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Debunking the Myth That Technology Is a Barrier for Volunteer Training Delivery

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Abstract

Georgia 4-H and Extension master gardener (EMG) volunteers were surveyed following required online trainings. Most respondents had access to high-speed Internet via personal computers. No significant differences existed regarding familiarity with, comfort with, or use of technology applications among the groups of 4-H and EMG volunteers surveyed. However, traditionalists (those born between 1925 and 1942) were less familiar and comfortable with technology than other generations surveyed. Extension personnel should use technology more with volunteers, including via online offerings accessible by and compatible with smartphones and tablets. Mixed success across program areas with online training does not appear to be due to lack of technology access.

Keywords: online volunteer training, Internet access, technology use, technology barrier, volunteer training barrier

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Introduction

Online training has been an efficient way to train volunteers, resulting in decreased trainer time and organizational costs, and volunteers have valued the additional benefit of flexible scheduling (Frendo, 2017; Ouellette, Lesmeister, Lobley, & Gross, 2014; Robideau & Vogel, 2014; VanDerZanden & Kirsch, 2003). Virtual trainings have been required for University of Georgia Extension volunteers who work with youths since 2008; however, over the years multiple technology-related issues have been presented as barriers by Extension staff and volunteers.

Some concerns about delivering volunteer training for which high-speed Internet connectivity is needed are as follows:

- Volunteers' technical skills and levels of Internet savviness and comfort with technology are obstacles (VanDerZanden, Rost, & Eckel, 2002; Vines, Jeannette, Eubanks, Lawrence, & Radhakrishna, 2016).

- Training is more difficult for volunteers who lack experience with the online environment (VanDerZanden et al., 2002).
- Rural areas lack sufficient technical infrastructure for volunteers to access online training (Robideau & Santl, 2011).
- Potential exists for volunteers to become frustrated if they cannot access resources (Robideau & Vogel, 2014; VanDerZanden & Rost, 2003).

Extension professionals not only must address concerns about virtual training but also must deliver programming that meets expectations and needs of volunteers across generations (Culp, McKee, & Nestor, 2005). Dorn, Newberry, Bauske, and Pennisi (2018) noted that their Extension master gardener (EMG) volunteers represented the four generations of Gen Y (born between 1982 and 2000), Gen X (born between 1961 and 1981), baby boomer (born between 1943 and 1960), and traditionalist (born between 1925 and 1942). Similar generational representation has been prevalent among 4-H volunteers (Culp et al., 2005). Members of each of these cohorts (or generations) have been commonly exposed to social and intellectual conditions, or events, that formed their generation's consciousness (Parry & Urwin, 2011; Rotolo & Wilson, 2004; Strauss & Howe, 1991; Zemke, Raines, & Filipczak, 2000).

Relative to training options for Extension volunteers, research has shown that commonality among members of a generation extends to expectations and needs associated with learning and communication as well. For example, Ouellette et al. (2014) noted that older 4-H volunteer respondents with less digital experience were less positive about an e-learning training experience and felt less prepared for their volunteer service. Newer generations, on the other hand, *expect* organizations to engage in virtual communication (Frendo, 2017). Indeed, Daniel and Hobbs (2018) described young adult 4-H volunteers as having both a preference for digital communication and a need for a personalized approach. Furthermore, a 2015 study of Iowa EMG volunteers indicated that online training was more often preferred by 20- to 49-year olds as compared to older volunteers (Takle, Haynes, & Schrock, 2016). However, Culp (2009) noted that even boomers "expect Extension to be technologically advanced" ("Organizational Resources," para 2).

Given the aforementioned findings, the perception exists that technology is a barrier to providing virtual training for Extension volunteers. Therefore, we wanted to determine whether lack of familiarity and lack of comfort with technology are indeed barriers to implementing such training for Extension volunteer groups in general and across generations. Bumgarner and Donaldson (2017) noted that "efficiency and efficacy in training involves understanding the most impactful methods and tools of instruction" (p. 144). Moreover, the perception of updated, high-quality trainings has been considered essential for success (Takle et al., 2016). Thus, it is imperative for Extension professionals to clarify whether perceived barriers to providing efficient, effective trainings actually exist.

Extension professionals must use technology to reach current and future volunteers to remain on the cutting edge of program delivery. In doing so, Extension professionals also reap other benefits of technology use: balancing program inputs such as trainer time, travel costs, and printing expenses; meeting the expectations of upcoming generations; and remaining an attractive place to volunteer. Given mixed reviews of online trainings from 4-H and EMG staff and volunteers, we set out to determine technological barriers, hypothesizing that there would be no differences in technology familiarity, comfort, use, and access among Extension volunteers in Georgia.

Materials and Methods

To obtain a reasonable number of responses (Israel, 2013), we surveyed a random sample of 907 Extension volunteers selected from 3,387 4-H volunteers and 2,825 EMG volunteers who were active in January 2017. The sample included 295 4-H volunteers who had completed an online risk management training module, 305 EMG volunteers who had completed an online risk management training module (EMG_RMT), and 307 EMG volunteers who had not completed the online training (EMG_nonRMT). Prior to our administration of the survey, the University of Georgia Internal Review Board determined the study to be exempt (approval #4364).

We explored three main technology constructs: familiarity with, comfort with, and use of technology. Each construct consisted of eight questions designed specifically for the study audience. Each question had a 5-point Likert response scale (1 = *not at all familiar* to 5 = *extremely familiar*, 1 = *extremely uncomfortable* to 5 = *extremely comfortable*, and 1 = *never* to 5 = *always*, respectively). We calculated the three construct scores using summated rating scales. Additionally, respondents were asked to provide demographic information and to identify

- their experience with online training other than the risk management module,
- the type of Internet access they were most likely to use, and
- the device they typically used to access the Internet.

An introductory message about the study was sent 1 week prior to our launching the Qualtrics online survey (Qualtrics 2017, Provo, UT), which was administered between January 31 and March 7, 2017. The survey remained open for 1 month, with follow-up emails sent at weeks 2, 3, and 4. After 2 weeks, we mailed a paper copy of the survey to individuals who had not responded to the online survey using postal addresses on record in respective volunteer systems. Our survey protocol was based on Dillman methods for mixed-methods survey research (Dillman, Smith, & Christian, 2014). We used IBM SPSS (version 24 for Windows; IBM Corp., Armonk, NY) to analyze responses through the generation of descriptive statistics, analysis of variance, and correlation. Bonferroni adjustment was used in the case of multiple comparisons.

Results

With 297 total surveys completed, the overall response rate was 32.7% (Table 1). More respondents completed surveys online than by paper. A small portion of surveys (9%) were returned due to incorrect contact information. Reliability, which we calculated using Cronbach's alpha, was consistently high across technology constructs (.868 for familiarity, .850 for comfort, and .812 for use), with no improvement with item deletion.

Table 1.

Response Rates to Technology and Training Survey

Respondent type	No. surveys sent	Online responses	Paper responses	Total responses	Total responses as % of surveys sent
4-H	295	55	11	66	22.3%
EMG_RMT	305	137	42	179	58.6%
EMG_nonRMT	307	23	29	52	16.9%
All	907	215	82	297	32.7%

Note. 4-H = 4-H volunteers who had completed an online risk management training module, EMG_RMT = EMG volunteers who had completed an online risk management training module, and EMG_nonRMT = EMG volunteers who had not completed the online training.

Respondents are demographically described as a group and by respondent type in Table 2. An age difference was observed among groups: 4-H volunteers were younger than EMG volunteers. Of 4-H respondents, the majority represented Gen X (75.4%), whereas the majorities of EMG_RMT and EMG_nonRMT respondents represented baby boomers (74.6% and 69.5%, respectively). The mean volunteer ages were 44.9, 66.6, and 65.8 years for 4-H, EMG_RMT, and EMG_nonRMT respondents, respectively. The majority of responses overall were from females (75.8%), with the majority of responses from each volunteer type also from females (65.5% for 4-H, 79.3% for EMG_RMT, and 75.5% for EMG_nonRMT). Higher percentages of 4-H volunteers and EMG_RMT volunteers (77.3% and 63.7%, respectively) had had experience with other online training than those who had not, whereas a higher percentage of EMG_nonRMT (57.7%) lacked experience with other online training.

Table 2.

Demographic Descriptions of Survey Respondents

Variable	All	4-H	EMG_RMT	EMG_nonRMT
Age (years)[a]				
18-29	5 (1.9%)	4 (7.5%)	0 (0.0%)	1 (2.1%)
30-39	17 (6.6%)	14 (26.4%)	3 (1.8%)	0 (0.0%)
40-49	24 (9.3%)	18 (33.9%)	4 (2.5%)	2 (4.3%)
50-59	32 (12.4%)	11 (20.7%)	14 (8.8%)	7 (15.2%)
60-69	94 (36.5%)	5 (9.4%)	75 (47.4%)	14 (30.4%)
70-79	77 (29.9%)	1 (1.8%)	56 (35.4%)	20 (43.4%)
80-89	8 (3.1%)	0 (0.0%)	6 (3.7%)	2 (4.3%)
Generation[b]				
Gen Y (18-35 years)	10 (3.9%)	6 (11.3%)	3 (1.8%)	1 (2.1%)
Gen X (36-56 years)	59 (23.0%)	40 (75.4%)	13 (8.2%)	6 (13.0%)
Baby boomer (57-74 years)	156 (60.7%)	6 (11.3%)	118 (74.6%)	32 (69.5%)
Traditionalist (75-92 years)	32 (12.8%)	1 (1.8%)	24 (15.1%)	7 (15.2%)

Gender				
Female	195 (75.8%)	40 (65.5%)	131 (79.3%)	37(75.5%)
Male	62 (24.1%)	21 (34.4%)	34 (20.6%)	12 (24.4%)
Experience with other online training				
No	107 (36.0%)	15 (22.7%)	62 (34.6%)	30 (57.7%)
Yes	185 (62.3%)	51 (77.3%)	114 (63.7%)	20 (38.5%)

Note. 4-H = 4-H volunteers who had completed an online risk management training module, EMG_RMT = EMG volunteers who had completed an online risk management training module, and EMG_nonRMT = EMG volunteers who had not completed the online training.
[a]In all, 257 respondents reported age data; *M* (*SD*) = 62.0 (13.2) years. Of 4-H respondents, 53 reported age data; *M* (*SD*) = 44.9 (11.7) years. Of EMG_RMT respondents, 158 reported age data; *M* (*SD*) = 66.6 (8.99) years. Of EMG_nonRMT respondents, 46 reported age data; *M* (*SD*) = 65.8 (11.0) years. [b]Gen Y = born between 1982 and 2000, Gen X = born between 1961 and 1981, baby boomer = born between 1943 and 1960, and traditionalist = born between 1925 and 1942.

Technology Constructs

No statistically significant differences were found in technology constructs (familiarity with, comfort with, or use of technology) among volunteer types (Table 3). When we analyzed the data by generation, we found significant differences in technology familiarity, $F(3) = 11.01$, $p < .001$, and technology comfort, $F(3) = 8.78$, $p < .001$ (Table 4). Specifically, traditionalists indicated lower familiarity and comfort than the other three generations (Table 4). Interestingly, technology use was not significantly different among generations, $F(3) = 3.04$, $p = .03$. Females had higher technology familiarity, comfort, and use scores than males (Table 5). Volunteers without other online training experience had significantly lower scores for all three constructs than volunteers having experience with other online training (Table 6).

Table 3.
Technology Construct Scores by Volunteer Type

Construct	**Volunteer type**	**No.**	***M* (*SD*)[a]**	***df***	***F***	***p***
Technology familiarity				2	1.42	.24NS
	4-H	62	3.67 (0.91) a			
	EMG_RMT	162	3.43 (0.96) a			
	EMG_nonRMT	45	3.51 (1.08) a			
	All	269	3.50 (0.97) a			
Technology comfort				2	1.99	.14NS
	4-H	64	4.14 (0.78) a			
	EMG_RMT	162	3.94 (0.80) a			
	EMG_nonRMT	49	3.82 (1.04) a			
	All	275	3.97 (0.85) a			

Technology use				2	1.78	.17[NS]
	4-H	63	3.24 (0.91) a			
	EMG_RMT	167	3.01 (0.87) a			
	EMG_nonRMT	49	2.96 (1.02) a			
	All	279	3.05 (0.91) a			

Note. Each construct based on an average of eight questions with 5-point Likert response scale. 4-H = 4-H volunteers who had completed an online risk management training module, EMG_RMT = EMG volunteers who had completed an online risk management training module, and EMG_nonRMT = EMG volunteers who had not completed the online training.

[a]Means separated by Tukey post hoc test. Means followed by same letter not significantly different from each other.

*significant at $p \leq .0125$. **significant at $p < .001$. [NS]Nonsignificant.

Table 4.

Technology Construct Scores by Volunteer Generation

Construct	**Generation**	**No.**	***M* (*SD*)[a]**	***df***	***F***	***p***
Technology familiarity				3	11.01	.00**
	Gen Y	9	4.04 (0.83) b			
	Gen X	55	3.78 (0.81) b			
	Baby boomer	143	3.53 (0.92) b			
	Traditionalist	27	2.65 (0.97) a			
Technology comfort				3	8.78	.00**
	Gen Y	9	4.01 (0.81) b			
	Gen X	57	3.89 (0.65) b			
	Baby boomer	143	4.02 (0.78) b			
	Traditionalist	27	2.65 (0.97) a			
Technology use				3	3.04	.03[NS]
	Gen Y	9	3.43 (0.75) a			
	Gen X	58	3.25 (0.84) a			
	Baby boomer	149	3.07 (0.91) a			
	Traditionalist	30	2.70 (0.95) a			

Note. Each construct based on an average of eight questions with 5-point Likert response scale. Gen Y = born between 1982 and 2000, Gen X = born between 1961 and 1981, baby boomer = born between 1943 and 1960, and traditionalist = born between 1925 and 1942.

[a]Means separated by Tukey post hoc test. Means followed by same letter not significantly different from each other.

*significant at $p \leq .0125$. **significant at $p < .001$. [NS]Nonsignificant.

Table 5.
Technology Construct Scores by Volunteer Gender

Construct	Generation	No.	*M* (*SD*)[a]	*df*	*F*	*p*
Technology familiarity				248	3.35	.00**
	Female	188	3.63 (0.94) a			
	Male	62	3.18 (0.91) b			
Technology comfort				252	2.56	.01*
	Female	192	4.08 (0.78) a			
	Male	62	3.77 (0.90) b			
Technology use				258	2.51	.01*
	Female	198	3.15 (0.93) a			
	Male	62	2.82 (0.82) b			

Note. Each construct based on an average of eight questions with 5-point Likert response scale.
[a]Means followed by same letter not significantly different from each other.
*significant at $p \leq .0125$. **significant at $p < .001$. [NS]Nonsignificant.

Table 6.
Technology Construct Scores by Experience with Other Online Training

Construct	Experience with other online training	No.	*M* (*SD*)[a]	*df*	*F*	*p*
Technology familiarity				265	-5.12	.00**
	No	94	3.23 (0.98) a			
	Yes	173	3.71 (0.89) b			
Technology comfort				271	-5.34	.00**
	No	99	3.62 (0.90) a			
	Yes	174	4.16 (0.75) b			
Technology use				274	-3.80	.00**
	No	99	2.78 (0.89) a			
	Yes	177	3.21 (0.89) b			

Note. Each construct based on an average of eight questions with 5-point Likert response scale.
aMeans followed by same letter not significantly different from each other.
*significant at $p \leq .0125$. **significant at $p < .001$. NSNonsignificant.

Consistently, familiarity with, comfort with, and use of technology had strong positive correlations with one another (Table 7). Age had a slight negative correlation with technology familiarity, comfort, and use (Table 7). As well, experience with other online training was slightly correlated with technology familiarity, comfort, and use (Table 7).

Table 7.

Pearson Product-Moment Correlations Between Technology Construct Scores and Respondent Demographics

Variable	Familiarity	Comfort	Use	Experience	Age
Familiarity	1.000	.865**	.855**	.300**	-.298**
Comfort		1.000	.797**	.309**	-.267**
Use			1.000	.223**	-.188**
Experience				1.000	-.191**
Age					1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Access to Internet

The majority of respondents indicated that they were most likely to access the Internet via high-speed access at home, with a second, smaller group indicating that they were most likely to do so through a mobile phone (Table 8). Volunteers accessed the Internet similarly, regardless of their volunteer type, generation, gender, or other online training experience (Table 8). All respondents had some form of Internet access, and only a small percentage (0.4%) indicated that they were most likely to access the Internet via public Wi-Fi (Table 8).

Table 8.

Respondents' Most Likely Methods for Accessing Internet

Respondents	High-speed Internet	Satellite Internet	Dial-up Internet	Public WiFi	Mobile phone	No access
Volunteer type						
4-H	43 (67.2%)	3 (4.7%)	3 (4.7%)	1 (1.6%)	14 (21.9%)	0 (0.0%)
EMG_RMT	146 (84.4%)	6 (3.5%)	3 (1.7%)	0 (0.0%)	18 (10.4%)	0 (0.0%)
EMG_nonRMT	41 (82.0%)	0 (0.0%)	3 (6.0%)	0 (0.0%)	6 (12%)	0 (0.0%)
All	230 (80.1%)	9 (3.1%)	9 (3.1%)	1 (0.3%)	38 (13.2%)	0 (0.0%)

Generation						
Gen Y	5 (50.0%)	0 (0.0%)	0 (0.0%)	1 (10.0%)	4 (40.0%)	0 (0.0%)
Gen X	44 (74.6%)	3 (5.1%)	2 (3.4%)	0 (0.0%)	10 (16.9%)	0 (0.0%)
Baby boomer	127 (84.1%)	3 (2.0%)	3 (2.0%)	0 (0.0%)	18 (11.9%)	0 (0.0%)
Traditionalist	25 (86.1%)	1 (3.4%)	1 (3.4%)	0 (0.0%)	2 (6.9%)	0 (0.0%)
All	201 (80.7%)	7 (2.8%)	6 (2.4%)	1 (0.4%)	34 (13.7%)	0 (0.0%)
Gender						
Female	168 (82.4%)	4 (2.0%)	3 (1.5%)	1 (0.5%)	28 (13.7%)	0 (0.0%)
Male	48 (76.2%)	4 (6.3%)	4 (6.3%)	0 (0.0%)	7 (11.1%)	0 (0.0%)
All	216 (80.9%)	8 (3.0%)	7 (2.6%)	1 (0.4%)	35 (13.1%)	0 (0.0%)
Experience with other online training						
No	82 (78.8%)	7 (6.7%)	3 (2.9%)	1 (1.0%)	11 (10.6%)	0 (0.0%)
Yes	148 (80.9%)	2 (1.1%)	6 (3.3%)	0 (0.0%)	27 (14.8%)	0 (0.0%)
All	230 (80.1%)	9 (3.1%)	9 (3.1%)	1 (0.3%)	38 (13.2%)	0 (0.0%)

Note. 4-H = 4-H volunteers who had completed an online risk management training module, EMG_RMT = EMG volunteers who had completed an online risk management training module, and EMG_nonRMT = EMG volunteers who had not completed the online training. Gen Y = born between 1982 and 2000, Gen X = born between 1961 and 1981, baby boomer = born between 1943 and 1960, and traditionalist = born between 1925 and 1942.

Devices Used to Access Internet

A personal computer was the primary device used to access the Internet for all comparisons, including volunteer type, generation, gender, and experience with other online training (Table 9). A smartphone was the second most frequently used device for accessing the Internet, followed by an iPad or other tablet-type device (Table 9).

Table 9.

Internet Access Devices Used by Respondents

Respondents	iPad/tablet	Smartphone	Personal computer	Public computer
Volunteer type				
4-H	8 (12.5%)	26 (40.6%)	30 (46.9%)	0 (0.0%)
EMG_RMT	31 (17.9%)	38 (26.8%)	102 (59.0%)	2 (1.2%)
EMG_nonRMT	12 (24.0%)	13 (26.0%)	25 (50.0%)	0 (0.0%)
All	51 (17.8%)	77 (26.8%)	157 (54.7%)	2 (0.7%)
Generation				
GenY	0 (0.0%)	6 (60.0%)	4 (40.0%)	0 (0.0%)

GenX	8 (13.6%)	21 (35.6%)	30 (50.8%)	0 (0.0%)
Baby Boomer	33 (21.7%)	33 (21.7%)	84 (55.3%)	2 (1.3%)
Traditionalist	4 (13.3%)	5 (16.7%)	21 (70.0%)	0 (0.0%)
All	45 (17.9%)	65 (25.9%)	139 (55.4%)	2 (0.8%)
Gender				
Female	34 (16.7%)	58 (28.4%)	111 (54.4%)	1 (0.5%)
Male	12 (18.5%)	11 (16.9%)	41 (63.1%)	1 (1.5%)
All	46 (17.1%)	69 (25.7%)	152 (56.5%)	2 (0.7%)
Experience with other online training				
No	21 (20.0%)	25 (23.8%)	57 (54.3%)	2 (1.9%)
Yes	31 (16.8%)	52 (28.3%)	100 (54.3%)	1 (0.5%)
All	52 (18.0%)	77 (26.6%)	157 (54.3%)	3 (1.0%)

Note. 4-H = 4-H volunteers who had completed an online risk management training module, EMG_RMT = EMG volunteers who had completed an online risk management training module, and EMG_nonRMT = EMG volunteers who had not completed the online training. Gen Y = born between 1982 and 2000, Gen X = born between 1961 and 1981, baby boomer = born between 1943 and 1960, and traditionalist = born between 1925 and 1942.

Discussion

The response rate to our survey was consistent with standard response rates and provided 94% confidence (Israel, 2013). Demographics of respondents were consistent with other assessments of similar volunteer programs (Culp et al., 2005; Dorn et al., 2018).

We were surprised by the level of incorrect volunteer contact information for our sample. Wrong email and postal addresses were found for both 4-H and EMG volunteer groups, though addresses for EMG_nonRMT were more likely to be incorrect. This is a problem for training as links to online training are sent via email. Incorrect contact information prohibits volunteer access and training completion and limits our study with a sampling frame error. After learning about the high number of incorrect volunteer email and postal addresses, we prompted volunteers to update contact information prior to subsequent rounds of online trainings.

Technology familiarity, comfort, and use scores for participants in our study (ranging from M = 2.96 to M = 4.15 on a 5-point scale) are consistent with volunteers who are savvy with basic Internet tools. Additionally, access to the Internet does not appear to be a limiting factor in using technology for training volunteers. A 2016 study of EMG volunteers showed that Internet access was an issue for only 5% of respondents (Vines et al., 2016), and we conclude that Internet access for our sample was no issue at all, with 0% of respondents having no access. Neither technology nor access to the Internet appears to be a barrier to online training.

We found that in both 4-H and EMG programs, majorities of volunteers had experience with other online trainings and had high technology construct scores. These findings are contrary to an earlier Extension personnel assessment suggesting that access and lack of skill were barriers to widespread use of technology for volunteer training (Dromgoole & Boleman, 2006). In fact, 58% of EMG volunteers in our study reported having had experience with an online course, up from 22% in a 2001 assessment of Oregon EMG volunteers (VanDerZanden & Rost, 2003).

The finding that the majority of our respondents accessed high-speed Internet using a personal computer suggests that there is now great flexibility for design and delivery of training modules. Educators must still consider, though, the small percentage of volunteers (3.1% in our sample) who may have a negative training experience due to slower dial-up Internet access.

We are cautiously optimistic that technology barriers are limitations of the past. Future considerations include providing more online trainings and programming resources. We anticipate the need for training modules to be compatible with smartphones and tablet-type devices. Though accessing training through mobile phones seems more convenient, we have a concern about the data usage and length of training module required.

Although there were no statistically significant differences in technology familiarity, comfort, and use scores among our respondent types (4-H, EMG_RMT, and EMG_nonRMT), we did find differences related to gender and generation of volunteers. Gender differences may be due to a larger proportion of females responding; however, volunteer coordinators seeking insight for increasing gender diversity may find value in the comparisons. We can reduce remaining barriers to technology use in volunteer preparation by taking simple steps, such as providing detailed orientations for traditionalists or those without prior online training experience. We anticipate value in testing new methodologies in preparation for engaging younger generations in Extension volunteer programs.

Conclusion

Mixed success across program areas with online training does not appear to be due to technology access. We assumed that lack of access to and comfort with technology were not barriers to online trainings, and our study supported these assumptions. Volunteers across program areas and generations have access to the Internet and technology, although younger generations of volunteers are more familiar and comfortable with technology than traditionalists. It is our recommendation that Extension personnel use technology more with volunteers, including via future online developments accessible by and compatible with smartphones and tablets.

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