survey participants, 22.8% (n=18) were unsure if their university-level ACT chapter covered the cost of any contest entries. In a cross tabulation, it was discovered that participation in the National ACT Critique and Contest increased from years one to two of membership, with respondents entering the competition for the first time in their second year (n=12). Additionally, it was found in a cross tabulation that total contest participation decreases

over time. Looking at juniors onward, after their first time entering the contest, participation steadily declines (see Table 2).

Table 2.

		Respondents' Student Classification (Year in School)						
		Freshman	Sophomore	Junior	Senior	Graduate	Doctoral	Total
Respondents' Rate of Participation in Years	0	6	7	12	11	1	0	37
	1	1	7	5	12	1	0	26
	2	0	2	2	5	3	0	12
	3	0	0	0	1	1	0	2
	4	0	0	0	1	0	0	1
	> 4	0	0	0	0	0	1	1
	Total	7	16	19	30	6	1	79

Objective 1: To assess the value of academic contest participation from the student perspective.

To address this objective, respondents were asked a series of questions on contest cost and structure, as well as the perceived benefits of contest participation. In terms of cost to students, respondents favored the current $5 cost-per-entry fee with 55.0% (n=60) supporting the amount charged. As dollar amount increased, students were less likely to perceive the contest as valuable.

At the $10 level 43.2% (n=41) disagreed and 34.7% (n=33) strongly disagreed with the statement, "I would be willing to pay $10 per contest entry." More than three-quarters (79.0%, n=75) of students were more likely to participate in the ACT Critique and Contest if NACT covered the cost of one entry per student into the contest. Similarly, 69.5% (n=66) of respondents would be more likely to participate in the ACT Critique and Contest if their local chapter paid for at least one contest entry (see Table 3).

Table 3.

Respondents' Likelihood of Contest Participation with Financial Support from Local Chapter

Participation	N	Percent (%)
Strongly Disagree	1	1.0
Disagree	5	5.3
Neutral	23	24.2
Agree	42	44.2
Strongly Agree	24	25.3
Total	95	100

Overall, respondents felt the National ACT Critique and Contest categories were reflective of their academic study program (65.5%, n=55) and professional interests (72.6%, n=61). (See Table 4.) In addition, more than three-quarters of respondents believed contest categories were considered up to date (77.1%, n=64).

Table 4.

Respondents' Beliefs Regarding Contest Categories Reflecting Their Professional Interests

Participation	N	Percent (%)
Strongly Disagree	1	1.2
Disagree	4	4.8
Neutral	18	21.4
Agree	53	63.1
Strongly Agree	8	9.5
Total	84	100

However, respondents indicated there was a lack of knowledge, regarding appropriate contest submission material; 16.1% (n=14) did not believe or were unsure that unpublished materials could be entered into the contest. That number increased to 17.9% (n=15) when asked if they believed published materials were appropriate for contest submission. When asked if they

knew how to submit ideas to improve the National ACT Critique and Contest, 65.5% of respondents (n=55) did not know how to submit their suggestions to National ACT.

Perceived benefits of contest participation were both short- and long-term. Regarding short-term benefits, 79.3% (n=65) of respondents said the National ACT Critique and Contest would encourage personal improvement, in terms of agricultural communication, and 56.7% (n=47) believed entering the contest would help them make industry connections. Long-term, 85.6% (n=71) of respondents said entering the contest would benefit them professionally in the future. As such, 81.5% (n=66) of students surveyed felt the National ACT Critique and Contest was worthwhile. In a cross tabulation between the respondents' classification, as determined by year in school, and perception of value, as the students' year in school increased, contest worth moved from neutrality toward strong agreement (see Table 5).

Table 5.

		Respondents' Perception Contest is Worthwhile (n)			
		Neutral	Agree	Strongly Agree	Total
Respondents' Classification	Freshman	3	3	1	7
	Sophomore	1	8	6	15
	Junior	4	12	3	19
	Senior	7	15	7	29
	Master's	0	3	2	5
	Doctoral	0	0	1	1
Total		15	41	20	76

Respondents were then asked a series of questions regarding past and present National ACT Critique and Contest participation. Those who had never participated in the competition, as well as those who did not participate in 2008, were asked to supply the reason they chose not to participate. Of the respondents that did not participate in the National ACT Critique and Contest

in 2008, 54.3% (n=19) said the reason was the time and effort it took to prepare and submit entries, while 42.9% (n=15) believed they had no appropriate work to submit. In a cross tabulation, there was some overlap between those who did not submit work with those who were unsure or did not believe that submitting certain types of materials were appropriate. In addition, 22.9% (n=8) said unclear instructions was a reason they did participate, while only 5.9% (n=2) said cost was the reason.

Objective 2: To assess the actual benefits students receive from academic contest participation.

As part of the aforementioned series of questions, respondents who said they participated in the contest prior to 2008 were asked about the types of actual benefits they received from contest participation, thus satisfying the second objective of the study. Perceived benefits and actual benefits varied widely. As previously stated, 56.7% (n=47) of respondents believed entering the contest would help them make industry connections, and 85.6% (n=71) said entering the contest would benefit them professionally in the future.

Only 6.5% (n=2) respondents said they had actually met one or more people in the agriculture and natural resources industry by participating in the National ACT Critique and Contest. Similarly, only one respondent (3.2%) agreed to benefitting professionally, either through a job or internship, through contest participation. Of those who had previously entered the contest, a little more than one-quarter (31.2%, n=10) said they had actually become better agricultural communicators as a result of contest entrance (see Table 6), whereas 79.3% (n=65) perceived this as a benefit in the previous section. Similarly, 32.3% (n=10) felt they had received helpful critiques from contest judges.

Table 6.

Respondents' Perceived Improvement as Agricultural Communicators, Due to Contest Participation

Improvement	N	Percent (%)
Strongly Disagree	3	9.4
Disagree	5	15.6
Neutral	14	43.8
Agree	9	28.1
Strongly Agree	1	3.1
Total	32	100

Objective 3: To determine how to maximize benefits to encourage participation.

To achieve the study's third and final objective, the researchers asked questions regarding contest incentives and opportunities for public recognition of winners. By determining the benefits participants find most attractive – and those they can do without – contest benefits can be maximized to encourage student participation. The researchers began by determining students' preferred methods of public recognition.

More than half of the respondents would be more likely to participate in the contest if winners' names were posted on the National ACT Web site (55.2%, n=43) or included in the National ACT newsletter (57.2%, n=44). Nearly two-thirds (64.1%, n=50) would be encouraged to enter the competition if a list of contest winners was sent to university administration for their respective universities. Respondents (79.5%, n=62) highly favored sending a list of contest winners to agricultural communication professionals (see Table 7).

Table 7.

Respondents' Likelihood of Contest Participation When List of Winners Sent to Industry Professionals

Participation	n	Percent (%)
Strongly Disagree	0	0.0
Disagree	2	2.6
Neutral	14	17.9
Agree	34	43.6
Strongly Agree	28	35.9
Total	78	100

Additionally, the researchers addressed the extent to which students knew about contest prizes. Only 18.3% (n=14) of respondents were fully aware of the prizes for being a winner in the National ACT Critique and Contest. In terms of prize preference, 40.3% (n=31) of respondents said the possibility of receiving a certificate encourages them to participate in the contest.

Two-thirds (66.7%, n=59) said the possibility of receiving a cash prize for winning the Excellence Award for a particular division in the National ACT Critique and Contest encourages them to participate. However, only 19.8% (n=15) and 16.9% (n=13) of respondents said they would not participate in the contest if these awards were not offered, respectively. The largest deterrent, regarding participation, would be the elimination of the professional critique component of the competition. Under this scenario of eliminating the professional critique, 57.2% (n=44) of respondents would not enter the contest (see Table 8).

Table 8.

Respondents' Likelihood of Contest Participation Without the Possibility of a Professional Critique

Participation	N	Percent (%)
Strongly Disagree	15	19.4
Disagree	29	37.7
Neutral	19	24.7
Agree	14	18.2
Strongly Agree	0	0.0
Total	77	100

CONCLUSIONS

This study provides support for continuous assessment of academic contests, making revisions where necessary. Based on the principle of Social Exchange, an academic contest must be perceived as relevant, and therefore valuable to students in terms of structure and application, cost, benefits, and incentives, in order for them to participate. For example, the structure of academic contests must reflect participants' academic and professional interests; as such competitions help them to further develop knowledge, skills, and interests in the contest area (Abernathy & Vineyard, 2001). Thus, because students are more likely to participate in academic contests they perceive as valuable (Homans, 1961), this study found that in order to increase students' perceived value, regarding participation, contest benefits must be determined and maximized.

However, this study also determined value must not only be present, regarding student perceptions, but it must be operationalized via contest benefits in order to bridge the gap between the perception that academic contests are worthwhile and actual participation. In the study, no respondents stated the contest was not worthwhile. While 81.5% (n=66) respondents agreed or

strongly agreed the National ACT Critique and Contest was worthwhile, 51.9% (n=41) of respondents had never participated. Further, of the 41 students who never participated in the contest, 30 said it was worthwhile to do so (73.2%).

Overall, as cost to students increased, their willingness to participate in the contest decreased. They were also resistant to change, with respect to altering the cost structure of the contest (i.e. raising dues to pay for contest entry or setting a flat rate for contest entry). Here, students found value in a contest they determined to be cost-effective. Students were more willing to participate if the cost of some entries was covered by either the national organization or their local university chapter. As an implication of the study, National ACT may wish to consider encouraging all chapters to support student participation by funding entries and informing students of the option, as six (7.6%) students from four different schools believed their university-level chapter did not provide funding, and 18 (22.8%) students from eight different schools were unsure if their local chapter funded contest entries.

Another key finding is that students were more likely to participate in an academic contest that was reflective of their academic study program and professional interests. In addition, participants value a contest that contains up-to-date content (i.e. digital photography, podcasts, Web design, etc.), which, in turn, reflects technologies used in the classroom, as well as by industry professionals. As such, 81.4% (n=36) of respondents that participated in the 2008 National ACT Critique and Contest considered contest categories up to date.

Additionally, it was found that total contest participation decreased over time. Looking at juniors onward, after their first time entering the contest, participation steadily declined. Perhaps this is because the actual benefits of the contest were not commensurate with those perceived by entrants. Under Social Exchange Theory, contest participants must continue to perceive contest

benefits as outweighing the costs (Homans, 1961). In this case, the most prevalent threat to contest entrance was time and effort. Therefore, students who expended time and effort to participate in the contest but did not gain a return on their investment, in terms of their perceived benefits, would not likely participate again.

Although this study is limited, in terms of contest representation, its findings may impact academic and professional agriculture and natural resources organizations that host similar contests, as they will be able to replicate this study to assess the benefits of their respective competitions. In order for contests to be successful, revision and restructuring must take place on a regular basis (Johnson, 1991). However, in order to improve a contest or to decide a contest is not worthwhile, an organization must determine if the benefits of its contest outweigh the costs. The findings of this study also support maximizing contest participation, with respect to the agricultural organizations that expend time, money, and manpower to facilitate contests. Such organizations hope to gain a return on their investment (i.e. time and effort spent to initiate academic competitions). However, if the return is not perceived as substantial or even beneficial, an organization may choose to eliminate a contest entirely or redesign it to maximize benefits to itself (as the contest host) and participants alike.

As such, this study is important to any organization that utilizes its resources to host a competitive event, and its findings may lead to larger-scale quantitative and qualitative studies, regarding academic and professional contests. Overall, this study found that value must be operationalized in terms of actual benefits to encourage contest participation among agriculture and natural resources students.

RECOMMENDATIONS

Based on this study, the main threat regarding contest participation was the time and effort it took students to prepare entries for the contest. In terms of appropriate submissions, students have the ability to enter personal, academic, and professional works into the competition. However, a number of students believed these items could not be submitted. One recommendation is to make sure potential participants are fully informed regarding contest rules and regulations. Making students aware that they do not need to do additional work to participate in the contest but can submit items they have already completed should decrease confusion in this regard. In addition, making submissions more Web friendly would decrease the amount of time it takes students to prepare and submit entries and supplemental forms. Information should also be communicated with respect to contest concerns, questions, or suggestions.

Another recommendation, based on this study's results, is to target students who are new to the organization. Whether freshmen or older students who are in the first year of ACT membership, these students should be targeted by the national organization and encouraged to submit work to the contest, citing actual benefits received by members. Doing so would increase students' perception of value, and by explicitly citing actual benefits, participation among newer members may be increased.

Most importantly, it is imperative for National ACT to ensure that perceived benefits translate into actual benefits for those who enter the contest. Otherwise, students may not continue to participate. To improve in this area, ACT should encourage professionals attending the Agricultural Media Summit (where the National ACT Convention and National ACT Critique and Contest awards ceremony is held) to be present before, during, and after the ACT awards ceremony or, at the very least, distribute a list of contest entrants and winners to them. By

making contacts with industry professionals, students are more likely to benefit professionally, through a job or internship, by entering the contest. Additionally, critiques should be constructive and helpful, and they should be distributed in a timely manner in order for students to improve their agricultural communication skills, based on contest entry. Returning contest submissions to advisers and students at the convention or soon after the convention will allow students to gain access to their critiqued entries in a timely fashion.

Finally, it is recommended that ACT reevaluate its contest incentives. The research shows that students are more encouraged to participate in the contest, based on the possibility of having winners' names posted on the national Web site, written in the newsletter, or sent in a list to administration and industry professionals. Students are also encouraged to participate if their local chapter or the national organization provides financial support for contest entrance. In order for the National ACT Critique and Contest to be more cost-effective for its host organization, it is recommended that National ACT encourages university-level chapters to fund contest entries, as opposed to doing so itself.

Similarly, contest incentives must be clearly defined and communicated. Students should be made aware of the specific incentives of the contest (i.e. certificate, critique, cash prize). The majority of students who participated in the survey said they were not fully aware of the different prizes offered for being a winner in the National ACT Critique and Contest. Moreover, by eliminating unnecessary prizes and incentives, ACT will also reduce its amount of resource expenditure.

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