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Adoption of Podcasting as a Tool for Extension Educators

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Abstract. The current study fills a gap in the current literature by measuring current CES personnel and stakeholders' attitudes toward the use of Podcasts as a tool for information dissemination. By identifying perceived barriers to podcasts by CES personnel and how receptive CES stakeholders are to CES-based podcasts, this study helps to identify important barriers to the development of podcasts, as well as how such podcasts can be best positioned to fulfill the needs and expectations of CES stakeholders. Podcasts have the potential to play a key role as an avenue for information exchange between the CES and its stakeholders. Two separate surveys were employed, one which focused on CES personnel with the second study focusing on CES stakeholders. Participant recruitment took place through email, and data analyses utilized SPSS to conduct descriptive statistics and frequencies. Findings indicate that significant differences exist between CES personnel and CES stakeholders when it comes to attitudes and beliefs regarding podcasts as a CES tool.

INTRODUCTION

Since the Cooperative Extension System's (CES) creation, personnel working for it have been tasked with maintaining the relevance of their work, meeting the needs of their evolving clientele while also adjusting to budget changes and mandates (Everts et al., 2012; Hendrickson et al., 2010; Henning et al., 2014; Wang, 2014). Additionally, CES employees also face a rapidly changing communications landscape, especially since the adoption of smartphones by the public and the widespread use of new educational channels used to disseminate information. For example, podcasts have become a popular tool for communication, with an estimated 100 million listeners in the United States alone. With more than 80% of Americans over the age of 12 now aware of podcasts, it is unsurprising that podcasts have become one of the more common channels used for learning by people of all ages. However, very little research has examined how CES is currently using podcasts to help connect with and inform its audiences. This study explored the perceptions of CES personnel toward the use of podcasts, the current use of podcasts as a CES tool, stakeholders' current use of already established CES podcasts, and their opinions toward podcasts as a CES tool for their use.

CURRENT AND EXPECTED DEMOGRAPHIC CHANGES IN EXTENSION STAKEHOLDERS

Customization of Extension education should include audience analysis and appropriate educational content. Although some programs may be appropriate for the general population, a target audience is made up of people who will find the information most relevant to their needs, problems, or concerns (Warner et al., 2019). Preferred methods of communication can be influenced by such factors as age, levels of education, and access to technology (Howell & Habron, 2004). As CES programming stands now, most program content is tailored toward a more traditional (older) target audience. However, data from a recent U.S. Department of Agriculture (USDA, 2019) 2017 Census of Agriculture indicated that 1 in 10 U.S. producers are 35 years of age or younger. This new potential CES target audience will consist mostly of millennials, the first generation who have enjoyed an Internet connection of some kind most of their lives (McAlister, 2009). These same millennials also see the incorporation of modern communication tools as a key part of their educational experience (Aviles & Eastman, 2012; McAlister, 2009). Despite the changes that naturally occur with the target audience for the CES, especially based on age and gender, it has been noted that programming for

the younger generation is often sacrificed to meet the "high-maintenance needs" of more traditional (older) CES clientele (Diem et al., 2011; Kurtzleben, 2014).

UNDERSTANDING THE VARK MODEL AND CONNECTIVISM—LEARNING THEORIES AND PODCASTS

The VARK learning styles model (visual, aural, read/write, and kinaesthetic) is based on the principle that various perceptual strengths should be used to deliver information to successfully reach individuals with differing learning styles (McLeod, 2006). Although CES has already adopted different methods for communicating important information by using the VARK model, podcasts present a unique opportunity for Extension professionals to meet the needs of those who prefer aural learning opportunities (Lim & Swenson, 2021). Aural learning via audio formats can be considered a less formal, more engaging way of communicating science-based content than traditional methods, such as classroom lectures, newsletters, and so forth (Merzagora, 2004). Fleming (1995, p. 310) confirmed the significance of using multiple forms of VARK model instruction, stating, "Each presentation in another mode gathers in another group of students who might otherwise have missed the point." This statement further supports the idea that podcasting could serve as a unique medium for CES to reach audiences it might have never connected with before or enhance existing relationships.

Another model to consider when incorporating podcasts into CES outreach is the connectivism theory (Hendrickson et al., 2010). Connectivism, as proposed by Siemans (2005), is the idea that learning and knowledge come from a wide array of sources that are constantly changing due to differences in how said information is distributed. Changes in technology have allowed new and unique content creators to emerge, with the ability to reach just about anybody with an Internet connection. The VARK model and connectivism support the idea that podcasts as an educational medium for CES programming would allow CES to connect with and play a role in the educational sphere of stakeholders that it otherwise would have never reached.

HISTORY OF PODCASTS

The term *podcast* was derived from the words *iPod* and *broadcast* and was created through the Really Simple Syndication (RSS) technology (Campbell, 2005). Despite RSS technology being developed by Dave Winer in 2000, the podcast format was not truly established until Adam Curry's release of his podcast directory system, iPodder, in 2005, which is recognized as the first true podcast directory (Chen, 2009). Birch and Weitkamp (2010) described RSS feeds as a hybrid "push" and "pull" system, with the content being "pushed" by podcast creators and podcast listeners "pulling" what content they wanted to listen to. Over the course of the last 17 years of the medium's history, the use of podcasts has increased at a breakneck pace. Interestingly, 46% of monthly podcast users in the United States today are reported as female, and 56% of monthly listeners are 12–34 years old (Edison Research, 2021).

CURRENT USE OF PODCASTS AS AN EDUCATION TOOL

The use of podcasts as a platform for educational purposes is found across multiple disciplines, including medical schools, teacher preparation courses, and nursing schools, to name a few (Kennedy et al., 2015; Luna & Cullen, 2011; McNamara & Haegele, 2020; Young et al., 2021). Although previous research on the application of podcasts for CES-related educational purposes is limited, a study by Mills (2011) compared dairy podcasts in Australia to online dairy publications by examining the number of downloads for each type of media. Results of that study indicated that the top 13 dairy podcast episodes generated 3.65 times the number of downloads when compared to the top 13 dairy publications in a PDF format (Mills, 2011). The first land-grant institution program in the United States to use podcast technology was Texas A&M University in September 2003 with the creation of the podcast *Agnews Weekly* (Fannin, 2006). Starting as an experiment with no budget, the CES-oriented podcast ended its second year of operation with 84,316 downloads (Fannin, 2006). When describing the success of the *Agnews Podcast*, Fannin (2006) stated, "Podcasting provides new ways to target general consumer and agricultural producers with audio news content." Fannin (2006) continued that *Agnews Weekly* had listeners tuning in from as far as Chicago, New York City, and even Scotland, thus exemplifying the unique reach that podcasting platforms can provide to CES programs.

Outside the inaugural *Agnews Weekly* created by Texas A&M University, CES podcasts have grown to include the *Alabama Crops Report Podcast* produced by the Alabama Cooperative Extension System (ACES) crops team, *Backyard Farmer* produced by the University of Nebraska-Lincoln, *Extension 302* produced by the University of Delaware Cooperative Extension, *Two Agents and the FACS* by University of Georgia Family and Consumer Sciences agents, and more. The University of Minnesota Extension team, as of 2022, has 17 different podcasts listed on its website. However, podcasting CES content format has not been widely used across all national CES programs.

THE APPEAL OF PODCASTS AS AN EXTENSION TOOL

As the digital age has continued, the demand for additional online CES resources has only increased (Diem et al., 2011). This need is understandable for CES because online programming has proven to help increase CES reach, expand the flexibility of content, and make materials and information

more accessible for stakeholders, all while lessening financial costs (Rich et al., 2011). The successful adoption of media technology as a CES tool has previously included the integration of blogs, social media, and Web conferencing tools (e.g., Zoom, Microsoft Teams, Skype, etc.; Barton et al., 2017). However, very little research has addressed why podcasting has yet to be as widely adopted across CES programs as other similar media technology. Therefore, this study hopes to fill this knowledge gap and identify barriers to adopting podcasting as a tool for CES education.

Up-to-date technological skills have been recognized as significant and necessary for CES personnel when developing and disseminating programming (Harriman & Daugherty, 1992). Mills (2011) communicated the belief that podcasting was a tool that could easily be applied to Extension programming and even stated, "The skill set required to develop and deliver podcasts is one that can be readily acquired by most extension officers with minimal training." This potential opportunity for training and support could theoretically be facilitated by CES programs' information technology (IT) support departments (Xie & Gu, 2007). Not only is podcasting an information delivery platform that is easy to navigate; it could also be an effective way for CES to repurpose previously created content (Lim & Swenson, 2021). Having this content in the form of a podcast would give clientele the convenience of listening to the content on demand, replaying the audio as needed, and learning in their setting of choice (Lim & Swenson, 2021).

In addition, podcasts present a low-cost/high-quality media platform. CES educators have struggled to find affordable ways to not only meet current audience needs but also expand into new programs and audiences. Podcasts as a CES tool present a cost-effective way to do just that (Hendrickson et al., 2010). Assuming that CES personnel already have access to a computer and some basic forms of computer programming, it is possible to start a podcast for less than $200. Anticipated needs to start a podcast include a quality microphone, audio editing software, headphones, and digital media branding components, such as podcast cover art.

The USDA 2012 Census of Agriculture (USDA, 2014) reported that 69.6% of U.S. farms had Internet access. Over the course of 5 years, that percentage jumped to 75.4%. Podcasts offer the unique ability to be downloaded when the end user is connected to the Internet and then easily saved and consumed later, even when an Internet connection is unavailable. This technology would allow end users to access CES podcasts while operating a combine, fixing farm equipment, or when driving across town. This multitasking listening approach is supported by previous research (Birch & Weitkamp, 2010), which found that the majority of respondents listened to podcasts while doing other things (e.g., walking, commuting, cleaning, or working). The flexibility that podcasts provide presents the opportunity for CES personnel to disseminate important information into the daily lives of CES program users.

STATEMENT OF RESEARCH PROBLEM

As reviewed, CES personnel face the challenge of adjusting their communication practices to remain relevant to stakeholders by adapting to technological advances. With podcasts growing in popularity, their potential for use in CES education for target audiences is substantial. Adoption of podcasting could expand the CES reach, allow for focused content, and help CES workers provide just-in-time relevant updates for stakeholders. The purpose of this study was to examine the views of CES workers toward the development and use of podcasting for Extension programming and examine possible barriers to the development and use of a podcast modality.

METHODS

Two separate surveys were written for the purposes of this study, and both were housed on the survey platform Qualtrics. Each survey measured perspectives toward podcasting as a CES tool, with one survey customized for CES personnel and the other written for CES stakeholders. Both surveys were reviewed for external validity by expert panels consisting of graduate students, university faculty, and CES personnel. Prior to survey recruitment, survey materials were provided to the Auburn University Institutional Review Board, and Study #21-438 was considered exempt. CES personnel participants for this study were recruited through an email invitation, which was sent to all ACES personnel by the ACES director and to all CES directors within the United States. CES stakeholders were also recruited via email, which CES directors sent to their constituents. Data collection took place over the course of 6 months, beginning in September 2021 and ending with the closing of the surveys in February 2022. Data analysis consisted of an initial scrubbing of incomplete data followed by a series of analyses, including descriptive statistics and frequencies, using IBM SPSS (Version 28) for quantitative data and coding plus frequencies for qualitative data.

RESULTS

CES personnel participants consisted of 193 individuals, and participant locations varied across 14 different states, the distributions of which can be found in Table 1. Of personnel participants, 65% reported that they were female (n = 126), and 35% reported that they were male (n = 67). Participant ages ranged from 21 to 69 years old, with the average age being 44 years old. CES personnel participants were asked

Table 1. Frequency Result of Stakeholder Participants Reporting CES* Programs Used

CES program	*n*	% of cases reported (*N* = 164)
Alabama Cooperative Extension	28	17%
University of Georgia Extension	8	5%
Kansas State University Research and Extension	7	4%
Mississippi State University Extension Service	7	4%
Texas A&M AgriLife Extension	7	4%
University of Arkansas Cooperative Extension	6	4%
University of Florida Extension	6	4%
University of Illinois Extension	6	4%
Iowa State University Extension and Outreach	6	4%
Oklahoma Cooperative Extension	6	4%
Clemson University Cooperative Extension	6	4%
Virginia Cooperative Extension	6	4%
University of Kentucky Cooperative Extension Service	5	3%
Purdue University Extension	4	2%
University of Missouri Extension	4	2%
University of Nebraska Extension	4	2%
North Carolina Cooperative Extension	4	2%
Ohio State University Extension	4	2%
Pennsylvania State University Extension	4	2%
Colorado State University Extension	3	2%
University of Idaho Extension	3	2%
University of Tennessee Extension	3	2%
University of Maryland Extension	2	1%
University of Minnesota Extension	2	1%
Lincoln University Cooperative Extension	2	1%
Cornell University Cooperative Extension	2	1%
South Carolina State University Extension	2	1%
South Dakota State University Extension	2	1%
University of California System Cooperative Extension	1	1%
University of Delaware Cooperative Extension	1	1%
Kentucky State University Cooperative Extension	1	1%
Louisiana State University Extension	1	1%
University of Maine Cooperative Extension	1	1%
Michigan State University Extension	1	1%
Rutgers New Jersey Cooperative Extension	1	1%
New Mexico State University Extension	1	1%
North Dakota State University Extension Service	1	1%
Oregon State University Extension Service	1	1%
Washington State University Extension	1	1%
West Virginia University Extension Service	1	1%
University of Wisconsin-Madison Cooperative Extension	1	1%
University of Wyoming Extension	1	1%
American Samoa Extension	1	1%

Note. Surveys were distributed via email to CES directors for further distribution to CES personnel as well as CES stakeholders. Participants consisted of 193 CES personnel and 52 CES stakeholders. This survey sought to evaluate their current production and use of podcasts as a CES tool. CES = Cooperative Extension System.

to select all that applied to the listed departments that best described their area of work within CES. Data indicated that among participants, 25% worked in 4-H/youth development (n = 51), 41% worked in agriculture, forestry, and natural resources (n = 83), 16% worked in human sciences (n = 32), 18% worked in county office operations (n = 36), and 8% worked in CES administration/business offices (n = 17).

Among CES personnel respondents, only 26% reported that they had previously participated in the creation/production of a podcast. Respondents who reported having previously participated in the creation or production of a podcast were asked how likely it was that a new stakeholder was connected to/learned about CES from their experience, with 74% of these respondents indicating that it was either extremely likely or highly likely.

When asked whether they had considered creating a podcast for CES, 50% of personnel participants responded "no," 18% responded "maybe," 18% responded "yes," and 14% responded that they had already created a podcast or were in the process of creating one.

Participants who responded "no" or "maybe" were asked why they would not create a CES podcast; 17% reported that they had no interest in using podcasts as a CES tool, 13% reported that using podcasts as a CES tool was too much work, 30% reported that they were intimated by the idea of creating a podcast, 36% reported that they believed that they did not have the means necessary to create a meaningful CES podcast, 7% reported not believing that podcasts could serve as an effective CES tool, 26% reported that they did not think that CES stakeholders would listen to a podcast, 11% reported believing that there was not a need for CES-produced podcasts, and 49% reported not having the time to create a CES podcast on top of other responsibilities. (Please note that respondents were allowed to select more than one response when responding to this question.)

Qualitative data for CES personnel participants who responded to the previous question that podcasting was too much work were asked why they believed podcasting as a CES tool to be too much work; 41% of participants mentioned concerns regarding the amount of time it would take to produce a podcast, and 25% indicated that there was an anticipated learning curve or that training would be needed to create a podcast, which was why they believed that podcasting as a CES tool would be too much work. One participant coded into this group stated, "Given my age and my expertise, I don't have the skills necessary to do podcasting. The learning curve is too steep." Additionally, 22% of respondents shared that their work priorities were focused elsewhere.

Personnel participants who responded to a previous survey question that they believed podcasts would go unused by stakeholders were asked why they believed that to be true. Among those participants, 47% of replies consisted of comments regarding CES's target audience consisting of an older generation or about target audience members not knowing how to access CES podcast content.

Figure 1. *Map displaying CES personnel participant reported locations.*

Figure 2. *Map displaying CES stakeholder participant reported locations.*

CES stakeholder participants consisted of 52 individuals located in 18 different states. Among stakeholders, the youngest participant age reported was 22 years old, while the oldest age reported was 83. The age average was 39 years old. Among CES programs reportedly used by these participants, the most widely used were ACES (n = 28), the University of Georgia Extension (n = 8), Kansas State University Research and Extension (n = 7), Mississippi State University Extension Service (n = 7), and Texas A&M AgriLife Extension (n = 7). The rest of the programs used by participants can be found in Figure 3. Stakeholders reported various lengths of time using CES resources, from as little as 1 month to as long as 45 years.

Stakeholder participants were asked to select all that applied to them from a list of CES stakeholder-type descriptions. Responses indicated that 56% of respondents considered themselves to be a producer/farmer/rancher, 29% selected family resource, 20% selected hobbyist, 42% selected university student, 27% selected youth programs coordinator, and 11% selected community programs coordinator.

Participants were asked whether they currently listened to podcasts in general, with 68% reporting "yes" and 32% reporting "no." Of the participants who reported listening to podcasts, 30% indicated that they listened to CES-oriented podcasts, and 70% indicated that they did not. Of the respondents who reported that they did not listen to CES-oriented podcasts, 81% reported that they were unaware that CES podcasts existed, 5% reported that they were uninterested in listening to CES podcasts, 5% reported not having the time to listen to CES podcasts, and 9% reported other.

Participants who reported that they did currently listen to a CES podcast were asked to select all that applied to them for reasons why they chose to listen to a CES podcast. Of these respondents, 67% reported that they listened because CES programs were a trustworthy source of information, 44% reported that podcasts were an easily accessible way for them to learn from CES, 11% reported that they enjoyed listening to CES podcasts and that they were entertaining, 89% reported that they multitasked while listening to and learning from CES podcasts, and 44% reported that they considered themselves to be auditory learners and that CES podcasts allowed them to learn CES information easily.

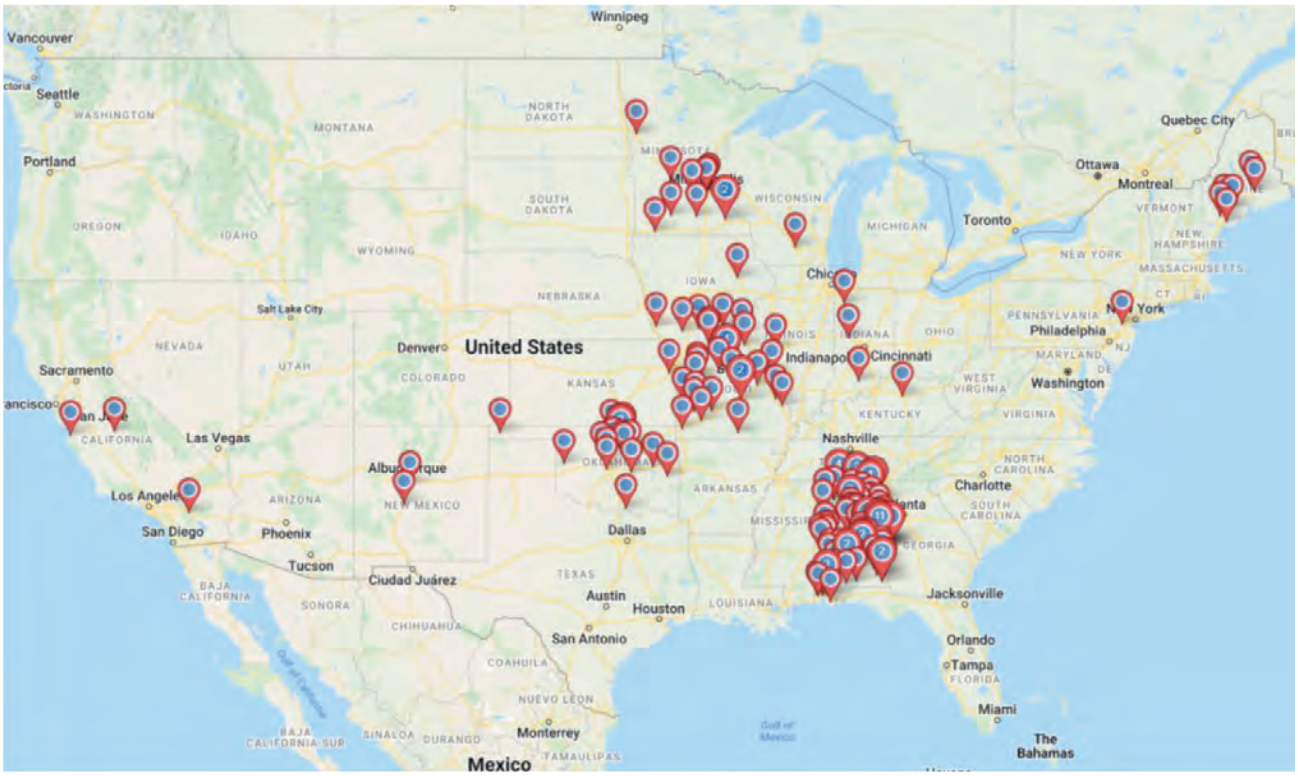

Figure 1. Map displaying CES personnel participant reported locations.

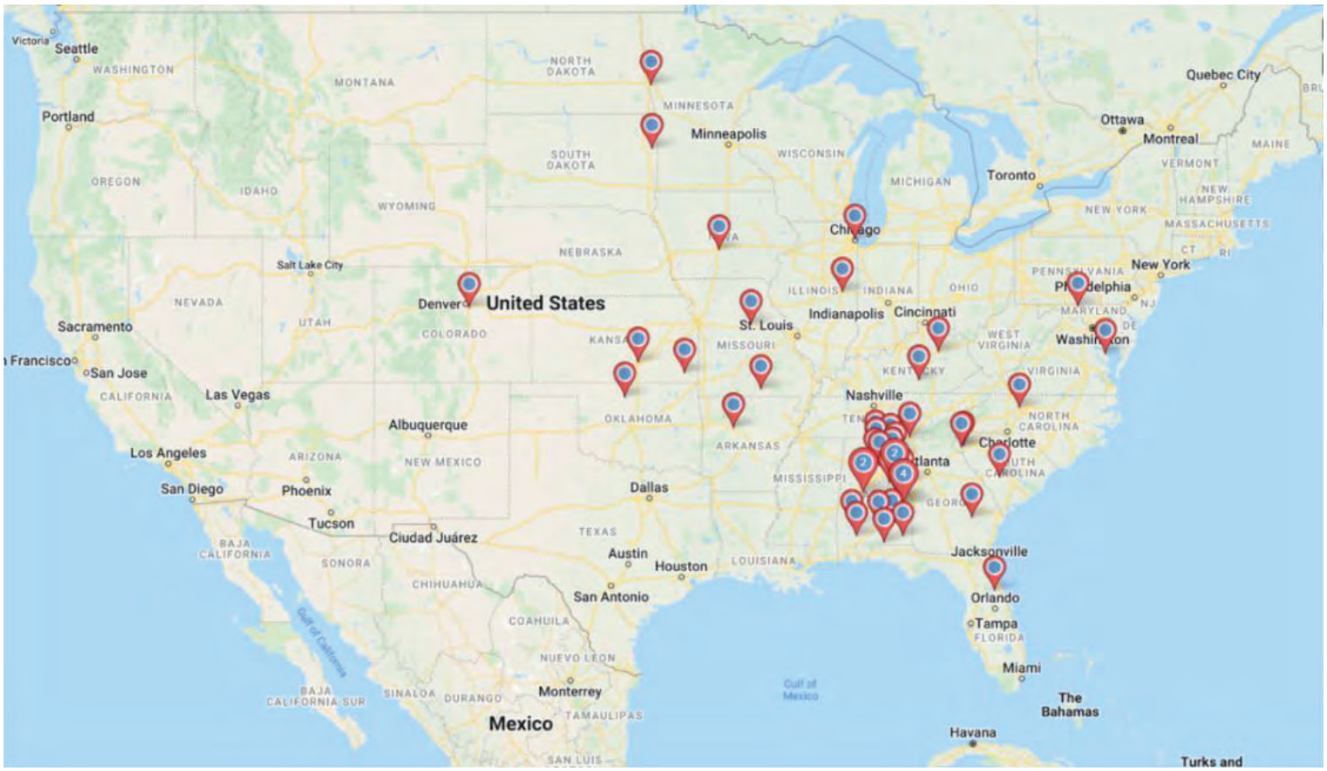

Figure 2. Map displaying CES stakeholder participant reported locations.

CONCLUSIONS

Conclusions drawn from this research's results include that CES personnel were hesitant to adopt podcasting as a newer modality for education and outreach for CES programming. CES personnel podcast adaptation hesitancy included a concern for the time required, a need for training, intimidation regarding the idea of creating a podcast, a lack of resources, priorities lying elsewhere, and an anticipated lack of use from CES stakeholders. CES personnel also conveyed that reasons they believed that CES stakeholders would not use a CES podcast included CES stakeholders' ages, a lack of interest in the platform, and the actual CES content.

CES stakeholder results showed that many CES stakeholders did, in fact, listen to podcasts and that among those who did, the majority needed to be made aware that CES podcasts exist. Results also showed that CES stakeholders who listened to CES podcasts did so because it allowed them to multitask, CES programs were trustworthy sources of information, podcasts were an easily accessible way for them to learn from CES, and they considered themselves to be auditory learners. These conclusions provide greater insight into reasons why podcasts as a CES tool have yet to be more widely adopted across CES programming and why CES stakeholders consider them to be valuable.

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