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Research

Professional Development

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Agricultural Communications: A National Portrait of Undergraduate Courses

Karen J. Cannon, Annie R. Specht and Emily B. Buck

Abstract

Considerable research has been conducted regarding competencies needed by agricultural communication program graduates during the past four decades. However, no studies have considered actual program offerings. This study used a qualitative approach to analyze courses offered in agricultural communication programs in the United States. Using content analysis methods, researchers analyzed published course descriptions and discovered 21 categories among 172 courses. Most popular were writing courses, followed by courses introducing students to the major, internship courses, and writing for publication and graphic design courses. Categories with the fewest offerings included research, study abroad, and international focused courses. Findings from this analysis are consistent with previous literature noting the variety existing in agricultural communication programs at the national level. With the current growth of agricultural communication as an academic discipline and the fundamental role agricultural communicators play in sharing information about key societal issues at a time when agriculture has never been under greater pressure, this study is a first step in creating a national portrait of curricular offerings in agricultural communication programs.

Key Words

Agricultural Communications, Curriculum, Content Analysis, Course Descriptions, Qualitative Methods

Literature Review

Agricultural communications is continually evolving as a discipline. The field began as agricultural journalism, focused on communicating about farming practices and techniques; today, agricultural communications encompasses the dissemination of credible, science-based information, agriculture- and natural resource-related advocacy work, and public opinion (Irani & Doerfert, 2013). In recent years, postsecondary agricultural communications curricula have adapted to better meet the professional needs of contemporary graduates. Despite growing interest in the field as an academic area of study no official consensus on the contents of or standards for a national agricultural communication curriculum has been reached. The purpose of the current study is to contribute to national level discussions about agricultural communication curricula.

Over the past 40 years, numerous studies have described agricultural communication curricula, from examinations of programs in their entirety (Bailey-Evans, 1994; Evans & Bolick, 1982; Doerfert & Cepica, 1991; Reisner, 1990; Terry et al., 1994; Sprecker & Rudd, 1997; Tucker, Whaley, Whiting, & Agunga, 2002; Weckman, Witham, & Telg, 2000), to analyses of competencies, skills, and experiences required to produce graduates who can successfully transition to agricultural communication careers (Hall, Rhoades, & Agunga, 2009; Morgan, 2010; Morgan,

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2012; Morgan & Rucker, 2013; Rhoades, Miller, & Edgar, 2012; Sitton, 2001; Sitton, Cartmell, & Sargent, 2005; Sprecker & Rudd, 1998). Doerfert and Miller (2006) noted, "it is the responsibility of higher education and agricultural communication programs to observe and keep pace with the ever-changing workplace to ensure that they can provide the preparation and kills that produce high quality graduates" (p. 21). In their article, the researchers presented the results of an industry needs assessment of employees and skills and a content analysis of interviews between industry experts and graduate students that discussed contemporary agricultural issues. These separate investigations revealed four general themes: rapidly changing needs, wants, and expectations of the agricultural communication industry; new agricultural communication stakeholder groups and an increasingly diverse set of related needs, wants, and preferences; a shortened response time for communication related activities; and the increasing importance of the agricultural industry's image in relation to the agricultural communication profession.

Academic research focused on curricular improvement is found in a variety of disciplines. Veltri, Webb, Matveev, and Zapaert (2011) used curriculum mapping techniques to evaluate and improve an Information Systems (IS) baccalaureate degree program, while Ahmed, Yaris, Frooqui, sand Saqib (2014) investigated key attributes and skills needed in undergraduate construction management curricula in order to better prepare graduates for a constantly evolving profession. In the field of public relations, Todd (2009) surveyed public relations faculty and professionals about their opinions regarding which concepts and skills should be emphasized and included in undergraduate public relations curricula. Results indicated that while faculty and professionals agreed on some aspects of what they saw as important such as internship experiences, professionals valued hands-on, practical skills more highly than faculty members and believed that public relations curricula were out of touch with industry practices. In contrast, a more recent study by Auger and Cho (2014) determined that public relations programs in the U.S. offer a healthy variety of coursework and generally provide students with strong foundations in writing and other areas, preparing them well for placement into entry-level public relations positions.

National Level Program Research in Agricultural Communication

Two studies of note have been conducted regarding agricultural communication program curricula at the national level. Doerfert and Cepica (1991) examined 30 agricultural communication and journalism programs in the United States and documented program-related details such as name of the college and department in which degrees were offered, program enrollment, degree type awarded (bachelor of arts, bachelor of science), whether the program required an internship, presence of a related student organization, programs' use of an advisory committee, faculty demographics, facilities and equipment, and information about future plans for each program. They found programs were predominantly housed in agricultural colleges and departments, typically comprised fewer than 30 students, most often awarded bachelor of science degrees, and frequently used computer and photography equipment.

Three years later, Terry and colleagues (1994) conducted a study to develop a discipline-based curriculum for agricultural communication using input from selected agricultural communication professional organizations. The researchers proposed a model curriculum, identifying areas of competency. Specifically, they recommended developing flexible curricula, allowing students to specialize in a content area of interest, and emphasized internships as valuable opportunities that ought be part of agricultural communication students' educational experiences. The team recommended future studies develop competency lists for specializations in the field.

Research on Competencies

Several studies have examined specific coursework seen as vital for agricultural communication students. Hall, Rhoades, and Agunga (2009) explored curricula in student publication courses. They found programs varied in longevity and form of publication (magazine, newsletter, online newsletter, or newspaper) and such courses were most often offered as part of

an agricultural communication curriculum. Instructors and advisors for the publications reported covering several topics in their courses, including writing, editing, photography, publication design, and online publishing.

Rhoades, Miller, and Edgar (2012) investigated the magazine capstone course at the University of Arkansas using the Model for Integration of Experiential Learning into Capstone Courses (MIELCC). Students participating in the study saw the capstone experience as a valuable opportunity to prepare them for their careers in agricultural communication, fulfilling their experiential learning needs and helping transform them into society-ready graduates. While this study focused on a single course, it supported Sitton's (2001) findings that students enrolled in the magazine production capstone course at Oklahoma State University considered the course essential to rounding out their agricultural communication education.

A series of studies conducted by Morgan (2010, 2012) and Morgan and Rucker (2013) explored competencies needed by undergraduate students enrolled in agricultural communication programs as perceived by industry professionals, alumni and academics. In investigating industry perspectives of competencies using a Delphi approach, Morgan (2010) determined competencies fell into three core areas: agriculture, communication, and general education. In the core area of agriculture, competencies ranked highest were the ability to conduct activities in an ethical manner, ability to meet deadlines, and dependability, followed by having a strong work ethic and reliability. In the core area of communication, participants ranked highest the ability to effectively communicate verbally, an understanding of communication principles, the ability to identify barriers to communication, and communication skills beyond listening. In the general education core area, competencies ranking highest were correct use of grammar, effective communication using the written word, and spelling. Overall, industry participants seemed to believe a holistic approach to communications was essential for learning.

In investigating the competencies needed as perceived by alumni, Morgan (2012) described the alumni focus group participants as "emphatic" (p. 22) about the importance of writing in the agricultural communication curriculum, regardless of the type of writing or job position graduates intended to seek. Following closely were what group members deemed basic communication skills, including audience identification, desired outcome from the communication, developing a plan to achieve said outcome, editing, proper grammar, and the ability to organize one's thoughts and write in a strategic manner. Interestingly, agricultural knowledge surfaced lower on the list of important competencies, with participants calling it "icing on the cake" (p. 23), helpful when relating to agricultural audiences but not a top-level requirement. Participants noted what gets graduates jobs are communication skills and they identified public speaking skills, general employment skills, a strong familiarity with new media, and internship opportunities as critical for students.

Morgan and Rucker (2013) explored competencies needed for agricultural communication graduates as perceived by national agricultural communication faculty. Again employing the Delphi method, the researchers investigated competencies employing the three core areas of study. In the core area of agriculture, faculty members ranked highest the concept of professional competence, ability to practice effective communication, critical thinking, ethics, and organized thinking and problem solving skills. Faculty also emphasized the importance in an ability to understand the agricultural industry, a basic understanding of the food system and agricultural production, as well as economics. In the core area of communication, faculty emphasized editing, audience analysis, journalistic ethics, AP style, layout and design skills, as well as an ability to organize facts or information into a coherent message. In the core area of education, emphasis was on communication skills, the ability to communicate effectively in writing, and the ability to find and use information from the Internet and other sources. Overall, faculty emphasized the need to integrate curriculum and provide students opportunities to apply technical skills to specific projects and situations, as well as a need for a broad understanding of agriculture on the part of successful graduates.

Conceptual Framework

Since Doerfert and Cepica (1991), no study has examined agricultural communication curricula on a national level. Numerous studies have been conducted at specific institutions, and as the review of literature above has documented, several researchers have identified competencies students should have upon graduation from agricultural communication programs. Though competencies necessary for agricultural communication students' success have been widely described in the literature, no recent research has investigated the actual content of program curricula. Using the Program Systems Model of curricular development (Finch & Crunkilton, 1999), the researchers in the present study sought to describe agricultural communication course content in agricultural communication programs nationwide.

The Program Systems Model (Figure 1) positions students as program inputs who are therein shaped by the academic program as well as environmental factors within the university, their communities, and industry. Faculty, resources, and the curriculum itself have a direct influence on program outputs—namely, program graduates—who then provide feedback to faculty regarding their experiences and preparation. Competencies of these graduates have been both self-assessed (Morgan, 2012) and evaluated by agricultural communication faculty (Morgan & Rucker, 2013). Even incoming students' expectations of curriculum content have been described (Watson & Robertson, 2011). With its focus on curriculum content, this study provides a missing piece to the conceptual puzzle of the agricultural communication program system.

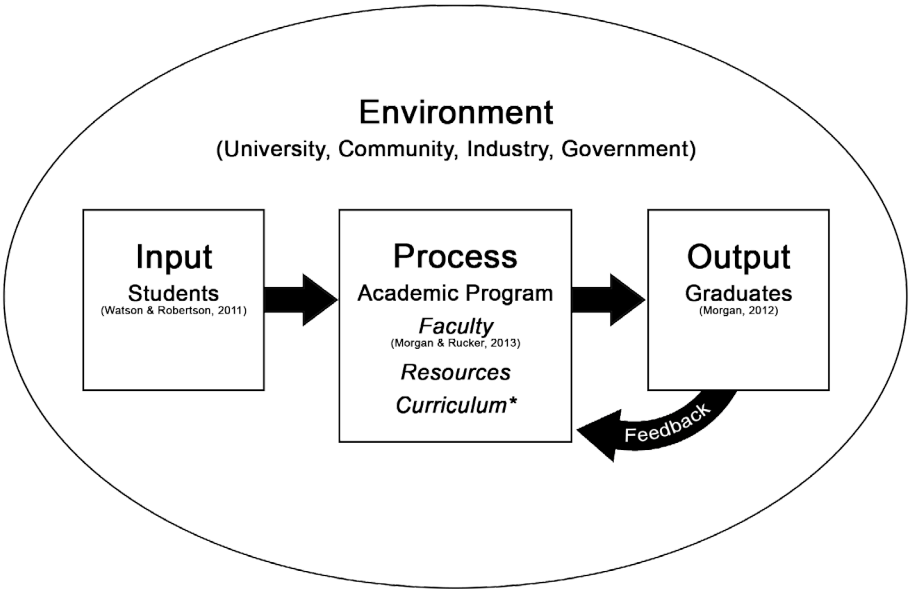

Figure 1. Program Systems Model with emphasis on curriculum content. Adapted from Finch & Crunkilton (1999).

Purpose and Objectives

The National Research Agenda (Doerfert, 2011) called on researchers to conduct studies in six identified priority areas. Priority 3 of the agenda focused on needed research to nurture a sufficient scientific and professional workforce that addresses the challenges of the 21st Century. Doerfert and Miller (2006) noted agricultural communication curricula should be reexamined regularly and that professionals in this field "will be among the leaders in creating knowledge management systems for the industry. As such, their knowledge, skills, and abilities must be at a level that ensures their continued success" (p. 28). Evaluating program curricula, specifically coursework focused in the discipline, is a first step in creating this national portrait and may provide groundwork for model curricula in future.

The purpose of this study was to conduct a content analysis of course descriptions offered in agricultural communication programs across the United States to determine what content programs are teaching in their curricula. To fulfill the purpose of the study, a single research question was posed: What agricultural communication focused courses are offered in undergraduate programs in the United States?

Methods

To address the research question, we used a qualitative case study approach and employed a constructivist worldview. Case study research allows researchers to "explore a bounded system… and report a case description and case-based themes" (Creswell, 2007, p. 73). In this instance, the bounded system included courses in agricultural communication programs in the United States. Our research team was comprised of faculty members in agricultural communication programs located in the United States with varying years of experience in academics ranging from eight to less than one. All team members have been involved in developing coursework and curricula to some degree.

Programs for the present study were selected beginning with a general Google search using the terms agricultural communication and major, and agriculture communication and major. Results from this search were cross-listed with four-year universities listed as land-grant institutions by the Association of Public and Land Grant Universities (APLU) and missing institutions were included in the analysis. Separately, all institutions on the APLU list were searched individually to determine if agricultural communication programs existed that might have been missed by the general Internet search. No additional programs were discovered. These search procedures yielded 35 programs, all housed in colleges of agriculture or dual listed between colleges of agriculture and colleges of communication.

Search results were then filtered using qualifiers with information gathered from institution websites. Programs where agricultural communication was a major area of study (a major), a minor, or concentration within another area of study with dedicated instruction (operationalized as dedicated faculty or staff with an agricultural/science communication area of expertise) and courses containing 'communication' as part of either the course title or course description listed in the university catalog were included. These filters resulted in a list of 17 programs. Additionally, information was gathered from each institution related to program internships and whether they were required, recommended, optional or not included.

Methods for this study were inspired by Chung and Choi's (2012) evaluation of public relations curricula in the United States, the United Kingdom and South Korea. In that study, the researchers used the public relations profession's definition of professionalism and employed 10 standard course categories identified as essential to high quality public relations education programs by the Commission on Public Relations Education. As the agricultural communication discipline has no such standards to use for analysis, the research team did not employ a priori categories and instead allowed categories to emerge from the data.

As in Chung and Choi (2012), course titles and descriptions as published in each institution's online undergraduate bulletin were content analyzed. Independent study, special problems and research practice courses, which vary from semester to semester, were not included in the analysis. Using the constant comparative method described by Lincoln and Guba (1985) the researchers independently content analyzed course descriptions from the 17 identified programs. Initial analysis yielded 27 categories, and trustworthiness was established through the process of member checking, which resulted in a collapsing of categories to a final total of 21.

Results

Course descriptions from 17 universities were compared in this analysis, with 172 individual courses analyzed and categorized. An average of 10 courses per university were discovered with a range of 2 to 33 and a median of 9. Of the programs included, 14 institutions had majors in agricultural communication, and the remaining three programs use a specialization or concentration within the agricultural education major. Two programs straddled multiple colleges, one with dedicated program faculty in the major and one without. All other programs had dedicated faculty to teach agricultural communication courses. Fourteen of the 17 programs were dues-paying National ACT members.

Based on titles and course descriptions, 21 categories emerged (see Table 1). The most prominent category, writing (n =24), was defined by courses in which the main focus was on written communication. These included all basic and advanced writing courses, editing, and reporting. Introduction (n =15) and internship (n =14) courses were also seen in several programs. Course descriptions related to basic communication concepts and those providing introductions to the field were sorted into the introduction category. Fourteen internship courses were identified; seven programs required internships and associated course credit, while nine programs included internship courses as optional. Three programs listed internships as recommended but did not offer accompanying courses.

Several skills-based categories emerged. Eleven courses were categorized as writing for publication. These courses focused on producing a student publication/magazine. Courses covering graphic design principles, software, and visual communication topics accounted for 11 courses, while eight courses focused on broadcasting and seven, Web technologies. Courses addressing technology but not focused solely on Web production were categorized as technology (n =6). Courses employing multimedia methods and theory related to technology were also included in this category. Photography was also a popular offering with a total of six courses.

Advertising, public relations, & Integrated Marketing Communication (IMC) were the focus of seven courses, which included practice and theory in marketing and public relations. Risk and crisis communication courses were categorized separately due to a difference in course focus, which yielded four courses. Similarly, four courses were categorized as campaigns courses as they were solely focused on developing public relations campaigns. Issues courses also emerged as a separate category (n = 8) with a focus on specific or current issues such as the environment and debates about science.

Table 1

Course Categories and Frequencies

Category	*n*
Writing	24
Introduction	15
Internship	14
Writing for publication (magazine development)	11
Graphic design	10
Professionalism	9
Broadcast	8
Issues	8
Advertising, public relations, IMC	7
Web	7
Capstone	6
Presentations	6
Photography	6
Technology	6
Campaigns	4
Oral & written communication	4
Risk/crisis communication	4
Field experience	3
Research	3
Study abroad	3
International	2
Total courses analyzed	172

References to preparing for future careers as professionals were found in several categories, however courses sorted into the professionalism category (n =8) covered topics including ethics, networking, and interviewing for career positions. Several programs offered courses focusing on presentations (n =6), while four courses covered both oral and written communication. Field experience (n =3) courses were found in a few programs and varied from the internship courses being offered based on description and requirements outlined.

Of the courses, two emerged as having a dominant focus on international experiences, and three were specifically described as study abroad courses. Research was the focus of three courses analyzed. Lastly, four courses were found to be outliers in relation to the other courses as they covered topics such as mass media and youth and health communication.

Implications and Recommendations

This study illustrates the variety of coursework available for students enrolled in agricultural communication programs across the nation, with 21 discrete categories discovered across 17 degree-offering institutions. The researchers noted several challenges related to categorizing the courses, not the least of which was some of the categories are not mutually exclusive. Some courses might fit into the writing course category, but may also be a writing for publication course or incorporate elements of multimedia communication.

Confirming previous literature stating the importance of written communication skills for students (Sprecker & Rudd, 1998; Terry et al., 1994; Morgan, 2010; Morgan, 2012; Morgan & Rucker, 2013), writing-focused classes are most common. The 24 courses in this category indicate several programs have more than one writing-focused course. The multitude of writing courses and the six presentation courses reflect that some agricultural communication programs house their college's writing and presentations course as a service.

Almost all programs appear to have a dedicated course introducing students to the field of agricultural communication. These courses address numerous topics including an overview of possible careers, job shadowing experiences, and basic communication skills. With respect to experiential learning opportunities, not all programs required internships, despite Terry et al.'s (1994) belief that these hands-on experiences are important for agricultural communication students. Nonetheless, most programs included coursework for internships, so students are exposed to internship opportunities, whether they were required or not.

Graphic design (n=10) and photography (n=6) courses are popular in agricultural communication programs across the nation. The emphasis on visual communication reflects the increasingly multimedia nature of the modern agricultural communication field. Per Morgan and Rucker (2013), graduates are expected to possess rudimentary design, layout, and photography skills upon entering the workforce. The discovery of 7 courses in the researcher-defined advertising-public relations-integrated marketing communication category indicates less of a focus on strategic communication. However, strategic communication courses often emphasize written and oral communication; therefore, despite the dearth of exclusive courses in advertising and related fields, these skills are likely still being taught to agricultural communication students.

Of the 172 courses categorized, only six were identified as capstone courses, despite previous research placing importance on capstone experiences (Rhoades, Miller, & Edgar, 2012; Sitton, 2001). This finding may be complicated by the possibility that not all capstone courses are specifically designated as such in their course descriptions. Consequently, it is possible that the operational definition created by the researchers impacted the number of courses in this category. For example, the researchers identified several courses emphasizing professionalism. These courses address topics such as résumé development, interviewing, interpersonal communication and relationships, and business etiquette. Some of the courses sorted into this category may serve as proxies for capstone experiences. Further research about courses incorporating or emphasizing professionalism and whether or not those constitute program capstones could prove helpful.

Risk and crisis communication was a category of interest to the researchers. This area has become a focus of agricultural communication researchers and professionals in recent years (Chambers, 2013; Irlbeck, Jennings, Meyers, Gibson, Palmer, Sellnow & Sellnow, 2014) due to increased incidence of food- and agriculture-related health, environmental, and social crises. Despite the agricultural industry's track record with news-making crises, the number of courses in this group is low in comparison to other categories. Programs may not be able to offer risk- and crisis-focused courses due to faculty capacity or student interest, or the topic may be integrated with public relations and marketing courses.

Eight issues-based courses were discovered. This finding suggests that program leaders may be following Irani and Doerfert's (2013) recommended issues-focused programming model rather than the prevailing competencies-based framework. Indeed, support exists for the idea that agricultural and natural resources issues can be successfully addressed through public engagement and issue management (Gorham, Lamm, & Rumble, 2014; Lindsey, 2011; Meyers, Hall, & Allen, 2011; Peppers & Sigurdson, 2011; Ponce de Leon & Tucker, 2011;). Involving agricultural communication students in problem-solving and issues management to prepare them to enter the workforce would therefore be beneficial.

The international category yielded the smallest number of courses. While Terry and colleagues (1994) identified international relations (understanding of foreign cultures, trade relations, and barriers to international communication) as an area of competence needed for students in agricultural communication, smaller programs may not have the capacity to offer and sustain such specific and potentially costly experiences as international or study abroad courses. Despite the small number of offerings of courses in this category, evidence is found in the literature to support the assertion that such experiences are available to students in programs and departments with agricultural communication foci (Coers, Rodriguez, Roberts, Emerson, & Barrick, 2012; Lamm, et al., 2011; Northfell and Edgar, 2014). Additionally, courses with an international focus may be offered at the college or even university level addressing varying topics in agriculture and/or communication. Indeed, study abroad experiences offered through other departments or colleges may present excellent opportunities for students to internationalize their education in lieu of study abroad programs or courses focused in the agricultural communication discipline.

Following the model employed by Chung and Choi (2012), this research explored only course descriptions. These descriptions are typically written and not edited over time, despite the fact that faculty often make necessary adjustments to courses to keep them up to date. Such descriptions and course titles do not provide a complete account of course content or program requirements. Rather, they serve to elucidate general concepts and skills taught in courses. More finite course descriptions would not only be helpful to future researchers, but also would benefit students interested in agricultural communication programs as they investigate program offerings.

Colleges and universities, under increasing pressure for accountability to students and other stakeholders, have begun to require academic degree programs to state learning outcomes (Hebel, 2010). A comparison of such outcomes would contribute to this national portrait of agricultural communication programs. In this vein, academic professionals in the field should discuss and establish standards or benchmark experiences and skills essential for a well-rounded education in agricultural communication. Programs should be distinctive based upon their geographic locations and institutional characteristics, but common expectations could be identified that would level the playing field for students seeking employment or higher-education opportunities in agricultural communication.

Suggestions for further research are wide-ranging. As mentioned, course descriptions do not provide indications whether courses included in the analysis are required or electives. This analysis did not include any non-major required courses students take or those taken as electives. Thus, it is important to continue—and to expand—research in this vein with a view to aiding faculty and departments developing or improving their agricultural communication curricula. Faculty may find it useful to compare results in this study with an analysis of program learning outcomes and syllabi from courses in the 17 included programs. Researchers should consider obtaining major check sheets or advising sheets with program requirements to more completely understand curricula at each institution. Research should also be conducted to determine if programs employ guiding documents, philosophies, missions, visions, or values to direct their curriculum development and maintenance and support a focus on learning outcomes.

Further research about national agricultural communication curricula must involve program faculty and advisors to assess perspectives on creating, upgrading, and sustaining high-quality programs. A mixed methods approach beginning with qualitative methods to gather base-line data, followed by quantitative methods to build consensus toward national level agreement about curricular guidelines, if not standards, would make an important contribution to the discipline.

The present study is not an evaluation or assessment of agricultural communication programs. Rather, it is an initial step to describe current programs and course offerings to better realize the program systems model for the field of agricultural communication. Findings,

conclusions, and recommendations from this study may be employed to help guide quality curricula for current and emerging programs alike. As researchers and faculty work toward model curricula, future research is vital to advance our understanding of courses, concepts, and competencies indicated as important by previous research.

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Agricultural Communications: Perspectives from the Experts

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Abstract

This qualitative research study evaluates the perspectives of agricultural communications (ACOM) according to ACOM experts (N = 25) from across the United States. Respondents represented policy makers, industry leaders, educators, and researchers and averaged about 15 years of experience. However, respondents were unable to identify a consistent definition of ACOM. Skills and characteristics needed by agricultural communicators ranged from general agriculture and policy understanding to technical communications and science knowledge. Audience identification, agricultural and policy knowledge, and targeted message development and delivery were all important skills needed by ACOMRs. Agricultural communicator characteristics focused on being flexible, responsible, gaining trust, and thinking critically. Challenges, sometimes noted as barriers, ranged from knowledge area changes to division and defense and from a non-unified voice to rapid expansion of technology. The discussion of higher education institutions training generalists versus specialists is an important topic based on findings of this study. Recommendations for future ACOM focus and education are discussed.

Key Words

Agricultural Communications, Influencing Factors, Future Directions, History

Literature Review

The profession of agricultural communications (ACOM) has transitioned from public information dissemination to a highly competitive industry, requiring professionals to understand business, journalism, and farming practices (Burnett & Tucker, 2001). Although ACOM was informally practiced with the arrival of the settlers, who relied on Native American tribes to teach farming methods (Burnett & Tucker, 2001), it was the need to disseminate information to the public about agricultural practices that eventually established ACOM as a profession (Telg & Irani, 2012). The late 1700s saw the first agricultural publications, including *The Farmer's Almana*c and the first published results of agricultural experimental work, for the purpose of sharing agricultural information (Telg & Irani, 2012). Today, as the general public is becoming further removed from the farm, communication becomes ever critical to the promotion of agriculture (Bailey-Evans, 1994).Today, as the general public is becoming further removed from the farm, communication becomes ever critical to the promotion of agriculture (Bailey-Evans, 1994).

Presently, the field of ACOM has evolved into a wide range of communications including news and broadcast reporting; feature writing; public relations; strategic communications; photojournalism; crisis communications; marketing and branding; and electronic communications (Irani & Doerfert, 2013; Tucker, Whaley, & Cano, 2003). Agricultural communicators now integrate digital technologies to disseminate messages to a variety of media outlets. Previous research describes strong writing skills as the most valuable communications skills (Crawford,

Lang, Fink, Dalton, & Fielitz, 2011; Sprecker & Rudd, 1997). As technology has rapidly changed, so has the field of ACOM. The need for instantaneous information has created an increasing demand for agricultural communicators (ACOMRs). Rogers (2003) stated there is a need to adopt new innovations as soon as possible, especially when the innovation impacts a societal problem or an area of high priority. Consequently, innovations in communication technology have impacted both secondary and postsecondary curricula (Edgar et al., 2012).

> The profession of agricultural communications/agricultural journalism has seen a major growth in the last century. Similarly, academic programs in this field have seen tremendous growth and development. Today they offer a dynamic range of course offerings while experiencing increasing enrollment. New programs seem to sprout roots on a regular basis and existing programs are seeing major growth spurts in relation to student numbers and curricular offerings as the need for communicating agricultural issues to an increasingly agricultural illiterate audience becomes more and more important. (Cartmell & Evans, 2013, p. 52)

Faculty are facing the challenges of raising a "young discipline" (Doerfert & Irani, 2013) and meeting industry demands, which require students to enter the workforce with the ability to be versatile and incorporate elements of communications successfully (Morgan, 2013). This springboards from a lack of public understanding of agriculture. ACOMRs are working with an audience at least three generations removed from the farm (American Farm Bureau Federation, 2015). Moreover, it is estimated 98 percent of the U.S. population is without first-hand knowledge of food production and food systems (U.S. Environmental Protection Agency, Ag 101, 2014). Consumer's lack of knowledge about agriculture leads to a lack of distrust of the food industry (Center for Food Integrity, 2014). Therefore, ACOMRs are working to not only educate the public but also build a relationship of trust and shared values with consumers.

Purpose and Objectives

The purpose of this qualitative study was to capture the essence of ACOM from the viewpoint of policy makers, industry leaders, educators, and researchers. Additionally, the study sought to provide a future forecast for ACOM. The following research objectives guided the study:

1. Determine a definition of ACOM.
2. Describe skills and characteristics required of an ACOMR in today's industry.
3. Identify current challenges within ACOM and opportunities for the future.

Methodology

This qualitative study used in-person and telephone interviews with ACOM experts in the United States to determine the history of ACOM and make suggestions to improve the profession in the next century. Video (in-person) interviews (n = 13), filmed using high quality video equipment, were conducted with respondents and an additional 12 interviews were conducted by phone because of scheduling conflicts. Respondents (N = 25) included policy makers (n = 4), agricultural industry leaders (n = 16), educators (n = 3), and researchers (n = 2). All interviews were voice recorded to allow transcription of each interview.

To identify policy makers, industry leaders, educators, and researchers who influenced ACOM, the researchers conducted an extensive search for experts in the United States. Experts were identified based on national presence, longevity and level of involvement in the industry. These experts ranged in ages 24-82 and the average years of experience was 14.88 years, with six months as the minimum and 55 years as the maximum. Because there are no rules for sample size

in qualitative research, a baseline of 25 experts was established (Erlandson, 1993). Researchers found a sample size of 25 did sufficiently yield data saturation.

Before conducting interviews, participants were contacted by a researcher to verify availability and involvement. The University of Arkansas Internal Review Board (IRB) approved all data collection materials for this study. Interviews were conducted from June 2 to August 12, 2015, and lasted an average of 45 minutes (Creswell, 2009). Prior to interviews, participants received a brief summary of interview topics. Additionally, an interview guide was created by the researchers and used to establish a comfortable setting for participants and encourage open-ended conversation. During interviews, the interviewer led participants through a series of semi-structured questions regarding ACOM present initiatives, needs, and opportunities for the future. Interviews were neo-positive in nature as the interviewer aimed to ask good questions, minimize bias, and generate quality data as well as conversation (Merriam, 2009).

After the questioning route was completed, the interviewer conducted member checking to ensure recorded data agreed with the participant's intended perception (Creswell, 1999, 2009; Lincoln & Guba, 1985). Each interview concluded with a brief, verbal survey to gain a deeper understanding of each participant's demographics. Following each interview session, video/audio recordings were saved to a computer and assigned a number based on interview order. Once sessions were completed, transcribed data were arranged according to their information source (Creswell, 2009) and interview question. Triangulation was implemented using various modes to record data including notes, audio recordings, and in most instances video recording to increase transcription accuracy (Merriam, 2009).

Transcripts were created by Rev, a transcription service provider. Transcriptions were hand-coded using color schemes and key segments were placed under categorical themes (Creswell, 2009). Open codes from each interview were clustered and consolidated through axial coding (Creswell, 2009; Tesch, 1990). Findings were reported through narratives supported by respondent quotations and included a general summary written to capture lessons learned in thick description (Creswell, 2009; Lincoln & Guba, 1985). Peer debriefing between at least two researchers was used to reinforce the data's accuracy and reach inter-coder agreement (Creswell, 2009; Gibbs, 2007). Transferability was increased through rich, thick description so individuals in a similar context may draw commonalities (Lincoln & Guba, 1985; Merriam, 2009). Dependability was maintained through a detailed audit trail and use of an interview protocol/script (Merriam, 2009).

Participants were coded to maintain confidentiality. However, policy makers are noted using a "P" and then the interview number, industry leaders with an "I," educators with an "E," and researchers with an "R."

Findings

Definition of ACOM

The first objective of the study was to determine a definition of ACOM. Many respondents found it difficult to provide a comprehensive definition of ACOM. While some respondents stated they could not provide a correct description, other respondents commented ACOM represents the vast and complex agricultural industry through the use of multiple communication outlets. "I would clearly define agricultural communications as the ability to share the message of agriculture through many different facets within communications" (I2). Promoting awareness, discussing the purpose of agriculture, informing an audience, and creating cohesiveness were all used to express the nature of the ACOM role. Respondents expressed how the field of ACOM is always changing as a result of changes in communication outlets, a shift in audience, and agricultural practices—which also creates a challenge in defining the profession. "There's no simple definition, but it includes communicating about a broad range of topics with a broad range of tools" (P2).

Respondents noted although there are professionals in ACOM, anyone could be an ACOMR – even those who are misinformed. "Everyone thinks they're an ag communicator because they post on social media about food" (E1). One respondent (P4) expressed the growing disconnect between consumers and agriculture is an opportunity for ACOM. "It's exciting because there's tons of opportunity, but that huge, growing disconnect means that the communications role is as important now as it has ever been" (P4). Respondents commented on the difficulty of the position as it combines the complex field of agriculture and the broad area of communications.

> It is one of the hardest jobs in agriculture, because it's someone who knows a lot about agriculture, a lot about communications tools and outlets, and delivers a message that's always tailored to your audience – someone who understands who the audience is. (P2)

Future Needs of ACOM and ACOMR

The majority of respondents (n = 15) remarked the need for ACOMRs is growing now and will continue to grow in the future. "People need communicators now more than ever" (I10). Respondents expressed the need for ACOMRs as the industry is constantly undergoing change and consumers desire more information about their food. "The future in ag communications is strong" (I2). Respondents attributed consumer demand for increased information as an "enormous need" (R2) to connect with the consumer.

> It's the perfect storm where we decreasingly have a knowledge about agriculture, and agriculture is increasingly complicated. It's the communications person who steps into the gap to help bridge that gap but to do that they've got to have a strong foundation and have to know what they're talking about. The good communicators distinguish themselves because they're going to put in the work to do that. (P4)

Although respondents expressed a strong future for ACOM, they also expressed a need for change within the profession. "Ag communications needs to change dramatically to be successful in getting the word out" (R2). One respondent (P2) expressed the need for ACOM positions. According to this respondent, the future of the ACOMR goes beyond industry-designated positions and carries over into public service. "Ag communicators will fill many leadership positions because the majority of the job is communicating with others" (P2).

Skills of ACOMR

The second objective of the research study was to describe skills and characteristics required of an ACOMR in today's industry.

Audience identification.

Nearly every respondent (n = 24) stated understanding the audience as a critical skill in ACOM. Throughout interviews, the concept of "understanding the audience" or "knowing the audience" was consistently mentioned. To effectively develop and deliver messages, respondents expressed ACOMRs must "understand who the audience is, how they operate, and the best ways to reach them" (I3). Specific audiences noted included general public/consumers (n = 18), farmers (n = 18), policy makers (n = 11), producers (n = 6), and ranchers (n = 5). Respondents discussed the shift from agricultural audiences to non-agricultural audiences, or the general public.

> Without a doubt the past ag communicators communicated what the farmer needed to know on a timely basis. The ag communicator of tomorrow communicates to the consumer what the farmer's doing that benefits the consumer. Ag communications in the future has very little, if anything, to do with communicating to the farmer. (I8)

One respondent (I9) explained the consumer audience will ultimately shape how decisions are made regarding agriculture and public opinion, and how it is frightening to have a misinformed generation who will become policy makers (I9). Moreover, respondents stated it is crucial for ACOMRs to meet consumers' wants and needs to gain trust. Regarding consumers' wants and needs, the majority of respondents discussed the consumers' demand to know about their food (n = 19), followed by the desire to consume messages conveyed as stories (n = 9). Identifying audience needs was often linked to knowing the audience. "It all goes back to knowing your audience" (P3). Many respondents stated the general public places more trust in blogs and social media than science, and prefer receiving communications about knowledge over factual information. "Knowledge is becoming something that is more and more readily available. If we can't provide that, then people don't have an ability to trust" (I2).

The consumer audience was regarded by respondents as being disconnected from agriculture and further removed from the farm—a continuous trend for the future. "In Chicago, [people] are five generations removed from the farm. I have to help them understand why we do what we do to put food on their table" (I16). One respondent (I2) noted the use of the word 'food' over 'agriculture' was more attractive to consumers and has resulted in successful messages in the respondent's organization. "If we're not communicating on their [audience] terms, then we're losing" (P4).

Knowledge skillset.

The majority of respondents (n = 23) named knowing or understanding agriculture as an important skill. Respondents expressed the importance of understanding agriculture on a broad scale, as well as the technical details and terminology. Additionally, almost every respondent (n = 23) stated a thorough knowledge or understanding of the communications field was required of an ACOMR. Nearly half of the respondents (n = 12) specifically mentioned writing as a skill critical for ACOMRs in the present and the future. Other communications skills mentioned by respondents included knowing how to use multiple media outlets, keeping up with technology changes, conducting research, and message or story development. Having knowledge or understanding of policy was often mentioned by respondents "because [policy makers] are making the laws that affect the two percent of the population growing food for the country" (I16). One policy maker (P1) commented on the need for the ACOMR to translate the complexity of agricultural policy issues to the public.

Message development and delivery.

Respondents discussed specific components of messages from development to delivery. When discussing components of the message, respondents expressed the need for a balance of education and entertainment. Respondents consistently expressed how messages must contain accurate information and facts to maintain credibility. Additionally, many respondents recommended the approach of storytelling to bridge the public disconnect with agriculture by creating a personable message, relating to feelings instead of focusing on facts, and incorporating human interest with education. Respondents described the importance of presenting messages as short, concise, and clear, allowing the message to be consumable and understandable for the audience. One respondent labeled this as "two sentence messages" (I2).

> As we think about what our consumers want, they're not going to sit down and read this article about why organic food is healthier for them or why GMOs are important to producing food for the world. They want to know what these two sentences are going to tell them. (I2)

Respondents noted strategies and tactics must guide message dissemination, and the success of the message is determined by the evaluation of message delivery. One respondent (I2) expressed the strategy must include how it fits into the overall picture of agriculture. Respondents discussed additional strategy components including timeliness, relevance to audience, and use of specific language. The message must "cut through the clutter" (I4, I14, E3) of misinformation and be tailored to a specific audience segment to successfully reach the audience, promote awareness, and change behavior. "There will always be a need for high quality information, but the strategies behind that will be how to best deliver it to the target audience" (I14). A skill respondents (n = 19) noted was the ability to utilize a growing number of communication outlets. However, respondents (n = 14) stressed the importance of knowing the best communication outlets to reach the desired audience when disseminating a message. These respondents stated researching the target audience, understanding how information is consumed, and determining which media outlets are most efficient and effective are critical to message delivery. A respondent (E3) described the message development and delivery process as "a source, communication medium, and a receiving audience."

Characteristics of an ACOMR.

Along with a knowledge base of agriculture and an understanding in communications and policy while targeting a specific audience, most respondents (n = 20) stated an ACOMR must be flexible or adaptable. A quickly changing communications industry and onset of technology advancements led respondents to prioritize flexibility as a skill. Flexibility and willingness to take on new responsibilities "while looking at a wide variety of media types" was crucial in new hires, according to one industry professional (I14). Flexibility also was desired of faculty when adapting curriculum to the current industry's issues and needs. Respondents expressed these characteristics were important to the success of a future ACOMR.

> I don't know if I can tell you where I see the future's going to go in terms of communications, but I can tell you that I'm willing to be flexible, adapt, and implement what I can to make sure that I'm a part of it. (I8)

Adapting to the constantly shifting fields of agriculture and communications was often regarded as a non-negotiable skill by respondents. One respondent (E2) with 53 years of experience in the ACOM discipline stated adaptability and willingness to change were required "in order to survive." Adaptability was directly linked to remaining relevant. Relevancy was described by one respondent (I10) as "keeping up with consumer trends and pressures of the world." Two respondents (R1, I2) used the example of consumer movement from agriculture and to interest in food to describe remaining relevant with the audience's concerns and preferences. Timeliness of message delivery to a target audience was also attributed to relevancy.

The ability to think critically, strategically, and forward was often mentioned by respondents. When discussing future skills, respondents often expressed using critical thinking skills to develop a message strategy while anticipating the future shifts and trends in communications as crucial. Credibility and accuracy were mentioned by respondents (n = 13) as a needed skill to gain public trust and establish a positive reputation. One respondent (P2) stated the seriousness of prioritizing credibility and accuracy because "if you lose these, then you've lost your respect and platform forever."

When asked what future skills would be required for ACOMRs to succeed in industry, respondents often said it was too difficult to anticipate the future because of the quickly shifting communications field. Rapid advancements in technology were often mentioned as something ACOMRs must adapt to be successful in the future. When asked about future technology, one

respondent answered, "Learn it or die" (R1). Respondents expressed current required skills would still be crucial in the future, particularly when relating to consumer trends in a consumer-driven world. "As the future comes and we really have to embrace change that we might not want to, that forward-thinking and flexibility is going to be crucial for the success of ag communicators and the agricultural industry in general" (I2).

Challenges

The final object of the research study was to identify current challenges within ACOM and opportunities for the future.

Changes in areas of knowledge.

When asked to describe challenges within ACOM, all respondents (N = 25) attributed the demand of knowledge in the rapidly changing environments of agriculture, communications, and audience as a challenge that currently exists and will continue in the future. The rapid advancement of communication technologies has led to the current challenge of keeping up. "There is no way those of us in earlier ag journalism could have anticipated the Internet" (E2). Respondents stated the broad sectors and sub sectors as well as the complex nature of agriculture add to the difficulty of having a thorough knowledge and understanding of the industry. In addition to those changes, respondents discussed the challenge of navigating the many channels available to reach an audience. "Everything is changing, so we have to be well-rounded as communicators to reach many people in many different ways" (I10). Respondents attributed communications channels and audience demand for short pieces of information as posing a challenge to ACOMRs who are tasked with communicating technical and complex agricultural issues. Agricultural issues mentioned by respondents include environmental impact; government and policy; agricultural technology; biotechnology; and new avenues in food production. One respondent (I6) discussed how the speeds of change in policy, science, industry practices, and public demands are all extremely different, creating a nearly impossible environment for an ACOMR to succeed.

Generalist vs specialist.

Although respondents named agricultural knowledge (n = 23) and communications knowledge (n = 23) as demands of being an effective ACOMR, respondents also offered insight on the challenge of being a generalist or a specialist as related to the profession of ACOMR. "The broad area makes it impossible for anyone to be so well-versed in the entire scope of agriculture and be able to communicate about it all" (P3). The pressure of being a specialist in everything was considered an unrealistic expectation. Not only did respondents feel pressured to know about agriculture, but they also felt the pressure of mastering multiple media outlets and audiences. "Now you have to be a jack of all trades and a master of all trades at the same time" (I9). Although one educator (E3) stated an ACOMR should have a broad knowledge of the complex field of agriculture to communicate effective and understand messages, meanwhile the need is to have professional specialists in specific media. Another educator (E1) said the job of teaching ACOM has become more complex and "overwhelming in the program and the profession. You create more than a story, you create a video, tweet, Facebook post, article, etc." Because there are so many platforms, it is impossible to be everywhere effectively (I3).

Division and defense.

When discussing challenges within ACOM, respondents also discussed how ACOM struggles to be proactive in its messages. According to respondents, current messages tend to be

defensive and play on negative accusations. "Agricultural communications needs to be much more proactive in sharing our information. It's hard to do that when you're always on the defense" (I9). Statements from respondents included playing catch-up, always behind, lack of preparation, and not proactively reaching out to the audience with a message. One policy maker (P4) commented on the defensive stance of ACOM and need for control of messages.

> I think we're going to have to stay on the leading edge…otherwise, we're constantly beating back stuff after the fact. I'm not an agricultural communications expert, but I would rather be managing the message rather than manage a response to the message. It's twice as much work. (P4)

The severity of defensiveness was linked by one respondent (I6) to the confusion of the purpose of an ACOMR – even within the field.

> At a tipping point, we're preaching to the choir in ag comm. A lot of people think we should train only to communicate with farmers. Then there are others who think we train to basically tell people who don't know anything about farmers to essentially leave farmers alone. It's almost like you're training communicators not to communicate. (I6)

One respondent (I2) stated a defensive attitude was the greatest hurdle for ACOMR. "The attitude of self-righteousness needs to come down a notch. As someone who comes from the agricultural realm, it's really frustrating and we will burn people out…if we continue to fight. Don't be on the defense, let's work together" (I2). Respondents believed the division and conflict within the industry hindered bridging the division between the agricultural industry and general consumers. "We are competitive against each other, and often times we end up taking shots at each other" (I4). Many times the messages against specific sectors of agriculture were driven by other agricultural sectors. Respondents noted how the general public sees food and agriculture as separate industries. ACOMRs need to "come together as a community" (I2) to gain credibility as an industry, instead of attacking sectors, such as organics or livestock production. The focus needs to shift back to the audience, because "people aren't talking about ag from the inside out—we do a lot of talking to each other, but not to the outside" (I3).

Audience confusion, disconnect, and misinformation.

The majority of respondents (n = 19) discussed the challenge of connecting with a confused and misinformed general public, who are generations removed from agricultural practices. Respondents noted how anyone can be a communicator if they have a social media account and smart phone. The general consumer, respondents stated, is more likely to trust opinions expressed through social media and blogs than trust science. One respondent (R2) explained when speaking about food production practices at public events, she had more credibility as a grandmother than as a scientist. Two respondents (I1, I2) commented about the influence "mommy blogs" have on consumer perceptions and beliefs. Fear marketing, described as using fear to influence public perceptions, was often mentioned as a strong influence used in attacks on agriculture. People now believe "technology is dangerous to their health and planet, and unrealistic demands are placed on farmers from government agencies that aren't based in science, [n]or [are they]practical" (I8). The challenges of combatting misinformation, fear marketing, uneducated opinion leaders, and proliferation of competitive messages were also regarded as threats to the future of the profession.

Respondents stressed the need to recognize that consumers value feelings over facts. Creating this personalized message helps generate trust between consumers and ACOMRs. By choosing to stay in a comfort zone and not responding to the shift in consumers' preferences, respondents warned, the consumer disconnect will continue in the future.

Opportunities

Unified voice.

Respondents offered that a unified voice across the agricultural industry was a must. One respondent (I9) recommended starting with a positive message of agricultural stewardship concerning animals, land, food, fiber, and sustainability to create unity, provide a proactive message, and foster personal connections through stories. "We need to get out there and tell our story. I know everybody says that, but we need to do it effectively" (I9). Respondents said the progress of agricultural technologies and policies and establishment of public trust begins with unity, and unity begins with collaboration. The first step, one respondent (I4) said, is getting everyone in agriculture on the same page. Respondents discussed the overall goal of addressing worldwide hunger will not be achieved until internal combat becomes collaboration. "We need to exchange information instead of fighting against each other—because that's not going to solve world hunger" (I7).

Message development and response to audience.

Respondents regularly stated the general consumer responds to opinions, feelings, emotion, and knowledge. One respondent (I2) addressed the difference between communicating facts and communicating knowledge, and others recommended combining entertainment and education in a message. According to respondents, people have an increasing to desire to know more about their food. This trend will continue. They suggested offering the public a direct connection to their food through creative and personalized messages resulting in increased relationships, trust, and knowledge.

> People want to feel important. People want to be relatable, to feel like they have a stake in things. I think the more we can continue to do that and make them a part of what we're doing, then that may potentially be what determines the effectiveness of ag communicators in the future. (I10)

Conclusion

This study sought to capture the essence of ACOM by gaining insights from professionals by interviewing policy makers, industry leaders, educators, and researchers. Participants (N = 25) ranged in age from 24 to 82 years with a median age of 48. Additionally, participants were from a variety of agricultural fields and included industry leaders (n = 16), policy makers (n = 4), ACOM educators (n = 3), and researchers (n = 2).

There is no clear cut definition of ACOM/ACOMR. While a common definition of ACOM used in higher education "is the exchange of information about the agricultural and natural resources industries through effective and efficient media, such as newspapers, magazines, television, radio, and the web, to research appropriate audiences" (Telg & Irani, 2012, p.4) respondents were unable to clearly articulate a definition of the profession or the discipline. The ambiguous definition of ACOM/ACOMR could be a result of the dramatic shifts in communication outlets, audiences, technology, and agricultural practices over the last century. However, when discussing skills and hurdles, respondents were able to discuss what an ACOMR *should be*. Factors associated with a successful ACOMR included knowledge about audience, agriculture, communication principles, and policy. Additionally, respondents noted technology has enabled the public to be perceived as ACOMRs with the instantaneous use of social media and smart phones.

Over the previous 100 years, communication technology has rapidly changed the landscape of ACOM (Boone et al., 2003). Respondents were adamant the future of ACOM lies with the ability of ACOMRs to adapt to rapidly evolving technology. "One of the most crucial choices in the entire innovation-development process is the decision to begin diffusing an innovation to potential adopters" (Rogers, 2003, p.155). In regards to technology, one respondent stated "learn it or die" (R1). Therefore, ACOMRs must be proactive in embracing and adopting new technology.

Although technology has changed the profession of ACOM, the basic principles of communication have and will continue to be important for successful future ACOMRs. A total of 24 respondents (92%) stated the importance of understanding the audience. Knowledge of audience proved to be key for selecting communication channels, developing messages, and gaining the public's trust. Similar to previous research studies, respondents stated the need for ACOMRs with strong writing skills (Crawford, Lang, Fink, Dalton, & Fielitz, 2011; Morgan, 2012; Sprecker & Rudd, 1997). ACOMRs should also focus on message development and delivery to effectively connect with audiences.

Study respondents discussed challenges and hurdles faced within ACOM. Specifically, ACOMRs are faced with the challenge of becoming a generalist or a specialist within the profession. Pressure to be well versed in their knowledge of agriculture as well as be an expert in a variety of communication channels finds ACOMRs feeling overwhelmed. Additionally, current audiences demand creating multiple communication pieces (i.e., web, video, social media, print media) for one story. Because there are so many platforms, many ACOMRs stated it was nearly impossible to be effective in all communication channels. Thus, ACOMRs are faced with the dilemma of having both a knowledge of and high skillset in a wide variety of communications efforts.

Another hurdle in ACOM is the issue of fighting internally within the realm of agriculture. Attacks are common about agricultural issues such as organic versus conventional production. To be effective within the profession, ACOMRs need to collaborate to develop a united message about food production and systems.

ACOMRs have the opportunity to effectively educate and communicate to the public if there is willingness to create a unified voice during the message development process. Respondents clearly stated the need to take action by actively listening to consumers. This course of action will help ACOMRs communicate messages based on the wants and needs of the intended audience. The art of storytelling must be emphasized in the training of future ACOMRs. This involves creating personable stories that resonate on an emotional level with consumers. Conveying shared values provides more motivation than facts alone. This conclusion aligns with findings of the 2014 Consumer Trust Research by the Center for Food Integrity (2014), which states, "After confidence (shared values) ha[ve] been established, people are more willing to consider technical information, or competence, in their decision making process" (p. 3).

Recommendations

This study offers insight from 25 current agricultural experts from within industry, policy makers, educators, and researchers. With a combined 372 years of experience in ACOM (median of 14.88), these findings are grounded in experience and should be taken seriously. The growing disconnect between consumers and agriculture presents unlimited opportunity for expansion of ACOM. As respondent (P4) stated, "It's exciting because there's tons of opportunity, but that huge, growing disconnect means that the communications role is as important now as it has ever been". Based on this research, ACOMRs should consider efforts to create a unified voice for ACOM. Conscientious efforts should be made to actively listen to the demands of consumers. "If we're not communicating on their [audience] terms, then we're losing" (P4). Therefore, ACOMRs should stop combatting the shift in the audience's perceptions and adapt their message accordingly.

The art of storytelling must be emphasized. Consumers want personalized information

about their food. Messages should be personable. This is evidenced by the story told by R2 as she explained when speaking about food production practices at public events, she had more credibility as a grandmother than as a scientist. ACOMRs must find ways to relate the message to their audience and garner the public's trust.

Educational institutions play a fundamental role in training ACOMRs. Therefore, educators need to focus on training ACOMRs to be specialists rather than generalists. To think an individual would be a content generalist in agriculture and policy as well as be an expert in all communication channels including writing, social media, layout and design, visual communications, and web design is unrealistic. While having a baseline knowledge of agriculture is important (Morgan, 2012), it is also important to focus on the development of specific communication skills. Encouraging specialization (i.e., print media, electronic communications, and videography) into ACOM programs is necessary to create effective future ACOMRs.

Technology strongly impacts the field of ACOM. Because technology changes rapidly, it is imperative for ACOMRs to keep up with emerging trends in technology. Therefore, professional associations, such as the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Skills should consider developing training specifically related to emerging technology. Trainings could occur at the organization's annual conference. This would encourage members to grow and adopt new technology to improve communication efforts.

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Coming of Age: How JAC is Reflecting a National Research Agenda for Communications in Agriculture, Natural Resources, and Life and Human Sciences

Lulu Rodriguez and James F. Evans

Abstract

This study analyzed communications research trends, topics, needs, and opportunities involving agriculture, natural resources, and life and human sciences since the development of a national research agenda (NRA) in 2007. A content analysis of 23 issues of the Journal of Applied Communications (JAC) published over 7.5 years (2008 to mid-2015) examined the degree to which the articles reflected the priority research areas (PRAs), key research questions (KRQs), and priority initiatives (PIs) identified in the NRA. Findings showed a watershed period from 2011-2014 in which the journal produced an average of 18 articles per year. The first RPA (RPA A), "Enhancing decision making within the agricultural sectors of society," received the most attention, followed by RPA B, which focused on rural-urban interactions. Within RPA A, the largest number of articles addressed the key research question, "What are the most effective ways to identify and communicate information that has economic and social value?" Under this question, the priority initiative (PI), "Analyze and strengthen the effectiveness of communications content and methods in communicating information," garnered the most research attention. Findings showed a dearth of studies in PIs across the four RPAs, including economic returns to, and social impacts of, agricultural information; how to engage key interest groups in decision making; models of collaboration, negotiation, and conflict management; use of critical theory in analyzing agriculture and related communications; the interplay between data, information and meaning within stakeholders; information asymmetries and barriers to public participation in decision making; the mechanisms by which information is made available; if and how knowledge gains value; and ethical issues and standards. Results prompted seven suggestions for further research progress and direction.

Key Words

Agricultural Communications, Research Agendas, Research Themes, Research Needs, Journal of Applied Communications

Literature Review

Nothing speaks more loudly of an academic discipline's commitment to help address the issues and problems facing individuals, organizations, and communities both locally and abroad than the announcement of its national research agenda (NRA). The NRA proclaims the focus of a discipline and serves as an internal compass to direct collaborative efforts and resources toward a scope of work. It provides a framework for research efforts and for targets, which evolve in the light of current and anticipated challenges (Doerfert, 2011).

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By setting forth a national research agenda, organizations, groups, or consortia hope to catalyze researchers, policy professionals, and national, state, and local leaders to improve how they respond to the challenges facing the discipline and the society within which it operates. A robust research base enables the furthering of best practices for those working within the discipline and allied fields and is a key element in demonstrating the field's relevance in addressing the needs of local and global societies. An extensive review of published studies and research currently under way as well as key policy areas informs most NRAs.

The research topics proposed in an agenda are typically organized across domains. Taken together, these topics cover the range of issues facing the discipline, seeking to implement solutions that work. In general, NRAs are directed to those who do research, use research, support research, and those who could become involved in research in some capacity. Both funders and researchers are expected to use the agenda to guide their choices about future investments in research within the discipline. The NRA is expected to be an evolving document to be reviewed and updated periodically in response to changing needs, understanding, and opportunities (U.S. Interagency Council on Homelessness, 2012). The goal, in the case of the Agricultural Communications NRA, is to advance the discipline while providing research- and experience-based solutions that address complex human interactions in agriculture, the environment, and natural resources.

Historical Background

In 2007, results were published from a joint national project to envision a framework and agenda for research in agricultural communications, agricultural leadership, agricultural education, and extension education (Osborne, 2007). The American Association for Agricultural Education (AAAE), Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE), the Association for International Agricultural and Extension Education (AIAEE), the Association of Leadership Educators (ALE), NCAC-24 of the Experiment Station Committee on Organization and Policy, and the National Council for Agricultural Education released the NRA "to effectively communicate research priorities to numerous state and national interests, including agricultural experiment station directors, USDA program administrators, and funding agencies" (Osborne, 2007, p. 2). To help guide research initiatives, it was featured prominently on the websites of professional societies and organizations that collaborated in developing the document. The NRA identified *Research Priority Areas* (RPAs), each of which included up to four *Key Research Questions* (KRQs) or critical research problems. Specific dimensions of each key research question were designated as *Priority Initiatives* (PIs).

Within the joint project, "agricultural communications" was interpreted broadly to involve communications related to food and nutrition, farming and ranching, natural resources and the environment, renewable energy, natural fibers, rural and community development, rural affairs, and associated activities. A report of the communications framework and agenda was subsequently published in a 2007 JAC article authored by Doerfert, Evans, Cartmell & Irani.

The NRA in Agricultural Communications was a product of a series of roundtable discussions on the changing conditions in the agricultural communications discipline and professions in the United States and the state of research in ACE member institutions. It incorporated the best thinking of national experts, including institutional leaders, senior researchers, and representatives from organizations that fund research. Although the target audiences were not specified, the NRA directed ACE members to consider what types of research would contribute most to the growth of the discipline, and hence, should be supported.

JAC as Lead Journal

Since its inaugural issue in 1968 as *aaace* (Carnahan, 2000), the quarterly *Journal of Applied Communications* (JAC), ACE's official journal, has been acknowledged as the lead publication

in reporting about advances in research and practice about communications in the subject areas of food and nutrition, farming and ranching, natural resources and the environment, renewable energy, natural fibers, rural affairs, community development, and related activities. These subject areas represent integral mandates of the U.S. Department of Agriculture and those of colleges and universities of agriculture nationwide. Today, the publication serves as a refereed journal "offering professional development for educational communicators who emphasize agriculture, natural resources, and life and human sciences. It welcomes original contributions from any author, although priority may be given to ACE members, should articles of comparable quality be available" (Journal of Applied Communications, n.d., ¶1-2). Articles published in the JAC fall under the following four categories: (1) research and evaluation articles, which are traditional scholarly articles that employ quantitative (e.g., statistical and survey methods) and/or qualitative (e.g., case and ethonographic studies) methods; (2) professional development articles, which take advantage of the author's particular expertise on a subject that benefits career performance of ACE members and others; (3) commentaries or opinion pieces that discuss trends in communication or other issues of importance to professional communicators; and (4) reviews, which typically are critiques of new books, journal articles, software/hardware, technologies, or any material that would be appropriate for the JAC audience. Theoretical and applied articles are prioritized based on their direct value to ACE members.

The Study

The NRA in Agricultural Communications, developed in 2005-2006 and released in 2007, provides a valuable framework for analyzing the research subject matter areas and themes the journal has addressed since then. The current study aimed to synthesize the research themes and domains published in the journal from 2008 to mid-2015.

The NRA lists four priority areas for communications research: (1) enhance decision making within the agriculture sectors of society; (2) within and among societies, help the public take part in decision making related to agriculture; (3) build societal knowledge and intellectual capabilities; and (4) develop effective agricultural workforces for knowledge-based societies. Eighteen key research questions and 59 priority initiatives fit within those areas. The present study aimed to ascertain the amount and extent of coverage that have been directed toward each priority area, key research question, and priority initiative.

Part of the synthesis also involved surveying the theories applied or tested, the methods used to gather data, and the populations studied, so the results can be considered with those of Williams & Woods (2002) who offered a synthesis of agricultural communications research published in the JAC from 1992 to 2001, and those of Edgar, Rutherford & Briers (2009) who analyzed JAC articles published from 1997 through 2006.

The present study offers a comprehensive analysis of research articles published in the journal since the NRA to evaluate the discipline's state of scholarship and impact. It provides a 7.5-year review of research published in the JAC. Beyond that, it reveals the extent to which the published research addresses priorities and needs identified in the NRA for communications involving agriculture and related subject areas.

This study views this inventory of studies within the agricultural communications domain from the lens of social systems theory (Luhmann, 1995) and its treatment of change within a recursively-reproduced system of practice. The NRA for Agricultural Communications is seen here as a product of a coalition of actors and institutions that collaborate to gain public support and influence policy mechanisms. Hence, it is an outcome of reflexive strategic practice. As an output of a complex of actors and institutions, the NRA helps shape research and development efforts in the field, and in turn, is acted upon by other actors and institutions within and outside of the field. A regular assessment of how a discipline fares based on the content of the NRA offers opportunities

to generate what Luhmann (1995) calls "strategic change." In this case, an assessment of the extent to which a discipline is living up to its stated research agenda could be considered an organizational "episode" in Luhmann's theory of change. It offers a mechanism by which "reflective discourses can be pursued without necessarily disrupting the practices and routines by which that system is maintained" (Hendry & Seidl, 2003, p. 180).

Thus, an NRA represents, and is an offshoot of, sociologically observable practices and routines of a discipline. Members of the scientific community, industry, government, advocacy groups, and international institutions are involved in different ways in the development and implementation of NRAs. NRAs thus serve to organize and present the discipline to the world, in effect defining how audiences should make sense of the discipline in the constellation of other disciplines. At the same time, social-structural and/or organizational factors influence the way the members of a discipline decide on what is worthy of their research and other scientific efforts as outlined in the NRA.

Five research questions served as focus for this study:

1. What theories, methods, channels, and populations were involved in the published reports?
2. What subject matter areas received research attention during the past 7.5 years?
3. How closely do these areas of research attention match the priority areas identified in the discipline's NRA?
4. How do the findings of this study compare with those of prior analyses of research articles published in the JAC?
5. What trends, strengths, needs, and opportunities are revealed through this analysis, in terms of informing the further development of the communications research agenda for subject areas related to agriculture?

Methods

An early decision involved what national research agenda to use for this content analysis. Two related agendas have been developed during the past decade. The first was the 2007 "National Research Agenda in Agricultural Education and Communication, 2007-2010." The second was a more integrated "National Research Agenda: American Association for Agricultural Education's Research Priority Areas for 2011-2015" released in 2011.

The earlier agenda was chosen for this content analysis because it permitted detailed analysis of research priority areas related to communications. As noted, four RPAs in the agenda included 18 KRQs and 59 PIs. The more recent agenda provided less opportunity for detailed analysis involving communications research. It identified six national research priorities broadly encompassing agricultural education in schools, universities, and other post-secondary institutions; education and other non-formal community education and outreach programs; leadership development in individuals, communities, organizations, and agencies; and communication within and throughout the agricultural and natural resources industries.

Data for this study were gathered through a content analysis of a complete enumeration or census of articles classified by JAC as falling under the research and evaluation category published from 2008 to mid-2015. Descriptive information about these articles was considered, including the number of articles published per year, the theoretical and/or conceptual frameworks employed, the methods used, and the populations studied or sampled. These variables, their labels, operational definitions, coding protocols, and coding values were specified in the study codebook.

Research method refers to the technique used to gather data (e.g., survey, experiment, content analysis, focus group session, in-depth interview, historical analysis, case study, and other qualitative methods). *Theory* refers to the theoretical or conceptual framework on which a study was based. A

study may stipulate more than one research method and theoretical rationale. A study also specifies a population studied or sampled (e.g., communication materials or products such as newspaper and magazine articles, radio broadcasts, extension bulletins, websites, social media messages, and policy instruments; consumers and consumer groups; agricultural communications professionals and experts; farmers and producers; media organizations; and media practitioners). A study that employed a mixed method approach may make use of multiple populations and/or samples.

Each article was coded based on the RPA under which it falls, the KRQs it asked, and the PIs addressed within each identified KRQ. Because RPAs are broad, a study may fall under multiple RPAs and respond to multiple KRQs and PIs. Thus, an article was examined to determine the presence (1) or absence (0) of all four RPAs, 18 KRQs, and 59 PIs in the NRA. Data were entered in and examined using SPSS v. 22.

To determine intercoder reliability, half of the total number of articles was selected and two journalism graduate students coded all variables after having been trained on the use of the coding scheme and protocols. Using the formula from North, Holsti, Zaninovich, and Zinnes (1963), intercoder reliability scores for the nominal variables were as follows: the theoretical and/or conceptual framework(s) employed (97.4%); the data gathering method(s) used (98.8%); the population(s) studied or sampled (97.3%); the priority area(s) under which the study falls (96.5%); the key research question(s) asked (93.7%); and the priority initiatives (94.8%) the study addressed.

The unit of analysis was the complete journal article. Descriptive statistics were used to describe sample characteristics, the PRAs examined, the KRQs answered, and the PIs that were involved.

Results

Research Question 1

What theories, methods, channels and populations were involved in the published reports? During those 7.5 years, the JAC published a total of 129 articles, a large majority of which fell under the research and evaluation category (108 or 83.72%). This was followed by professional development articles (10), and a sprinkling of commentaries and reviews (5 and 6, respectively). This study analyzed only those classified by the JAC itself as research articles (108 or 83.72%). The number of such articles the journal featured grew over time, with the largest number seeing print in 2013 (22 or 20.37%). From 2011-2014, the journal averaged 18 research articles per year, indicating a clear upward trajectory in terms of the number of peer reviewed studies published (Table 1).

Of the studies that examined the performance or characteristics of different mass media (n=79), a clear majority (27 or 34.17%) analyzed the traditional print media (newspapers, magazines, other print), with the online media a close second (26 or 32.91%). Interpersonal channels were the least explored (6 or 7.59%). Table 1 also provides a breakdown of studies based on the channels assessed.

Table 1

Sample Characteristics (n = 108)

Year of publication	*n*	%
2008	7	6.48
2009	12	11.11
2010	7	6.48
2011	15	13.88
2012	17	15.74
2013	22	20.37
2014	19	17.59
2015	9	8.33
Information channels studied (*n* = 79)		
TV	18	22.78
Newspapers	8	10.12
Magazines	11	13.92
Other print	8	10.12
Online, including social networking sites	26	32.91
Interpersonal communication	6	7.59
Multimedia	2	2.53

Authors employed a number of theoretical and conceptual frameworks to underpin their studies. These are enumerated in Table 2. Following the trajectory of theory use in the general mass communication discipline, agricultural communications research saw a tide of studies that used framing as the theoretical rationale. This can be seen in 13 of the 94 studies (13.83%) that specified a theoretical or conceptual framework. Some made use of the tenets of the diffusion of innovations (9 or 9.57%) and uses and gratifications theories (8 or 8.51%) as well as semiotics (7 or 7.44%).

Table 2

Theoretical and/or Conceptual Frameworks Used (n=94)

Theory	*n*	%
Framing	13	13.83
Diffusion of innovations	9	9.57
Uses and gratifications	8	8.51
Semiotics	7	7.44
Experiential learning	5	5.32
Excellence in public relations	4	4.25
Agenda-setting	3	3.19
Knowledge gap	3	3.19
Technology acceptance model	3	3.19
Cognitive dissonance	3	3.19
Social presence	3	3.19
Theory of planned behavior	2	2.13
Social cognitive theory	2	2.13
Elaboration likelihood model	2	2.13
Media dependency	2	2.13
Best practices in risk communication	2	2.13
Schema	2	2.13
Theory of education and identity	2	2.13
Agricultural Knowledge and Innovation System (AKIS) model (Pakistani version)	1	1.06
Contingency theory of accommodation	1	1.06
Editorial vigor theory	1	1.06
Exemplification theory	1	1.06
Expectancy value theory	1	1.06
Functionalism	1	1.06
Lifelong education program planning model	1	1.06
Grounded theory	1	1.06
Media richness theory	1	1.06
Memorability, efficiency, errors, learnability, and satisfaction (MEELS) model	1	1.06
Minority identity development model	1	1.06
Model of causality in social learning	1	1.06
Protective action decision model	1	1.06
Social amplification of risk framework	1	1.06
Technology integration model	1	1.06
Theory of omniphasism	1	1.06
Theory of social comparison processes	1	1.06
Total food quality model	1	1.06
Uncertainty reduction theory	1	1.06
Articles with no specified theoretical base	29	9.57

Table 3 lists the array of methods applied to gather data for the compendium of studies published in the JAC. Surveys (mail, online, and telephone) topped the list with 35 of 113 methods specified (30.97%). Because of the need to analyze media or channel performance, content analysis, the staple of communications research, was a popular method used in 28 studies (24.78%). Focus groups (13.27%), and in-depth interviews (11.5%) also were frequently observed.

Table 3

Research Methods Conducted to Gather Data (n=113)

Method 1	*n*	%
Survey (mail, telephone, online)	35	30.97
Content analysis	28	24.78
Focus groups	15	13.27
In-depth interviews	13	11.50
Case study	6	5.31
Experiment	5	4.42
Delphi method	3	2.65
Historical analysis	2	1.77
Discourse analysis	1	0.88
Usability testing	1	0.88
Integrative literature review	1	0.88
Community forum	1	0.88
Non-experimental comparative design	1	0.88
Phenomenological analysis	1	0.88

The articles addressed nine broad categories of populations and samples: communications materials, which constituted 25 of the 113 identified samples (22.12%); consumers and consumer groups, users of a particular medium, citizens or residents (17 or 15.04%); high school and college students (16 or 14.16%); agricultural communications professionals or experts (13 or 11.5%); farmers and producers (12 or 10.62%); members and employees of professional and/or scientific organizations and technical experts (11 or 9.73%); media organizations and their employees (9.73%); developers of educational materials (4 or 3.53%); and others (also 4 or 3.53%). Table 4 shows examples of actual population groups in each category.

Communications materials were the most studied samples. In terms of channels, the findings showed a major push during the period to analyze online media content, especially the use and application of social networking sites.

Table 4

Populations or Samples Studied (n=113)

Populations/samples studied	*n*	%
Communication materials (advertising pieces, photos, photo-illustrations, logos, newspaper articles, TV transcripts, Tweets, journal articles, books, websites, comments, blogs, policy pieces, campaign materials, films)	25	22.12
Consumers and consumer groups, users of a particular medium, citizens, residents	17	15.04
Students, college and high school	16	14.16
Agricultural communication professionals and experts (editors, blog authors, faculty, publishers, Facebook group administrators of ag organizations, alumni, public relations practitioners, campaigners, teachers)	13	11.50
Farmers (ranchers, dairy producers, beef producers, grain growers, citrus growers, managers of beeflots, alternative agriculture producers, coffee growers, agriculturalists, agricultural producers)	12	10.62
Members and employees of professional and/or scientific organizations, technical experts (agritourism operators, horticulturists, ag marketers)	11	9.73
Media organizations and members and employees of media organizations (news directors and reporters, TV reporters, editors, ag journalists)	11	9.73
Educational materials (course, curricula, course packets, degree programs, disciplinary organizations)	4	3.53
Other (shareholders, stakeholders, general crisis response, government officials)	4	3.53

Research Question 2

What subject matter areas received research attention during the past 7.5 years?

Each research article was coded with respect to the RPA, the key research questions under each RPA, and the priority initiatives under each KRQ as specified in the agenda. Table 5 summarizes the frequency counts for each item across all levels. It shows that RPA A, "Enhance decision making within the agricultural sectors of society," received the most attention from scholars. It was evident in 89 of the 108 research articles analyzed (82.40%). Within this RPA, the most commonly asked question was, "What are the most effective ways to identify and communicate information that has economic and social value?" which was detected in 47 articles. Of the published articles within this KRQ, 21 analyzed the effectiveness of communications content and methods. Many (25 articles) provided answers to the KRQ, "Who are the relevant audiences with respect to high priority issues?" Subsumed under this research question, 13 articles examined the information needs and preferences of identified audiences.

Table 5

Priority Research Areas, Key Research Questions and Priority Initiatives Addressed in the JAC, 2008 to mid-2015 (n=108)

Priority Research Areas/ Key Research Questions	Priority Initiatives	*n*	%
A. Enhance decision making within agricultural sectors		**89**	**82.40**
1. *Who are the relevant audiences with respect to high priority issues?*		***25***	
	a. Develop and improve tools for audience identification and communication analysis	3	
	b. Determine information needs and preferences of identified audiences	13	
	c. Determine information sources and factors that influence perceptions of audience trust and credibility	9	
2. *What are the most effective ways to identify and communicate information that has economic and social value?*		***47***	
	a. Analyze roles, use, and effectiveness of information structures, systems and concepts **b.** Analyze and strengthen the effectiveness of communications content and methods	8	
	b. Analyze and strengthen the effectiveness of communications content and methods	21	
	c. Analyze and strengthen the effectiveness of information technologies	10	
	d. Strengthen guidelines for using planned, coordinated approaches for agricultural decision making	5	
	e. Examine economic returns to, and social impacts of, ag information in various forms, settings, and audiences	0	
	f. Develop, identify, test, and evaluate the most viable tools for assessing the economic value of ag information	1	
	g. Develop approaches for enhancing decision making by systematically engaging key interest groups	1	
	h. Adapt and test models of collaboration, mediation, negotiation, conflict management, and joint problem solving for decision making	0	
	i. Determine critical success factors in ag knowledge management systems, networks, and processes	1	
3. *What information do stakeholders need to make informed decisions?*		***17***	
	a. Assess the impact of information on informed decision making	3	
	b. Develop guidelines for providing information that balances perspectives of change and stability in agriculture	1	

Priority Research Areas/ Key Research Questions	Priority Initiatives	*n*	%
	c. Analyze past and current patterns of conflict avoidance and resolution in the ag/food complex	1	
	d. Use normative inquiry in analyzing ag-related communications systems, programs and methods	1	
	e. Evaluate the ability of messages and channels to change behavior	5	
	f. Use critical theory in analyzing ag-related communication systems, programs and methods, domestically and internationally	0	
	g. Examine and strengthen ethical dimensions of knowledge management systems and processes	1	
	h. Analyze activities associated with knowledge management and their use within various stakeholder groups	2	
	i. Identify best practices and potential barriers and test models for recording and disseminating tacit and explicit knowledge	3	
	j. Understand the interplay between data, information and meaning within various groups of ag stakeholders	0	
B. Rural-urban interactions: Within and among societies, aid the public in participating in public decision making related to agriculture		**63**	**58.33**
1. *How do we reach, create awareness, and constructively engage high-priority agricultural issues?*		***6***	
	a. Develop and test guidelines for building coalitions for public decision making	1	
	b. Adapt and develop models of collaboration, mediation, and conflict management to advance ag decision making	0	
	c. Examine the extent, forms, outcomes, and effectiveness of public participation regarding ag-related decision making	1	
	d. Analyze the communications aspects of current and emerging social movements	3	
	e. Explore the interface of ag science and communication, including the ways by which communications institutions, systems, and methods are used to shape identities, perceptions, and social outcomes	1	
2. *How do we identify, assimilate, disseminate, format, and evaluate information that facilitates decision making about high-priority ag issues?*		***14***	
	a. Examine and assess the quality and adequacy of information available for local, national, and international public decision making related to high-priority ag issues, current and past	7	

Priority Research Areas/ Key Research Questions	Priority Initiatives	*n*	%
	b. Understand how the public interprets, creates meaning, and values information related to high-priority ag issues	7	
	c. Identify information asymmetries, barriers, and imperfections in public participation in the decision making process	0	
3. *How do we improve the effectiveness of mass and other mediated coverage of ag issues?*		***25***	
	a. Develop ways to monitor the rural-urban interface continuously to anticipate social issues that involve ag and proactively engage the mass media in covering them	1	
	b. Examine the amount and effectiveness of media coverage of ag-related topics, current and past	10	
	c. Improve strategies to strengthen media coverage of ag-related issues	13	
	d. Test in-service training methods for helping media professionals improve their skills in covering agriculture	1	
4. *How will emerging technologies impact the flow of ag-related information in support of public participation?*		***18***	
	a. Identify, adapt, and test new, emerging, and changing information technologies for ag knowledge management	16	
	b. Use communication theory to improve the application of media in engaging the public in ag decision making	2	
C. Build societal knowledge and intellectual capabilities		**36**	**33.33**
1. *How do we improve thinking processes and problem solving capabilities through information systems?*		***5***	
	a. Identify and analyze the drivers of local, national, and international cultural change within public agencies, organizations, and media institutions to guide the improvement of ag information systems	4	
	b. Monitor knowledge transfer systems and knowledge flows and develop ways to improve effectiveness	1	
2. *How does information delivery affect thinking processes, problem solving, and decision making?*		***20***	
	a. Examine the role and effectiveness of information in ag-related decision making of individuals, groups, and societies	15	
	b. Analyze how professional communicators gather, process, and use information to plan approaches to communications	5	

Priority Research Areas/ Key Research Questions	Priority Initiatives	*n*	%
3. *How can we gather and make available the widely scattered literature about ag-related communications internationally?*		***1***	
	a. Analyze and seek ways to strengthen the efforts of the Agricultural Communications Documentation Center and other mechanisms to identify and process such literature and to make it more widely and readily available	0	
	b. Develop ways to capture and share expert knowledge related to ag	1	
4. *How do we use communications networks, linkages, and approaches more effectively in ag knowledge management?*		***5***	
	a. Experiment with knowledge management tools and other exchange mechanisms to strengthen decision making	2	
	b. Examine ways to identify existing professional ag communication organizations globally and foster linkages among them	3	
5. *What sectors of society contain our most valuable ideas and knowledge?*		***2***	
	a. Determine how the sharing of knowledge among sectors of society can be supported	2	
	b. Examine if and how knowledge gains value when being shared with others	0	
6. *What strategies can we apply to prepare organizations for shifts in ag knowledge management?*		***2***	
	a. Examine common and unique characteristics of ag knowledge markets and knowledge communities and their impact on knowledge management strategies	2	
7. *How do we weave ideas of knowledge and its value into ag and remain able to function in the present business situation?*		***0***	
	a. Examine how Knowledge Age factors (e.g., 24/7 business hours) impact the ag complex	0	
8. *How do we balance the needs, wants, and aspirations of individuals with those of larger organizational structures related to ag?*		***1***	
	a. Determine the ethical standards for the fair exchange of knowledge and information within an economy	0	
	b. Examine the functional and organizational changes in knowledge management among ag entrepreneurs and corporations	1	

Priority Research Areas/ Key Research Questions	Priority Initiatives	*n*	%
D. Develop effective agricultural workforces for knowledge-based societies		**43**	**39.81**
1. *What are the theoretical underpinnings of and synergistic relationships between knowledge management and ag communications as a field of research, education and practice?*		***6***	
	a. Analyze features and potentials of knowledge management concepts and technologies as an integrative framework for ag communications research	3	
	b. Examine the theoretical base for agricultural communications research, including connections between it and related disciplines	3	
2. *What are the skills and competencies needed to improve the communications and knowledge management effectiveness in the ag workforces?*		***11***	
	a. Develop strategies and mechanisms to strengthen the communication skills and perspective of ag professionals	6	
	b. Develop strategies and mechanisms to increase the critical thinking skills of ag professionals	5	
3. *What are the skills, competencies, and resources needed to prepare professional ag communicators for success?*		***26***	
	a. Identify and analyze the communications skills and perspectives necessary within the diverse career sectors in which professional ag communicators work now and in the future	10	
	b. Provide insights to strengthen courses, curricula, and other aspects of ag communications and related academic programs	11	
	c. Develop and enhance mechanisms to strengthen the knowledge base for ag communicators and provide career-long professional learning opportunities for them	2	
	d. Identify guidelines for strengthening the international and cross-cultural perspectives and skills of ag communicators	2	
	e. Develop and test methods for increasing the critical thinking skills of professional ag communicators	1	

Note: Percentages do not add to 100% because an article may respond to multiple PRAs, KRQs and PIs.

RPA B, "Within and among societies, aid the public in effectively participating in public decision making related to agriculture," was the subject of 63 research articles (58.33%). Articles that exhibited this RPA generally asked, "How do we improve the effectiveness of mass and other mediated coverage of agricultural issues?" (25 articles) and "How will emerging technologies impact the flow of information in support of public participation?" (18 articles). These two KRQs are the subject of studies that intended to quantify the extent and effectiveness of media coverage of agriculture-related issues. These KRQs also circumscribe articles that examined the thoroughness, accuracy, and overall quality of media coverage.

The fourth RPA (RPA D), "Develop effective agricultural workforces for knowledge-based societies," was the subject of 43 articles (39.81%). Of the articles that discussed this RPA, 26 addressed the question, "What are the skills, competencies and resources needed to prepare professional agricultural communicators for success in various aspects of agricultural knowledge management?" Most of these articles provided insights to strengthen courses, curricula, and other aspects of academic programs, and analyzed the communications skills and perspectives necessary within the diverse career sectors in which professional agricultural communicators work currently and are expected to participate in the future.

The area least studied is RPA C, "Build competitive societal knowledge and intellectual capabilities." Only 36 articles (33.33%) addressed it. Under this broad area, many studies (20) generally asked, "How does information and media delivery affect thinking processes, problem solving and decision making related to agriculture?" Fifteen of the articles that focused on this question looked at the role and effectiveness of information in the decision making of individuals, groups, and societies.

Research Question 3

How closely do these areas of research attention match the priority areas identified in the discipline's national research agenda?

Based on frequency counts, 16.7% of the key research questions and 43.9% of the priority initiatives remained unaddressed or largely so during this period.

Under the first research priority area (RPA A), for example, no study examined the economic returns to, and social impacts of, agricultural information in various forms, settings and audiences. Largely missing were inquiries that attempted to develop approaches to enhance agricultural decision making by systematically engaging key interest groups, and those that develop and test tools that assess the value of ag information. Research during the period also lacked attention to adapting and testing models of collaboration, mediation, negotiation, conflict management, and joint problem solving for decision-making endeavors beyond confrontational approaches. Little research during the period assessed the critical success factors in agricultural knowledge management systems, networks, and processes. All of these priority initiatives fall under the second KRQ of the first research priority area.

Also within the first RPA, some priority initiatives under KRQ 3 received little attention. In particular, few studies aimed at developing guidelines for providing information that balances perspectives of change and stability. Rarely did the studies analyze past and current patterns of conflict avoidance and resolution. Few used normative and critical inquiry to analyze communications systems, programs and methods, locally and abroad. Moreover, little was reported during the period about the findings of studies that assessed the historical and ethical dimensions of agricultural knowledge management systems and processes, and efforts to understand the interplay among data, information, and meaning within various groups of stakeholders.

Under RPA B, there was a dearth of studies with the objective of developing and testing guidelines for building coalitions for public decision making, adapting and developing models of conflict management to advance agricultural decision making efforts beyond conflict-based

approaches, and examining the extent, forms, outcomes and effectiveness of public participation in decision making processes. Gaps also appeared in efforts to explore the interface of agricultural science and communication, including specific ways in which communications institutions, systems, and methods are used to shape identities, perceptions, and social outcomes. Research gaps also pointed to the need to identify information asymmetries, barriers, and imperfections in public participation in the decision making process on high-priority rural-urban issues. Also observed is the paucity of studies that test in-service training methods for helping mass media professionals improve their skills in covering agriculture.

Articles published under RPA C revealed gaps in all but three KRQs. Studies that attempted to provide answers to questions pertaining to how to make available the widely scattered literature about agriculture-related communications internationally were few and far between. Within the third RPA, two other KRQs remained under-studied: How can agricultural communicators weave the ideas of knowledge and its value into agriculture and remain able to function in the present business situation? How do strategists balance the needs, wants, and aspirations of individuals with those of larger organizational structures related to agriculture?

Within RPA D, studies that devoted energies on mechanisms to strengthen the knowledge base of ag communicators and providing them with professional learning opportunities were scant. Only two articles responded to the priority initiative of developing guidelines to strengthen the international and cross-cultural perspectives and skills of professional communicators in agriculture.

Research Question 4

How do the findings of this study compare with those of prior analyses of research articles published in the JAC?

Efforts to compare results of this study with those from two previous analyses of JAC articles (Williams & Woods, 2002, covering 1992-2001; and Edgar, Rutherford & Briers, 2009, covering 1997-2006) proved useful, if limited to three shared dimensions. All three studies reported the number of articles produced across specific time periods. All reported the research methods employed, revealing more use of quantitative than qualitative methods and led by surveys, content analyses, case studies, interviews, and evaluations. Researchers uniformly called for more variety in research methods.

The three analyses varied considerably in categorizing research topics. The current study, involving the agricultural communications NRA, used an integrated systems and knowledge management framework, was broad in scope, focused on social or professional impact, and was largely independent of specific skills, activities, or issues. The two earlier analyses featured topics that were less inter-connected and more specific, led in frequency by articles about information sources and technologies, electronic media, communications management, media relations, biotechnology communications, and professional development. Writing, photography, graphic design, audience analysis, distance education, globalization, and issue framing were among other topical categories in those analyses.

Research Question 5

What trends, strengths, needs, and opportunities are revealed through this analysis, in terms of informing the further development of the communications research agenda for the subject areas related to agriculture?

The past 7.5 years of communications research reported in JAC reveal meaningful trends. The number of research articles published per year showed growth, with 2013-2014 serving as watershed years. The survey (mail, telephone or online) dominated as the method used, but evidence suggests a broadening menu of quantitative and qualitative research methods. Framing

theory was the most employed theoretical basis, although a wide range of theories and conceptual frameworks were applied to anchor empirical studies. The range of theoretical frameworks shown in Table 2 suggests a discipline that has come to recognize the value of contributing to the body of knowledge in the broader field of communications by testing formal frameworks in agriculture and related domains.

Discussion and Recommendations

The findings identified needs and opportunities for added research about dozens of topics for enhancing decision making within agriculture and among stakeholders in public decisions related to agriculture. Such research is critical, especially as the discipline grapples with increasingly contentious issues that need to be negotiated and managed within agriculture, and beyond.

This study also revealed significant need and opportunity for research about other priority initiatives such as: economic returns to, and social impacts of, agricultural information; how to systematically engage key interest groups; models of collaboration, negotiation, and conflict management; the use of critical theory in analyzing communication systems; the historical and ethical dimensions of agricultural knowledge management systems; ways of helping media professionals improve their skills in covering agriculture; how to make literature more widely and readily available; how knowledge gains value when shared; and the functional and organizational changes in knowledge management among agricultural entrepreneurs and corporations.

In short, the diverse themes, theories, and methods evident in research articles published in the JAC during this recent 7.5-year period suggest that agriculture-related communications research is coming of age. It is addressing new branches of inquiry. The battery of research articles examined indicates attention to heretofore untouched research themes, such as deciphering best practices before, during, and after crisis and risk situations (Veil and Sellnow, 2008; White and Rutherford, 2008; Ashlock, Cartmell & Leising, 2009) particularly when food safety is under threat (Irlbeck, Akers & Palmer, 2011; Barr, Irlbeck & Akers, 2012; Irlbeck, Jennings, Meyers, Gibson & Chambers, 2013), incidences of agroterrorism (Ashlock, Cartmell & Leising, 2009 and 2012; Riley, Cartmell & Naile, 2012) and plant and animal disease outbreaks (e.g., Cannon and Irani, 2011; Narayana, 2013); the impact of the popular and entertainment media on cognitions and attitudes (e.g., Meyers, Irlbeck & Fletcher, 2011; Holt & Cartmell, 2013; Specht & Rutherford, 2015); people's perceptions of agricultural terminologies, sources, and issues (Goodwin, Chiarelli & Irani, 2011; Barr, Irlbeck, Meyers & Chambers, 2011; Rumble, Holt & Irani, 2014); the role of communication in ag policy formulation (e.g., Goodwin & Rhoades, 2011); the use of emerging and new media to communicate issues (e.g., Wagler & Cannon, 2009; Moore, Meyers, Irlbeck & Burris, 2009; Meyers, Irlbeck, Graybill-Leonard & Doerfert, 2011; Baker & Irani, 2014) and to foment social movements (Graybill-Leonard, Meyers, Doerfert & Irlbeck, 2011); communication strategies to reach audiences with disabilities (Christen & Fetsch, 2008); the role of communication in emerging industries within agriculture (Miller, McCullough, Rainey & Das, 2012); and the impact of organizational brand salience and differentiation (Settle, Goodwin, Telg, Irani, Carter & Wysocki, 2012; Settle, Baker & Irani, 2014), to name a few of the most obvious recent branches of inquiry.

Diversifying the Inquiry

A synthesis of research topics suggests two research aspects that would clearly benefit from continued diversification. The first is in the *conceptualization of agricultural communications* itself. Historically rooted in production agriculture, it has become a complex construct involving not only farming/ranching and food production, rural affairs, natural resources, and the environment, but also the issues involved when science and society interact, such as risk and uncertainty, expertise or perceptions thereof, and the public's agriculture and science literacy. This multifaceted conceptualization demands attention to new and emerging areas of application. Indeed, the

framework of the NRA offers encouragement and directions for doing so. The blossoming of newer areas of research within this very broad domain, such as the use of new and emerging media to reach out to more diverse populations and the popularization of agricultural science themes, is a promising trend.

The second aspect that would benefit from diversification is the *inquiry* itself. This refers to data gathering methods beyond surveys, focus groups, in-depth interviews, and content analyses, to include attempts to uncover long-term audience effects through longitudinal designs, stronger measures of causality through experiments, and analytical (as opposed to descriptive) surveys that provide evidence for relationships between and among variables. Within the body of research analyzed, the sharp focus was on communications content, but very little emphasis was placed on the downstream effects of content on audiences or the upstream organizational or social factors that lead to such content.

Advancing the Research Agenda

Broad commitments of societies to the scientific and technological enterprise and the attendant value of research in the discipline point to seven considerations and future directions scholars could take to advance the relevance and responsiveness of agriculture-related communications to societal needs. They are as follow:

1. Studies that attempt to understand the impact of communications on audiences demand greater attention. Audience effects studies are few and far between and the impacts of communication are often inferred and rarely tested. More audience-oriented questions are in order, considering consumers' need for information and the decisions they make about what sources of information to use given the expanding array of possibilities. What kinds of information do people *want* and to what extent do they satisfy their information needs? Does being exposed to content increase or decrease people's perceived susceptibility to risk, and if so, do those changes in perceived susceptibility influence adoption of preventive behaviors? Or does the coverage simply remind people of their greatest fears, leading to fear control responses that may ultimately put them at greater risk? These questions are critical, considering changing consumption patterns, information delivery systems, and increased fragmentation of audiences brought about by advances in communication technology.

2. Content analysis findings should lead to questions that examine why agriculture and related topics are presented the way they are. This line of inquiry calls for an examination of journalistic routines and practices to answer questions such as: Why do editors make the choices they make about which topics do and do not receive coverage? Have there been drastic changes to conventional gatekeeping processes? Why are some information items emphasized more often than others? What motivates information gatekeepers to include and exclude various kinds of information? Such studies also could examine the influence of other factors in the creation or modification of content, including cultural, social-structural or organizational variables, the ideological leanings of sources and content producers, or perceived audience demand and need for specific kinds of information.

3. More attention to the visual. One obvious difference between the online media and other channels is in the predominance of visuals over text. Surprisingly, only a handful of the examined studies considered visuals as carriers of relevant meaning (e.g., Glaze, Edgar, Rhoades & Rutherford, 2013; Specht and Rutherford, 2013; Borron, 2013). Yet visuals are known to be easier to comprehend and lead to different audience effects than text. Overlooking the influence of visuals may be handicapping critical insights to what agriculture-related communication products are contributing. As a corollary, audience studies could examine if the activity of the audience intersects with either the expectation for certain kinds of content or the effects of it. Comparative studies contrasting the coverage of agriculture and related issues or its effects between other forms of media could both provide evidence of medium performance and help researchers discover new directions for future studies.

4. Take framing studies to new directions. The array of studies that examined how specific topics or issues have been framed or portrayed (e.g., Meyers and Abrams, 2010; Irlbeck, Akers & Palmer, 2011; Abrams and Meyers, 2012) points to new directions for framing research. Studies that employed frame analysis primarily detected the presence (or absence) of discrete information items. Further analyses can address how a topic has been discursively presented or contextualized to purposively influence audience beliefs, attitudes, and practices. Popular discourse about agriculture and related issues will be expanded profitably by considering a broader array of meta-perspectives or holistic frames. Furthermore, of the 13 framing studies analyzed, a great majority limited the scope to the analysis of content or media frames. Future efforts could delve into how audiences interpret media frames and whether the differences in tone of coverage across issues affected people's behavior, knowledge, and attitudes.

5. Apply theories from science and risk communications. While framing can be applied to most topics and media, other theories and conceptual frameworks could be employed to better understand agriculture and related issues as they are conveyed through communications. These areas generally address the interaction of science within society and include topics such as risk communications, presentation of uncertainty, perceptions of trust, expertise and credibility, and dimensions of agriculture literacy.

Taking risk communication as an example, many theories attempt to explain how individuals come to form judgments when presented with risk information, using factors such as information insufficiency, fear, or cultural worldviews. Studies could apply any of these theories to, for instance, predict or explain the response of readers to specific types of coverage. The benefit of such theoretical application is that results can be generalized beyond specific issues and can provide predictive power in new contexts.

6. Adopt a more international and intercultural lens. Studies that display international and intercultural perspectives appeared rarely in JAC during this period. Only five studies did so (Cai and Abbott, 2013; Kubitz, Telg, Irani & Roberts, 2013; Narayana, 2013; Ezezika & Mabeya, 2014; and Cannon &Irani, 2011). The low performance in this research area is troubling given the demands for global food security exacerbated by climate change threats. Emphasizing intercultural and international dimensions supports the development of globally-engaged and culture-sensitive communicators.

7. Maintain an agricultural communications research agenda, collaborating within journalism/communications and other agriculture-related social and human sciences. Results of this study underscore the value of a research agenda that focuses specifically on communications related to the broad domains of agriculture, natural resources, and life and human sciences. Insights reported here would not be possible without one. It reflects several key features of Turnbull's (1979) "priority convergence technique" which systematically involves all parties with informed interest in the research agenda, allows those parties to define and communicate their own priorities, provides for cross-group communications, allows for a convergence or synthesis across priority sets, and thus helps create a unified effort. Use of this framework for an agricultural communications research agenda also permits unlimited refinements, over time, in topic priorities and other dimensions (Doerfert et al., 2007, p. 18).

Beyond these seven considerations, an important follow-up research effort should delve into meta-analysis, which contrasts and combines the results of multiple studies dealing with a similar phenomenon. Such analysis can help identify patterns among results, sources of disagreement among those results, or other meaningful relationships that may come to light in the context of multiple studies. It can help synthesize the results of existing empirical studies to develop generalizations about significant research domains.

In summary, the national research agenda for communications related to agriculture, natural resources, and life and human sciences is proving insightful and promisingly valuable for advancement in this discipline. The *Journal of Applied Communications* serves an expanding, vital role in reporting the results of that agenda.

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Let's Get Theoretical: A Quantitative Content Analysis of Theories and Models Used in the Journal of Applied Communications

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Abstract

Theories and models are an important element in the progression of an academic field. This article focused on quantifying theories and models used in agricultural communication through a quantitative content analysis of the last 20 years of the Journal of Applied Communication (JAC). Specifically, the following research objectives guided this study: 1) describe characteristics (methods, number of authors) of articles in JAC, 2) identify which theories and models have been used in JAC, 3) determine how theory was used in JAC, 4) determine what characteristics predict the use of a theory or model in JAC. Researchers found 87 theories and models identified in JAC with 11 used five or more times and 19 that used between two and four times. Approximately 35% of the articles in JAC used a theory or model. Of those using a theory or model, the majority used it to inform the study, but rarely tested, created/built theory. Other results indicate the use of theory has increased in recent years and the number of authors and number of articles published. Implications for this study are a clear need for increased theoretical vigor in agricultural communication through increased focus on using theory to build on previous work in the industry.

Key Words

Journal of Applied Communications, Theory, Models, Agricultural Communication, Content Analysis

Literature Review

The importance of theory to the field of agricultural communication was established in a 2006 article in The *Journal of Applied Communications (JAC)* (Evans, 2006). This article documented the use of theory in agricultural communication but was a commentary piece without empirical evidence on how theory was used in the discipline. Evans challenged the profession to use theory more strategically, rather than the scattered use of theory that he saw at the time. The importance of theory to the mainstream communication discipline has been established with the progression of theory documented and the concept of communication theory explained (Baldwin, Perry, & Moffitt, 2004; McQuail, 2005). Baldwin et al. (2004) described theories as tools used by both scientists and laypeople to help process and understand the world around them. Theories are naturally conceptual and not specifically related to a certain subject (Glanz, 2011), but may inform multiple disciplines and subject areas at the same time. The agricultural communication field is also informed by a myriad of disciplines in its creation and practice and, as such, draws upon theory from multiple areas (Evans, 2006).

This article was in response to proposals for the 100th issue of JAC.

Theory can be used in research in various ways: informing, testing, and building/creating (Glanz, 2011). When a theory informs a study, it is identified as contributing to the study in concept, but the use of the theory is limited and the theory is not specifically tested. When a theory is tested in a study, the framework is very specific and the different components or concepts of the theory are measured and tested. Theory can also be created by studies through measuring and analyzing specific constructs (Glanz, 2011). Some theories reflect the same common notions but are called different names in different bodies of literature. For example, self-perception theory in communication literature (Baldwin et al., 2004) is referred to as self-discrepancy theory in psychology literature (Higgins, 1987). Additionally, some theories are elements within another theory like opinion leadership (Katz & Lazersfeld, 1955) is a stand-alone theory, but is also a component of the diffusion of innovations (Rogers, 2003). Each theory uses different words or models to identify specific factors that theorists deem significant. Theories differ in the degree to which they have been developed and tested (Glanz, 2011).

Theory is used in both quantitative and qualitative study designs in an effort to understand, explain, or even predict associations for researchers. The primary goal of theory is to make sense of reality and guide the gathering and assessment of data (McQuail, 2005). Quantitative research can be used to test theories or answer relevant questions (Creswell, 2009). Qualitative research uses theory in many different capacities, it can create a whole new theory, use a theory to frame the study (Creswell, 2009), or test or build a theory through the use of case studies (Creswell, 2009; Eisenhardt & Graebner, 2007). Models are visual representations of theories or concepts that make them more understandable. In communication theory, models are a "verbal or diagrammatic form of some aspect of the dynamic process of mass communication" (McQuail, 2005, p. 5).

One important element in theory development is replication. Replication increases the reliability, external and internal validity, and credibility of a theory (Tsang & Kwan, 1999). In the social sciences replication is sometimes an overlooked necessity (Berthon, Pitt, Ewing, & Carr, 2002; Tsang & Kwan, 1999), but when developing or progressing theory it is important to replicate studies (Tsang & Kwan, 1999). "The growth of knowledge is a cumulative process in which new insights are added to the existing stock of knowledge" (Tsang & Kwan, 1999, p. 771). Thus, replication should be encouraged for a discipline to move from a scattered pattern of theory development to a multifocal pattern with in-depth understanding, generalizability, and explanatory power (Tsang & Kwan, 1999).

Communication Theory

Communication is not a standalone discipline. Early theoretical elements of the dominant paradigm were not new inventions for mass media but were adapted from sociology, psychology and information sciences (McQuail, 2005). The growth of the communication discipline has drawn the attention of many disciplines including philosophy, history, geography, psychology, sociology, ethnology, economics, political science, biology, cybernetics, and the cognitive sciences (Mattelart & Mattelart, 1998). Communication theory started to evolve shortly after World War II. The "dominant paradigm" became the paradigm under which communication research would blossom. This paradigm is defined as one that unites mass media with the research practices of social sciences and has been effected by larger societal issues. In third world countries research under the dominant paradigm operated under the assumption that societies would either converge or surpass the Western model. The dominant paradigm was vulnerable to communism, which used mass media for the destruction of democracy (Mattelart & Mattelart, 1998).

The "alternative paradigm" is a criticism of the dominant paradigm. The alternative paradigm is based on a more comprehensive interpretation of communication "as sharing and ritual rather than just 'transmission" (McQuail, 2005, p. 67). It is focused on qualitative methodology, rather than quantitative. Instead of following mainstream society, the alternative paradigm opposed society and was involved with inequality (McQuail, 2005). Interpretativism and constructionism were also embraced by the alternative paradigm.

JAC Background

The field of agricultural communication has evolved alongside agriculture and mass media since the passing of the Morrill Act of 1862 (Irani & Doerfert, 2013). However, prior to the creation of *JAC*, there was not a publication outlet dedicated specifically to the field of agricultural communication. *JAC* was originally a newsletter known as the ACE Quarterly, but converted to a peer-reviewed journal in 1990 (Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE) Records | Special Collections, n.d.; Naile, Robertson, & Cartmell II, 2010). It is published quarterly by the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE) ("ACE," n.d.). While *JAC* is a peer-reviewed journal, it is not just for those in academia, but anyone interested in agriculture, communication, and education (Telg, Tucker, & Dolbier, 2001). *JAC* is used by members of ACE to aid in professional development for both academicians and practitioners (Telg, et al., 2001). *JAC* is considered a core journal for the field of agricultural communication (Zumalt, 2008).

In 2001, the format of *JAC* changed from only having a designated section for reviews, while including other unspecified articles to a format with four focus areas: commentary, research and evaluation, professional development, and reviews. The research section of the journal was intended to be scholarly articles, open to both qualitative and quantitative methods (Telg et al., 2001). *JAC* is intended to appeal to the broad ACE membership, many of whom are not academics, but also practitioners in the field (Telg et al., 2001). The research section of the journal is no exception. "While not all ACE members conduct or publish research, nearly all can benefit greatly by reading and using applied communication research findings in their work" (Telg et al., 2001, p. 11). *JAC* not only calls for research practitioners can use but also for practitioners to implement the findings to improve their work (Miller, Stewart, & West, 2006).

Previous Studies Related to JAC

In 2010, Naile, Robertson, and Cartmell (2010) analyzed JAC for content and trends in scholarly progression, and for citation structure, from 1997 to 2006 by Edgar and Rutherford (2011). Edgar and Rutherford sought to increase the understanding of the range and influence of the agricultural field. Edgar and Rutherford's study established *JAC* as the premier journal for agricultural communication. Additionally, in the ten-year span studied by Edgar and Rutherford (2011), there were 1,732 works cited, with an average of 19 citations per article, and it was established that the discipline uses a diverse array of sources for research. Miller et al. (2006) analyzed *JAC* from 2000-2004 for themes, authors, and citations. Major themes were communication management, information technology, media relations, distance education, public accountability, and biotechnology and 119 authors were identified (Miller et al., 2006).

Evans commented on theory usage in the agricultural communication discipline in his 2006 article in *JAC*. He stated that in the young field, general signs of scatter and lack of focus were evident, as well as a lack of theoretical vigor (Evans, 2006). Evans commented that communicators used theories daily, whether they recognized it or not. The roots of these theories spanned across many different disciplines. Evans called for collaboration with people in these other disciplines to increase theoretical vigor of the agricultural communication field (Evans, 2006). The current study sought to build on Evans work to quantify the use of theory in the agricultural communication discipline.

Purpose and Objectives

The purpose of this study was to empirically determine which theories and models have been used in agricultural communication. While Evans (2006) has commented on how he used theory in the field and has seen others use theory, there has not been a study that quantified the use of theory in agricultural communication. Additionally, in an effort to understand the use of theory in the discipline and offer strategic recommendations for improving theoretical vigor, it was important for the researchers to determine the characteristics that predicted the use of theory in an article. As the primary journal of agricultural communication, *JAC* served as the publication outlet of interest in this study. The following research objectives guided this study:

RO1: Describe characteristics (methods, number of authors) of articles in *JAC*

RO2: Identify which theories and models have been used in *JAC*

RO3: Determine how theory has been used in *JAC*

RO4: Determine what characteristics predict the use of a theory or model in *JAC* articles

Methods

Sample

Articles from *JAC* were gathered from the past 20 years. This was the largest sample we were able to collect. Years 2008 to 2015 were available online and years 1995 to 2007 were borrowed from faculty members and libraries across the United States. At the time of this data collection, the most recent volume and issue of *JAC* available was 99(2), which was half way through 2015. This census sampling method resulted in 338 articles. To keep formats consistent, all articles were printed for analysis. Two articles were removed from the sample: one was removed because it was abstracts of research presentations from an ACE Conference and one was a commentary piece about theory, which mentioned over 30 theories and would have skewed the results of this study. This brought the number of articles in the census sample to 336.

Instrumentation

A codebook and codesheet were created using guidelines set forth by Krippendorff (2013) and Riffe, Lacy, and Fico (2013). The unit of analysis for this study was an individual article. Three coders were trained on the use of the codebook: coder 1) a second year Master's student in agricultural communication; coder 2) a faculty member in agricultural communication, and coder 3) a first semester graduate student in agricultural communication. The researcher developed code book included 27 items with 14 variables. Eight of the items were factual descriptors including coder ID, article name, number of authors, names of authors, volume and issue number, year, and section of journal. Other variables included whether or not the article identified theory or models, the study type/methods used, the number of theories used, names of theories used, and how the theories were used.

Study type included choices of 1) quantitative, 2) qualitative, 3) mixed methods, 4) not research, and 5) research but unable to identify type. If the article authors directly identified study type, then that was the type documented. If not, we reviewed the methods to determine study type. If a survey had open-ended questions that were analyzed qualitatively, the study was identified as mixed methods. To determine if the article used theory, we included any theory or model identified by the author(s) as a theory or a model. If the theory was not identified by the author(s), but we thought it could be a theory, a Google search was done with the name and "theory." If it was identified as a theory on any page in the first page of results, it was included as a theory or model. The item related to how the theory was used included choices of 1) informed the study, 2) tested, 3) created/built, 4) informed and tested 5), informed and created/built, and 6) informed, tested, created/built. These categories were based on literature related to the use of theory in social sciences (Baldwin et al., 2004; Creswell, 2009; Eisenhardt & Graebner, 2007; Glanz, 2011; Mattelart & Mattelart, 1998).

Reliability and Analysis

Initial interrater reliability was conducted on 10 percent of the entire sample. Articles were chosen from each journal year in the sample and all sections of the journals so the interrater reliability was representative of the entire sample. Cohen's Kappa was used to measure the level of agreement between all coders on an item basis. The interrater reliability for factual descriptor items' described earlier between coders 1 and 2 ranged from Kappa = .80 to 1.0 and Kappa = .85 and 1.0 between coder 3 and coders 1 and 2. The more difficult items related to the study had Kappa scores of .70 to .81 between coders 1 and 2 and between .30 and .93 between coders 1 and 3 and 2 and 3. Upon reviewing the items and codebook, we determined coder 3 did not have enough experience with theory and methods as a first semester graduate student to identify and understand theory and methods used in each unit of analysis. At this point, coder 3 was removed from the study and coders 1 and 2 proceeded to code the next 10% of the data. On the next 10%, the interrater reliability between coders 1 and 2 on the factual descriptor data was a Kappa of 1.0 for all items individually. For the more difficult items, Kappa scores ranged from .76 to 1.0. Recommended reliability is at .70 on 20% of the sample (Riffe, et al., 2005), which was achieved in this study. After the interrater reliability was determined to be acceptable for all items on 20% of the sample, coders 1 and 2 divided the remaining articles in half and coded the rest of the articles individually. Data were analyzed using IBM SPSS 22. Analysis included frequencies, percentages, crosstabs, correlations, and linear regression. We chose predictive regression analysis over causal analysis because it lessens the concerns related to not having all available variables. In this study, the only available variables were related to data within the JAC articles. Additionally, there was a potential for multicollinearity within the data, made which predictive regression more suited (Allison, 1999). The variables were entered into the model in order of R^2 in the initial simple regression, with the highest correlations entered first as recommended by Field (2013). All variables of interest explained some level of variance in the use of theory or models in a *JAC* article, so multiple regression was used to further explore the relationship. More details on the procedures used are included in the results section.

Results

Article Characteristics in JAC

To determine differences in how articles used theory and models, it was necessary to first determine the characteristics of the articles published in *JAC* articles. The number of authors in *JAC* ranged from one to seven with a mean of 2.24 (*SD* = 1.30). More articles used quantitative methods than any other type of method (*n* = 121, 36%) with 113 (33.60%) not being research, 60 (17.90%) used qualitative methods, and seven (2.10%) articles researchers were unable to determine the type of method used in the research (Table 1).

Table 1

Methods Used in JAC

	f	%
Quantitative	121	36.00
Not Research	113	33.60
Qualitative	60	17.90
Mixed Method	35	10.40
Unable to determine method	7	2.10

Theories and Models Used

Of the 336 articles, 120 (35.70%) identified at least one theory or model, leaving 216 (64.3%) that did not identify either a theory or a model. Eighty-seven theories and models were identified in the 120 (35.70%) articles that used a theory or model. The number of theories or models used in these articles ranged from one to six with a mean use of 1.64 (SD = .48).

Of the 87 theories and models used, only eleven were used in five or more articles. The most used theory was framing with 20 (6%) occurrences, followed by diffusion of innovations and uses and gratifications both with nine (2.7%) occurrences. Agenda setting was identified eight (2.4%) times, excellence in public relations was identified seven (2.1%) times, and theory of planned behavior was identified six (1.8%) times. Experiential learning, elaboration likelihood model, gatekeeping, semiotics, and the technology acceptance model were each used five (1.5%) times (Table 2).

Table 2

Theories and Models Used in JAC Five or More Times

	f	%
Framing	20	6
Diffusion of innovations	9	2.7
Uses and gratifications	9	2.7
Agenda setting	8	2.4
Excellence in public relations	7	2.1
Theory of planned behavior	6	1.8
Experiential learning	5	1.5
Elaboration likelihood model	5	1.5
Gatekeeping	5	1.5
Semiotic theory or social semiotics	5	1.5
Technology acceptance model	5	1.5

Nineteen theories or models were used between two and four times; none were used four times. Accountability, cognitive dissonance, knowledge gap, media dependency, social capital, social presence, and source credibility were all used in three (.9%) articles. Theory of education and identity, critical thinking, digital divide, intentional social change theory, knowledge transfer or exchange, program-systems model, schema theory, self efficacy, social cognitive theory, social construction of reality, visual literacy, and computer-mediated communication, were all used in two (.6%) (Table 3).

Table 3

Theories and Models Used in JAC Between Two and Four Times

	f	%
Accountability	3	.90
Cognitive dissonance	3	.90
Knowledge gap	3	.90
Media dependency	3	.90
Social capital	3	.90
Social presence	3	.90
Source credibility	3	.90
Theory of education and identity	2	.60
Critical thinking	2	.60
Digital divide	2	.60
Intentional social change theory	2	.60
Knowledge transfer or exchange	2	.60
Program systems model	2	.60
Schema theory	2	.60
Self efficacy	2	.60
Social cognitive theory	2	.60
Social construction of reality	2	.60
Visual literacy	2	.60
Computer-mediated communications	2	.60

Note: The other 57 theories and models identified in *JAC* only appeared in one article (.30%).

How Theory Was Used in JAC

To determin how theory was used in *JAC*, we evaluated how theory was used in the 120 articles that used a theory or model. The majority of the articles used a theory or model to inform the research (n = 103, 30.60%). Eleven (3.30%) articles used theory or a model to inform and test the theory or model, three (.90%) created/built a theory or model, two (.60%) informed, tested, and created/built a theory or model, and one (.30%) used theory or model to inform and created/built a theory or model (Table 4).

Table 4

How Theory or Models Were Used in JAC

	f	%
Informed the research	103	30.60
Informed and tested	11	3.30
Created/built theory or model	3	.90
Informed, tested, and created/built	2	.60
Informed and created/built	1	.30
Tested theory or model	0	0

Note: The codebook only allowed for an article to be used in one category

Crosstabs were used to further investigate how theory or models were used in *JAC* based on study type and whether or not an article identified a theory or model. It is important to note that percentages were calculated based on the total in each method, not the total number of articles in the entire study. Fifty-four quantitative articles identified a theory or model, which was 44.63% of all quantitative articles in the study. Forty-one qualitative articles identified a theory or model, which was 68.33% of all qualitative articles in the study (Table 5).

Table 5

Comparison of Study Type and Identification of Theory or Model

	Identified a theory or model	Did NOT identify theory or model
Quantitative (n = 121)	54 (44.63%)	67 (55.37%)
Qualitative (n = 60)	41 (68.33%)	19 (31.67%)
Mixed Method (n = 35)	16 (45.71%)	19 (54.29%)
Not Research (n = 113)	5 (4.42%)	108 (95.58%)
Unable to determine method (n = 7)	4 (57.14%)	3 (42.86%)

Note: Percentages are based on the total number of articles within the method type.

To understand how theory and models were used in *JAC*, crosstabs were used to compare theory or model use and publication year in five-year increments. From 1995 to 1999, 13 (15.29%) of the articles identified a theory or model, from 2000 to 2005 14 (14.14%) identified a theory or model, from 2006 to 2010 22 (44.00%) articles identified a theory or model, and from 2011 to 2015 71 (69.61%) of the articles published identified a theory or model (Table 6).

Table 6

Comparison of Use of Theory or Model by Publication Year

	Identified a theory or model	Did NOT identify theory or model
1995 to 1999 (n = 85)	13 (15.29%)	72 (84.71%)
2000 to 2005 (n = 99)	14 (14.14%)	85 (85.86%)
2006 to 2010 (n = 50)	22 (44.00%)	28 (56.00%)
2011 to 2015 (n = 102)	71 (69.61%)	31 (30.39%)

Note: Percentages were calculated based on the total number of articles within the publication year range

To further explore how theory or models were used in *JAC*, crosstab analysis was conducted between the type of study and how a theory or model was used. Informing a study was the most common use of theories and models with 63.33% (n = 38) of the qualitative articles using a theory or model to inform the study, 37.14% (n = 13) of the mixed methods, and 35.54% (n = 43) of the quantitative articles. The next highest use of theory or a model was through informed and tested with 7.44% (n = 11) of quantitative studies using theory or a model to inform and test a theory or model and 5.71% (n = 2) of mixed methods studies (Table 7).

Table 7

Comparison of How a Theory or Model Was Used and Type of Study

	Quantitative *n* = 121		Qualitative *n* = 60		Mixed Method *n* = 35		Not Research *n* = 113		Unable to Determine *n* = 7	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Informed (*n* = 103)	43	35.54	38	63.33	13	37.14	5	4.43	4	57.14
Informed & tested (*n* = 11)	9	7.44	0	0	2	5.71	0	0	0	0
Created/built (*n* = 3)	0	0	2	3.33	1	2.86	0	0	0	0
Informed, tested, created/uilt (*n* = 2)	2	1.65	0	0	0	0	0	0	0	0
Informed and Created/Built (*n* = 1)	0	0	1	1.67	0	0	0	0	0	0
Tested (*n* = 0)	0	0	0	0	0	0	0	0	0	0
Did not use theory or model (*n* = 216)	67	55.37	19	31.67	19	54.29	108	95.58	3	42.86

Note: Percentages are based on the total number of articles within method type

Characteristics predicting the use of a theory or model in JAC articles

Correlation and multiple regression analyses were conducted to examine the relationship between inclusion of a theory or model and the number of authors, year, section of journal, and study type. Table 8 summarizes the descriptive statistics and analysis results. Bivariate correlations were run on all variables of interest. The correlation between independent variables was reviewed to eliminate multicollinearity, which is a concern in regression analysis. None of the correlations were considered to be high, with all correlations at .42 or less. Next, correlations between the dependent variable of inclusion of theory or model and independent variables were explored. These correlations were year (-.48); number of authors (r = -.28); section of journal (.37); and study type (.34). All correlations were significant at the p<.001 level. As can be seen, section of journal and study type are each positively and significantly correlated with the outcome variable. The negative, significant correlations in year and number of authors indicate that the higher number of authors of an article, the more likely the article was to use theory or a model and the more recent the year, the more likely the article was to use theory or a model.

Table 8

Correlation Between Use of Theory and Variables of Interest

	r
Year	-.48**
Number of Authors	-.28**
Section of Journal	.37**
Study Type	.34**

Note: ** $p<.001$

To determine how much of the independent or outcome variable was explained by the characteristics of the article, regression analysis was used with the outcome variable of "identified theory or a model. Simple regression was used initially to determine if the characteristic variable should be included in the multiple regression model. Simple regression analysis using the year of publication resulted in the model $R^2 = .23$, $F(1,334) = 217.92$, $p < .001$, which indicates the year variable is significant and explains 23% of the variance in use of a theory or model. The number of authors variable produced $R^2 = .08$, $F(1,334) = 29.04$, $p < .001$. This indicates that number of authors is significant and accounts for 8% of the variance in use of theory or a model. The section of the journal simple regression produced $R^2 = .14$, $F(1,334) = 53.33$, $p < .001$, which indicates 14% of the variance is predicted by the section of the journal in which the article appeared. The last variable of interest was study type, which produced $R^2 = .12$, $F(1,334) = 44.65$, $p < .001$ indicating 12% of the variance is accounted for by the study type.

Because all variables of interest explained some level of variance in the use of theory or models in a *JAC* article, multiple regression was used to understand the relationship further. The multiple regression model with all four predictors produced $R^2 = .30$, $F(4,331) = 35.43$, $p < .001$. This model with all four predictors explains 30% of the variance in use of theory or models in a *JAC* article. Study type and year had significant regression weights, indicating these variables had a significant influence on the use of a theory or model in an article, after controlling for the other variables in the regression model (Table 9). The negative regression weight for year indicates that after accounting for other variables in the model, the articles with a more recent year of publication, used theory. Number of authors and section of journal were not significant and did not contribute to the multiple regression model.

Table 9

Regression Analysis With Use of Theory and Variables of Interest

	b	*B*
Year	-.03	-.41**
Number of Authors	-.01	-.03
Section of Journal	.01	.02
Study Type	.09	.25**

Note: ** $p<.001$

Conclusions, Discussion, and Implications

Over the past 20 years, 338 articles were published in *JAC*, with 336 being appropriate for analysis in this study. Analysis of the methods used indicated non-research articles (n = 113, 33.60%) were the most common followed by quantitative (n = 121, 36%), qualitative (n = 60, 17.90%), mixed methods (n = 35, 10.40%), and unable to determine (n = 7, 2.10%). One hundred and twenty of the articles (35.70%) identified at least one theory or model with 87 individual theories and models identified over the last 20 years. Eleven of these theories were used in five or more articles, 19 were used between two and four times, and 57 were used in only one article. It should be noted that not every article in *JAC* has to use theory and we did not make any value judgments related to the use of theory in a study. The articles that were not research or were commentary or professional development may not have needed theory to be successful. However, the lack of consistent use of theory is a bit concerning. It is difficult for a field to grow and develop when it is spread across so many theories with an apparent lack of focus. As Tsang and Kwan (1999) explained, replication is a necessary step in order to develop and grow the theoretical base of a discipline. With the majority of the theories in *JAC* only being used once (n = 57), replication and use of theory in the context of agricultural communication has not been done in order to advance the knowledge and rigor of the field. This study offered empirical evidence to support Evans' (2006) commentary on the scattered nature of theory in our discipline as a whole, which resulted in a lack of general theoretical vigor and the absence of knowledge accumulation and multifocal pattern recommended by Tsang and Kwan (1999) to develop theoretical vigor and generalizability.

When a theory or model was used in the articles analyzed in this study, it was most often used to inform the study (n = 103, 30.60%). Eleven articles informed and tested theory or a model while six either created/built, informed, tested, and created/built, or informed and created/built a theory of model. Qualitative (n = 41, 68.33%) and mixed methods (n = 16, 45.71%) studies identified a theory or model more often than quantitative (n = 54, 44.63%) studies. These results confirm Glanz' (2011) description of the multiple ways a theory can be used. Using theory to inform a study is certainly valuable, but the low number of studies that were testing theory or models or creating or building on theory or models speaks to the continued lack of progression in theory in the field of agricultural communication. The causes of this may be from the large number of other disciplines that agricultural communication draws from as noted by Evans (2006) and speaks to the need for agricultural communication researchers to focus on theory development and building to advance the field and body of knowledge as recommended by Tsang and Kwan (1999).

Articles in the early years of *JAC* included fewer uses of theories and models than more recent years. From 1995 to 1999, 13 articles (15.29%) identified a theory or model. In later years, the use of theory increased up to the point of present day 2011 to 2015 when 71 articles (69.61%) identified a theory or model. The number of authors has also increased throughout the years, which may be a result of more people in the profession and more master's and doctoral students who are publishing with their committee members and other faculty and graduate students. These results indicate the field is growing in the identification of theory, but work is needed in the area of theoretical progression.

The regression analysis revealed that the number of authors, year, section of journal, and study type together predicted 30% of the variance in the use of a theory or model over the past 20 years. As the number of authors increased, the article was more likely to use theory. This may be a result of the larger number of authors serving as an indication that the work was a part of a thesis or dissertation or perhaps was a collaboration across disciplines. Later publication years also correlated with the increase in number of authors, and thus may be the result of increased collaboration, increased graduate students in the discipline, and/or increased number of faculty in the discipline. These results explain some of the variance in use of a theory or model, but do not completely explain the use. The results indicated the use of theory is increasing with the addition of

people and time. However, the building of specific theories or growth in certain areas of theoretical explanation is still lacking because of the large number of theories used. Further, very few repeat studies or studies that build upon previous theoretical knowledge appeared in the data set. The agricultural communication discipline is not alone in a lack of replication, as this in an area where other social sciences struggle (Berthon, et al., 2002; Tsang & Kwan, 1999)

Recommendations

This study resulted in multiple recommendations for the agricultural communication field. We recommend authors publishing in *JAC* be more specific about the theories being used in research. This will enable those less familiar with the theory, such as practitioners or other researchers in the field, to make the connection with the theories and research them more in depth. There were many instances where researchers recognized either citations or premises of theories. However, the theories were not explicitly mentioned, so the coders could not code for those theories.

More research is needed to determine the strongest indication for the use of theory or models to completely understand the use in the agricultural communication field. The agricultural communication field can grow and develop over the next 20 years through testing and building upon previously used theories and models in order to create a discipline with strong theoretical vigor. This effort must begin with faculty in agricultural communication taking the lead on using theories previously used and testing and building on previous research in agricultural communication. Before a study is started, a thorough review of previous literature in JAC should be conducted in order to build on previous work in the disciple. Additionally, faculty must educate master's and doctoral students not only about the specific theories used in this industry, but about how to use theory in a way that advances the theoretical vigor of the field. While informing a study will remain an important element of how theory is used, it is imperative that future studies focus on testing, building, and creating theory so the industry can continue to advance as a respected discipline.

The results of the regression analysis indicate Evans' (2006) may have been correct that collaboration with other disciplines has helped increase theoretical vigor in recent years; future research should explore this concept further and faculty should continue to seek opportunities for collaboration. Because *JAC* audiences are not all academicians (Telg et al., 2001), future research should investigate the readers of *JAC* to understand their needs and understanding related to research and theory. Moreover, future research should look at the authors of *JAC* to understand their place in the profession (practitioners and/or academics) and the degrees they hold or are pursuing to understand the use of theory in their research.

The findings of this research indicate future research should look specifically at the research section of the journal and do a more advanced analysis of theory and models related to the strength of the research. An in-depth analysis of the more recent years of *JAC* would also be valuable since these were more likely to contain theory or models. It may be of additional value to look at the institutions where researchers were trained or where they currently work. This may be another valuable piece in understanding the use of theories and models in agricultural communication.

This study offers a snapshot of theory and model use in the agricultural communication discipline. In order to gain a better understanding of the entire discipline, it is recommended that future research investigate in what other journals agricultural communication researchers are publishing. This should be followed by an in-depth look at those journals and articles related to the discipline to examine theory and model use.

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Literature Themes from Five Decades of Agricultural Communications Publications

Bo/David Williford, Leslie D. Edgar, K. Jill Rucker and Stuart Estes

Abstract

The discipline of agricultural communications has been developing for nearly two centuries. As the discipline has adapted, professional organizations such as the American Association of `Agricultural College Editors (AAACE) and the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE) have published literature representative of the topics and issues that have impacted the discipline through magazines and journals such as the AAACE, ACE Quarterly, and the Journal of Applied Communications (JAC). The purpose of this study was to review the literature published in AAACE, ACE Quarterly, and JAC from 1968-2015 to identify primary and secondary literature themes. There were 13 emergent themes identified. The most prolific primary theme identified was Channel Development, Use or Research while the most prolific secondary theme identified was Educating Professionals. A count of the number of articles classified as "professional development" and "research" revealed a shift in the focus in the journal outlets. In earlier years, the discipline focused mainly on professional development articles (AAACE and ACE Quarterly), but transitioned almost completely to research (JAC). This research acknowledges that the discipline has experienced significant literary shifts and provides a recommendation for further research in audience analysis of the literature coming from the journals of the discipline.

Key Words

Agricultural Communications Literature, Content Analysis, Journal of Applied Communications Research

Literature Review

Agricultural communications (ACOM) was originally developed to disseminate information from Agricultural Experiment Stations to the public (Telg & Irani, 2012). ACOM plays an important role in connecting agricultural producers to the consumers who are increasingly separated from the processes that provide them with food, fiber, shelter, and energy. As the need for communication between producers and consumers continued to increase over the last century, ACOM evolved from an area of study in agricultural education to a discrete discipline with its own relevant body of literature. In addition to refining practices used in the industry and educating college students, ACOM faculty focus on social science, specifically applied communications research.

The profession of ACOM began in the early 1800s (Tucker, Whaley, & Cano, 2003). Publications such as The Agricultural Museum, The American Farmer, and The Breeder's Gazette were created by national leaders of agriculture, such as John Stuart Skinner, to improve farming and production practices (Tedrick, 2009). By the 1900s, the ACOM field of study was competitive and required skilled writers and editors who had knowledge of agricultural issues and farming practices (Burnett & Tucker, 2001). Therefore, the academic discipline of agricultural journalism was created

with the first courses being offered at Iowa State in 1905 (Boone, Meisenbach, & Tucker, 2000; Tedrick, 2009). Early agricultural journalism courses focused on writing, editing, and dissemination skills to improve agricultural practices. In 1908, the University of Wisconsin established the Department of Agricultural Communications and offered a bachelor's degree within the field of ACOM. Today, 26 higher education institutions offer a major, minor, or concentration in ACOM/journalism (Miller, Large, Rucker, Shoulders, & Buck, 2015).

Soon after the turn of the 20th century, collaborative efforts between agricultural communicators and industry members were formalized with the creation of professional development organizations. In 1913, the first meeting of the American Association of Agricultural College Editors (AAACE) was conducted at the University of Illinois (Tedrick, 2009). While only three editors attended the inaugural meeting, the association continued to grow as a gathering and idea-sharing platform for ACOM practitioners and educators. In 1919, the *ACE* magazine was created to distribute information related to jobs in the ACOM profession, abstracts from AAACE meetings, and news items. By 1966, AAACE had become one of the leading organizations for ACOM with a membership of over 400 dues-paying broadcasters, writers, editors, and photographers (Jarnagin, 1967). This was the beginning of the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE). The association's publication, *ACE Quarterly*, provided an outlet for ACE members to showcase their ACOM skills including writing, broadcasting, and new communication technology. Later, the *Journal of Applied Communications* (*JAC*) was created and solicited peer-reviewed articles. It was at this time the published works in this outlet began to shift from professional development to research-focused articles.

Research in ACOM assists the discipline (education) and practice (industry) by identifying scientific activity, philosophy, and education. Cartmell and Evans (2013) conducted research noting the close relationship among courses, degree programs, research agendas, and other academic programming. Furthermore, their research made a strong case for continued efforts to strengthen this relationship to better promote and anchor the mission of the ACOM discipline. A study conducted by Edgar, Rutherford, and Briers (2008) identified *JAC* as the primary peer reviewed journal for ACOM research and professional scholarship. This study analyzed published *JAC* articles from 1997 to 2006 and identified 21 primary research theme areas, as well as 28 secondary research theme areas. Results of the study revealed cyclic research themes, with specific themes appearing as both primary and secondary themes. As with any cognate area, the body of ACOM literature possesses gaps in knowledge that need to be addressed, some of which are more pertinent and timely than others. Understanding where these literature gaps exist is at the heart of defining the direction of the agricultural communications profession. There is currently no longitudinal, comprehensive literature looking at emergent themes in published works from AAACE, *ACE Quarterly*, or *JAC* as a holistic body of knowledge. The focus of this research was to reflect on and review the field of ACOM literature to allow research focus to adjust, if needed, in the future.

Purpose of the Study

The focus of this research was to review ACOM literature from 1968 to 2015. This review used a content analysis of previous literature published in the three literary outlets: AAACE, *ACE Quarterly*, and *JAC*. The following research objectives guided the study:

1. Describe and synthesize primary (knowledge-base) and secondary (conceptual-base) literature areas from journal articles published in AAACE (1968-1978), *ACE Quarterly* (1978-1989), and the *Journal of Applied Communications* (1990-2015).
2. Identify primary and secondary emergent theme areas by outlet.

Methods

This study employed a qualitative content analysis to assess articles published in the American Association of Agricultural College Editors (AAACE), *ACE Quarterly*, and the *Journal of Applied Communications* (*JAC*) from 1968 to present. Content analysis as a research method has existed for decades (Weber, 1990), and 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 and a specific field of study to focus the research. Professional and research articles from 1968 to 2015, in the identified journals, were used as the frame. These years were selected because they were in print and accessible. The main focus of each article (knowledge-base or most prominent focus) was coded as the primary theme area. The most prevalent supporting theme (conceptual-base or secondary focus) was identified as the secondary theme for each article. 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 then used a consolidated checklist to independently apply coding. The researchers periodically checked for agreement in coding; if reliability was not acceptable (at least 80% accuracy), then the previous steps were repeated.

Once inter-rater agreement was established, a constant comparative strategy was used to assess each article. Qualitative data analysis is "primarily an inductive process of organizing data into categories and identifying patterns and relationships among the categories" (McMillan & Schumacher, 2010, p. 367). Themes emerged both from the data (an inductive approach) and from the investigators' prior understanding of the phenomenon under study (an *a priori* approach). Researchers used inductive analysis to synthesize and create meaning from the data as well as identify and quantify the presence of words and concepts representing emergent themes within the primary and secondary themes (McMillan & Schumacher, 2010). A quantitative content analysis approach was used to determine the frequency at which each of the emergent themes was represented among the articles. This was accomplished through the use of Microsoft™ Excel sheets for each outlet. Analyses of word counts were used to determine inferences about the frequency of themes. Word counts do not imply importance, merely frequencies.

Limitations to this study include the development of broad emergent themes. This was necessary because of the vast diversity in articles discovered in these literary outlets. Overall, 263 emergent themes were identified. Therefore, it was necessary to compress these themes into more manageable areas for reporting. However, it should be noted that professional development and research in these outlets are vast and overeaching.

Results and Findings

There were 177 articles analyzed in AAACE (1968-1978), 184 articles in *ACE Quarterly* (1978-1989), and 324 in *JAC* (1990-2015). Of those AAACE articles analyzed, 145 articles were professional development and 32 were research-focused. In *ACE Quarterly*, there were 146 professional development articles and 38 research. In *JAC*, 95 were professional development and 229 were research-focused. All articles without research methodologies were classified as "professional development." There were 13 emergent themes identified in the journals (N = 685). A list of the emergent themes and descriptors of those themes are noted in Table 1.

Table 1

Emergent Themes Identified in AAACE, ACE Quarterly, and JAC, 1968 to 2015

Emergent Theme	Descriptors
ACOM Organization	AAACE, ACE, Service to the Organization (all information specific an ACOM organization or publication outlet)
Channel Development, Use or Research (articles were specific to a channel)	Development, Distribution, Evaluation, Outlet, and Research Specific to Communication Channels (i.e. radio, print, television, web, etc.)
Consumers/Publics	Audience, Attitudes, Messaging or Messages, Perceptions, Views/Perspectives
Extension, Youth, Rural Programs	Cooperative Extension Service, Development Efforts, Global, Service, International, Program Development, Youth Programming
Educating Professionals	Duties, Professionalism, Roles, Skills, Training
General Agriculture	Practices, Commodities, Biotechnologies
Higher Education	Adult Learning, Curriculum, Distance Education, Land-grant System, Tenure
Journalism	Dissemination, Production, Placement, Relations, Sources
Marketing/Public Relations	Advertising, Branding, Strategy, Campaign
Organizational Communication & Management	Business management, Information Management, Leadership
Policy & Issues	Legal Issues, Opinion Leaders, Regulations
Risk & Crisis Communications	Crisis Response, Emergency Preparedness, Risk Assessment
Research Analyses	Communication Assessment, Research Analytics, Scientific Writing

The frequencies of primary and secondary literature themes for all outlets are noted in Table 2. The most identified primary theme (knowledge-base or most prominent focus of the article) was Channel Development, Use or Research (n = 145). The most identified secondary theme (conceptual-base or secondary focus of the article) was Educating Professionals (n = 170). The least identified primary theme was General Agriculture (n = 4), and Risk and Crisis Communication (n = 11) was the least identified secondary theme.

Table 2

Primary and Secondary Themes Identified in AAACE, ACE Quarterly, and JAC, 1968 to 2015 (n = 685)

Primary Themes	*n*	%	Secondary Themes	*f*	%
Channel Development, Use or Research	145	21.2	Educating Professionals	170	24.8
Consumers/Publics	94	13.7	Channel Development, Use or Research	107	15.6
Educating Professionals	94	13.7	Extension, Youth, Rural Programs	77	11.2
Journalism	87	12.7	Consumers/Publics	75	10.9
Higher Education	79	11.5	Higher Education	66	9.6
Research Analyses	54	7.9	Policy & Issues	42	6.1
Organizational Communication & Management	27	3.9	Organizational Communication & Management	26	3.8
Extension, Youth, Rural Programs	26	3.8	Journalism	24	3.5
Marketing/Public Relations	23	3.4	ACOM Organizations	23	3.4
ACOM Organization	21	3.1	General Agriculture	22	3.3
Risk & Crisis Communications	16	2.3	Research Analyses	22	3.3
Policy & Issues	15	2.2	Marketing/Public Relations	20	2.9
General Agriculture	4	0.6	Risk & Crisis Communication	11	1.6

Of the 177 AAACE articles analyzed, 71 articles had primary and secondary themes compressed into the same category (40%). In Table 3, primary and secondary literature themes identified in AAACE are noted. Also, noted is the number of research articles by theme (32 total research-focused articles). The remaining articles are classified as professional development articles or articles without research methodologies (145 articles). Educating Professionals was noted as the most frequent primary (n = 37) and secondary theme (n = 40), comprising 22% of all the literature in AAACE. There were no articles with a focus on Risk and Crisis Communications.

Table 3

Primary and Secondary Themes Identified in the Literature Published in the American Association of Agricultural College Editors (n = 177)

Emergent Theme	*n* Primary Themes	*n* Research Articles	*n* Secondary Themes	*n* Research Articles	Total *n*	%
Educating Professionals	37	3	40	4	77	22%
Channel Development, Use or Research	30	6	28	6	58	16%
Consumers/Publics	25	5	19	1	44	13%
Higher Education	15	4	16	5	31	9%
Extension, Youth, Rural Programs	8	2	22	3	30	9%
Research Analyses	21	6	6	1	27	8%
Journalism	14	3	6	2	20	6%
ACOM Organizations	10	0	9	2	19	5%
Organizational Communication & Management	7	1	11	2	18	5%
Policy & Issues	5	0	11	2	16	5%
Marketing/Public Relations	5	2	3	2	8	2%
General Agriculture	0	0	6	1	6	1%
Risk & Crisis Communications	0	0	0	0	0	0%

Of the 184 *ACE Quarterly* articles analyzed, 49 articles had primary and secondary themes compressed into the same category (27%). Primary and secondary literature themes identified in *ACE Quarterly* are noted in Table 4. Also, noted is the number of research articles by theme (38 total research-focused articles). The remaining articles are classified as professional development articles or articles without research methodologies (146 articles). Channel Development, Use or Research was noted as the most frequent primary theme (*n* = 47) and Educating Professionals was the most noted secondary theme (*n* = 66). The most frequent (29%) emergent theme was Educating Professionals (*n* Primary Themes = 40; *n* Secondary Themes = 66).

Table 4

Primary and Secondary Themes Identified in the Literature Published in the ACE Quarterly (n = 184)

Emergent Theme	*n* Primary Themes	*n* Research Articles	*n* Secondary Themes	*n* Research Articles	Total *n*	%
Educating Professionals	40	3	66	14	106	29%
Channel Development, Use or Research	47	10	32	3	79	21%
Extension, Youth, Rural Programs	7	3	30	7	37	10%
Journalism	22	7	7	0	29	8%
Consumers/Publics	12	6	13	3	25	7%
Research Analyses	19	1	8	2	27	7%
Higher Education	11	5	9	2	20	5%
Organizational Communication & Management	11	1	6	1	17	5%
ACOM Organizations	5	1	6	3	11	3%
Marketing/Public Relations	5	1	1	0	6	2%
Risk & Crisis Communications	2	0	0	0	2	1%
Policy & Issues	2	0	3	0	5	1%
General Agriculture	1	0	3	3	4	1%

Of the 324 *JAC* articles analyzed, 80 articles had primary and secondary themes compressed into the same category (25%). In Table 5, primary and secondary themes identified in *JAC* literature are noted. Also, noted is the number of research articles by theme (229 total research focused articles). The remaining articles are classified as professional development articles or articles without research methodologies (95 articles). Channel Development, Use or Research was noted as the most frequent primary theme (*n* = 68) and Educating Professionals was the

most noted secondary theme (*n* = 64). The most frequent (20%) emergent theme was Channel Development, Use or Research (*n* Primary Themes = 68; *n* Secondary Themes = 47), followed closely by Consumers/Publics at 19%.

Table 5

Primary and Secondary Themes Identified in the Literature Published in the Journal of Applied Communications *(n = 324)*

Emergent Theme	*n* Primary Themes	*n* Research Articles	*n* Secondary Themes	*n* Research Articles	Total *n*	%
Channel Development, Use or Research	68	45	47	45	115	18%
Consumers/Publics	57	48	43	48	100	15%
Higher Education	53	37	41	37	94	15%
Educating Professionals	17	10	64	10	81	12%
Journalism	51	42	11	42	62	10%
Extension, Youth, Rural Programs	11	7	25	7	36	6%
Policy & Issues	8	5	28	5	36	6%
Marketing/Public Relations	13	10	16	10	29	4%
Risk & Crisis Communications	14	11	11	11	25	4%
Organizational Communication & Management	9	4	9	4	18	3%
Research Analyses	14	5	8	5	22	3%
ACOM Organizations	6	3	8	3	14	2%
General Agriculture	3	2	13	2	16	2%

The most frequent themes by year are identified in Table 6. Of the 13 emergent themes identified, 10 were the most published theme by year for at least one year. There were years where the most prominent emergent themes were tied. Those themes are also noted below.

Table 6

Most Frequent Emergent Themes Identified Per Year

Theme	Most frequent themes by year	Most frequent themes that were tied by year
Channel Development, Use or Research	1972,1973, 1977, 1979, 1981, 1983, 1986, 1988, 1989, 1991, 1992, 1994, 2000, 2006	1974, 1984, 1987, 1996, 1997, 2002
Educating Professionals	1969, 1970, 1980, 1982, 1985	1976, 1984, 1993, 2015
Consumer/Publics	1971, 1974, 2005, 2007, 2013, 2014	1974, 1976, 2015
Higher Education	1990, 1995, 1998, 2001	1976, 1993, 1996, 2002
Journalism	2003, 2004, 2009, 2010, 2011	1987, 1997
Marketing/Public Relations	1975, 1978	1976, 1979
Research Analyses	1968	1976
Organizational Communication & Management	--	2002
ACOM Organizations	--	2008
General Agriculture	--	2008
Extension, Youth, Rural Programs	--	--
Risk & Crisis Communication	--	--
Policy & Issues	--	--

Conclusions

A total of 685 articles were analyzed from the American Association of Agricultural College Editors (AAACE) (1968-1978), *ACE Quarterly* (1978-1989), and the *Journal of Applied Communications* (*JAC*) (1990-2015). There were 299 research articles and 386 professional development articles (articles without research methodologies). AAACE and *ACE Quarterly*

were primarily professional development publication outlets with growing numbers of research articles, but the main focus was to inform practice and were often written by practitioners. *JAC* focused primarily on research articles, indicating that the agricultural communications discipline has shifted to more research focus in this outlet. This may be due both to the influx of new media channels where professional development forums can more easily be shared with practitioners and to researchers using *JAC* as the primary outlet for ACOM research (Edgar et al., 2008).

The majority (51%) of the literature published in AAACE (n = 177) was focused on Educating Professionals (21%), Channel Development, Use or Research (16%), and Consumers/Publics (13%). Higher Education (9%) and Extension, Youth, Rural Programs (9%) were also noteworthy. In *ACE Quarterly* (n = 184), the majority (60%) of literature published was focused on Educating Professionals (29%), Channel Development, Use or Research (21%), and Extension, Youth, Rural Programs (10%). The majority (60%) of the literature published in *JAC* (n = 324) was focused on Channel Development, Use or Research (18%), Consumers/Publics (15%), Higher Education (15%), and Educating Professionals (12%). When comparing all outlets for primary themes, Channel Development, Use or Research (21.2%), Consumers/Publics (13.7%), Educating Professionals (13.7%), and Journalism (12.7%) were the most frequent emergent themes. Secondary emergent themes for all assessed outlets focused primarily on Educating Professionals (24.8%), Channel Development, Use or Research (15.6%), and Extension, Youth, Rural Programs (11.2%).

Educating Professionals were important literary areas for both AAACE and *ACE Quarterly*, and was noted as the most frequent theme in these outlets. Yet, it was the fourth most frequent emergent theme in *JAC*. Throughout all three literary outlets (AAACE, *ACE Quarterly*, *JAC*), Channel Development, Use or Research was first (*JAC*) or second (AAACE and *ACE Quarterly)* in primary themes. Moreover, articles pertaining to Risk and Crisis Communications were not presented in AAACE and negligible (1%; in primary theme n = 2 and 0% in secondary theme) in *ACE Quarterly*. However, the frequency of articles pertaining to Risk and Crisis Communications increased, what appears to be, significantly in *JAC* (11%; primary theme n = 14; secondary theme n = 11). This is likely due to both an emergent and increased focus of research in this area.

When analyzing primary and secondary emergent themes per article, 22% from AAACE and 29% from *ACE Quarterly* focused on Educating Professionals. For *JAC*, 18% focused on Channel Development, Use or Research, followed in the fourth most frequent theme being Educating Professionals. It appears, then, the agricultural communications discipline has and continues to be focused on educating others. Yet, additional literary areas continue to be published with fluctuation on frequency.

Findings from this study supported previous research that noted *JAC* themes were cyclic in nature and specific themes appeared as both primary and secondary themes (Edgar et al., 2008). Also, it is important to use information gleaned from this research to focus future research and the development of research agendas and research focus (Cartmell & Evans, 2013; Edgar et al., 2008). This research may also add value to ACOM curriculum development (Large et al., 2015). In this study, emergent theme areas were broad to capture the essence of changes in published literature in ACOM outlets during the past 50 years. These broad emergent theme areas make it difficult to understand specifically how the discipline has shifted.

Recommendations

This research provided insight into the development and progression of published works in ACOM outlets over five decades, specifically from AAACE to *ACE Quarterly* to *JAC*. Most of the emergent theme of ACOM Organization occurred early in the literature analyzed. This could be due to the emergence and progression in the organizational structure of the discipline.

Earlier research also focused more heavily on Extension, Youth, Rural Programs (14% of primary and secondary literary themes). This is likely due to the ACOM discipline being more focused in ACOM service units in earlier years (Boone et al., 2000). There may be value in understanding more fully how the discipline shifted and developed during this time to better understand why and how literary themes were shifting in this primary outlet (Edgar et al., 2008).

The results of this study describe a shift of focus in ACOM literature as described in primary and secondary themes throughout the almost 50 years of literary works. As the ACOM discipline continues to morph and expand, the discovery and exploration of new knowledge, channels, research, media, and issues important to agriculture and communications will continue. As the *Journal of Applied Communications* moves forward into the next few decades, it is important for research and professional development contributors as well as journal editors to understand the nature of ACOM and its literary shifts. Continuing to assess the journal as it evolves is necessary to meet the diverse needs of practitioners and academicians. Further research should explore the readership of the journal and analyze if the journal is meeting the needs of its audience.

Implications of this research could affect future research agendas for the discipline. Future research should evaluate the alignment of industry needs and academic discipline publications. It is clear the focus in research and professional development has shifted throughout the years, but it is not clear that there is alignment or transference from these publications to professionals in the industry.

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The Spirit Lives On: Communication Seminars as a Surprisingly Hardy, Valuable, and Promising Heritage of NPAC

Kerry J. Byrnes and Jim Evans

Abstract

After many decades, dwindling numbers of communicators, extension personnel, and development professionals recall the National Project in Agricultural Communications (NPAC) of the 1950s and early 1960s. But around the world many professionals, scholars, and organizations can recognize the spirit and legacy of NPAC, which has had substantial impact well beyond its original national mission. NPAC became the springboard for a long-running series of communication seminars that built the capacity of foreign students, studying in the United States, to return home better able to communicate as change agents in fostering development. Seminars of NPAC also point to key ingredients for addressing urgent issues facing our nation and world today. This study addresses the origins, features, transitions, durability, and impacts of those communication seminars across nearly 60 years. The authors used historical analysis to reveal a surprising trail of service that leads to the present day and beyond. It provides new insights about how the NPAC communication training program has exerted more than 15 kinds of impact on agricultural development, on organizations at all levels throughout the world – and on individuals touched by it. The analysis highlights insightful, unpublished backstories about the communication training heritage of NPAC. It also identifies key elements of effective communication training programs and identifies opportunities for further research and practice. It could help readers identify professional development innovations the Journal of Applied Communications will advance and report during its second century.

Key Words

National Project in Agricultural Communications (NPAC), Professional Development, Communication Training, Extension Communication, Development Communication

Literature Review

Perhaps the most ambitious project in the history of what is now the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE) ended more than a half century ago. It was the National Project in Agricultural Communications (NPAC), funded by the Kellogg Foundation and participating member institutions of the American Association of Land-Grant Colleges and State Universities. It got under way in 1953 and ended in 1960, then was extended briefly until 1962 when the NPAC office at Michigan State University closed. Staff members moved to new stages of their careers. However, the spirit, legacy, and value of NPAC did not end.

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What follows is the report of a nearly-60-year analysis, beginning with what was known as the communication training program of NPAC. Training was the largest single program area in a $1 million-plus project that also included (a) collection, evaluation, and dissemination of research, (b) services, and (c) creative programming.

Background of the Communication Training Program of NPAC

The charter purpose of NPAC was to "assist administrators and information workers in our land-grant institutions and the United States Department of Agriculture in using present and potential communications more effectively and efficiently in extending to the entire public the services and facilities of their institutions" (National Project, 1960, p. 14). Thus, communication training and professional development were woven into the core mission of NPAC. When the new project was approved in early 1953 the person selected to be Executive Director was Stanley Andrews who had recently resigned as administrator of the U.S. Technical Cooperation Administration (TCA). Andrews began his new job at Michigan State on September 1, 1953, and served as Executive Director of NPAC until February 29, 1960 (National Project, 1960, p. 89).

Michigan State offered the Associate Director position to Francis C. Byrnes who would serve in it from October 1, 1953 to February 29, 1960 (National Project, 1960, p. 90). As Associate Director, he was responsible for coordinating information, training, and research services for staff members in U.S. land-grant universities involved in agricultural research, extension, education, and communication. More than one-third of the NPAC budget was allocated for training. (National Project, 1960, p. 13). As coordinator for that initiative he led development of the NPAC communication training program, integrating social science knowledge into in-service training of U.S. extension and community development professionals.

Byrnes, since 1947, had been working with Ohio State University as agricultural editor of the Cooperative Extension Service and Ohio Agricultural Experiment Station. His experiences fit well with the needs of NPAC, having integrated the communication programs of the College of Agriculture and Extension Service at Columbus with those of the Ohio Agricultural Experiment Station at Wooster. He had helped develop the concept for a consumer-oriented television program, "City-Farm Extra," and helped mobilize matching grant support for it from 10 agricultural organizations. He had gained international experience placing young farmers from European countries on Ohio farms to learn U. S. agricultural methods (K. Byrnes, 2014, p. 1).

NPAC staff created a series of training programs and materials to upgrade their communication skills. Project staff and collaborating university professors traveled around the country conducting seminars to "train the trainers." Participating extension specialists and agents then returned home, adapted the materials for local needs and used them to train others (National Project, 1960, p. 29-40; K. Byrnes, 2014, p. 3).

These communication training sessions began in 1956, met with immediate acceptance, and continued actively throughout the nation during NPAC's remaining years. Several features characterized the training program. (1) It involved a broad base of organizational stakeholders that helped ensure administrative support and interdisciplinary teams that involved academics, extension specialists, and field staff. (2) It featured a "train the trainer" concept. (3) It emphasized a behavioral approach to communication, teaching communication skills within the context of new social and psychological concepts about how people behave. (4) It incorporated new research and insights about the diffusion and adoption of agricultural innovations. (5) It de-emphasized lectures and used inductive teaching methods, bringing participants actively into a "learning by doing" process through individual or group exercises, games, simulation, and discussion. (6) It drew upon packaged training materials adapted to field situations in agriculture and home economics. (7) It included agricultural applications of new information technologies, including the television medium that emerged during the 1950s (National Project, 1960).

Figure 1. Francis Byrnes, John Morrow, and Stanley Andrews (Michigan State College – Nov.-Dec. 1953) (Associate Director, Audio-Visual Director, and Executive Director, respectively)

NPAC leaders placed special emphasis on using a behavioral approach to communication in support of development. In an oral history interview on October 31, 1970, former NPAC Director Stanley Andrews reflected on efforts to incorporate it and reasons for doing so:

> At Michigan State (University) we began to get into this communication problem in depth. We looked at communications in terms of how people behave. We stumbled onto something that if we could have had it when we started we might have done a better job in Point IV (the U.S. Government's foreign assistance program before the establishment of the U.S. Agency for International Development (USAID) in 1961). It looked like we were going to get AID to try out the behavioral communications idea. It went clear up in the Eisenhower administration, to the last man, and he said, "Well, damn it, this looks like something awful good, but you know we've got so many things I'll just have to put it off for a while." And the fellow that was carrying it through the bureaucracy was sent to Africa and the whole thing collapsed (Andrews, 1970).

Andrews explained that giving professionals from abroad a debriefing before they return home led them to ask what this means in their countries and how they would relate this to their problems. He observed that it gives an entirely different concept of human behavior, finding common denominators rather than exaggerating differences in human beings.

Pilot Conference for International Communication Training

The international dimension appeared during 1958 as NPAC began to organize pre-departure communication seminars for foreign students studying in the United States (K. Byrnes, 2014, p. 5-8).

Under contract with the U.S. International Cooperation Administration (ICA), NPAC conducted a pilot communication training program to be held at MSU for about 50 foreign trainees. This connection is understandable, given NPAC Director Andrews' former affiliation with the Technical Cooperation Agency, later named ICA and in 1961 the U.S. Agency for International Development (USAID). Randall Harrison reported that ICA asked if:

> NPAC might be able to help with a problem it [ICA] had. ICA was sponsoring thousands of foreign participants who came to the United States for various kinds of technical training. These participants then returned home. And, while competent in their new skills, they did not seem able to effectively communicate their new knowledge to others. In short, they were not very good change agents. Perhaps, suggested ICA, if these participants were given a workshop on communication and change, just before going home, they might be more successful (K. Byrnes, 2014. p. 5).

A pilot workshop, based on the NPAC training model, was called the International Communications Conference. It was held in East Lansing, Michigan, on June 22-28, 1958, with 39 participants from nine countries. The purpose was to prepare the participants to re-enter their work situations and help them plan ways to communicate what they learned. The trial effort proved successful. Minutes of the August 20, 1958 meeting of the State Board of Agriculture show that ICA granted $73,000 to MSU to be used under the direction of Dr. David Berlo to deliver 14 week-long workshops (40-hours each) from July 1, 1958, through June 30, 1959. These workshops were to serve a maximum of 850 ICA-funded developing country participants studying at various universities throughout the United States (Minutes, 1958).

Figure 2. David K. Berlo (Left) & Francis C. Byrnes (Right) - ICA-funded International Communications Conference (the Pilot Communication Training Program)

One condition of the contract was that if ICA wished to continue the pre-departure seminar program a university would be ready to contract for a continuance. NPAC leaders, with endorsement of the communication unit on campus, decided that Michigan State would serve that purpose.

> NPAC arranged, in its contract for the pilot seminar, for research funds so that faculty might gain insight on the problems returning participants face and for "back home" evaluation of the seminar by a faculty member [six] months after the pilot. Berlo travelled around the world on this evaluation, finding almost without exception not only favorable comments about the seminar experience but also evidence of changed job behaviors and endorsing comments of supervisors and ICA missions. A few weeks later, with a contract from ICA, Michigan State was in the communication seminar business (K. Byrnes, 2014, p. 6).

In October 1959, an agreement was reached between NPAC and MSU for Michigan State to take over NPAC for an initial three-year period. NPAC entered a new phase as a unit in the College of Communication Arts on March 1, 1960. Reflecting on the fate of NPAC after moving into Communication Arts, Erwin P. Bettinghaus observed that the unit did not do much with NPAC after 1960 (personal communication, February 20, 2013). Absent any new funding after the Kellogg Foundation grant ended, NPAC closed officially in March, 1962 (Klare, 1963, p. v).

The Study

Three research questions guided this analysis of communication training initiatives that emerged from the communication training program of NPAC:

1. In what ways, if any, did the communication training program extend beyond the NPAC project?
2. What levels and kinds of impact did it exert?
3. What lessons and potentials does it offer for future research and practice?

Findings in relation to these questions are organized within four sections: The Michigan State communication seminars, the communication seminars as a private enterprise, International Agricultural Research Centers as new platforms, and impacts of the NPAC communication training program.

Methods

This analysis involved a combination of organizational structures and programming activities. Methodology used here employed the perspective that structural history and historical narrative can complement each other. Emphasis on analyzing organizational or social structures may become static while traditional narrative (featuring events and "telling the story") may pass over important aspects of the past. Highlighting the relation between historical structure and the older tradition of history as narrative may create a useful synthesis (Burke, 2001; Dougherty & Nawrotzki, 2013; & McDowell, 2002).

On the structural side, this analysis involved a sequence of four models (1) a multi-institutional structure hosting NPAC under foundation financing, (2) a university-based structure featuring public-financed international communication seminars, (3) a private enterprise providing funded communication seminars, and (4) a network of international agricultural research centers providing communication training. The narrative side featured reports of varied activities for improving the competence of those who communicate within and about agriculture.

Libraries, archived and personal collections, and online search systems were used to identify source materials. Those materials represented official documents and other primary sources; books, scholarly articles and other secondary sources; and recollections of participants in the form of correspondence and oral histories. They were evaluated on the basis of informed and competent sources, relevance, authenticity, and verifiability. Materials were excluded if they dealt with communication training programs in general or lacked reference to NPAC and the communication training efforts which emerged from it. No date limits were placed on searching.

The Agricultural Communications Documentation Center and several related collections in the University of Illinois Library, along with the HathiTrust Digital Library, were found to be comprehensive sources of information. Other sources found productive included: PubAg (National Agricultural Library, U. S. Department of Agriculture), JSTOR (Humanities, Arts, Social Sciences), Web of Science, Google Scholar, Google Books, and the Dogpile metasearch system. Search terms used in the online searches included "National Project in Agricultural Communications;" "Communication Training Program;" "communication seminars;" "Michigan State;" and "Management Training and Development Institute." Authors analyzed selected documents on the basis of their credibility and relevance to the three research questions.

Results

The Michigan State Communication Seminars

Ironically, the ICA-funded communication training program, which grew out of the NPAC-conducted pilot communication training program in 1958, blossomed at Michigan State as a major activity of the Department of General Communication Arts (later shortened to the

Department of Communication). ICA's successor organization, the U.S. Agency for International Development (USAID), continued to provide funding to conduct the communication seminars.

A major component of the seminars was the exposure that participants received to the research that rural sociologists George Beal and Joe Bohlen conducted on adoption and diffusion of agricultural innovations and on developing a model of community-based social action. NPAC staff developed various publications, training materials, and training courses incorporating concepts from the information diffusion and social action research literature.

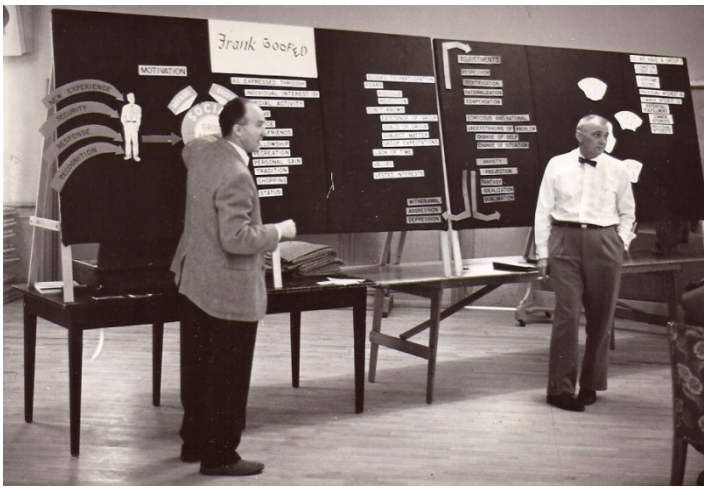

Figure 3. George Beal and Joe Bohlen presenting their social action model in an NPAC communication training program (Laramie, Wyoming, October 1956)

In turn, some of these materials became part of the curricula of the international communication seminars that MSU's Department of Communication conducted under contract with ICA, and later USAID, for foreign participants studying in the United States.

From the early 1960s through 1978, various department staff directed, organized, and took part in more than 550 communication workshops/seminars that reached 30,000 students from 100 countries pursuing academic programs in agriculture and other fields at U.S. universities (K. Byrnes, 2014, p. 9). These seminars provided communication training that enhanced application of knowledge and skills the participants were learning in their technical fields. They featured group discussion, team teaching to diffuse authority in the classroom and promote group activity, participant presentations each day, early and continuing emphasis on participants' expectations and needs, teaching methodologies that did not overwhelm the program, use of the experience of prior participants in shaping programs, and focus on the participants' re-entry into their home country settings.

Figure 4. Francis Byrnes training in communication workshop in Jamaica (March 1960).

The Communication Seminars as a Private Enterprise

By the late 1970s, either USAID had lost interest in funding the communication seminars and/or MSU's Communication Department had decided not to renew its contract with USAID. Robert Morris was serving as the seminar program director, a position he held from May 1974 through December 1978. He had gained experience in training evaluation from 1972 to 1974 as a Social Science Research Council Grantee conducting research and training design at the International Center for Tropical Agriculture (CIAT) in Colombia, where Byrnes was head of communication and training. Morris evaluated CIAT's first five years of short courses, following up with 300 former CIAT research and training participants from 16 countries. Morris later recalled the offer he received to manage the communication workshops at MSU:

> I had been informed when I took the job that it might not last more than a year or so given noises from USAID. However, I figured that if the program got good ratings it would be continued. It did, from all I could discern, but after four years, we were informed that it was coming to an end. … I stayed on another year at MSU completing my doctorate (Higher Education Administration and Curriculum, 1984). Being assured that MSU was not interested in pursuing the Communication Workshops on a non-contract basis, I decided to take a shot at offering a program on a similar, but non-contract basis with open enrollment to all foreign graduate students regardless of their sponsorship, and redesigned the program to give more emphasis to management and leadership (Byrnes, 2014, p. 12).

The experiences Morris gained as communication seminar director allowed him to adapt it and continue to make many of its features available for another 29 years. He moved to Washington, D. C., in 1978 and established Management Communication Associates (MCA), later changing its name to the Management Training and Development Institute (MTDI). At that time Susanne Morris (also an MSU PhD) joined him in running the organization. MTDI programs operated from 1978-2007, building on the design of the original MSU Communication Seminars and providing hundreds of five- and ten-day workshops in management communication; project management and evaluation; training of trainers; and management of training. Recently, Bob and Susanne Morris recalled that the training had further ripple effects. An Indonesian husband and wife who attended an MTDI workshop were so impressed with the approach and methodology that they returned home and founded their own company, using that system (R. Morris and S. Morris, personal communication, February 25, 2016).

MTDI also offered custom topics and experiences on special topics and as components for participants on professional travel to the United States. In summary, Morris reported:

> More than 10,000 participants from 123 countries attended the MTDI programs. Participants were sponsored by various U.S. agencies, United Nations and other international organizations, NGOs, private firms and home governments, e.g., Saudi Arabia, Malaysia, Nigeria, Philippines, Bolivia, Kuwait, and others. Programs have also been conducted directly, or with interpreters, in Spanish, Arabic, Korean, Russian, Polish, Mongolian and French. Programs were also occasionally held abroad, usually at the invitation of former MTDI participants (K. Byrnes, 2014, p. 13).

Figure 5. MTDI communication workshop for senior educators from Ghana and Malaysia, studying in the United States. MTDI trainer Don Cushman in back left. "We learned later that they continued to exchange information and consultancies with each other after they returned home" (Robert Morris, personal communication, January 18, 2014).

Over time, MTDI expanded its curriculum to two-week courses on multiple topics covering leadership, listening, critical thinking, decision making, conflict resolution, and team building. But the terrorist attacks of September 11, 2001, had a negative impact on MTDI's ability to sustain high enrollment levels of foreign students in its training programs.

With the decline in USAID sponsorship of international students to the US, during 2002-2006 Morris explored the potential to add MTDI functions to operations of several other organizations. He then moved into semi-retirement and more advisory roles, including to the International Leadership Center of IBI International which can now provide these services if international student sponsorship is provided.

International Agricultural Research Centers as New Platforms

While the MTDI program ended and occasional efforts to develop a new NPAC-type project stalled (Kern, 2008), philosophies embodied in the original NPAC communication training program and the communication seminars of Michigan State University and MTDI continued within a new organizational platform. It was the network of International Agricultural Research Centers (IARCs). Indeed, some communicators (e.g., Francis Byrnes, Robert Kern, Robert Morris, Delbert Myren, and Raymond Woodis) who were influenced by NPAC later worked on the communication staff of one or more of the IARCs. Key elements in the NPAC heritage have been adopted and applied in IARC training programs.

Figure 6. K. Byrnes working third Fertilizer Marketing Training Program for the Asian Region (Cikampek, Indonesia, 1982)

Impacts of the NPAC Communication Training Program

Economic and social impacts of the communication seminars that grew from the communication training program which NPAC introduced more than a half century ago are impossible to capture in full. No formal evaluation of impact was conducted for the NPAC project (National Project, 1960). Participant evaluations of the Michigan State and MTDI communication seminars were generally highly complimentary and helped guide adjustments to training teams and content emphasis (Robert Morris, personal communication, June 16, 2015). The current analysis identified evidence that communication training proved valuable in home-country re-entry following studies abroad (Morris & Morris, 1992; Morris, 1993; Morris & Morris, 1994; Harrison, 1996; Training future leaders, 2007). No other impact evaluation is evident regarding the Michigan State and MTDI communication seminars, or the communication training programs of the International Agricultural Research Centers. However, testimonies to NPAC-rooted impact are apparent.

Speeding progress in agricultural development. The U. S. Agency for International Development featured this achievement at the occasion of its 50th Anniversary in 2011. It explained in the publication, *USAID's Legacy in Agricultural Development*:

> While a lot of investments were made in developing the Green Revolution technologies…, the speed with which they were adopted and diffused depended on how effectively these technologies were communicated – providing information to change farmers' knowledge, leading to changes in attitudes and acceptance and adoption of new practices. Key to this is the relevance of the improved technology to the farmer's situation and the competence and credibility of the "change agent" to introduce a new technology. … as adoption and diffusion [of innovations in agricultural technology] also depend on the availability and quality of extension services, USAID took lessons from the experience in the U.S. of the National Project on Agricultural Communications (NPAC), 1953-60. Its largest activity was communications training and the "train the trainer" approach was at the forefront, based on four communications training units for basic, oral, written and visual skills, each incorporating the latest technological advances and training by doing. This approach elevated the role of communications and got different disciplines to work together for effective messaging (2013, p. 48-49).

Spotlighting communication, mobilizing resources, and boosting knowledge. As the NPAC project ended, staff members emphasized several areas of achievement: (1) NPAC increased awareness throughout the federal-state system of the importance and role of communication. (2) It mobilized resources and people to attack communication problems of the day. (3) It sparked the collection, dissemination, and application of available and emerging knowledge about communication (National Project, 1960, p. 27-28). Since then, others have emphasized that NPAC also raised the status of information staffs, broadened the understanding and sharpened the skills of communicators, demonstrated the benefits of crossing interdisciplinary lines, added synergies through groups, individuals, and resources focused on shared interests and problems; sparked graduate study ambitions and research agendas; and extended communication training throughout the world (Miller, 1995; F. Byrnes, 1995; Miller, 2004; McKay, 2005; Miller & Taylor, 2006).

Building academic programs in agricultural communications. The research and training achievements of NPAC "have greatly strengthened development of agricultural communications in the academic community. They also reveal the value of close ties between (a) the courses, degree programs, research agendas and other academic programming and (b) the day-to-day activities, skills, creativity, and insights of those who practice as professionals within the discipline" (Cartmell & Evans, 2013, p. 65-66)

Connecting science with human communication. NPAC workshops provided what Robert Kern described as "the great leap forward" in connecting the communication practices in states and federal offices with a growing body of research and understanding about human interaction and

behavior. They fostered an interest in communication research, which popped up in many places "like bits of yeast in bread dough" (Kern, 2013, p. 15-16).

Influencing and developing careers. The NPAC communication training program also has had career-shaping impact. It "opened a new world to the editors of the time: new ways of thinking about and approaching communication, new ways of thinking about learning and teaching" (Miller, 1995, p. 7).

Authors of this analysis have personal experiences that may serve as useful case examples. After participation in or exposure to NPAC activities, they went on to careers in applied communication that drew on concepts and materials that supported their own academic and development-related work.

One co-author's involvement in the program began when his father worked with NPAC in the 1950s and early 1960s. He often helped his father around the home kitchen table to collate seminar training materials into packets for participants. Later, at Michigan State University, while studying for his M.A. in Communication from 1967-1968, he helped with the communication seminars as a junior staff member, gaining exposure to the seminar content and training approaches.

More than a decade later, working from 1980-1984 as a sociologist in the Outreach Division of the International Fertilizer Development Center (IFDC) in Alabama, he became heavily involved in communication-related training, helping to design, manage, teach in, and evaluate IFDC training programs. During those years, he participated in or led IFDC fertilizer marketing programs in Thailand, Nigeria, Indonesia, and Bangladesh; an IFDC fertilizer use training program in Kenya; and an International Center for Tropical Agriculture (CIAT) seed enterprise and marketing training program in Colombia.

Those experiences provided a valuable foundation when he began working in 1987 as a consultant to MTDI in the Management Communication for Development (MCD) Seminars. Over several years, he worked in nine MCD Seminars, six in English and three in Spanish, held in various cities around the United States. The experience raised his level of confidence as a trainer and provided experience in translating training materials in English into Spanish and doing training in Spanish, an area in which he had an initial baptism when he travelled to Colombia in 1984 to conduct the Green Revolution Game and a *Comunicación Eficaz* (Effective Communication) course in Spanish as part of the CIAT seed training program.

That experience built confidence to create a Spanish version of the MCD course and deliver it in Spanish to a group of Latin American census officials. Then, as a consultant or as part of a full-time job under various employment arrangements with USAID, he developed and delivered training courses in Spanish and English on Organizational Management for Sustainability (OMS) for NGOs in numerous Latin American and Caribbean countries.

The other co-author became aware of NPAC and the communication training program when he joined the University of Illinois faculty in 1962 to lead a new academic program in agricultural communications. He was marginally acquainted with communication theory and related research of the day. After undergraduate study in agricultural journalism, he gained nearly six years of professional experience in counseling, public information, and agricultural broadcasting and advertising. His masters study emphasized marketing and acquainted him with some research in areas such as social psychology and diffusion/adoption of innovations.

That background, while helpful to a neophyte faculty member, left gaping academic holes that NPAC and the communication training program helped fill. While the NPAC program had ended, NPAC training materials were available. They became a valued resource for his early teaching, opened his eyes to communication research, sparked his interest in doctoral study, and have continued to inform his academic work.

Implications, Lessons, and Opportunities

The communication training program of NPAC was clearly founded upon something enduringly valuable. As the project neared an end, leaders identified 12 lessons learned from NPAC, most dealing with structure and operations (National Project, 1960, p. 82-84). This analysis has traced the impact of the program through three succeeding structures and initiatives. A half century later, analysis suggests that perhaps five features represent core lessons for success, longevity, and impact in communication training. (1) A broad base of organizational stakeholders and diverse teaching partners contributed substantially. (2) Communication training programs operated successfully within varied structural and financial arrangements, including public/private partnerships. (3) Emphasis on a behavioral approach to communication provided dynamic enrichment, putting skills within a context for sound human communication. Behavioral theories and insights have changed dramatically since the 1950s (including diffusion/adoption theory), but communication training has changed with them. (4) The inductive approach to teaching and emphasis on "learning by doing" were progressive at the time and have worn well across the decades. (5) Similarly, an emphasis on testing and using new information technologies added a valuable dimension that continues to serve.

The current analysis also illustrates how communication training is vital across organizations, settings, and eras. Jonathan Colton recently called for "learning space" in agricultural development: "Knowledge about what does and does not work in scaling up needs to be harnessed through monitoring, evaluation, knowledge sharing, and training. This ensures that programs, as they grow, are adjusted based on the lessons learned" (2015, p. 59).

Today, societies face threatening issues such as population growth, environmental degradation, agricultural sustainability, rural poverty, food security and malnutrition, and social inequity – all of which relate to the interests of ACE and the *Journal of Applied Communications*. The challenges are domestic and international in scope. Perhaps the most relevant area where the legacy of the NPAC communication training program and the succeeding initiatives apply today is the ongoing challenge to donors, national governments, and the private sector (for profit and nonprofit) to reduce poverty in rural areas of the developing world. These are areas where agriculture continues to be the livelihood source and most immediately available licit opportunity for millions of small-scale farmers to raise their incomes. Effective communication is vital in providing a sustainable mix of appropriate productivity-enhancing agricultural technologies. It also enriches a range of institutional support services to grow vibrant agricultural value chains linking small-scale farmers to local, regional, and international markets. The challenges include food security, environmental sustainability, and social wellbeing, both in the developing world and in the United States.

The food price hikes of 2008 that so dramatically triggered food security-related turmoil throughout the developing world spurred the more developed countries to launch varied assistance efforts. These were targeted on addressing the food security challenge of how to most effectively reduce rural-based poverty, increase agricultural productivity, and address constraints to improving childhood nutritional deficiencies. In this regard, the United States launched its "Feed the Future" initiative. At base, the challenges that food security initiatives such as Feed the Future are continuing to face are in many ways those that earlier social action and adoption/diffusion research addressed. In turn, those initiatives informed the design of the communication training program of NPAC and succeeding initiatives described here. Central to the communication training program was a recognition of the importance of understanding the communication process and using this understanding (knowledge) to inform and shape more effective "applied communication" initiatives that serve human development at various levels farm/household, community, market, and governmental (local to international). This challenge continues today in many fields, but clearly and especially in the field of devising agricultural communication initiatives that are more effective in reducing rural-based poverty and improving food security. Communication training in the spirit of the NPAC program and these three following initiatives will be at the heart of success, globally.

Research Questions

Following are some research questions that may serve future professional development in the ACE-oriented arenas of agriculture, natural resources, and life and human sciences:

1. What communication training efforts, if any, are in operation now involving major features of the NPAC communication training program? Under what structural and financial arrangements are they conducted, by whom, among what learners, by what means, and with what results? In what ways do they vary by nation or culture?

2. Among the core features of the original NPAC communication training program and the successors of it, which have endured? Which have disappeared? Which are revised?

3. How do basic principles taught in the NPAC communication training program (e.g., communication process, principles of learning, social change and action, group process, diffusion/adoption, visualization, leadership) compare and contrast with those today?

4. What unmet needs and new opportunities exist today for communication training in support of professional development for educational communicators, extension personnel, scientists, administrators, or others in public agencies, the land-grant system, and other organizations? What new or emerging educational technologies and approaches can help serve those needs?

5. How can we measure more fully the economic and social impact of communication, including the training aspects of it?

Such research directions may help the *Journal of Applied Communications* continue and expand a remarkably durable, valuable, and global tradition in the professional development aspects of its own mission.

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