1890 Land-Grant University Extension: A Content Analysis of Accessibility and Online Presence

Despite President James Buchanan vetoing the first Morrill Act in 1857, Vermont Representative, Justin Smith Morrill continued to work to see it pass as a law (Lee & Keys, 2013). After finally being signed by President Abraham Lincoln, the Morrill Act of 1862 established a land-grant institution in each state. This bill allowed for states to receive federal land within the state to use to establish training institutions in agriculture and mechanical arts (Kelsey & Hearne, 1955). Prior to the Morrill Act of 1862, private institutions provided the majority of higher education in the United States, and the access to these institutions was limited to those who could afford to attend (APLU, 2012). Today, at least one land-grant institution exists in every state and territory, as well as the District of Columbia (APLU, 2012). The Morrill Act of 1862 allowed for a new partnership to be developed between each state and the federal government to establish what is known today as one of the great strengths of American higher education (Lee & Keys, 2013).

Prior to the Morrill Act of 1890, which established a land-grant institution to serve African-American individuals in segregated states, higher education for African-Americans was primarily limited to private universities such as Howard University and Fisk University (Lee & Keys, 2013). After the Civil War, the South was held under the basis of separate but equal. Separate but equal required Southern states to establish schools specifically for its African American citizens if they were not willing to allow black students access to the already existing public universities (Comer, Campbell, Edwards, & Hillison, 2006). The first public institution to be established for the education of black citizens was Alcorn State University in Mississippi, which later received the 1890 land-grant designation for the state (Alcorn State University, n.d.).

With the government's recognition of the importance of educating the nation, the second Morrill Act of 1890 was passed because African-American citizens could not benefit from the 1862 Morrill Act in Southern states (Lee & Keys, 2013). This Act required Southern states to establish a second land-grant college to serve the needs of black citizens in the training of agriculture and mechanical arts (Comer et al., 2006). The Morrill Act of 1890 barred the allocation of funds to states that made admissions decisions based on race unless at least one land-grant college for African Americans was established (Lee & Keys, 2013). With the passing of the 1890 Morrill Act, 17 states located in the South or bordering the South took advantage of this funding and established these institutions (Comer et al., 2006).

Cooperative Extension

Cooperative Extension is a publicly-funded, education system providing non-formal education to individuals through the links between the education and research resources of the United States Department of Agriculture, land-grant universities, and administration within the county units (Seevers, Graham, Gamon, & Conklin, 1997). The Hatch Act of 1887 played an important role in setting the stage for the establishment of Extension and continues to be a vital part of Extension's success today. This act appropriated funds from the federal government to establish agricultural research stations in each state connected to the land-grant institution (Lee & Keys, 2013). With the success of these agricultural experiment stations, it was necessary to establish methods to educate the public. The creation of farm institutes to educate farmers regarding new production methods filled a void in American education. These farm institutes allowed for a place where college professors and farmers interacted at meetings, and it provided an opportunity for person-

to-person communication and interaction between those who possessed information and the farmers and ranchers who needed it (Rasmussen, 1989).

Many agricultural colleges and schools started having institutes, trainings, and meetings where lecturers presented information to the public about agriculture. These became known as "moveable schools" (Comer et al., 2006). Seaman Knapp, who is often credited as being the father of Extension, helped develop this movement. Knapp felt farmers would not adopt changes in their production practices simply from observing them on public lands and facilities, but if they carried out these new production practices on their own farms, they would be more likely to adopt the change (Comer et al., 2006). The instruction and training offered at these experiment stations as well as "movable schools" that went from town to town doing small demonstrations served as the foundation for what would later become the Extension service (Seevers et al., 1997).

When signing the Smith-Lever Act of 1914 into law, President Woodrow Wilson considered the Extension service one of the most significant and far-reaching pieces of legislature adopted by the government to specifically serve adult education (Rasmussen, 1989). The U.S. Congress originally funded the Extension service to educate rural populations in both academic and life skills in an off-campus, non-formal setting (Seevers et al., 1997). Extension programs through the land-grant universities provided programs for community and rural education. These programs provided immediate and direct impacts on the livelihood of the citizens in the communities that chose to take part in these programs, and they still make these same impacts today (Lee & Keys, 2013).

Because the Hatch Act of 1887 was passed prior to the Morrill Act of 1890, the 1890 land-grant institutions were not able to take advantage of this act and establish their own research stations. It was not until the Evans-Allen Act of 1977 that funding for food and agricultural research specifically at 1890 land-grant universities was provided (Lee & Keys, 2013).

Despite the late appropriation of funds for 1890 land-grant Extension programs, Extension work was taking place at the Tuskegee Institute in Alabama soon after the establishment of the institution (Comer et al., 2006). Booker T. Washington encouraged George Washington Carver to come to Tuskegee to work as an instructor of practical farming. Using the foundation Knapp had established, Washington had Carver visit rural communities throughout Macon County. Carver used the moveable schools model as he hauled his tools and equipment in a buggy for demonstrations (Comer et al., 2006). Later, Carver and Washington would work to put on the first Negro Farmers Conference. This conference hosted more than 500 farmers from Alabama (Campbell, 1969; Denton, 1993).

While the methods Extension uses to disseminate information have changed over the years, the philosophy has not. The "county agent" might no longer visit individual farms and provide technical advice, but the Extension agent and Extension programs are still a source of knowledge for both farmers and homeowners today (Seevers et al., 1997).

Extension's Role Today

Extension personnel serve the needs of a variety of audiences (Seevers et al., 1997). One of the main strengths of the 1890 land-grant Extension programs is its ability to reach individuals who are limited by their social and financial resources. Extension programs through 1890 land-grants aid in improving the access to positive opportunities through outreach education for these populations (USDA, n.d.).

Funding distribution at the state level has been an ongoing issue for 1890 land-grants. At the federal level, equal appropriations of funds to 1862 land-grants and 1890 land-grants has been consistent. However, at the state levels, most 1890 institutions do not receive the one-to-one

matching of funds of their 1862 counterpart (Lee & Keys, 2013). Of the 18 states with an 1890 institution, 10 of these states do not provide the one-to-one funding to their institution. Further, Alabama provides one-to-one funding to only one of its two 1890 institutions. The only state that provides greater than a one-to-one match to its 1890 institution is Mississippi (Lee & Keys, 2013). As these institutions often serve individuals with a lower socioeconomic status, it is important they receive their share of funding so they can best develop programs and materials these audiences need (USDA, n.d.).

The 1890 land-grant institutions have found ways to provide access to programs and resources to the audiences they serve. These institutions have led the way in research and Extension endeavors related to alternative livestock production operations such as goat and aquaculture production as well as serving the needs of urban audiences (Association of Extension Administrators, n.d.). By identifying these specialized audiences, 1890 land-grant institutions have positioned themselves to best serve their populations despite their sometimes-limited resources.

Online Extension

Extension has struggled to maintain its status as a primary source for agrarian information (Kelsey, Stafne, & Greer, 2011). Extension's online services are not well known and are described by extension staff as "unpopular" (Arnold, Hill, Bailey & Meyers, 2012). Rader (2011) found online searches for "extension service" declined by more than 50% from 2004 to 2010. In contrast, however, Kelsey et al. (2011) reported a Google search on "grape diseases" provided more than one million results in 2010. The following year, the same search yielded more than 10 million results, with the top 10 hits being from land-grant university sources (Kelsey et al, 2011). This growth in Extension Google hits shows the public has access to a large amount of Extension-related information without having to contact Extension services (Kelsey et al., 2011).

In 2008, the Cooperative Extension System developed eXtension (Kelsey et al., 2011). This online service assists extension employees in increasing measurable local impacts through professional development opportunities (eXtension, 2017). Services available for Extension personnel include webinars, resource articles, and course delivery processes. The goal of eXtension is to become a "trusted engine powering innovation for the Cooperative Extension and America's future" (eXtension, 2017, p. 1). eXtension has social media accounts on Facebook, Twitter, Pinterest, and YouTube, which is important for maintaining Extension's relevancy amongst a variety of audiences (Arnold et al., 2012).

Researchers agree eXtension needs to do more to build its online popularity (Arnold et al., 2012; Kelsey et al., 2011; Rader, 2011). In a study about Extension's online presence on 1862 land-grant university websites, Arnold et al. (2012) found that only half of the university websites contained a link to Extension services. Furthermore, only 45% of state Extension websites had a link to eXtension, which fell short of the projected 75% adoption rate (Arnold et al., 2012). Additionally, there have been no studies discussing the click-through rate nor the accessibility of content on 1890's land grant Extension websites.

To increase online traffic, Rader (2011) proposed Extension needs to focus on searchable content and build webpages with easy search functions and design. Rader (2011) also recommended Extension employees use data analytical services such as Google Analytics and Google Trends to monitor outreach then use the most impactful keywords, links, and content to improve Extension's rankings in Google Search. Web users do not search the term "extension"; therefore, Extension needs to build content based on popular search terms to increase its online traffic (Rader, 2011).

Although many people are attracted to view a website due to the aesthetics, website usability, structure, and content helps the viewer to navigate the site. The accessibility of a site is crucial to how a viewer responds to and finds information on site. If the viewer is not able to access the information they seek, they will automatically seek out new information (Petrie, Hamilton, & King, 2004). Additionally, website usability has been connected to online traffic. In particular, individuals who are able to navigate a website with use, or are able to find the information they are seeking easily, are more likely to continue to use a website or return to the website (Leonie, Hamilton, & Tee, 2015). Furthermore, the website must be designed to allow the user the ability to find the information they are seeking. Lachance, Erby, Ford, Allen, & Kaphingst (2010) concluded website developers must prioritize the placement of informational content on websites in order for ease of use (Lachance et al., 2010). Their findings suggested click-through rates needed to be low to result in a maximum amount of consideration and processing, and information on third and lower level pages tended to not be viewed by the individual.

This study's purpose was to understand the accessibility of online Extension information through 1890 land-grant institutions. This content analysis is based on research Arnold et al. (2012) conducted regarding the online presence of Extension at 1862 land-grant institutions. The basis of their content analysis evaluated the steps it takes to get from the primary university website to the Extension website based on the number of clicks. Their research also explored links to social media, the use of slideshows, videos, and highlights of Extension on the main university webpages as well as the college of agriculture webpage for 51 land-grant institutions. Their research excluded 1890 land-grant institutions; therefore, there is a need to evaluate the online presence of these institutions.

Conceptual Framework

The framework for the current study was based on the DAGMAR (Defining Advertising Goals for Measured Advertising Results) marketing model. Colley (1961) proposed this model, which outlines the four stages (Awareness, Comprehension, Conviction, and Action) consumers go through in product acceptance. This model can be useful to Extension personnel when considering strategies to promote their services and programs.

The DAGMAR model states that due to varying levels of understanding, consumers find themselves at different stages of the model. Building customer or client bases through communication rather than numerical goals such as attendance or sales can increase participant numbers (Colley, 1961; Jones, 1994). Understanding awareness of Extension is one of the first steps to build awareness within the publics Extension serves and increasing these communication efforts. Herring (2008) found when people have questions they will often use online Extension resources to get their answers, thus a well-stocked library equipped with innovative knowledge should be readily available and easily accessible to Extension's online clientele. Extension should prioritize awareness of their services and programs and sustain this awareness while engaging with their audience or interest and participation will decline.

Purpose and Objectives

The purpose of this study was to determine the click-through rate to access the online Extension information for 1890 land-grant institutions and their use of social media for marketing to

determine the ease of use to find information on the site. The following research objectives guided this study:

1. Identify the number of clicks needed to access the Extension and Extension contacts from university and college/school/department of agriculture websites.
2. Identify the online platforms 1890 land-grant Extension websites used to market themselves.

Methods

Sample

The sample included 18, 1980 land-grant institutions. This sample represented all except one of the 19, 1890 land-grant institutions. While Central State University had been granted its land-grant status at the time of data collection, this institution was omitted from the study because its agricultural academic program and proposed joint Extension program with The Ohio State University had yet to be established. University homepage, college/school/department of agriculture homepage, and Extension homepage served as the units of analysis for this study. Table 1 outlines each institution analyzed in this study.

Table 1

1890 Land-Grant Universities Included in Study (N = 18)

Institution	Location
Alabama A&M University	Huntsville, AL
Alcorn State University	Lorman, MS
Delaware State University	Dover, DE
Florida A&M University	Tallahassee, FL
Fort Valley State University	Fort Valley, GA
Kentucky State University	Frankfort, KY
Langston University	Langston, OK
Lincoln University	Jefferson City, MO
North Carolina A&T State University	Greensboro, NC
South Carolina State University	Orangeburg, SC
Southern University	Baton Rouge, LA
Tennessee State University	Nashville, TN
Tuskegee University	Tuskegee, AL
University of Arkansas, Pine Bluff	Pine Bluff, AR
University of Maryland, Eastern Shore	Princess Anne, MD
Virginia State University	Petersburg, VA
West Virginia State University	Institute, WV

These institutions' websites were evaluated because they serve the needs of specific populations of Americans in the South, specifically those involved in alternative livestock

production operations and individuals in urban communities. Assessing the visibility of online Extension information can better determine how 1890s land-grant institutions are meeting their tripartite mission of education, research, and outreach by providing accessible Extension information to their populations.

Coding

These websites were evaluated on a numerical system outlined in a codebook adapted from the Arnold et al. (2012) study of 1862 land-grant universities. Nineteen variables were included in this codebook, and the codebook was based on the following criteria:

Variable 1. This scale-level variable determined the number of clicks it takes to get from the main university website to the main Extension website. This variable allows us to better understand what steps a user searching for Extension information has to go through to find Extension from the university homepage. One issue regarding reliability for this variable is the possibility of there being multiple pathways from the university website to the Extension website. For the purpose of this study, the coders were instructed to identify the pathway with the fewest number of clicks.

Variable 2. This scale-level variable determined the number of clicks it takes to get from the college/school/department of agriculture homepage to the main Extension website. Some users may use the agricultural academic unit as the starting point in their search for Extension information because Extension is linked with this academic portion of the university. As such, this variable allows us to better understand what steps a user searching for Extension information has to go through to find Extension from the college/school/department of agriculture homepage. One issue regarding reliability for this variable is the possibility of there being multiple pathways from the college/school/department of agriculture website to the Extension website. For the purpose of this study, the coders were instructed to identify the pathway with the fewest number of clicks.

Variable 3. This scale-level variable determined the number of clicks it takes to get from the main Extension website to contact information for a local Extension agent or office. Coders were instructed to look for terms such as "find your local agent" or "find your local office" when coding for this variable. This variable allows us to determine what steps an individual who is looking to contact his or her local agent must go through to find this information. One issue regarding reliability for this variable is the possibility of there being multiple pathways from the Extension website to the contact information for a local Extension agent or office. For the purpose of this study, the coders were instructed to identify the pathway with the fewest number of clicks.

Variables 4 – 7. These nominal-level variables determined if a highlight or description of Extension was located on the main university webpage and the college/school/department of agriculture webpage. To code for these variables, coders were instructed to look for the presence of any reference to Extension through photos, videos, or stories. Further, coders were instructed to determine if there was a description of what Extension was so an uninformed visitor can learn or better understand what Extension is and what Extension can do for him or her.

Variables 8-10. These nominal-level variables determined if a slide show that included a photo of Extension content was present on the main university webpage, college/school/department of agriculture webpage, and the main Extension webpage. A photo highlight on these webpages may help attract individuals to available Extension programs.

Variables 11-13. These nominal-level variables determined if a video that included Extension content was present on the main university webpage, college/school/department of agriculture webpage, and the main Extension webpage. A video highlight on these webpages may help attract individuals to available Extension programs.

Variables 14-16. These nominal-level variables determined if a link to eXtension was present on the main university webpage, college/school/department of agriculture webpage, and the main Extension webpage. A link to eXtension can connect users to Extension resources at other institutions. The content available on the eXtension website provides users with relevant information they might otherwise not be able to get from their local Extension agent.

Variables 17-19. These nominal-level variables determined if a link to any social media presence of Extension was present on the main university webpage, college/school/department of agriculture webpage, and the main Extension webpage. By linking individuals to Extension's social media content, Extension can better provide relevant and timely information to its clientele.

Coder Training

The lead author trained two independent coders on Nov. 15, 2016, and coding took place Nov. 28-30, 2016. Coders were trained using 1862 land-grant university websites. The lead author reviewed the codebook with three websites during the training and discussed possible issues that may arise during the coding process including the inability to reach Extension's website from the homepage, determining what constitutes as the college/school/department of agriculture homepage, and how to identify Extension highlights, features, and descriptions.

Both coders independently coded all 18 websites and intercoder reliability was assessed. Krippendorff's alphas ranged from .876 to .054 for all scale-level data and perfect agreement to a Krippendorff's alpha level of -.094 for all nominal-level data. Krippendorff's alpha for all 19 variables is included in Table 2.

Data Analysis

Denzin and Lincoln (2011) recommended a Krippendorff's alpha level of a least .677 be attained to reach acceptable conclusions. Due to inconsistencies with coder agreement resulting in less than acceptable Krippendorff's alpha levels with 10 variables, the lead author recoded the variables where discrepancies occurred between coders and made the final coding decision regarding these variables prior to data analysis.

To accomplish the research objectives, descriptive statistics, including means and frequencies, were calculated. To address RO1, means and frequencies were calculated for variable 1 (number of clicks from the university homepage to Extension homepage), variable 2 (number of clicks from the college/school/department of agriculture homepage to Extension homepage), and variable 3 (number of clicks from the Extension homepage to local agent contact information). Means and frequencies were calculated to answer RO2 to determine what online platforms Extension is using to promote their services to current and potential users.

Table 2

Krippendorff's alpha Levels for Each Variable After Initial Coding

Variable	Krippendorff's alpha
Variable 1	.876
Variable 2	.713
Variable 3	.054
Variable 4	-.094
Variable 5	.271
Variable 6	100% Agreement
Variable 7	.828
Variable 8	100% Agreement
Variable 9	-.094
Variable 10	.192
Variable 11	100% Agreement
Variable 12	-.094
Variable 13	.646
Variable 14	100% Agreement
Variable 15	0
Variable 16	.222
Variable 17	100% Agreement
Variable 18	100% Agreement
Variable 19	.365

Results

In order to address RO1, frequency of clicks to access the Extension homepage and local Extension agent contact information was recorded. Of the university websites evaluated, only one (5.6%) required one click to reach the Extension homepage. On average, a user had to click 3.5 times to reach the Extension homepage, with 44.4% (n = 8) requiring 3 clicks. The number of clicks required to access the Extension homepage from the university homepage ranged from 1 to 6 clicks with 11.1% (n = 2) having no obvious path to reach the Extension homepage from the university homepage.

On average, college/school/department of agriculture websites required 1.47 clicks to reach the Extension homepage with 55.6% (n = 10) having a direct link to Extension on the

college/school/department of agriculture homepage. The number of clicks required to access the Extension homepage from the college/school/department of agriculture homepage ranged from 1 to 4 clicks with 16.7% (*n* = 3) having no obvious path to reach the Extension homepage from the college/school/department of agriculture homepage. Overall click frequencies to access the Extension homepage from the university and college/school/department of agriculture homepage are provided in Table 3.

Table 3

Number of Clicks Needed to Access the Extension Homepage from University Homepage and College/School/Department of Agriculture Homepage (N = 18)

	Number of Clicks						
Website Type	1 % (n)	2 % (n)	3 % (n)	4 % (n)	5 % (n)	6 % (n)	No Obvious Link % (n)
University	5.6(1)	-	44.4(8)	27.8(5)	5.6(1)	5.6(1)	11.1(2)
College/School/ Department of Agriculture	55.6(10)	22.2(4)	-	5.6(1)	-	-	16.7(3)

Access to contact information of a local agent from the Extension homepage required an average of 1.06 clicks. Of the Extension homepages evaluated, 66.7% (*n* = 12) required 1 click and 11.1% (*n* = 2) had contact information located directly on the homepage. The number of clicks required to access contact information for a local agent from the Extension homepage ranged from 0 to 3 clicks and 11.1% (*n* = 2) had no contact information for local agents.

In addressing RO2, the presence of online platforms to market Extension was recorded. Highlights of Extension were absent on 94.4% (*n* = 17) of university homepages and descriptions of Extension were absent on 100% (*n* = 18) of university homepages. No university homepage used slide shows or videos that included Extension content. Additionally, no university homepage had a direct link to eXtension or Extension's social media.

A highlight of Extension was present on 66.7% (*n* = 12) college/school/department of agriculture websites. Only 22.2% (*n* = 4) college/school/department of agriculture websites had a description of Extension. One college/school/department of agriculture had a slide show that included Extension content, 16.7% (*n* = 3) had a video that included Extension content, and none had links to eXtension or Extension social media.

Six Extension homepages used a slide show that included Extension content, 11.1% (*n* = 2) included a video that included Extension content, 16.7% (*n* = 3) had direct links to eXtension, and 22.2% (*n* = 4) had links to Extension's social media. Table 4 provides a summary of online platforms used to promote Extension across all websites.

Table 4

Online Platforms University, College/School/Department of Agriculture, and Extension Websites use to Promote Extension (N = 18)

Website Type	Highlight Extension %(n)	Description %(n)	Slide Show %(n)	Video %(n)	eXtension %(n)	Social Media %(n)
University	5.6(1)	0(0)	0(0)	0(0)	0(0)	0(0)
College/school/department of agriculture	66.7(12)	22.2(4)	5.6(1)	16.7(3)	0(0)	0(0)
Extension	-	-	33.3(6)	11.1(2)	16.7(3)	22.2(4)

Conclusions and Discussions

The main goal of the Cooperative Extension Program is to be a trusted source of information that provides timely, relevant, and accessible information to the public (Seevers et al., 1997). The Morrill Act of 1862 allowed for the development of the land-grant institution, a federally-funded institution, which had the main goal to educate students from any background in agricultural sciences and mechanical arts (Lee & Keyes, 2012). However, the culture of the American South led to discrimination and segregation of specific populations, and the 1890 land-grant university was established to provide higher education to African-American populations (Lee & Keys, 2013).

Similar to the 1862 land-grant institution, one of the purposes for establishing the 1890s land-grant universities was to provide agrarian information to the public through Extension (Arnold et al., 2012). Today, the majority of the public can access Extension-related content online without having to connect firsthand with Extension services (Kelsey et al., 2011). Although Extension's purpose is to provide readily available and searchable information, a 2012 study found only half of the 1862 land grant university websites had links to Extension (Arnold et al., 2012). Additionally, there have been no studies that have documented the Extension accessibility and marketing efforts of the 1890 land-grant institution.

Arnold et al. (2012) recommended that to remain relevant and searchable, Extension needed to extend their online presence. Similarly, the findings from this study found that the majority of university homepages did not promote Extension. Only one university highlighted the Extension program on its homepage. In addition to limited visibility of Extension from the home page of the university website, there was also limited access from the college/school/department of agriculture homepage. The DAGMAR model proposes that building awareness is the first step in the marketing and advertising goal model (Colley, 1961; Jones, 1994). However, these findings demonstrate that the Extension programs connected to the 1890s land-grant institutions are not readily available or easily accessible from the university homepage, thus the first step in the DAGMAR model is not being completed by these institutions or the Extension programs. Without awareness of Extension, users are less likely to find their way to the programs or services Extension provides.

While there were challenges regarding accessing Extension homepages, the number of clicks from the Extension website to local county agent information was readily available with an average number of clicks of 1.06 clicks. Furthermore, the college/school/department of agriculture

homepages promoted Extension more than university homepages. The majority (66.7%, n = 12) of college/school/department of agriculture homepages featured a highlight of the Extension program, and four included a description. By making the local county information easy to locate, users may become aware, comprehend, evaluate, and perform an action of participating in the Extension programming (Colley, 1961; Jones, 1994).

This research also sought to identify the role of marketing and promotion via eXtension and social media on the websites of 1890 land-grant institutions. Although most universities did not promote Extension on the homepage of the university website, many of the college/school/department of agriculture websites did promote Extension through highlights, slideshows, or videos. Extension programming needs to have a larger online presence and needs to be promoted more effectively (Rader, 2011). Online content changes quite often on university websites, therefore it should be considered that the universities in this study were not featuring Extension content during the time of data collection. Because the universities in this study have chosen not to promote their Extension program at this time, they are limiting the public's ability to become aware of the opportunities and information available through Extension.

To further emphasize this point, none of the college/school/department of agriculture websites provided a link to eXtension or related social media sites. In their research, Arnold et al. (2012) found that 45% of the state Extension websites had a link to eXtension. The current study found the 1890 land-grant university Extension websites failed to promote eXtension, with only 16.3% (n = 3) providing a link to this site. The role of eXtension is to be a place where services of specific Extension programs may be highlighted through webinars, resource articles, and course delivery (eXtension, 2017). However, if 1890 land-grant institutions are not participating in eXtension promotion, these university and Extension programs are limiting the ability for their audience members to access relevant content that 1890 land-grant Extension programs are not providing themselves.

Recommendations

Prior authors have noted the need for land-grant universities to enhance strategic communication goals in terms of promoting Extension to target audience segments. Although the 1890 land-grant universities have established websites, these websites are not taking full advantage of the opportunity to promote and market its Extension programs. By not prioritizing public awareness of Extension programs through their websites, 1890 institutions are failing at the first step of the DAGMAR model.

Extension personnel at each university need to work with communication specialists at the university and college/school/department of agriculture level to make sure content is placed in visible sections of the websites. For example, communicators need to advocate for links to the Extension website on the university homepage, and communicators should highlight news and Extension programs on homepage slideshows, videos, and content areas. By demonstrating the impacts Extension programs and information have on communities, Extension can better plan their advocacy efforts to allow them to be more prominently displayed on the institutional websites. Extension communication specialists should prioritize disseminating news and events on multiple platforms to reach a greater audience.

Social media presence should also be an avenue for Extension to promote and market their programming. Many people use social media, such as Facebook or Twitter, to find information, discuss problems, and come to solutions; however, if there is an inability to find these social media

accounts, then the public cannot be aware and will not increase Extension's presence. These sites need to be used to their full potential. Additionally, this research has practical evidence for instructors in agricultural communicators. The research suggests the importance of click-through rate and use on website usability. Instructors teaching web design within agricultural communication could focus their efforts on developing websites with low click-through rates to allow for easy navigation. This is a topic that needs to be addressed in more courses in agricultural communications.

Future research should analyze these Extension programs' social media content for timeliness, response, and interaction with users. Each institution's Extension website usability should additionally be evaluated for types of content as well as accessibility of content. Finally, survey and focus group research with individuals actively using 1890 Extension programming could help us better understand the types of content users are looking for, where they find their information, and to guide Extension communicator efforts for providing relevant information to clients via Extension websites and social media platforms.

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