

Introduction

In the United Kingdom, agricultural studies are some of the fastest growing disciplines at the university level (Truss, 2016). In 2016, 19,000 students were pursuing an education in agriculture and related subjects (Truss, 2016). cursory reviews of college and university prospectuses in the U.K. show academic offerings in numerous agriculture-related disciplines, including animal science, agricultural economics, food science, horticulture, and crop and soil sciences, among many others. However, there is no specified academic discipline for aspiring agricultural journalists, agricultural public relations specialists, and agricultural advertising professionals. The agricultural communications academic discipline, which has its roots in the United States' land grant university system, was originally intended to prepare graduates for a wide range of job opportunities in communications in the food and agriculture industries (Evans & Bolick, 1982). In the U.S., numerous agricultural institutions provide classes/modules and degree programs that prepare students for communications-related careers in agricultural extension, academia, and government agencies, as well as in public relations and advertising in agribusiness (Priest, 2010). Anecdotally, there appears to be a gap between classes/modules and academic degree programs offered at the college and university level in the U.K. and the needs of the agricultural communications sector in the U.K. According to Ben Briggs, editor of the Preston, England-based *Farmers Guardian*, agricultural publications typically hire candidates who are either skilled in agriculture or skilled in journalism and communications, without the opportunity to choose a candidate who is institutionally trained in both (B. Briggs, personal communications, May 30, 2017).

In the U.S., university students can seek agricultural communications degrees to fit their intended career paths. Miller et al. (2015) identified 48 higher education degree programs devoted to the agricultural communications discipline in the U.S. This academic discipline is one of several fast-growing agriculture-related disciplines that prepare graduates to supply a growing demand for professionals in the U.S. agriculture industry (Miller et al., 2015). According to a United States Department of Agriculture report (USDA, 2015), an average of 35,000 college graduates are reported to fill 61% of the almost 60,000 high-skilled job openings in the overall sector in the U.S. This report projected 12% of job offerings will be in education, communication and governmental services; 15% in food and biometrics products; 27% in science, technology, engineering and mathematics (STEM) areas; and 46% in management and business (USDA, 2015).

According to Doerfert and Miller (2006), "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 skills that produce high quality graduates" (p. 21). As the agriculture industry in the U.K. continues to grow and as the profession of agricultural communications grows as well, a need exists to determine what professionals and students would expect academic curriculum in agricultural communications to emphasize. Logic dictates that those best suited to inform on this issue are the prospective employers of graduates with agricultural communications skills and the prospective students themselves.

Therefore, identifying and describing opinions of prospective employers and current agricultural students about the prospects of developing an agricultural communications academic discipline in the U.K. seems to be a logical next step. An understanding of the competencies employers would expect of agricultural communications graduates, as well as an understanding of what students would expect to learn, could inform the conceptualization and development of

the discipline in the U.K. The results of this descriptive study can provide faculty and administrators with empirical data that may be utilized to establish agricultural communications curricula and programs. The study can help to develop the discipline in a way that builds on the strengths of the current discipline in the U.S. but that takes into consideration the context of industry and academia in the U.K.

Purpose and Objectives

The purpose of this study was to characterize the perceptions of agricultural communications professionals and agricultural students in the U.K. to identify the competencies they would expect college/university-level agricultural communications students to develop and to identify classes/modules they would expect students to participate in as a part of a programmatic curriculum. The study was guided by the following specific objectives:

1. Determine professional competencies selected U.K. agricultural communications professionals and agricultural students would expect U.K. agricultural communications graduates to develop through a course of study at a U.K. higher education institution.
2. Determine classes/modules selected U.K. agricultural communications professionals and agricultural students would expect to be included in an agricultural communications course of study at a U.K. higher education institution.

Review of Literature

Issues related to agricultural production, food security and the environment permeate the political and corporate news in the U.K. Therefore, it stands to reason, professionals trained to communicate about these issues will continue to be needed in the workforce. To understand the factors involved in the creation of this new academic discipline in the U.K., it is important to understand the characteristics of the already-established discipline in the U.S., the higher education structure in the U.K., the state of the agricultural communications industry in the U.K., and the theoretical foundations behind the development of academic disciplines.

U.S. Agricultural Communications Curricula and Degree Programs

The first agricultural communications classes in the U.S. were taught in 1905 at Iowa State University, when colleges of agriculture determined a need to disseminate information from land grant university experiment stations (Duley et al., 1984; Doerfert & Miller, 2006). In the following 100 years, agricultural communications evolved into a true academic discipline with degree programs offered nationwide. As of 2015, 48 agricultural communications academic programs were identified and verified in the United States (Miller, et al., 2015). Many of these programs (88.5%) offer a Bachelor of Science degree (four-year undergraduate) (Miller et al., 2015). Students in the U.S. can also receive associate's (two-year undergraduate), master's, and doctoral degrees, as well as various minors and certificates. University students from across the U.S. can seek agricultural communications degrees to fit their desired career track, with variables such as specific communications emphasis (e.g., journalism, public relations, or advertising) and agricultural emphasis (e.g., livestock production, row crop production, or horticulture) in mind (Miller et al., 2015).

In the mid 1990s, as many agricultural communications programs were becoming more firmly established in U.S. academia, Terry et al. (1994) noted that "agricultural communications programs are designed to fulfill two primary needs of graduates: (1) provide a strong basis of both technical agriculture and sources for agriculture information, and, (2) introduce methods of

journalistic writing and other communication skills” (p. 94). This observation reaffirmed (Evans & Bolick’s (1982) recommendations that agricultural communications graduates must be able to disseminate agricultural information to those in and out of the agricultural industry. This realization of diverse audiences and diverse communications purposes requires agricultural communications curricula and programs to supply graduates with the competencies they need to qualify for a wide range of communications-related job opportunities in the broad agricultural and food sector (Evans & Bolick, 1982). These general needs of agricultural communications graduates have stood the test of time and appear frequently Corder and Irlbeck’s (2018) review of literature on agricultural communications curricula.

Sprecker and Rudd (1998) noted that agricultural communicators are not agriculturalists primarily, but are communicators with special knowledge of agricultural and food topics, issues, and technologies. To develop these types of professional communicators, students must complete significant credit hours of mass communication classes in addition to their agricultural science and technology classes. At Texas Tech University, Ahrens and Gibson (2014) reported that the agricultural communications program at one time required 29 credit hours (about 10 semester-long classes/modules) of mass communications coursework in the 1970s, but that requirement has grown to as many as 35 credit hours (about 12 semester-long classes/modules) of mass communications coursework. Large’s (2014) survey of U.S. programs showed that typically agricultural communications students in the U.S. can participate in a variety of semester-long business communications and mass communications classes, including Agricultural Communications Law, Communications Campaigns, Communications Theory, Electronic Communication in Agriculture, Ethics in Communications, General Agricultural Communications, Technical/Scientific Writing, and Writing for Agricultural Media. These courses are in line with Corder and Irlbeck’s (2018, p. 190) observation that “accuracy, good writing, proper planning, interviewing, verbal skills, and public relations” were important with the earliest agricultural communications curricula and continue to be important with current curricula.

Students in the U.S are also required to take a variety of classes/modules that teach the fundamentals of agricultural sciences and technologies in a multi-disciplinary or cross-disciplinary approach. Typical agricultural science and technology classes/modules include Agricultural Economics, Agricultural Education, Agronomy, Animal Science, Horticulture, Food Science, Environmental Science, and Pest Management (Large, 2014).

In addition to the multi-disciplinary nature of U.S. agricultural communication programs, the concept of experiential learning is also prevalent in the academic discipline (Miller et al., 2015; Rhodes et al. 2012). Typical experiential learning approaches include internships and capstone courses (Rhodes et al., 2012).

Agricultural Education and Communications in the U.K.

The higher education system in the United Kingdom differs from its counterpart in the United States in several ways. As of 2017, there were 110 universities and university colleges in the U.K. (Higher Education Funding Council for England, 2017). These institutions in England, Wales, Northern Ireland and Scotland offer the following types of degrees: certificates of higher education, foundation degrees, higher national diplomas, ordinary bachelor’s or first degrees, bachelor’s degrees with honors, master’s degrees, and doctorates (Leišytė, 2007). Many of these programs are, like the agricultural communications programs in the U.S., inclusive of experiential learning opportunities, including apprenticeships and placements (Tomlinson, 2008).

Along with the increase in students studying in agricultural disciplines in the U.K.,

employment opportunities in the U.K. agricultural and food industry are likely to continue to grow. As new technologies emerge, and as European and global markets change, skilled communicators who can help disseminate new technologies and who can use their marketing communications skills to promote U.K. agricultural and food products appear poised to increase in marketability.

Specialized agricultural education began in the United Kingdom in 1845 with the founding of the Royal Agricultural University (RAU, 2017b). The RAU motto is *Arvorum Cultus Pecorumque* meaning “Caring for the Fields and the Beasts” (RAU, 2017a). Today, RAU has more than 20 undergraduate programs across a range of agricultural disciplines. Some of the academic degree programs require students to take classes /modules such as Data Handling, Marketing Communication, and Contemporary Media Studies, but many do not have a journalism or communication type class/module in their curricula (RAU, 2017b).

Another example of a land-based (or agricultural) higher education institute is Scotland’s Rural College (SRUC). Three of Scotland’s agricultural institutions united to form the Scottish Agriculture College (SAC) in 1990 (Independent, 2013). In 2012 four partners—Barony, Elmwood, Oatridge Colleges and SAC—merged to create Scotland’s Rural College (Scotland’s Rural College [SRUC], 2017). The college now consists of six campuses across Scotland in Edinburgh, Aberdeen, Ayr, Barony, Elmwood, and Oatridge (SRUC, 2017). The vision of SRUC is “leading innovation and sustainable development in agriculture, land and the rural sector” (SRUC, 2017). SRUC offers several program areas including agriculture, animal care, environmental organic farming, and business (SRUC, 2017). SRUC and RAU offer some social science programs such as agricultural economics and rural policy, but agricultural communications is not included in either curricula.

Writtle University College was established in 1893, and is now located in rural Essex, England on approximately 200 hectares (Writtle University College, 2020a). WUC is acknowledged as a leader in providing “land-based, animal, environmental, design and sport education” (Writtle University College, 2020a, para. 1). It offers postgraduate courses in agriculture, animal science, equine, horticulture, among others (Writtle University College, 2020b). WUC also offers degree programs, college classes/modules, short training courses and certificates, as well as apprenticeships in multiple areas of agriculture and other industries, but the curricula typically do not include communications or journalism classes/modules.

Potential employers of agricultural communications graduates include members of the British Guild of Agricultural Journalists (GAJ), an organization which represents editors, journalists, broadcasters, photographers, and public relations/marketing professionals working in British agriculture, commercial horticulture, and other rural industries (British Guild, n.d.). The GAJ was formed in 1944 under the leadership of Sir Reginald Dorman-Smith, an agriculture minister for the British Government in 1939 and 1940. Informal luncheons were added as a way for government officials and journalists to meet and exchange government policies, priorities, and information. Now the Guild serves a wide variety of professional communicators involved in the agricultural industry in Britain and is a source of expertise in the field (British Guild, n.d.).

Gender and Agricultural Communications

In the U.K., opportunities for females to find professional careers in agriculture have begun to grow significantly. In 2016, 25% more women than men were enrolled in college and university level agricultural programs/courses (U.K. Department for Environment, Food, and Rural Affairs [DEFRA], 2016). Though the topic of how agricultural communications careers may provide an avenue to attract more female professionals into the agriculture industry has not

been well researched, one study provided support for this concept. Large's (2014) census of U.S. agricultural communications programs found that faculty—instructors and professors of all academic ranks—consisted of 25% more females than males. Additionally, new data published by Data USA (2020) indicate that nearly 80% of recent graduates from U.S. agricultural communications programs were female. These data indicate that the agricultural communications profession could indeed hold potential for professional opportunities for women in the U.K. agriculture industry.

Methods

To achieve the objectives of this study, two quantitative, descriptive surveys were conducted online using Qualtrics. The survey methodology was guided by Groves et al. (2009) and Adams and Cox (2008) as well as by Creswell (2008) and Dillman (2007). Subjects selected through non-probability, purposive sampling included current members of the British Guild of Agricultural Journalists ($N = 200$) and students studying agriculture at Scotland's Rural College (SRUC) and Writtle University College (WUC) ($N = 1,575$). Purposive sampling involves choosing participants deliberately based on qualities the participants possess. This technique does not require a set number of participants or respondents, and the response rate is simply the percentage of people who were willing to complete the survey, but the findings of such surveys are not generalizable outside the sample (Cozby & Bates, 2020; Etikan, et al., 2016).

GAJ membership consists of editors, journalists, broadcasters, photographers and PR/marketing specialists working in agriculture (GAJ, 2017). The GAJ members were selected because of their expertise in agricultural communication related fields and because they are potential employers of students in an agricultural communications academic program. Student respondents from SRUC were currently studying in multiple programs across agriculture-related disciplines ($n = 1,525$), and respondents from WUC ($n = 50$) were studying specifically in the agriculture BSc honors program. These students were selected because they had experience in and around agricultural academic programs and provided a student-oriented perspective that could inform the study. Human subjects protocol was approved by the University of Arkansas Institutional Review Board (#1711083233).

An online, web-based (Qualtrics) survey was developed, containing questions that would evoke responses regarding participant demographics and opinions on the development of an agricultural communications academic discipline in the U.K. Several previous agricultural communications curriculum studies served to guide the development of questions related to expected competencies and constructs (Large, 2014; Morgan, 2012; Maiga, 2011; Deering, 2005; Sprecker & Rudd, 1997, Terry et al., 1994). An expert panel consisting of three U.S. faculty members experienced in survey research and two U.K. agricultural journalism professionals reviewed the survey to ensure face validity. Also, to improve instrument validity, cognitive interviews were conducted with three subjects who provided feedback on the usability of the survey, resulting in minor edits to the survey questions.

To recruit participants, an introductory email was sent to college and university administrators to be forwarded to students in agricultural programs at the two universities, and a similar email was sent to a list of all active GAJ members. In multiple follow up attempts, links to the Qualtrics survey were emailed to the respondent groups to improve response rate (Schaefer & Dillman, 1998; Dillman, 1991; Linsky, 1974; Scott, 1961). Post-hoc reliability was addressed using Cronbach's alpha (1951). According to Mujis (2004), above .700 is considered reasonable reliability for research purposes, and the instrument employed in this study met this criterion based on post-hoc evaluation.

The number of completed surveys from U.K. agricultural communications professional (GAJ members) was $n = 23$, resulting in a response rate of 11.5%. The aggregate number of student respondents from SRUC and WUC was $n = 67$ (4.3%).

Descriptive statistics were used to establish frequencies, means, and percentages related to the study objectives. Comparative statistics were utilized to compare collective frequencies, means, and percentages for experiences in agriculture, competencies desired from an agricultural communications graduate, and classes/modules that would be expected in an agricultural communications program. Statistical hypothesis tests were used to determine the chi-square statistic and p-value of the relationships between agricultural communication professionals and agricultural communication students' opinions of competencies.

Results

Participant Demographics

Agricultural communications professional respondents were asked questions related to their gender, education level, area of professional specialization, years in the field, and agricultural experiences (see Table 1). Questions for agricultural students focused on gender and agricultural experiences (see Table 2).

Table 1

Demographic Characteristics of Participating Agricultural Communications Professionals (n = 23)

	<i>f</i>	<i>%</i>
Gender		
Female	15	65.22
Male	8	34.78
Level of Education		
Bachelor's	20	86.96
Master's (MA, MLitt, MSc, etc.)	5	21.74
Higher National Diploma (HND)	3	13.04
None	1	4.34
Higher National Certificate (HNC)	0	--
Diploma of Higher Education	0	--
Foundation Degree	0	--
Doctorate	0	--
Other	0	--
Professional Specialization		
PR/Marketing Specialist	16	69.57
Print Journalist	13	56.52
Print Editor	8	34.78
Broadcaster	3	13.04
Photographer	2	8.70
Other	1	4.35

	<i>f</i>	<i>%</i>
Years in Communication/Journalism Field		
11-20	9	39.13
31-40	6	26.09
1-10	5	21.74
21-30	3	13.04
Experiences in Agriculture		
Live(d) in a rural area	20	86.96
Work(ed) in a rural area	16	69.57
Work(ed) for an agricultural business	16	69.57
Work(ed) on a farm	14	60.87
Live(d) on a farm	12	52.17
Completed university agricultural class/module	10	43.48
Own(ed) an agricultural business	5	21.74
Own(ed) a farm	3	13.04
Other	2	8.70
Completed secondary school agricultural class/module	1	4.35
None	1	4.35

Note. Respondents were able to choose more than one response for level of education, professional specialization, and agricultural experience.

Agricultural communications professionals who responded were 35% male and 65% female. Most respondents had at least obtained a bachelor's degree (87%) while only 22% had a master's degree. Most professionals identified themselves as PR/marketing specialists (70%), print journalists (57%), or print editors (35%). Professionals' years in the communication/journalism field varied from 1 to 40 years, with only five participants who had less than 11 years of professional experience. Most agricultural communications professionals reported living or having lived in a rural area (87%), having worked in a rural area (70%), having worked for an agricultural business (70%) and having worked on a farm (61%). Forty-three percent reported having completed an agricultural class or module at the university level. Only one respondent indicated they had no agricultural experience.

Table 2*Demographic Characteristics of Participating Agriculture Students (n = 107)*

	<i>f</i>	<i>%</i>
Gender		
Male	74	69.16
Female	33	30.84
Agricultural Experiences		
Work(ed) on a farm	68	63.55
Live(d) in a rural area	55	51.40
Work(ed) in a rural area	54	50.47
Live(d) on a farm	49	45.79
Work(ed) for an agricultural business	34	31.78
Completed secondary school agricultural class/module	18	16.82
Own(ed) a farm	11	10.28
Own(ed) an agricultural business	10	9.35
None	10	9.35
Other	7	6.54

Note. Respondents were able to choose more than one response for agricultural experience.

A majority of agricultural students responding to this survey were female (69%). Most students reported have some experience in agriculture, with many of them reporting they have worked or are currently working on a farm (64%) and/or in a rural area. About half the students lived in a rural area (51%) and/or on a farm (45%).

Expected Competencies and Classes/Modules

The second and third objectives of this study were to describe the competencies agricultural communications professionals and agricultural students would expect students to develop through participating in a degree program and to describe the classes/modules both groups thought would be important for a program to offer. The final objective was to compare the two group's opinions on these issues. Table 3 describes the findings related to competencies as well as comparisons of the two groups' mean responses.

Table 3*Agricultural Communications Professionals and Agricultural Students' Ratings of Important Competencies*

	<i>Agricultural Communications Professionals</i>	<i>Agricultural Students</i>	X^2	<i>p</i>
	<i>M (SD)</i>	<i>M (SD)</i>		
<i>Agricultural Knowledge</i>				
Understand the impact of government and political involvement on agriculture	1.39 (.58)	1.26 (.53)	1.98	0.37
Understand public perceptions of agricultural issues	1.52 (.59)	1.41 (.65)	2.28	0.52
Understand the agricultural community in the U.K.	1.65 (.65)	1.38 (.59)	4.51	0.10
Understand the cultural impact of agriculture in the U.K.	2.04 (.71)	1.42 (.62)	15.52	0.0004
Describe the international impact agriculture creates	2.09 (.67)	1.46 (.62)	16.23	0.0003
<i>Writing</i>				
Interview a source effectively	1.30 (.47)	1.60 (.77)	3.25	0.35
Understand and practice ethical journalism	1.39 (.5)	1.88 (.77)	7.89	0.048
Write features on agricultural topics	1.40 (.5)	1.48 (.62)	3.45	0.18
Write using appropriate journalistic style	1.43 (.51)	1.83 (.74)	3.95	0.27
Appropriately attribute journalistic sources	1.52 (.51)	1.83 (.79)	4.35	0.23
Write news stories	1.52 (.59)	1.96 (.78)	6.71	0.08
Write using appropriate grammar and punctuation	1.57 (.51)	1.55 (.76)	3.07	0.38
Write for print media	1.65 (.49)	1.95 (.74)	4.73	0.19
Write for the internet	1.78 (.60)	1.93 (.79)	2.08	0.56
Write social media posts	1.83 (.72)	1.90 (.79)	0.63	0.89
Write opinion columns	2.04 (.82)	2.04 (.76)	4.95	0.18
<i>General Communications</i>				
Identify appropriate and newsworthy story ideas	1.09 (.29)	1.80 (.70)	21.64	<0.0001
Use effective nonverbal communication	1.39 (.50)	1.72 (.64)	5.10	0.08
Use a variety of media to inform the public	1.48 (.79)	1.52 (.71)	0.69	0.71
Practice effective oral communication	1.57 (.59)	1.43 (.58)	1.60	0.45

Layout and Editing

Effectively edit and proofread the works of others	1.50 (.60)	1.69 (.72)	1.39	0.71
Appropriately attribute journalistic sources	1.86 (.77)	1.81 (.78)	1.06	0.79
Identify appropriate audience	1.45 (.51)	1.47 (.60)	1.65	0.48
Use correct editing marks and symbols	1.91 (.81)	1.82 (.74)	0.94	0.82
Edit layout and designs of publications	1.95 (.84)	1.83 (.78)	0.41	0.94

Broadcasting

Interview a source effectively	1.27 (.46)	1.52 (.73)	2.49	0.48
Use appropriate tone and voice	1.41 (.50)	1.65 (.66)	2.64	0.45
Present effective video/radio broadcast	1.77 (.75)	1.68 (.73)	1.05	0.79
Budget and supervise video/radio production	2.09 (.61)	2.00 (.79)	3.03	0.39
Understand technical aspects of broadcasting equipment and editing software	2.09 (.81)	2.15 (.87)	0.37	0.95

Technology

Navigate the Internet and download important information	1.45 (.60)	1.55 (.70)	0.55	0.91
Effectively use social media	1.68 (.78)	1.65 (.76)	5.68	0.13
Effectively utilize media equipment (cameras, recorders, speakers, etc.)	2.05 (.58)	1.98 (.73)	2.24	0.52
Use spreadsheet software	2.18 (.73)	1.87 (.77)	4.03	0.26
Use photo editing software	2.27 (.70)	2.23 (.71)	1.41	0.70
Design websites and blogs	2.59 (.73)	2.06 (.86)	12.33	0.006

Note. Questions were rated on a 4-point scale with 1 being very important, 2 being important, 3 being somewhat important and 4 being not at all important. Level of significance was set *a priori* at $p < .05$

The communications professionals rated *all* the listed competencies in the range of very important or important. Competencies they identified as most important for agricultural communications graduates included *identifying appropriate and newsworthy story ideas* ($M = 1.09$), *interviewing a source effectively* for broadcast journalism ($M = 1.27$), *interviewing a source effectively* for print journalism ($M = 1.30$), *using effective nonverbal communication* ($M = 1.39$), *understanding and practicing ethical journalism* ($M = 1.39$), and *using a variety of media to inform the public* ($M = 1.39$). General communications and writing competencies accounted for four of the top six most important competencies in the opinions of agricultural communications professionals. Relative to other competencies, the professionals rated *designing websites and blogs* ($M = 2.59$), *using photo editing software* ($M = 2.27$), *using spreadsheet software* ($M = 2.18$), *understanding technical aspects of broadcasting equipment and editing*

software ($M = 2.09$), *budgeting and supervising video/radio production* ($M = 2.09$), and *describing the international impact agriculture creates* ($M = 2.09$) lower in importance, yet still important overall. Three of the six least important competencies as identified by agricultural communications professionals are in the technology competency category.

As with the professionals, students rated *all* the listed competencies as very important or important. They identified the most important overall competency as the ability to *understand the impact of government and political involvement on agriculture* ($M = 1.26$). In fact, four of the students' top six most important competencies were in the general category of agricultural knowledge. Also included is *understanding the agricultural community in the U.K.* ($M = 1.38$), *understanding public perceptions of agricultural issues* ($M = 1.41$), *understanding the cultural impact of agriculture in the U.K.* ($M = 1.42$). The ability to *practice effective oral communication* ($M = 1.43$) was an important general communications competency for students, and the ability to *describe the international impact agriculture creates* ($M = 1.46$) was also important in students' opinions. Relative to the other competencies, students viewed as less important the abilities to *use photo editing software* ($M = 2.23$), *understanding technical aspects of broadcasting equipment and editing software* ($M = 2.15$), the ability to *design websites and blogs* ($M = 2.06$), the ability to *write opinion columns* ($M = 2.04$), *budgeting and supervising video/radio production* ($M = 2.00$), and effectively utilizing media equipment ($M = 1.98$). For students, three of the six least important competencies were in the general category of communications technology.

In comparison across groups, professionals' and students' opinions regarding important competencies did not vary greatly. The sample means across all ratings were 1.71 for professionals and 1.73 for students, using the four-point scale. However, Chi-square tests showed significant differences between the groups' collective opinions on the importance of the following five competencies: *identify appropriate and newsworthy story ideas* ($p < .00001$), *describe the international impact agriculture creates* ($p = 0.0003$), *understand the cultural impact of agriculture in the U.K.* ($p = 0.0004$), *design websites and blogs* ($p = 0.006$), and *practice ethical journalism* ($p = .048$). The first two of these areas of disagreement were in the category of agricultural knowledge competencies, with students placing a significantly higher priority than professionals on equipping agricultural communications students with an understanding of the cultural and international aspects of U.K. agriculture as well as on having the technological skill to design websites and blog. Conversely, the professionals placed a higher importance on understanding and practicing journalistic ethics than did the students.

The two groups were also asked to rate the importance of classes/modules in which students in an agricultural communications program might participate. Table 4 describes findings related to classes/modules and also shows comparisons between the professionals' and students' responses.

Table 4*Agricultural Communications Professionals and Agricultural Students' Ratings of Important Classes/Modules*

	<i>Agricultural Communications Professionals</i>	<i>Agricultural Students</i>	X^2	<i>p</i>
	<i>M (SD)</i>	<i>M (SD)</i>		
<i>Agricultural Communications Related Classes/Modules</i>				
News Reporting and Feature Writing	1.27 (.46)	2.06 (.76)	19.51	0.0002
Technical Writing	1.36 (.49)	1.97 (.80)	10.40	0.02
Communicating Agriculture to the Public	1.59 (.67)	1.32 (.59)	5.99	0.11
Communication Law and Ethics	1.64 (.79)	1.88 (.89)	2.97	0.40
Apprenticeship/internship/placement/practicum in agricultural journalism	1.68 (.65)	1.85 (.90)	2.56	0.46
Electronic (Online) Communication in Agriculture	1.73 (.63)	2.02 (.69)	2.96	0.40
Communications Campaigns	1.73 (.78)	2.06 (.82)	3.66	0.30
Public Relations Principles	1.73 (.70)	1.85 (.79)	1.37	0.71
Video and Radio Broadcast Production in Agriculture	1.77 (.69)	2.08 (.77)	2.81	0.42
Risk and Crisis Communications in Agriculture and Natural Resources	1.77 (.81)	1.64 (.74)	1.23	0.75
Development of Agricultural Publications	1.77 (.61)	1.88 (.81)	1.8	0.61
Photojournalism	2.18 (.59)	2.33 (.81)	3.73	0.29
Agricultural and Environmental Photography	2.23 (.53)	2.00 (.78)	6.08	0.11
Advanced Public Speaking	2.32 (.84)	1.91 (.76)	4.43	0.22
Graphic Design	2.73 (.63)	2.60 (.84)	2.96	0.40
<i>Agricultural Science Related Classes/Modules</i>				
Agricultural Business	1.86 (.64)	1.45 (.64)	9.78	0.02
Animal Science	2.05 (.65)	1.43 (.68)	21.56	<0.0001
Agricultural Economics	2.05 (.79)	1.49 (.64)	11.07	0.01
Agronomy	2.09 (.75)	1.55 (.81)	12.38	0.006
Environmental Sciences	2.14 (.71)	1.57 (.77)	14.25	0.002
Horticulture	2.18 (.73)	2.17 (.94)	3.41	0.33
Food Science	2.23 (.69)	1.72 (.80)	14.52	0.002
Agricultural Education	2.27 (.77)	1.43 (.66)	24.54	<0.0001
Pest Management	2.32 (.78)	1.51 (.75)	19.91	0.0002

Note. Questions were rated on a 4-point scale with 1 being very important, 2 being important, 3 being somewhat important and 4 being not at all important; Level of significance was set *a priori* at $p < .05$.

Professionals identified all the potential classes/modules as important or very important for agricultural communications students to experience; however, the group mean of the communications classes/modules ($M_g = 1.83$) was lower (indicating a higher importance) than the group mean for the agricultural science- classes/modules ($M_g = 2.13$). Communications-related classes/modules that were most important to professionals included *News Reporting and Feature Writing* ($M = 1.27$), *Technical Writing* ($M = 1.36$), *Communicating Agriculture to the Public* ($M = 1.59$), and *apprenticeships, internships, placements, and/or practicums in agricultural journalism* ($M = 1.68$). *Agricultural and Environmental Photography* ($M = 2.23$), *Advanced Public Speaking* ($M = 2.32$) and *Graphic Design* ($M = 2.73$) were rated lower in importance than the other communications-related classes/modules. The professionals identified *Agricultural Business* ($M = 1.86$) to be the most important agricultural science class/module for an agricultural communications student to experience. *Animal Science* ($M = 2.05$) and *Agricultural Economics* ($M = 2.05$) were also rated as important. Relative to these, courses that were rated less important (yet still important) by professionals included *Pest Management* ($M = 2.32$), *Agricultural Education* ($M = 2.27$), and *Food Science* ($M = 2.23$).

Agricultural students, contradicting the professionals' ratings, rated agricultural communications courses as less important ($M_g = 1.96$) than agricultural science courses ($M_g = 1.59$), yet all suggested courses were perceived as important or very important. Communications courses titled *Communicating Agriculture to the Public* ($M = 1.32$), *Risk and Crisis Communications in Agriculture and Natural Resources* ($M = 1.64$), *apprenticeships, internships, placements, and/or practicums in agricultural journalism* ($M = 1.85$), and *Public Relations* ($M = 1.85$), were perceived by students to be very important classes/modules for an agricultural communications graduate. *Video and Radio Broadcast Production* ($M = 2.08$), *Photojournalism* ($M = 2.33$) and *Graphic Design* ($M = 2.60$) were not viewed as being as important as the other classes/modules, but still were important. Agricultural science classes/modules that students identified as important included *Agricultural Education* ($M = 1.43$), *Animal Science* ($M = 1.43$) and *Agricultural Business* ($M = 1.45$). Students rated *Horticulture* ($M = 2.17$) as the least important agricultural science class/module, yet it was still rated as important.

Comparison of the two group's responses showed that professionals' ratings regarding important classes/modules were slightly different across all classes/modules than students' ratings. The sample group means were 1.95 for professionals and 1.82 for students, using the four-point scale. There were also significant differences in opinions ($p < .05$) about the importance of 10 of the 24 classes/modules proposed. Opinions differed about the importance of two communications classes/modules, *News Reporting and Feature Writing* ($p = 0.0002$) and *Technical Writing* ($p = 0.02$), with both courses being rated higher in importance by the professionals than by the students. Further, opinions about the importance of eight out of the nine agricultural science classes/modules were statistically different, including *Agricultural Education* ($p < 0.0001$), *Animal Science* ($p < 0.0001$), *Pest Management* ($p = 0.0002$), *Food Science* ($p = 0.0023$), *Environmental Sciences* ($p = 0.0026$), *Agronomy* ($p = 0.0062$), *Agricultural Economics* ($p = 0.0114$), and *Agricultural Business* ($p = 0.0205$). In all instances, students rated the importance of the agricultural science courses significantly higher than professionals. The four class/modules that professionals and students agreed upon the closest included *Risk and Crisis Communications in Agriculture and Natural Resources* ($p = 0.75$),

Public Relations Principles ($p = 0.71$), *Development of Agricultural Productions* ($p = 0.61$), and *apprenticeship/internship/placement/practicum in agricultural journalism* ($p = 0.46$).

Conclusions and Discussion

For U.K. colleges and universities considering adding curriculum in the discipline of agricultural communications, this study's conclusions and recommendations could provide important guidance. The findings of this study led to some key conclusions related to the demographics of the study participants and their opinions on competencies they would expect student to master. The findings also provided insight into classes/modules study participants would expect students to participate in as a part of a full agricultural communications curriculum.

While the conclusions of this study are well-supported by the findings, they should be interpreted with some limitations in mind. Key limitations were the relatively small sample size of both students and professionals and the non-probability sampling method, both of which dictate that the conclusions may not be generalized outside the survey participants. Additionally, only 11.5% of the GAJ members responded to the survey and only 4.3% of students in the agriculture programs at SRUC and WUC responded to the survey. Another possible limitation was the cultural and semantic differences between academic systems in the United Kingdom (the subjects' country) and United States (the researchers' country). It is possible in some instances that the survey questions and/or the overarching concepts guiding the survey could have been misunderstood as a result of differences across cultures.

Still, with these limitations in mind, the study's conclusions and recommendations appear to constitute a solid starting point for further discussion about what an agricultural communications academic discipline in the U.K. might look like one day.

Participant Demographics

Analyses of the participants' demographics resulted in some clear conclusions about the students and professionals who were surveyed regarding gender, level of education, areas of communications specialization, and the requirement of having an agricultural or rural background.

The agricultural communications professionals participating in the survey were predominantly female, yet the student respondents, who were all studying agriculture at their respective institutions, were mostly male. While nationally in the U.K. females now outpace males in enrollment in agricultural academic programs (DEFRA, 2016), this does not appear to be the case among the survey participants at SRUC and WUC. However, the high percentage of female professionals who responded in this study indicates that there is abundant opportunity for female graduates to find work in agricultural communications in the U.K. This is in line with Data USA's (2020) estimation that females make up 79.6% of the agricultural communications workforce in the U.S.

Agricultural communications professionals' specific communications roles were varied, but the majority reported working as public relations/marketing specialists and as agricultural journalists. These conclusions could be key in identifying important aspects of prospective agricultural communications curriculum.

Further, many (but not all) of the professionals and students indicated they had at least some experience with and background in agriculture and rural living. So, while such an agricultural or rural background is common, it is not required in order to participate in either

agricultural communications as a student nor as a professional. This fact could help inform future recruiting for academic programs.

Professional Competencies

According to Truss (2016), as new technologies emerge so does the need for skilled communicators who can disseminate technology to promote U.K. agriculture. Agricultural communications professionals tended to identify journalistic and technical writing competencies as important and technology-related skills not as important. The professionals and students agreed that skills related to technology are less important than the other five competencies, with three of the six least important skills, in both groups, identified within the technology competency. Among the top skills, professionals rated identifying journalistic story ideas and interviewing sources the highest in importance. This conclusion is supported in the literature by Ahrens and Gibson's (2013) case study at Texas Tech University, which described an agricultural communications program that had, over time, added significantly more communications classes/modules and reduced the number of agriculture-focused classes/modules. The conclusion also aligns with Sprecker and Rudd's (1998) observation that agricultural communicators are not primary agriculturalists, but instead are communicators with special knowledge of the agriculture industry and its issues, practices, and technologies.

Agricultural students, however, rated topics related to understanding agricultural issues as most important for agricultural communications students—more important in most cases than communications skills. It appears that the students envisioned agricultural communications graduates as professionals who would be experts in agriculture with solid communications skills—the opposite, in a way, of how Sprecker and Rudd (2013) described agricultural communicators in the U.S.

Classes/Modules

While all classes/modules listed in the survey were deemed important by the study participants, the results clearly showed that professionals placed the highest value on communications topics, and the students placed a higher importance on science-focused topics while still acknowledging the importance of communications classes/modules. The top four classes/modules for professionals were all communications courses. Conversely, three of the four most important classes/modules as rated by students were science courses, demonstrating their apparent belief that technical knowledge is more important in the classroom than communications skills.

Another solid conclusion was both groups' high rating of the importance of an apprenticeship or practical experience. While experiential learning is a well-known tenet in agricultural education in the U.S. as well as in the U.S. agricultural communications discipline (Rhodes, Miller, & Edgar, 2012), it also is a foundation in the U.K. educational system. Tomlinson (2008) noted that U.K. higher education students understand the need to gain experiences outside of the required curriculum.

Students' vs. Professionals' Opinions

Conclusions related to the differences between professionals' opinions and students' opinions in this study were insightful. Opinions on only two of the 15 listed communications competencies were determined to be statistically different between the two groups, indicating solid agreement among the two groups in terms of important competencies. However, the

disagreement appeared to focus on the importance professionals placed on writing skills. Morgan's (2012) survey of U.S. agricultural communications professionals showed that writing was the most important communications skill for U.S. students to develop.

The two groups' opinions on important coursework were not in line with each other. Their ratings on 10 of the 24 proposed classes/modules were statistically different, eight of which were agricultural science courses. Professionals tended to rate communications classes/modules as higher in importance than science class/modules, while students rated science classes/modules as higher in importance than communications courses. The professionals' opinion on the importance of communications classes is in line with results provided by Morgan (2012) and Morgan and Rucker (2013), as well as in Corder and Irlbeck's (2018) literature review on this subject, where agricultural professionals and agricultural communications faculty stated that communications skills are what will land an agricultural communications graduate a job, though the agricultural knowledge is an important secondary benefit and still very important. The results of this survey of UK professionals and showed that every agricultural science class/module proposed was rated as very important or important, though students consistently rated all courses higher than the professionals did.

Recommendations and Implications

Additional, more targeted, and more broad studies should be conducted with potential employers of U.K. agricultural communications graduates to further define the industry need in terms of numbers of employees and types of positions available. If an agricultural communications academic discipline is established in the United Kingdom, a longitudinal study should be conducted to report on the placement and professional success of the graduates. Additionally, secondary-school students' opinions about considering agricultural communications as a career path could help inform curriculum development at the college/university level. Both qualitative and quantitative research on these issues would be helpful in informing potential growth of the academic discipline.

If the current study were to be repeated, it is recommended to increase the data collection period to gain more respondents. A higher response rate, especially from the agricultural communications professionals, would increase the accuracy and generalizability of the findings (Dillman, 1991). Additional material should be added to the survey instrument to determine the locations of the respondents, especially student respondents. This study should also be recreated in more diverse regions across the United Kingdom to determine if geographical and cultural difference would affect the study and, if so, to describe those differences so that they can be addressed in curriculum planning.

Agricultural communication professionals tended to rate the writing skill competencies higher than agriculture students. The data shows that professionals understand the importance of writing, however, students do not think it is as important as other competencies associated with technology-related skills. So, while professionals appear to place great importance on writing in the workplace, students seem to focus less on the importance of writing skills and more on the future of technology and its importance in their future careers. A stronger understanding of the potential gap between what students consider important and what professionals consider important could be helpful in guiding the direction of the agricultural communications discipline but could also be helpful in informing recruiting practices for emerging academic programs.

Practical Recommendations

The task of adding agricultural communications courses to existing curriculum will likely take time, so prioritizing the most important classes to be added first will be key. Based on the results of this study, it is recommended the U.K. institutions use the following list of potential agricultural communications classes/modules as a starting point for an agricultural communications program: Apprenticeship/internship/placement/practicum in agricultural journalism, Communicating Agriculture to the Public, Communications Campaigns, Communications Law and Ethics, Development of Agricultural Publications, Electronic (Online) Communications in Agriculture, News Reporting and Feature Writing, Public Relations, Risk and Crisis Communications in Agriculture and Natural Resources, and Technical Writing. Students also should take technical agriculture coursework in Agricultural Business, Agricultural Economics, Agronomy, and Animal Science.

Conclusion

An obvious need to describe the perceptions of prospective employers and current agricultural students about the prospects of developing an agricultural communications academic discipline in the U.K. provided the overarching impetus for this study. As with any new endeavor, gathering information and developing plans based on sound data and solid logic is the best approach. So, using this empirical data as a starting point in discussions about agricultural communications program development seems to make good sense.

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