Prevalence and Effectiveness of Technology Use Among Family & Consumer Sciences Agents

Abstract

Extension agents are encouraged to use new technologies to reach and teach their clientele. To uncover the prevalence and effectiveness of technology use, a survey was conducted among family and consumer sciences agents in the southern region of the United States. The results show that there is not much deviation from PowerPoint presentations, though some additional multimedia is incorporated. Barriers and advantages of using educational technology are discussed.

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Introduction

Extension educators use technology every day to develop and deliver educational programs, but how effectively do they use the vast array of multimedia applications and tools that are available? Why even consider multimedia in program delivery? To study this issue, we conducted an electronic survey among family and consumer sciences Extension educators in the southern United States. The survey consisted of questions related to the types of electronic devices used to deliver programming, multimedia applications used, perceived effectiveness of the devices and applications, ongoing maintenance of multimedia, and creative uses of educational technology.

Background

A study by Kinsey (2011) evaluated the different uses of technology across career stages and found that 46% of early-career (0-10 years) educators, compared to 14% of mid-career (11-20 years) educators, and 0% of late-career (21+ years) educators use daily or weekly social networking sites. Though the studies by Kinsey (2011) and O'Neill, Zumwalt, Ravenscraft, Swanson, and Seiling (2011) acknowledge the use of social media by Extension family and consumer sciences agents, a review of all devices and forms of multimedia used by Extension agents is not found. Courts and Tucker (2012) suggest a vast array of technology that can be used to enhance classroom learning, though not specific to Extension.

Extension educators cite a number of barriers to using technology, including time to learn and use Web 2.0 (interactive) technologies, awareness of technologies, and time to maintain the technologies on an ongoing basis (O'Neill et al., 2011). Diem, Hino, Martin, and Meisenbach (2011) found a number of misconceptions about technology that inhibit its use by educators: fear of losing traditional clientele, client

interest or ability to use technology, concern that educator presence will diminish when technology is adopted, concern that the delivery of technology-devised programs will extend past political or funding boundaries (e.g.. county lines), and difficulty imagining virtual programming. Extension has long held that relationships and personal contact are at the core of success (Seger, 2011).

Nevertheless, the advantages of using educational technology are strong. Studies have found that technology use:

1. Broadens the range of client characteristics, resulting in larger and more diverse audiences;

2. Provides asynchronous informational access so that the time and place of receiving and processing information are irrelevant;

3. Increases the convenience of accessing technology-based programming both physically and/or geographically;

4. Decreases the costs of technology-based programs making it possible for more clients to engage in learning, as well as collaborate and communicate with each other, thus enhancing the learning environment and experience;

5. Provides a written record of program activity, so it can be easily documented (O'Neill et al, 2011; Reiboldt, 2001; Courts & Tucker, 2012).

Purpose

The purpose of the research reported here was to determine how commonly Extension family and consumer sciences agents use educational technology and how effective they find it for program delivery. Therefore, participants were surveyed with objectives to determine:

- Types of electronic devices used, as well as multimedia used

- Perceived effectiveness of devices and multimedia

- Ongoing maintenance of multimedia

- Creative uses of devices and multimedia

Methods

The authors constructed a survey instrument using Qualtrics (available upon request) devised of 32 questions, including multiple choice, checklist, text response, and 5-point Likert scales. After the instrument was reviewed by colleagues, it was revised accordingly. The research protocol and instrument were sent for IRB approval, and the study was determined to be exempt. The survey was distributed by email to affiliate presidents who represent the 13 states that make up the National Extension Association of Family and Consumer Sciences (NEAFCS) southern region. The presidents then forwarded the survey link to NEAFCS members in their states. The survey was sent to the presidents three times over a 6-week period. The overall instrument showed an alpha reliability coefficient of .77.

Results

Two hundred twenty-nine (N = 229) respondents completed the survey, representing 11 states. Because there was a potential of 925 respondents, the response rate was 24%. Due to brevity, additional demographic characteristics are not included here.

Device Use

Sixty-four (64) percent of respondents indicated that they possess the technical skills and resources necessary to do their jobs. We found a major drop in use in technology-based delivery devices after laptop and projector were indicated. Respondents were asked to indicate any device that they use for Extension program delivery.

Table 1.

Device Use of Respondents

Device	% of Respondents Using Device for Extension Program Delivery
Laptop	100
Projector	98
Audience Response System (clickers)	28
Tablet	22
SmartBoard	16
Cellphone	11
Other	6
Elmo	3

Further, only 7% of respondents had used any of these devices listed in Table 1 in an unusual or creative way. Self-reported examples included: maintaining a blog; photovoicing a workshop for grandparents and grandchildren; using a cellphone for portable wireless service; and using the iPad for a SlideShark presentation or live food demonstration.

Device Effectiveness

We also queried respondents about the perceived effectiveness of using specific technology devices for program delivery. Table 2 below shows that the majority of respondents found the laptop and projector as the most effective devices. Use of audience response systems and tablets appears to be generally effective, yet many respondents did not find most of the other devices applicable, which we assume indicates they have not used them or found a use for them.

Table 2.

Device Effectiveness

Device	% Very Ineffective	% Somewhat Ineffective	% Neither Effective nor Ineffective	% Somewhat Effective	% Very Effective	% N/A	Total Responses
Laptop	13	3	1	18	67	1	239
Projector	13	3	2	13	70	2	236
Elmo	3	0	3	2	2	91	145
SmartBoard	3	2	4	8	16	70	165
Tablet	2	2	5	13	15	65	168
Audience Response System	6	1	4	12	23	56	174
Cellphone Use by Participant	4	2	6	4	6	81	160

Multimedia Creation and Use

Respondents also indicated which forms of multimedia they use, whether they create or develop their own multimedia offerings, the program applications they use, and unusual or creative uses of multimedia (Table 3). If they did not create or add their own multimedia, respondents indicated that it was typically an administrative assistant who created it, except in the case of video, which was largely produced by communications departments at the state or county levels.

Table 3.

Multimedia Creation and Use

Form of Multimedia	% Who Created or Added Own	Applications Used (%)	Usual or Creative Uses
Presentations	85% (another 6% use presentations, but someone else creates the technical aspects; 9% do not use multimedia presentations at all)	99%-PowerPoint 10%-Prezi 7%-Google 4%-Keynote 4%-Animoto 3%-Flash Slideshow 0%-Photopeach, Pecha Kucha, VoiceThread	-Photos on slides -Interactive games -Marketing publication

Images or Graphics	92% (another 3% use graphics, but someone else creates the technical aspects; 5% do not use graphics at all)	75%-In-house or personal photo gallery 71%-MS Office gallery 23%-Other (mostly Google) 9%-Flickr 4%-Creative Commons	n/a
Podcasts	1% (another 1% use podcasts, but someone else creates the technical aspects; 98% do not use podcasts at all)	67%-Audacity 33%-Centra 0%-EasyPodcast	n/a
Blogs	15% (another 3% use blogs, but someone else creates the technical aspects; 82% do not use blogs at all)	53%-WordPress 41%-Blogger 12%-Other (Edublog, Blogspot) 6%-Typepad	n/a
Videos	10% (another 10% use videos, but someone else creates the technical aspects; 80% do not use videos at all)	70%-MovieMaker 26%-iMovie 17%-Other (FlipShare, FlipVideo, YouTube) 4%-JumpCut	n/a
Animation	7% (another 1% use animation, but someone else creates the technical aspects; 92% do not use animation at all)	67%-Other (Animate, MS Office, PowerPoint, Animoto) 13%-Scratch 7%-Xtranormal	n/a
Cartoons	2% (0% use cartoons, with	100%-Other (Google images,	n/a

	someone else creates the technical aspects; 98% do not use cartoons at all)	Paint)	
Games & Simulations	28% (another 4% use games, but someone else creates the technical aspects; 68% do not use games at all)	82%-Other (PuzzleMaker, TurningPoint, PowerPoint, Publisher, Word, GameShow Pro, online templates) 16%-GameMaker Studio 2%-SecondLife	n/a
Social Media	64% (36% do not use social media at all)	96%-Facebook 34%-Twitter 26%-LinkedIn 6%-Other (Pinterest, WordPress, Texting)	Marketing, polling, brief facts, links, announcements, pictures, recruitment, vote on contests, networking (LinkedIn), text reminders, tweet/post-program impacts, ongoing contact/monitoring of class participants.
Website	43% (another 57% use a website, but someone else creates the technical aspects; 24% do not use a website at all)	Plone, FrontPage, WordPress, Sharepoint, Facebook, Contribute, CMS	Newsletters, announcements, calendar, links, fact sheets, recipes, pictures, video clips, Powerpoints, course registration, blogs, forms

Multimedia Effectiveness

We asked respondents how effective they perceived various forms of multimedia were for delivering program content. Presentations were largely reported as the most effective application. Websites and social media also showed a strong contingency. The results also indicated that many multimedia forms are underused, such as podcasts, blogs, animation, and cartoons, based on non-responses to those questions. The various applications used by Extension educators for each form of multimedia are reported in Table 4 below.

Table 4.

Multimedia Effectiveness

Multimedia Application	% Very Ineffective	% Somewhat Ineffective	% Neither Effective or Ineffective	% Somewhat Effective	% Very Effective	% N/A	Total Responses
Presentations	9	2	1	22	65	4	219
Podcasts	3	0	3	5	0	90	168
Blogs	4	4	5	15	3	73	176
Videos	4	3	4	17	26	50	183
Animation	3	3	3	6	6	82	177
Cartoons	2	2	2	7	3	87	172
Games & Simulations	3	3	3	9	21	63	177
Social Media	3	7	9	32	22	29	198
Website	4	5	9	42	23	19	204

Conclusion

Although a variety of technological devices and multimedia applications are available for educational delivery, most Extension educators rely on laptops and projectors, using PowerPoint for presentations. Training and resources should be available to update educational delivery for a society that is becoming more technologically savvy and instantaneous with their demand for information.

As proposed by Diem et al. (2011), six key actions are needed to successfully meet modern demand for educational delivery:

- Model the use of technology by administrative leadership;

- Develop and implement a technology plan that addresses leadership directive and system needs;

- Establish a recognition program for technology use among faculty, staff, and volunteers;

- Provide support to improve success;

- Provide needed technology for administrative and managerial tasks, not just for program delivery;

- Use eXtension for program content, delivery, and collaboration among colleagues.

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