A DESCRIPTIVE STUDY OF 4-H ADULT VOLUNTEERS'

PERCEPTIONS OF DISTANCE LEARNING

by

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DEDICATION

       I dedicate my thesis work to my family and friends that encouraged me to reach my academic and professional goals. Each member of my family played an important role in helping me to recognize the importance of tackling this goal. My husband Jay and my daughter Lucy endured late nights of writing and stressful moments alongside me and I will forever me grateful for their patience and encouragement as I completed this strenuous process. Also, to all of my parents that knew I could do this, even when I wasn't sure I could and took such pride in recognizing this academic achievement. I thank you for giving me the moral support I needed.

       There are so many friends and colleagues that deserve recognition for their unwavering support and encouragement. While I will not name you all, I am sure you know who you are and are celebrating this achievement with me. However, one friend began this journey with me and together we have achieved this momentous goal. Josie Evenson has been by my side whenever I have needed her and I would not have accomplished most things, including this work without her.

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GLOSSERY OF TERMS

Montana 4-H: Montana 4-H is the youth development program of Montana State University Extension. It is an out of school youth organization for youth ages 5-19 and is delivered in each county across Montana through the MSU Extension office and supported statewide by the 4-H Center for Youth Development.

4honline: The web-based database system used by MSU Extension county offices to collect enrollment information from 4-H members, volunteer and families.

Organizational Volunteer or Leader: This type of volunteer guides the overall organization of a 4-H club, help it function smoothly and maintain communications among the member families, the club and the county. Also, the primary club contact person with the MSU Extension county staff.

Project Volunteer or Leader: Has specific expertise in an area of interest and works with members enrolled in a specific project or project area, assisting them to plan and carry out experiences that will help them reach their learning goals including project meetings, workshops and competitive events.

Other Volunteer: Provide leadership within a specific, short-term project or activity. These activity volunteers work with 4-H members to prepare for the activity, obtain relevant literature and distribute it to adult and youth participants, and coordinate the activity or community event while supporting the positive growth and development of each youth involved.

ABSTRACT

Like many other states Montana 4-H is experiencing reduced participation in types of face-to-face volunteer learning experiences. To continue to provide a high-quality program to both youth members and volunteer leaders without putting burden on MSU Extension field faculty, distance learning has been identified as a possible solution to this phenomenon. MSU Extension agents indicated during 2018 focus groups that distance learning is a viable and exciting delivery method for some types of 4-H learning experiences, however further investigation of user perceptions is necessary before we proceed as a system. By using quantitative descriptive research methodology, this study identifies the perceptions and needs of the prospective adult volunteer user in order for 4-H professionals to adequately assess and design the integration of distance learning methods with 4-H learning experiences, specifically for volunteer training. This study is aimed at considering the possibilities of distance learning and bringing them together with the ideas and opinions of the individuals who have an important stake in program delivery.

CHAPTER ONE

INTRODUCTION

Background

The delivery of educational courses and programs using distance learning methods is prevalent in higher education and K-12 settings; however, there has been limited discussion and use of web-based and distance education by youth organizations for engaging both members and volunteers in learning. 4-H programs are traditionally delivered in face-to-face settings including community and project club meetings, afterschool programs, camp settings and other educational events and programs that require the youth and volunteers to come to the educational experience in order to develop their skills or partake in an experience ("National Institute" n.d.).

However, according to a 2007 study of Florida 4-H youth there were significant obstacles that keep youth from actively engaging in youth organizations. The authors stated the most significant of these obstacles were lack of time or other organizations competing for their time, lack of financial support and lack of parental involvement (Brennan, Barnett, Baugh, 2007). The same phenomenon was described by MSU Extension agents during 2018 focus groups as existing throughout Montana 4-H, both with overscheduled teens and busy adult volunteers (Schomer).

Volunteer training and engagement is an integral part of any successful 4-H program (Kaslon, Lodi & Greve, 2005; Richard & Verma, 1984). While face-to-face methods for training and engaging volunteers worked ideally in the past, those methods have become less feasible. A recent study among MSU Extension agents, as well as a review of the literature, indicated older

4-H youth and 4-H volunteers could benefit from distance learning delivery options because they have seen a significant decrease in engagement among volunteer leaders in face-to-face training opportunities (Schomer, 2018). This phenomenon begs the question, if they are not coming to us, should we go to them? By definition, distance learning can be thought of as education or training delivered to individuals who are geographically dispersed or separated by physical distance from the instructor using computer and telecommunication facilities (Belanger & Jordan, 2000). This proposed study is a natural next step to determine the best way to proceed with a revised program planning delivery model incorporating distance technology.

<u>Purpose</u>

The purpose of this quantitative descriptive study was to investigate the perceptions of currently enrolled Montana 4-H volunteer leaders on the topic of distance learning and the delivery of Montana 4-H learning experiences in order to identify the most effective program delivery methods for this group. Of particular interest was the potential use, or lack thereof, of distance learning as a method of 4-H program delivery within the Montana State University (MSU) Extension system. Quantitative descriptive research methodology is applied to investigate this research question within the Montana 4-H program and MSU Extension system: How do 4-H volunteers perceive the use of instructional technology to deliver 4-H learning or training opportunities?

To guide and accomplish the research question, the following specific objectives were investigated:

1. What are the perceived advantages to delivering 4-H learning experiences using distance delivery technologies?

2. What are the perceived disadvantages to delivering 4-H learning experiences using distance delivery technologies?

3. What are the perceptions of technology that affect the implementation of distance learning within the Montana 4-H program?

Significance

This research has the potential to have a significant impact on how programs are designed and delivery within Montana 4-H and possibly 4-H across the United States. Schools across the country are utilizing distance education at the K-12 and higher education level extensively to offer courses when they do not have the staff or capacity to provide their students with face-to-face instruction. The development and design of digital experiences that model the same components as a face-to-face educational opportunity would allow the 4-H program to reach a greater number of people, thereby potentially increasing 4-H's reach and impact across the state.

It would be irresponsible to move forward with the adoption of distance learning without the opinions and thoughtful knowledge from the professionals who play a key role in delivering Montana 4-H programming. MSU Extension agents are the invaluable connection to local communities that access MSU Extension content and knowledge. The perceptions, ideas and opinions of this group have been identified in a recent collection of qualitative and while questions on complexity exist, relative advantage and compatibility were positively confirmed (Schomer, 2018). This current study is vital to addressing such complexities. By identifying the

perceptions and needs of the prospective users, adult volunteers, 4-H professionals can more adequately assess and design the integration of distance learning methods for 4-H learning experiences.

<center>Limitations and Assumptions</center>

A literature review revealed that distance learning is an effective way for teachers and facilitators to deliver educational material and for learners to gain knowledge. However, it is likely there are members of the 4-H community who would not agree or lack the capacity to receive training in this manner. Distance learning may not work for everyone. An additional assumption is that MSU Extension has the capacity to develop opportunities for distance learning. This capacity would include technical assistance and professional development support of MSU Extension professionals to develop quality online educational programs.

There are limitations to the study conducted. There is limited time to conduct data collection and a pilot test of the survey instrument was not conducted. The survey was administered to Montana 4-H volunteers enrolled for the 4-H year 2019-2020 and the results are representative of this population. It is also possible that due to the COVID-19 crisis survey participants experiences and attituded towards online experiences have been affected due to an overload of virtual offerings and participants perceptions are skewed by this phenomenon.

The online Qualtrics survey was delivered via email, limiting participation to those with an accurate email address. Participants who responded to the email invitation to complete the online survey showed a willingness to be a part of the study and a readiness to participate in an online distance method of communication. It is possible their motivation and comfort level using internet technology could also be a limitation of the research. More opportunity for all members,

volunteers and families to comment and provide their attitudes and perceptions using more traditional face-to-face or pen and paper methods may allow a clearer and broader picture.

An additional limitation of this study is the relationship between the participants and the researcher. Further described in the positionality section, my role within the MSU Extension system and the 4-H Center for Youth Development is to deliver programs in partnership with the 4-H volunteers being studied. However, because I have a close relationship and deep understanding of the study context data collection and analysis is more efficient and profound. The research purpose and question are bound to the context of the organization MSU Extension and the Montana 4-H program and thus strengthens the design of the study making it very specific.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The literature supports Diem, Hino, Martin, and Meisenbach's (2011) statement that *"The Cooperative Extension System is at a crossroads regarding educational programming and clientele relationships in a digital age."* This study's intention is to investigate the readiness of volunteer leaders, as a critical audience within the Montana 4-H program, to adopt distance learning technologies as a program delivery method. There is a wide body of literature that discusses a variety of distance learning concepts and helps to understand how the evolution to online learning relates to fulfilling the Extension mission and developing programming for adult learners including 4-H volunteer leaders.

Extension History and Movement to Distance Delivery Methods

A 2013 survey conducted by Babson Survey Research Group called *Grade Change – Tracking Online Education in the United States* indicated the number of institutions that believe online education is a critical component of their long-term strategy has shown small but steady increases for a decade. Harting and Erthal (2005) reported a variety of research revealing distance learning was an ever evolving pedagogical and social construct that had rooted itself within the field of education. In Ketnor's (2015) historical review of distance education the author opens the chapter with "online education is no longer a trend." It is safe to say that the research supports online learning as a viable, if not necessary, tool for the dissemination of information and procurement of knowledge.

Campbell (1995) noted that "higher education faces the challenge of expanding the reach, quality, and effectiveness of instruction within the context of shrinking resources as well as organizing itself to serve students regardless of where they reside" (p.73). Even with its challenges distance learning has opened the doors to a wider audience of learners that benefit from higher education. The Extension system educatas learners at all stages of life on topics from financial management to food safety to youth leadership and pesticide management. Adult learners can reap the benefits of the ability to access knowledge and information wherever and whenever they want due to advancements in online learning (Iloh, 2015).

Montana State University Extension is a statewide educational outreach network that applies unbiased, research-based university resources to practical needs as identified by the people of Montana in their home communities. Extension is a form of distance learning, bringing educational programs from the university campus into local communities. Currently this is accomplished through the local county Extension office and the dissemination of information through face-to-face workshops, online and paper guides and curriculum, and relationships with knowledgeable professionals. Some webinar series have been tested and deemed successful, including a 2013 financial education program delivered jointly by Montana State University and South Dakota State specialists to county clientele. Johnson and Schumacher (2016) concluded that they were able to improve the reach of this program by delivering it online versus face-to-face.

Within the local communities MSU Extension professionals and campus-based faculty cooperate with local governments and citizens, to develop educational programs and

partnerships that make a positive difference in people's daily lives (Montana State University Extension (n.d.). Montana 4-H is the youth development program of MSU Extension and is one of the four program areas charged with carrying out this mission. As an active part of the higher education system, Extension education programs face similar challenges to campus-based educational programs. In order to continue to meet the needs of changing communities and reach individuals where they are, Extension professionals needed to rely more on technology to carry out the Extension mission (Bowen-Ellzey, Romich, Civittolo & Davis, 2013).

Franz and Cox (2012) were critical of the Extension system in noting that, as a whole, leaders and professionals were averse to change. However, they cited instances where pockets of individuals and groups with the national system were making strides to adopt innovation and utilize technology to increase program delivery and design. Dromgoole and Boleman (2006) found that Extension agents were uncertain about distance learning and cited such barriers as clientele acceptance, access, inability to use technology and the lack of face-to face interaction.

MSU Extension professionals have exhibited timid excitement about the possibilities of distance learning. The general attitude seems to be that Extension professionals accept the need but are unclear where their role is within adopting the innovation of distance learning. The same can also be said for 4-H volunteers. Kaslon, Lodl and Greve (2005) concluded 4-H volunteer leaders were interested in online training as a method for gaining new skills. This was also consistent with even older research that indicated 4-H volunteer leaders

needed other options of training in addition to county face-to-face meetings (Hiller,

MacDuff, & Mack, 2000).

Challenges to Using Distance Delivery Methods

Distance learning has not been used without drawbacks. Research conducted in

higher education and K-12 education indicated there was an intense requirement on self-

discipline and self-direction that some learners did not possess; the lack of face-to-face

engagement was detrimental to some learners (Dumford & Miller, 2018). Therefore,

understanding the perceptions of the user were important to the future relationship between

distance learning and 4-H programming. Research has also identified that the lack of

personal interaction with the instructor is a negative perception of distance learning.

Boleman and Dromgoole identified many perceived barriers of distance program delivery in

their 2006 study of Extension faculty. Among the most noteworthy were the lack of

interaction with the educator and peers and their own ability to deliver quality programs

online.

Distance learning theory indicates that the role of the instructor is a crucial part of

distance learning that leads to overall success of the learning (Totara, et al., 2005). This

lends to the assumption that the attitudes of the instructor, in this case Extension

professionals is a significant population to study within any given system. Research also

indicates that attitude toward technology is a determining factor in teacher readiness for

online learning (Celik & Yesilyurt, 2013). This could serve to be a significant challenge

within the MSU Extension system due to limited technical and program development

support for Extension professionals. However, MSU shows great promise in this area with the development of the Academic Technology and Outreach department.

Qualitative focus group research of MSU Extension faculty resulted in learning that MSU Extension agents are open to the idea and feel that distance learning can fill a gap in programming, specifically for 4-H volunteers (Schomer, 2018). With more knowledge and information regarding the ideas and opinions of the user, Extension professionals would have more knowledge to adopt distance learning methods and effecting their overall attitude towards the use of technology for programming.

<u>Distance Delivered Extension Programming</u>

Across the nation Extension professionals have been studying the use of distance learning methods and technology to deliver Extension learning experiences as diverse as family economics, pesticide management and 4-H volunteer training. Rader (2012) reported there were four keys to a successful Extension distance education course: a) the experience must be high quality; b) the content is in high demand, c) the need has been established and d) the delivery method must be accessible. In 2015, Rader & Gannon completed their three-part study and tested these factors with success by delivering a mixed method course to Alaska Stockgrowers. Authors concluded that the factors existed, therefore the course was successful, and a more flexible learning environment led to expanded potential for outreach.

Parker (2009) took an applied approach evaluating the actual skills necessary of an Extension professional embarking on distance learning delivery. He concluded that learning the skills necessary to create distance education materials was not difficult; it was more the fear of the unknown that was a barrier to Extension faculty. Previous research, including

Dromgoole and Boleman's (2006) study, revealed the perceptions and attitudes of Extension educators were key elements leading to the diffusion of the innovation of distance learning within Extension programs. As described by *Diffusion of Innovation theory*, diffusion is the rate for which the innovation is adopted by a system (Rogers, 2003).

Segar (2011) studied the barriers to the adoption of new technologies to deliver Extension programming and found that the people involved, including professionals and clientele, are the strongest barriers. The fear of losing the personal relationship between parties and the lack of understanding of the technological world has Extension holding tight to a traditional model of knowledge dissemination (Segar, 2011). Subsequently it is vital to look at the research that has evaluated the success of innovative programming that uses distance technology. A 1996 food safety instructor program delivered using videoconferencing software across Texas led by Dooley, Van Laanen, and Fletcher reported most of survey respondents were favorable of the methods used and would participate in a similar training again, but most importantly data indicated that there was a substantial increase in knowledge.

Based on Segar's (2011) evaluation of barriers it is also important to investigate participants opinion on the ability to build relationships while using distance technologies. Ricketts, Hoelscher-Day, Begeman, & Houtkooper (2001) were able to compare the effectiveness of a sports nutrition workshop delivered online and face-to-face finding that using a distance education format that employs a collaborative team effort and interactive telecommunication networks, the experience is as effective as face-to-face and has the capacity to reach participants in more locations while minimizing cost and instructor time. Like most

things quality counts and we must pay close attention to how the distance learning experiences are delivered not just through what means.

Barton and Barton compared the perceived satisfaction and intent to remain in the program between Delaware Master Gardeners who participated in a virtual and face-to-face delivery, finding that while reported satisfaction was lower for those that participated virtually this did not diminish their intent to remain in the program (2019). Participants reported that with time and increased familiarity of the virtual platform they felt overall satisfaction would increase (Barton & Barton, 2019).

Recognizing changes in Extension clients' learning preferences Hino and Kahn examined the use of hybrid or blended format, of some asynchronous online and some face-to-face, as a good fit for Extension program delivery (2016). The blended model builds on Extension's strengths of engagement while also responding to the limitations of time, financial implications and scheduling issues. While they found that not all topics in Extension are suited to the blended model, they found that the mode of delivery was efficient for the educators, convenient for the learners and they were able to meet a broader audience (Hino & Kahn, 2016).

<div align="center">Impact of Distance Technology on 4-H Volunteer Engagement</div>

While 4-H's mission is positive youth development (PYD) and programs that accomplish this mission are the mainstay, increasingly volunteer development and training is as important because it is these volunteers who are delivering the program to enrolled youth. Current research within Extension has been highly focused on volunteer training and management and the best way to accomplish this goa.

Robideau and Santl (2011) looked at the communication needs within 4-H families residing in largely rural areas of Northern Minnesota and foundthat technology barriers do still exist, that make it challenging for 4-H members, volunteers and their parents to access online training. However, the families that participated in the research did agree that online methods were the best way for the program to disseminate information, even with the connectivity challenges, citing that they are actively trying to improve their access to internet technology (Robideau & Santl, 2011). Researchers question if technology barriers should continue to be a deterrent to developing web-based resources.

A 2014 study evaluated the e-learning format of the volunteer training modules developed by 4-H specialist from the western region (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming) specifically looking at how e-learning may improve opportunities for volunteers to access 4-H orientation and training materials including the quality and content of the modules presented (Ouellette, Lesmeister, Lobley, & Gross, 2014). Respondents of the study commented that they liked the convenience and flexibility, the self-direction and ability to complete at their own pace and on their own time. However, the impersonal and very generic nature of the modules and lack of any interaction was an overwhelming dislike of participants.

The literature indicates one size does not fit all. Freidig found in a recent study of Master Gardener volunteers' experience with the addition to an online discussion forum to asynchronous learning modules, increased learning and satisfaction of the volunteers (2019). The addition of the added engagement and reflection of the discussion with peers, while not

without problems, is a positive integration and one way to overcome the perceived barrier of connection to others as a result of e-learning.

Dorn and Hobbs 2020 study of Extension 4-H and Master Gardener Volunteers in Georgia was able to, as stated in their title, "Debunk[ing] the Myth That Technology is a Barrier for Volunteer Training Delivery". The study aimed at clarifying whether perceived barriers to providing online training for volunteer exist in order to illustrate the benefits of technology use by Extension professionals to reach a broader audience of volunteers. The study did conclude, within the range of their study, technology barriers are a limitation of the past and both 4-H and Master Gardener volunteers surveyed are increasingly more familiar and comfortable with technology being used to deliver online training (Dorn & Hobbs, 2020).

Moving forward we can learn so much from the evaluation of innovative projects in the field. Learning what to do and what not to do when adopting distance learning methods. The research indicates that we should continue to move forward and find ways to incorporate distance learning methods to reach 4-H volunteers where they are. Accompanied by past research this study has the potential to serve as a road map for Montana 4-H's journey into applied distance technology.

<u>Theoretical Framework for Innovation to Distance Learning</u>

In summary, there seem to be many educators trying to identify the best way to travel the crossroads the digital age has presented us with. Distance learning is not without opposition and is not a perfect fix to many of Extension's programming challenges. However, it does seem to be important to continue to gather information from clientele and learn more about the best way to

balance ongoing challenges with resources and develop programming that meet the needs of communities.

While distance delivered educational programming may not be considered an innovation or new idea across all education realms, within the MSU Extension system and 4-H program it has not been widely used. Innovations in educating from a distance have been evolving for over 300 years and can be linked to trends in advancements in communication (Kentnor, 2015). The theoretical frame for this study was Diffusion of Innovation Theory. Rogers (2003) described innovation as *"an idea, practice, or object perceived as new by an individual or other unit of adoption"* (p. 34). The idea of distance learning and online education is new to volunteer leaders within the Montana 4-H system being investigated.

Innovation is at the forefront of the conversation pertaining to Extension programming. The topic is so important that the Journal of Extension committed its entire September (2018) issue to innovations within Extension programing, not only nationally but internationally. Extension is looking at innovation and specifically technology to solve problems, meet a more complex set of needs and engage a more diverse audience of clientele. Scanga, Deen, Smith, and Wright's (2018) development of a program that provided ongoing professional training by Extension professionals to educators in Burundi, Africa over a two-year period using only videoconferencing with great success is just one example of this innovation and adoption of distance technology within Extension.

The roots of the land grant institution and the Extension system itself can be traced back to innovators such as Justin Morrill who proposed the Morrill Act in 1862. An equally

as important innovation was the Smith Lever Act in 1914 *"providing federal support for land-grant institutions to offer instruction beyond their campuses through Cooperative Extension efforts in agriculture and home economics.* (Association of Public and Land Grant Universities, n.d.)"*. Rogers described these as innovators, the first to adopt innovation, always drawn to new ideas and not afraid of the risk (1973). Also critical to the adoption theory process, according to Rogers (1973) were the early adopters, characterized as individuals open and willing to embrace change.

Roger's Diffusion of Innovation theory serves as both a theoretical framework and a means to interpret data. Five major factors influence the adoption of an innovation. As this study focuses its efforts in gaining the in-depth understanding of the adoption of distance learning within a specific system, it makes sense to interpret the results through the lens of these factors to predict the intent of the population. Rollins (1993) similarly used Roger's (1973) five factors to investigate the innovativeness of Pennsylvania farmers. This study will use the five factors, relative advantage, compatibility, complexity, trialability, and observability to investigate the ability and likelihood of 4-H volunteers to adopt the identified innovation of distance learning:

1. Relative Advantage - The degree to which an innovation is seen as better than the idea, program, or product it replaces.

2. Compatibility - How consistent the innovation is with the values, experiences, and needs of the potential adopters.

3. Complexity - How difficult the innovation is to understand and/or use.

4. Trialability - The extent to which the innovation can be tested or

   experimented with before a commitment to adopt is made.

5. Observability - The extent to which the innovation provides tangible results.

   (Rogers, 2003 & LaMorte, 2016)

Figure 1

CHAPTER THREE

METHODOLOGY

<u>Design of Study</u>

According to Leedy & Ormrod research means to collect, analyze, and interpret information to understand a phenomenon (2014). This study used a descriptive survey design that employed quantitative research methods to address the research questions. Descriptive survey design was chosen to gain information about the attitudes, opinions, beliefs, behaviors, and demographics of the population (Creswell, 2014).

The design of this study was aimed at learning about the attitudes and opinions of current adult 4-H volunteers in order to determine their possible adoption of distance learning as a program delivery method in the future. This specific group was chosen to collect data because in earlier research adult volunteer leaders were identified as the most likely users and the users who could benefit the most from distance learning (Schomer, 2018; Kaslon, Lodle, & Greve, 2005).

Dillman identifies web-based surveys delivered via email to possible participants as the lowest in cost and most convenient for researchers (2014). However, web surveys generally have a low response rate. Data from the 4-H volunteer population identified was collected at one point in time using an online questionnaire. Respondents were invited to participate in the survey via an email invitation that included a unique survey link generated by the Qualtrics distribution tool.

Positionality

I believe strongly in the Land Grant mission and the power and responsibility we have as MSU Extension professionals to deliver quality research-based information to communities and citizens of Montana. It is my passion for this mission that has driven me to pursue research on the topic of distance learning. Informed by both experience and research, I believe barriers exist that make realizing the Extension mission more challenging for not only MSU Extension, but for extension professionals across the country. I agree with Hino and Kahn (2016) who stated, "*Extension clients' learning preferences are changing. The advent of widespread high-speed Internet, mobile devices, and advances in online pedagogy has disrupted traditional models of teaching and learning.*" In the current state of our technological world, a well thought out plan to bring communities and people closer to the programs we can deliver must include the application of distance technology resources. As a result of my familiarity of MSU Extension program I am aware of the gaps within programming that may be filled with distance learning practices.

As a youth development professional with over 15 years of experience in the field and working within the MSU Extension system and Montana 4-H program, I strongly believe in the 4-H program's ability to reach its educational goals. As the largest out of school youth development program in the state the Montana 4-H program is committed to providing programming that develops leadership, citizenship, and life skills in youth across Montana. The participants for this study are Montana 4-H volunteers whom, in most cases I have had an opportunity to work closely with in my capacity at the 4-H Center for Youth Development.

Beginning to understand the perceptions, capacity and needs of program users is

important in bridging the gap of distance between programming and need, helping to tear down barriers. However, it is most likely that a new set of barriers will exist to deliver educational opportunities through distance learning methods. It is vital to Extension's continued positioning within the higher education system that we do not face these technological barriers with fear, but the ability to understand analyze and overcome them. Diem, Hino, Martin, and Meisenbach (2011) suggest that Extension systems are failing to connect with a growing but largely underserved online only audiences. 4-H Volunteers are a vital group to delivering the 4-H Youth Development program across the country and have informational needs that are not being met (Ouellette, Lesmeister, Lobley, & Gross, 2014). It is my hope that with the in depth understanding and investigation of this research problem, light will be shed, and we will be able to move forward in our program delivery as a system.

Participants and Sample Design

Montana 4-H volunteers are enrolled each year in their county 4-H program using a statewide enrollment system called 4honline. The target population for this study was adult volunteers currently active in a county 4-H program. Using 4honline a report was run identifying adults that meet these criteria. This report returned 2,306 names. Additional information collected for the population through the enrollment system included the county of enrollment, the type of volunteer and email address, in order to select a stratified random sample. Because the survey was administered using an email invitation to an online survey, 47 individuals that did not have an email address listed in 4honline were removed from the list.

From the population ($N=2,259$) a proportionate stratified random sample was determined using the stratified sampling formula of, the stratified random sample (n_h) = sample size (n) /

population (N) x population of subgroup (N_h). The sample was proportionally stratified into three strata based on the county of enrollment, using the existing geographical grouping of regions. The strata groups used were: West (N=820), Central (N=647) and East (N=792). Stratification of the population geographically ensures that the sample best represents the entire statewide population of 4-H volunteers. These regions are often used in MSU Extension to deliver county-based programming and how MSU Extension agents are organized to receive administrative support. These regions also reflect the geographical differences across a large state like Montana. By stratifying the sample geographically, the sample reflects these regional differences.

Table 3.1 shows each of the three strata were then proportionally stratified by volunteer type based on their frequency in the population of that region. These strata include: *organizational volunteers* from the western region (N=148), from the Central region (N=129), and from the Eastern region (N=99); *project volunteers* from the Western region (N=282), from the Central region (N=234), and from the Eastern region (N=347); *other volunteers* from the Western region (N=323, and *both project and organizational volunteer* from the Western region (N=67), from the Central region (N=58) and from the Eastern region (N=56). Each of these volunteer types have different responsibilities and needs and it is important for each type to be proportionally represented in the sample.

Table 3.1 Stratification of population by region and volunteer type

	Population (N)			
	West	Central	East	Total
Freq. of Organizational Volunteer	148	129	99	376

Freq. of Project Volunteer	282	234	347	863
Freq. of Both Project and Organizational Volunteer	67	58	56	181
Freq. of Other Volunteer	323	226	290	839
Total	820	647	792	2259

Based on the sample size calculator (Qualtrics, n.d.), with a confidence level of 95%, a confidence interval of .05, and a population size of 2,259 volunteers, the sample size needed for this study was 329 participants, (n=329). Considering a response rate of 30%, each stratified sample was increased, and participants were randomly selected from each strata group totaling 1,014 participants invited to respond to the survey. Table 3.2 shows the stratification of the desired sample.

Table 3.2 Stratification of sample by region and volunteer type

	Sample (n)			
	West	Central	East	Total of (n)
Organizational Volunteer	22	19	14	55
Project Volunteer	41	34	51	126
Both Project and Organizational Volunteer	10	8	8	26
Other Volunteer	47	33	42	122
Total	119	94	115	329

<u>Survey Instrument</u>

The online questionnaire (APPENDIX A) consisted of 11 descriptive demographic

questions crafted to provide data reflecting geographic and individual descriptive information, as well as data to describe respondents experience and position as a 4-H volunteer. In addition to descriptive demographic questions, the survey utilized questions designed to answer the three research questions. These groups of questions include 5 questions indicating the compatibility of the innovation of distance learning and the perceptions of the factors that lead to implementation. The second and third grouping of questions utilize a 5-point Likert scale indicating the respondent's perceptions to the advantages or disadvantages of distance learning delivery methods.

These questions are adapted from a questionnaire developed to study the attitudes of teachers related to e-learning. The questionnaire, titled Test of e-learning Related Attitudes (TeLRA) scale (APPENDIX B), was developed by the Tanzanian education system as they transitioned from face-to-face classroom learning to e-learning instructional delivery. The study used a similar model to Roger's Diffusion of Innovation theory, the Technology Acceptance Model (TAM) as a conceptual framework to predict Tanzanian Higher Learning Institution teacher's adoption of e-learning based on their attitudes towards the subject (Kisanga & Ireson, 2016). Questions categorized by the themes *benefits from e-learning* and *challenges of e-learning* on the scale were used in this study because they closely represent the themes of advantage and disadvantage outlined by the research questions.

<u>Data Collection</u>

Following Montana State University IRB approval (APPENDIX C) the survey instrument was transferred to Qualtrics, the web-based survey management system supported by MSU Information Technology. The survey was sent to four MSU Extension Agents and all

four responded to test for survey readability and timing. After making minor adjustments a list of names and emails was uploaded to Qualtrics distribution and coded. All names and contact information were kept confidential.

A unique email invitation was sent to each of the 1,014 possible participants in January 2021. The email contained information regarding the survey research being conducted, reasoning for their participation and an enticement of being entered in a drawing for a $50 Amazon gift card. After the initial invitation was sent the Qualtrics distribution tool indicated that 60 emails bounced making those participants un-reachable. To increase survey response two email reminders, (APPENDIX D) were sent following the initial invitation. The final email reminder (APPENDIX E) to non-respondents was sent indicating the survey would be closing.

CHAPTER FOUR

RESULTS AND FINDINGS

<u>Introduction</u>

This descriptive study was designed to determine the attitudes and beliefs of 4-H volunteer's perceptions of distance learning and factors related to implantation of distance learning programming. The data collected was survey responses by current Montana 4-H adult volunteers. The data from this source is explained, and results of the questionnaire were analyzed to address these research questions:

1. What are the perceived advantages to delivering 4-H learning experiences using distance delivery technologies?

2. What are the perceived disadvantages to delivering 4-H learning experiences using distance delivery technologies?

3. What are the perceptions of technology that affect the implementation of distance learning within the Montana 4-H program?

The findings of each of the above research questions are discussed individually. The independent variables in this study include the type of volunteer that responded to the survey from each of the three regions of Montana. Descriptive demographic data of the sample is analyzed using frequency and percentage distribution. Further analysis using the dependent variables of, the perceived advantages of distance learning technology, the perceived disadvantages of distance learning modes of program deliver and the technology related factors that lead to implementation, follows.

Data Analysis

Data collected was analyzed using the Qualtrics system and Microsoft Excel software using descriptive statistics to calculate frequencies, percentages, means, and standard deviations. Other methods used to analyze data were a Chi-Square correlation test that measured any significant differences in perceptions among volunteers from each of the three regions and type of volunteer.

Descriptive Demographics of the Sample

Of the 1,014 invited to participate in the survey 238 responses were received. Of those 238, 8 respondents indicated in the first question they did not wish to participate in the survey at this time. Of the 230 remaining respondents 7 were removed for lack of completion, leaving a survey sample of 223, (n=223). This is a fairly low response rate of just over 23% however it is just over 10% of the target population. Researchers have discussed an increase in research fatigue, including low response rate, as a result of the current COVID-19 pandemic with an influx of online research being conducted in order to understand the pandemic and community impacts (Patel, Webster, Greenberg, Weston & Brooks, 2020).

Table 4.1 displays the demographics of the survey respondents. There were 141 or 63.2% of respondents indicated female as their gender and 37 or 16.6% indicated male. However, 45 respondents did not indicate a gender. Over 60% of the volunteer that participated in the survey rage in age from 40 to 55 (64.1%). After that large percent of the sample, the volunteers who responded range in age from 56 to 74 at 18.8% (42) and 24 to 39 at 15.2% (34). One respondent indicated they were over 75 years of age and no respondents were between the ages of 18 and 23.

The ethnicity of respondents is similar to the averages seen in the Montana population however 91.9% (205) of respondents identify themselves as white which is higher than the state average of 84.9 % from the 2018 census data and 3.6% (8) identified themselves as American Indian and Alaska Native which is lower than the state average of 6.16%. Out of the 223 respondents 9 (4%) chose not to disclose their ethnicity. All of the respondents indicated they had at least a high school diploma or equivalent with the highest percentage of people possessing a bachelor's degree from a 4-year institution (36.8%).

Table 4.1 Demographics of Sample

Variable	Frequency	Percent
Gender		
Female	141	63.2
Male	37	16.6
Total	178	79.8
Age Range		
18-23	0	0.0
24-39	34	15.2
40-55	143	64.1
56-74	42	18.8
75+	1	0.4
Total	220	98.7
Ethnicity		
American Indian or Alaska Native	8	3.6
Asian	1	0.4
White	205	91.9
Prefer not to say	9	4.0
Total	223	100.0

Table 4.1 Continued

Variable	Frequency	Percent
Level of Education		
High school graduate (high school diploma or equivalent including GED)	25	11.2
Some college but no degree	31	13.9
Associate degree in college (2-year)	48	21.5
Bachelor's degree in college (4-year)	82	36.8
Master's degree	24	10.8
Doctoral degree	4	1.8
Professional degree (JD, MD)	5	2.2
Total	219	98.2

The variables that describe the volunteers experience and how the volunteer participants in the 4-H program are important to this study. It is noteworthy that 74% of the respondents currently have children or grandchildren enrolled in the Montana 4-H program, indicating their involvement is high. Only 6.3% of participants have never had children or grandchildren to the program and have come to volunteer as a result of another type of involvement. This indicates that most volunteers make the choice to become a volunteer after being exposed to the program by their children or grandchildren. Researchers have investigated this same 4-H volunteerism phenomenon and found similar findings (White & Arnold, 2003 and Boone, Payne & Woloshuk, 2013).

The rate of response by type of volunteer is noteworthy. The datum indicates that organizational volunteers and respondents who identified as both organizational and project volunteers responded (48.4%) at a rate two times that of their average frequency in the target population (24.6%). Participants who indicated they were an other volunteer responded at a rate

(13%) significantly less than their frequency in the population (37.1%). Organizational

volunteers are substantially more involved in the 4-H program participating in activities and

communication on a weekly if not daily basis, while other volunteers generally are less involved

in the program. From this it can be inferred that the level of involvement in the program led to a

higher rate of response.

Table 4.2 Description of Volunteer

Variable	Frequency	Percent
Type of Volunteer		
Organizational Volunteer	67	30.0
Project Volunteer	85	38.1
Other Volunteer	29	13.0
Both Organizational and Project Leader	41	18.4
Total	222	99.6
Project Leader Area of Leadership		
Animal Science	70	55.6
Communication and Expressive Arts	6	4.8
Engineering	3	2.4
Environmental and Natural Sciences	12	9.5
Family & Consumer Science	9	7.1
Foods & Nutrition (Health)	4	3.2
Leadership & Personal Growth	13	10.3
Total	117	92.9
Years as a Volunteer		
0-2	18	8.1
3-5	59	26.5
6-10	67	30.0
11-15	26	11.7
15+	50	22.4

Total	220	98.7

Status of Children or Grandchildren
in the 4-H Program

have children enrolled	158	70.9
have grandchildren enrolled	7	3.1
were enrolled but, have aged out of the program	39	17.5
never had children/grandchildren in the program	14	6.3
Total	218	97.8

Geographical location and size of a volunteer's place of residence is important when discussing the use of technology and the factors that lead to implementation of distance learning. The access to technology and reliable internet by volunteers living in more rural areas has been seen as a barrier to the use of distance learning methods (Dromgoole & Boleman, 2006 and Dorn & Hobbs, 2020). Table 4.3 displays the results of geographical variables related to the volunteer participants. It is noteworthy that 77.7% of the respondents indicated that their place of residence is located on a farm or ranch or out of town, but not on a farm or ranch. Therefore, if respondents do perceive that they do not have access to reliable internet or cannot access the internet consistently then it can be concluded that a substantial barrier to accessing distance learning does exist.

Table 4.3 Description of Geographical Location of Volunteer

Variable	Frequency	Percent
Region		
Central	90.0	40.4
East	41.0	18.4

West	92.0	41.3
Total	223	100.0

Location of Residence

Farm or Ranch	124	55.6
Out of town (non-farm or ranch)	47	21.1
In town less than 2,500	20	9.0
In town 2,500 - 9,999	11	4.9
In town 10,000 - 49,999	8	3.6
In town larger than 50,000	10	4.5
Total	220	98.7

Location of 4-H Club

Less than 500 people	35	15.7
500-1,499 people	45	20.2
1,500 - 2,499 people	26	11.7
2,500 - 9,999	59	26.5
10,000 - 49,999	24	10.8
larger than 50,000	28	12.6
Total	217	97.3

<u>Research Question 1</u>

What are the perceived advantages to delivering 4-H learning experiences using distance delivery technologies?

To determine the attitudes and opinions of the 4-H volunteers surveyed about the perceived advantages of distance learning a set of questions was adapted from the TeSLE e-learning scale related to the benefits of e-learning (Kinsaga, 2016). Results show that 80.1% of respondents strongly agree or agree that the use of the internet is beneficial for learning. While generally 50.3% of volunteers responded that they strongly agree or agree that online learning

allows me to meet with people I may not otherwise connect with, female respondent more

frequently agreed with this statement. Volunteers agreed or strongly agreed at a rate of 35.5%

and 41.9% were neutral with their response to online learning technology would provide them

with an opportunity to be a better volunteer. However, volunteers with 11 or more years of

experience responded that they more strongly agreed with this statement.

Table 4.4 Volunteer Attitudes Towards the Advantages of Distance Learning

Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5

Variable	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Freq	Perc	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.
I feel that the use of the internet is beneficial for learning	13	5.9%	5	2.3%	26	11.8%	110	49.8%	67	30.3%
n=221, Mean=3.96, SD=1.02, Variance= 1.04, Missing=2										
Taking an online training is enjoyable.	9	4.1%	47	21.4%	93	42.3%	59	26.8%	12	5.5%
n=220, Mean=3.08, SD=0.932, Variance= 0.86, Missing=3										
Online training would be more convenient than taking a traditional face-to-face course.	14	6.4%	57	26.0%	58	26.5	71	32.4	19	8.7%
n=219, Mean=3.11, SD=1.08, Variance= 1.18, Missing=4										
Online learning technology allows me to meet with people I may not otherwise connect with.	10	4.6%	33	15.1%	66	30.1%	98	44.7%	12	5.5%
n=219, Mean=3.32, SD=0.95, Variance= 0.9, Missing=4										

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Table 4.4 Continued

Variable	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Freq	Perc	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.
Online learning technology allows me to meet with people I may not otherwise connect with.	10	4.6%	33	15.1%	66	30.1%	98	44.7%	12	5.5%
n=219, Mean=3.32, SD=0.95, Variance= 0.9, Missing=4										
Online technology will provide me with more learning opportunities than traditional learning.	8	3.7%	28	12.8%	77	35.3%	85	39.0%	20	9.2
n=218, Mean=3.37, SD=0.95, Variance= 0.89, Missing=5										
Traditional face-to-face training meets my needs as a volunteer.	4	1.8%	9	4.1%	66	30.3%	104	47.7%	35	16.1%
n=218, Mean=3.72, SD=0.85, Variance= 0.72, Missing=5										
Online learning would provide more opportunity for me to be a stronger volunteer.	10	4.6%	39	18.0%	91	41.9%	70	32.3%	7	3.2%
n=217, Mean=3.12, SD=0.9, Variance= 0.8, Missing=6										

Research Question 2

What are the perceived disadvantages to delivering 4-H learning experiences using distance delivery technologies?

To determine the attitudes and opinions of the 4-H volunteers surveyed about the perceived disadvantages of distance learning a set of questions was adapted from the TeSLE e-learning scale related to the challenges of e-learning (Kinsaga, 2016).

Table 4.5 Volunteer Attitudes Towards the Disadvantages of Distance Learning

Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5

Variable	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc
My knowledge of online technology is a barrier to learning online.	67	30.73%	88	40.37%	37	16.97%	22	10.09%	4	1.83%
n=218, Mean=2.12, SD=1.01, Variance= 1.03, Missing=5										
My internet connection is reliable.	5	2.3%	26	11.98%	23	10.6%	107	49.31%	56	25.81%
n=217, Mean=3.84, SD=1.01, Variance= 1.03, Missing=6										
I have access to hardware I need to access online learning.	14	6.4%	57	26.0%	58	26.5	71	32.4	19	8.7%
n=218, Mean=4.2, SD=0.84, Variance= 0.70, Missing=6										
Access to technical support when learning and meeting online is very important.	0	0%	10	4.61%	34	15.67%	130	59.91%	43	19.82

n=217, Mean=3.95, SD=0.73, Variance= 0.54, Missing=6

Table 4.5 Continued

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc
Online learning is difficult to use.	33	15.21%	79	36.41%	73	33.64%	27	12.44	4	2.3%
n=217, Mean=2.5, SD=0.97, Variance= 0.94, Missing=6										
Online learning increases social isolation.	8	3.67%	36	16.51%	41	18.81%	84	38.53%	48	22.5%
n=218, Mean=3.6, SD=1.11, Variance= 1.24, Missing=5										

The literature review revealed that the access to reliable internet, hardware and technology support have influenced the offering of extension programing via distance learning and the use of distance learning by program constituents, making the findings from this set of questions important to how professionals view distance learning in the future. The data shows that 77.7% of the respondents live in a rural area of Montana and that 75% agree or strongly agree that their internet is reliable. Data were also analyzed by the regional strata of East, Central and West with no statistical difference among responses based on location in the state.

Nearly 90% (194) volunteers who responded reported they have the hardware necessary to access online learning. In order to investigate this further, the participants were asked how they access the internet most often with 56.8% (125) responding they use a smartphone most often to access the internet. The remainder of the sample responded that they use a laptop or PC computer (34.55%) or tablet or device other than a smartphone (8.18%) to access the internet with only one participant indicating they do not access the internet.

<u>Research Question 3</u>

What are the perceptions of technology that affect the implementation of distance

learning within the Montana 4-H program?

Data were collected to understand the use of technology by 4-H volunteers. The results

from these variables are important when looking at the implementation of distance learning

because this method of programming requires the user to have access to the internet and the

hardware to engage with the delivery method. In addition to the previously mentioned hardware

used to access the internet, how often and where participants access the internet was also

ascertained. Table 4.6 shows how often participants access the internet and Table 4.7 shows

where they access the internet most often.

Table 4.6 Volunteer perceptions of how often they access the internet

Variable	Freq.	Perc.
Everyday	198	90.00%
5 days a week	11	5.00%
2 to 4 days a week	8	3.64%
Once a week	2	0.91%
I do not access the internet	1	0.45%

n=220, Missing=3

Table 4.7 Volunteer perceptions of where they access the internet most often

Variable	Freq.	Perc.
Home	155	70.78%

Office/Work	58	26.48%
Public access, like the town library	0	0.00%
Other	5	2.28%
I do not access the internet	1	0.46%
n= 219, Missing=4		

In order to understand where volunteers access information, respondents were also asked to rank what source they use to answer a question. Table 4.8 shows the results of respondents ranking of their preferred method of accessing information when needing to answer a question. Search the internet was ranked number one most often by respondents. Making a phone call was the second highest ranked choice for accessing information. When looking at the results of this question by age range the results remain the same with search the internet as the first choice most often and making a phone call to a reputable source the second choice most often.

Table 4.8 Ranking of preferred method to access information when answering a question

Variable	Min	Max	Mean	Median
Search the Internet	1	5	1.42	1.00
Make a phone call to a reputable source	1	4	1.98	2.00
Search on YouTube	1	5	3.20	3.00
Listen to a podcast	1	5	4.03	4.00
Other	1	5	4.38	5.00
n=198, Missing=25				

In summary, the responses of surveyed Montana 4-H volunteers showed that the use of internet technology is prevalent in the daily lives of this population and the advantages of using distance learning technology are visible in the preferences of volunteers that responded to the survey. While perceived disadvantages do exist, respondents agree that they are not a barrier for accessing distance learning. The discussion of the implications of these results are explained in the following discussion section.

CHAPTER FIVE

DISCUSSION

Summary of the Study

This study relied on quantitative data to answer the research questions in order to investigate the use of distance learning technology by the Montana 4-H volunteer population within the Montana State University Extension system. These research questions aimed to discover how 4-H volunteers perceive the advantages and disadvantages of distance learning technology, as well as the use of technology by this population in relation to the implementation of distance learning as a program delivery method.

A literature review revealed that researchers have been discussing the use of distance learning within extension systems across the country and the perceived barriers that may or may not exist in different contexts and populations. The 2014 study by 13 western states determined that 4-H volunteers can benefit from training delivered from a distance (Ouellette, Lesmeister, Lobley, & Gross, 2014). The previous research also indicates that even though barriers may exist professionals cannot continue to use this as an excuse for not offering information and training from a distance (Dorn & Hobbs, 2020). Consequently, using Roger's Diffusion of Innovation theory as a lens to interpret findings determinations can be made to predict the adoption of distance learning as an innovation by the studied population.

While past research may have indicated that distance learning technology is here to stay and has many benefits, it is the hope that this study of the topic within the specific system and population will provide evidence to inform both professionals and volunteer users that the

benefits out way the challenges and Montana 4-H has the capacity for implementation.

Conclusions

Using Roger's Diffusion of Innovation theory to deliver conclusions related to this research is intended to predict the likelihood that the 4-H volunteer audience will adopt distance learning (Rogers, 2003 & LaMorte, 2016).

Relative Advantage

The results of this study indicate that overall, the population surveyed uses the internet on a regular basis and has reliable means to engage with information. It is conclusive that the volunteer audience sees distance learning as better in some ways than face-to-face learning opportunities. This indicates volunteers perceive a relative advantage to distance delivery methods when educating themselves as a 4-H volunteer. Participates agree that there are advantages to the distance learning delivery method, including the ability to meet people they would not normally interact with; however they are not displeased with traditional face-to face training opportunities. While the findings do not conclusively reveal distance learning is more convenient, findings do show that most of the respondents agree distance learning would help them to be a better volunteer and that the internet is beneficial for learning. Results.

Compatibility

The findings that lead to perceived advantage coupled with the discoveries regarding access to technology indicate that previously perceived barriers may no longer exist indicating this audience has an increased compatibility with distance learning. The interpretation of these results indicates that if distance learning opportunities were available to Montana 4-H volunteers

they would have the capacity to access the learning opportunities. Specifically, volunteers report

they access the internet at least once per day, use the internet to answer questions and agree that

the internet is beneficial for learning, concluding that the use of distance learning is consistent

with the audience's values and experiences. When designing these distance learning

opportunities, it would be important to look at the findings that show volunteers use mobile

devices most often to access the internet and do so from their work or home, in order to make

these learning opportunities most desirable and accessible for volunteers. This would include

decisions about synchronous or asynchronous

While this study does not specifically address the compatibility of specific types of

distance learning such as synchronous and asynchronous design, the overall perceived

advantages by respondents indicate that the information volunteers need is compatible with

distance learning. The attitudes of 4-H volunteers that participated in this study are positive

towards the adoption of distance learning as an appropriate delivery method for this population

and agree that 4-H volunteer training is compatible with distance learning. However, the results

do indicate that different types of volunteers have different needs and these should be considered

during program design and implementation in order to predict adoption by these different

volunteer groups.

Complexity

Considering the complexities that have existed in the past, there is a small percentage of

the surveyed population that may not use the internet at the same rate as others, however, the

disadvantages or barriers to the use of distance learning that still exist may not discourage 4-H

volunteers from the use of distance learning when they can. Findings also indicate that older 4-H

volunteers still may view distance learning as difficult to use and all volunteers agree that technical support is important to their access to distance learning. Most importantly, access to reliable internet and the hardware necessary is not a barrier for most volunteers and the audience does not perceive the use of distance learning as difficult to use or understand. These conclusions can lead professionals to believe that 4-H volunteers are likely to adapt to using distance learning programs regardless of minor complexities that exist.

<div align="center">Recommendations</div>

These recommendations are for future practices by Montana 4-H and MSU Extension professionals as it relates to the use of internet technology and the implementation distance learning based on the results of this study.

In relation to research question one regarding the advantages of distance learning as a delivery method for 4-H volunteers, the conclusions support a recommendation for MSU Extension professionals to use internet technology to meet the needs of this population. While volunteers report they are neutral about current modes of volunteer training, the results are clear that volunteers are using the internet to retrieve the information they need and are not averse to using distance learning to be a better 4-H volunteer. By not offering volunteer training and other forms of information via internet technology 4-H professionals are not meeting 4-H volunteers where they are.

4-H and Extension professionals need to consider the information that is available to 4-H volunteers via the internet and increase their efforts to deliver material to volunteers in this way. Currently the web presence at the county level is lacking and needs to be addressed if the needs of 4-H volunteers are going to be met. System wide MSU Extension is not using the ability to

interact with volunteers via the internet to its capacity. Knowing how volunteers access the internet, when and where should aid professionals in reaching their volunteers more consistently and with more success.

There are more mobile friendly ways to disseminate information than the traditional use of email, such as mobile friendly websites and learning platforms. Knowing that volunteers access information most often on their mobile devices indicates that the use of PDF documents may not be the best way to offer information or curriculum because it is difficult to read and open on mobile devices. Also, 4-H volunteers agree that there is a benefit to using the internet for learning indicating a positive attitude towards learning in this way. Extension professionals may be able to use this positive attitude to motivate volunteers towards more training that will help them to be a better volunteer. This process may be slow but is worth exploring.

This experimentation and testing of distance learning is described as trialability by Roger's Diffusion of innovation and along with observability or the presence of results, is a necessary part of the process that leads to adoption of the innovation that is distance learning (Rogers, 2003 & LaMorte, 2016). Based on conclusions, it is suggested that volunteers have the capacity to adopt distance learning however it will take experimentation and further research to conclude how this innovation can benefit the system. Specific platforms and methods of distance learning will need to be learned and adapted in order for distance learning to consistently become a part of our delivery methodology.

During this experimentation process it is recommended to use technology available to the system through MSU such as:

- Tech Smith Relay to create asynchronous video presentations that use engagement tools

like quizzes to deliver and test knowledge gained.

- <u>Microsoft Teams</u> to create online learning communities of volunteers that can form relationships across geographical boundaries and learn from each other while being exposed to volunteer training materials they can access on their own time.

- <u>Zsuites</u>, Montana 4-H's cloud-based enrollment and communication program that all volunteers have access to. This program has a built-in learning module system that delivers educational content on the users own time and provides important completion and engagement information to professionals.

- <u>Brighspace</u>, which has traditionally been used to deliver credit courses at the university level, could be used to create courses for 4-H volunteers.

- <u>WebEx</u> video conference system is often used among professionals both in the field and on campus. This is an important tool to incorporating scheduled volunteer distance learning opportunities and should be tested with this audience.

Relative to research question two regarding perceived disadvantages, Extension professionals should not assume that distance learning will meet all volunteers needs, however the findings confirm that we should not be afraid of past barriers such as reliability of internet in rural areas and access to hardware to engage in internet technology. Findings indicate that volunteer's do not perceive there to be disadvantages to the use of distance learning. It is important to offer programming for 4-H volunteers that is varied and diverse in delivery method. While there are basic and standard information that can be delivered via internet technology, building relationships among volunteers is important and may not be achieved through distance delivery methods.

The above-named list of platforms and distance learning technology tools offers a variety of different delivery methods that can meet these varied learning needs and user preferences. It is recommended that time be spent developing volunteer training resources that can be used across a variety of platforms and delivery methods. The creation of one video presentation could be accessed via website, used in a scheduled WebEx or face-to-face presentation and posted to an online community for discussion.

By focusing professional's already limited time on resources and learning materials that can be used in a variety of ways will increase the systems ability to deliver volunteer training information more efficiently. These resources can be shared across the state alleviating county professionals from creating their own training resources but leaving room for county specific information to be shared with volunteers. This also increases the systems capacity to use the knowledge and intellectual resources of many to reach the joint goal of a well-trained, prepared and confident population of 4-H volunteers.

In relation to research question three recommendations are based on the conclusive findings that 4-H volunteers currently use internet technology often and without issue. It is suggested that the findings are considered when designing distance learning programming for 4-H volunteers. Considering the preferences and habits of 4-H volunteers will ensure that the programming is accessible and has better usability.

There is also a relationship between the 4-H professional and the complexity of distance learning. Learning materials must be created and supported. A process for this needs to be identified and assessed by administration and professional development to gain the skills necessary to create high quality research-based distance learning tools will need to be offered. It

is also important for administration to note the conclusive evidence that technology support is important to this audience and will need to be provided. The development of technology support materials and access to tech support is necessary for the successful use of distance learning.

This study has established that Montana 4-H volunteers have the capacity to access internet technology and positively perceive the use of distance learning delivery. The experimentation with distance delivery methods and further research of this population's attitudes towards different types of distance learning delivery is necessary to determine preferences and impacts. Future research is needed to determine what programming can be successfully delivered via distance delivery and what tools are preferable and provide the greatest impact. It may also benefit the system to identify other populations, such as youth participants and parents regarding their perceptions of distance learning in order to make informed youth program planning decisions.

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APPENDICES

APPENDIX A

ELECTRONIC QUALTRICS SURVEY:

PERCEPTIONS OF MONTANA 4-H VOLUNTEER LEADERS ON DISTANCE LEARNING

SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY
Project Title: **Perceptions of Montana 4-H Volunteers of Online Learning.**

You are being asked to participate in a research study led by Brett Schomer [investigator], on behalf of the 4-H Center for Youth Development as part of her Master's of Science in Agriculture Education.

Purpose of Study The delivery of educational courses and programs at a distance is prevalent in higher-education and K-12 settings however, until very recently there has been limited implementation and use of distance learning technology by youth organizations, such as 4-H. The purpose of this questionnaire is to identify the perceptions of Montana volunteers on distance learning and the distance delivery of Montana 4-H learning experiences across our large state. The need has become even more timely due to recent restrictions on 4-H staff and volunteers. The information gained from this study will help to inform future decisions and resources regarding program design and delivery.

Procedure   You were selected as a possible participant in this study because you are enrolled as a certified 4-H volunteer during the 2019-2020 4-H year. Participants are asked to complete the online Qualtrics questionnaire responding with their own ideas and opinions. The questionnaire should take no more than 15 minutes to complete. Your participation in any part of this study is voluntary. When completing the questionnaire, you can choose to not answer any questions you do not want to answer and/or you can stop at any time. Your responses will remain confidential with the researcher, and no names or identifying information will be included in any reports. Your decision whether to participate in this study is voluntary and will not affect your role as a Montana 4-H volunteer. There are no recognized or perceived risks to the participants of this study. If at any point you have questions about the research, you can contact Brett Schomer, (406) 994-1721 or bschomer@montana.edu. If you have additional questions about the rights of human subjects they can contact the Chair of the Institutional Review Board, Mark Quinn, (406) 994-4707 or mquinn@montana.edu.

AUTHORIZATION

○   By checking this box I acknowledge that I have read the above and understand the discomforts, inconvenience and risk of this study. I agree to participate in this research. I

understand that I may later refuse to participate and that I may withdraw from the study at any time. I have received [in invitation email] a copy of this consent form for my own records. (1)

○   I do not wish to participate at this time. (2)

Participants that choose this option receive the following message.

Thank you for your consideration. If at anytime you choose to participate in the survey you can return to the link in the email and begin again.

In what county or reservation 4-H program are you an enrolled volunteer? (2019-2020)

▼ Drop down list of all Montana counties and reservations.

What is your volunteer leader role(s) in 4-H?

☐   Organizational Volunteer (1)

☐   Project Volunteer (2)

☐   Other Volunteer (3)

☐   Both Organizational and Project Leader (4)

What project area category? (select all that apply)

○ Animal Science (1)

○ Communication and Expressive Arts (2)

○ Engineering (3)

○ Environmental and Natural Sciences (4)

○ Family & Consumer Science (5)

○ Foods & Nutrition (Health) (6)

○ Leadership & Personal Growth (7)

○ Plant Science (8)

How many years have you been a 4-H volunteer?

   ○ 0-2 (1)

   ○ 3-5 (2)

   ○ 6-10 (3)

   ○ 11-15 (4)

   ○ 15+ (5)

Are you a parent or grandparent of a child or children enrolled in the Montana 4-H program?

   ○ Yes, I currently have children enrolled. (1)

   ○ Yes, I currently have grandchildren enrolled. (2)

   ○ Yes, but they have aged out of the program. (3)

   ○ No, I have never had children/grandchildren in the program (4)

Where is your residence located?

○ Farm or Ranch (1)

○ Out of town (non-farm or ranch) (2)

○ In town less than 2,500 (3)

○ In town 2,500 - 9,999 (4)

○ In town 10,000 - 49,999 (5)

○ In town larger than 50,000 (6)

○

What is the size of the community your 4-H club is located?

○ Less than 500 people (1)

○ 500-1,499 people (2)

○ 1,500 - 2,499 people (3)

○ 2,500 - 9,999 (4)

○ 10,000 - 49,999 (5)

○ larger than 50,000 (6)

What is your gender?

_____

What is your age range?

○ 18-23 (1)

○ 24-39 (2)

○ 40-55 (3)

○ 56-74 (4)

○ 75+ (5)

Choose one or more races that you consider yourself to be:

☐   American Indian or Alaska Native (1)

☐   Asian (2)

☐   Black or African American (3)

☐   Native Hawaiian or Pacific Islander (4)

☐   White (5)

☐   Prefer not to say (6)

☐   Other (7) _____

What is the highest level of education you have earned?

○ Less than high school degree (1)

○ High school graduate (high school diploma or equivalent including GED) (2)

○ Some college but no degree (3)

○ Associate degree in college (2-year) (4)

○ Bachelor's degree in college (4-year) (5)

○ Master's degree (6)

○ Doctoral degree (7)

○ Professional degree (JD, MD) (8)

When looking for information or resources to answer a question what are you most likely to do?
Rank (drag) in order of preference.
Make a phone call to a reputable source (1)
Search the Internet (2)
Search on YouTube (3)
Listen to a podcast (4)
Other (5)

How do you access the internet most often?

○ Smartphone (1)

○ Laptop or desktop computer (2)

○ Tablet or device other than a phone (3)

○ Other (4) _____

○ I do not access the internet (5)

How often do you access the internet?

○ Everyday (1)

○ 5 days a week (2)

○ 2 to 4 days a week (3)

○ Once a week (4)

○ I do not access the internet (5)

Where do you most often access the internet?

○ Home (1)

○ Office/Work (2)

○ Public access, like the town library (3)

○ Other (4) _____

○ I do not access the internet (5)

Rate what level you would agree or disagree with the following statements as they relate to your role as a 4-H volunteer.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I feel that the use of the internet is beneficial for learning (1)					

Taking an online training is enjoyable. (2)	
Taking an online training would be more convenient than taking a traditional face-to-face course. (3)	
Online learning technology allows me to meet with people I may not otherwise connect with. (4)	
Online technology will provide me with more learning opportunities than traditional means of learning. (5)	
Traditional face-to-face training meets my needs as a volunteer. (6)	
Online learning would provide more opportunity for me to be a stronger volunteer. (7)	

Rate what level you would agree or disagree with the following statements *as they relate to your role as a 4-H volunteer.*

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
My knowledge of online technology is a barrier to learning online. (1)					
My internet connection is reliable. (2)					
I have access to hardware (computer, tablet, smartphone, etc.) I need to access online learning. (3)					

Access to technical support when learning and meeting online is very important. (4)				
Online learning is difficult to use. (5)				
Online learning increases social isolation. (6)				

What online learning type would you prefer? D*rag statements into* order *of preference.*

– Hosted live webinar at a scheduled time. (1)

– Narrated and recorded video with follow-up questions you are able to do on your own time. (2)

– Learning module with participant interaction throughout you are able to complete on your own time. (3)

– A combination of recorded video or module you do on your own time and live webinar. (4)

– A combination of Recorded video or module you do on your own time and face-to-face meeting. (5)

End of Survey

Thank you for participating in this survey. Your ideas and opinions are appreciated and the information gained from this study will help to inform future decisions and resources regarding program design and delivery.

APPENDIX B

TEST OF E-LEARNING RELATED ATTITUDES (TeLRA) SCALE

Test of e-Learning Related Attitudes (TeLRA) Scale

Information about teachers' understanding and attitudes about e-learning.

Instructions

- There is no wrong answer; each response will be treated as a correct one. Your opinion is what is required in this study.
- Do not think too long about each statement. It should take you around 10 minutes to complete.
- For each statement, put a tick (✓) to show your level of agreement; **Strongly Disagree**, **Disagree**, **Agree**, and **Strongly Agree**. Do not tick across two boxes.

	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1	E-learning is very economical for educational institutions to adopt.				
2	I believe using e-learning will improve the quality of my work.				
3	Computers make work more interesting.				
4	I prefer reading articles in e-learning.				
5	It is easier to revise electronic educational materials than printed material				
6	I prefer using a computer to prepare my lessons.				
7	I feel uncomfortable reading a text book on a computer screen than a physical text book.				
8	I enjoy teaching using computers.				
9	Delivering a lecture through electronic technologies is very difficult.				
10	E-learning requires expensive technical support.				
11	E-learning reduces quality of knowledge attained.				
12	Interacting with the computer system is often frustrating.				
13	A face-to-face method is more learner-centred than E-learning methods.				
14	I believe using e-learning technologies will improve my job performance.				
15	Communicating through social networks is fun.				
16	I like reading magazines on new technology innovations.				
17	Teaching through e-learning is tiresome.				
18	E-learning increases learners' social isolation.				

	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
19	E-learning technologies are difficult to use.				
20	Using computer systems requires a lot of mental effort.				
21	Discussions on e-learning technologies are uninteresting.				
22	My institution has enough teaching-learning resources to carry out e-learning.				
23	E-learning will increase teachers' efficiency.				
24	Working with computers is exciting.				
25	I like discussing about new e-learning innovations.				
26	Supporting learners in an e-learning environment is very difficult.				
27	E-learning infrastructure is very expensive for the government to afford.				
28	It will be difficult for me to become skilful in the use of e-learning tools.				
29	I make errors frequently when using a Computer.				
30	Using a computer at home is very frustrating.				
31	Using e-learning technologies will allow me to accomplish more work than would otherwise be possible.				
32	I enjoy computer games very much.				
33	E-learning is a threat to teachers' employment.				
34	E-learning will provide me with better learning opportunities than traditional means of learning.				
35	I find computer online interaction unexciting.				
36	Communicating through electronic mails is annoying.				

(Kisanga & Ireson, 2016, pp. 26-27)

APPENDIX C

MONTANA STATE UNIVERSITY IRB APPROVAL FOR RESEARCH

INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

MONTANA STATE UNIVERSITY

2155 Analysis Drive
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MEMORANDUM

TO: Brett Schomer and Carl Igo

FROM: Mark Quinn *Mark Quinn oj*
Chair, Institutional Review Board for the Protection of Human Subjects

DATE: May 8, 2020

RE: *"Perceptions of Montana 4-H Volunteers on Online Learning and the Distance Delivery of Montana 4-H Learning Experiences"* [BS050820-EX]

The above research, described in your submission of May 8, 2020, is exempt from the requirement of review by the Institutional Review Board in accordance with the Code of Federal regulations, Part 46, section 101. The specific paragraph which applies to your research is:

_____ (b) (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

__X__ (b) (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation; and (iii) the information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by section 16.111(a)(7).

_____ (b) (3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

_____ (b) (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available, or if the information is recorded by the investigator in such a manner that the subjects cannot be identified, directly or through identifiers linked to the subjects.

_____ (b) (5) Research and demonstration projects, which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

_____ (b) (6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed, or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the FDA, or approved by the EPA, or the Food Safety and Inspection Service of the USDA.

Although review by the Institutional Review Board is not required for the above research, the Committee will be glad to review it. If you wish a review and committee approval, please submit 3 copies of the usual application form and it will be processed by expedited review.

Introduction/Consent

SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY

Project Title: **Perceptions of Montana 4-H Volunteers on Online Learning.**

You are being asked to participate in a research study led by Brett Schomer [investigator], on behalf of the 4-H Center for Youth Development as part of her Master's of Science in Agriculture Education.

Purpose of Study

The delivery of educational courses and programs at a distance is prevalent in higher-education and K-12 settings however, until very recently there has been limited implementation and use of distance learning technology by youth organizations, such as 4-H.

The purpose of this questionnaire is to identify the perceptions of Montana volunteers on distance learning and the distance delivery of Montana 4-H learning experiences across our large state. The need has become even more timely due to recent restrictions on 4-H staff and volunteers. The information gained from this study will help to inform future decisions and resources regarding program design and delivery.

APPENDIX D

EMAIL INVITATION TO PARTICIPATE IN SURVEY

Dear ${e://Field/RecipientFirstName},

Please take just a moment to complete this online survey created to learn more about how 4-H adult volunteers feel about learning online and accessing online resources. We have learned so much but have much left to learn!

It should only take about 10 minutes and survey respondents will be entered into a drawing for a $50 Amazon gift card.
Follow this Link to Survey: ${l://SurveyLink?d=Take the Survey}
Or copy and paste the URL below into your internet browser: ${l://SurveyURL}

Project Title: Perceptions of Montana 4-H Volunteers on Online Learning.

This is a research study led by Brett Schomer, on behalf of the 4-H Center for Youth Development as part of her Master's of Science in Agriculture Education.

Purpose of Study
The delivery of educational courses and programs at a distance is prevalent in higher-education and K-12 settings however, until very recently there has been limited implementation and use of distance learning technology by youth organizations, such as 4-H.

The purpose of this questionnaire is to identify the perceptions of Montana volunteers on distance learning and the distance delivery of Montana 4-H learning experiences across our large state. The need has become even more timely due to recent restrictions on 4-H staff and volunteers. The information gained from this study will help to inform future decisions and resources regarding program design and delivery.

Thank you very much for your time and service to the youth of Montana.

Sincerely,
Brett Schomer
Montana 4-H Program & Events Specialist

APPENDIX E

EMAIL REMINDERS TO PARTICIPATE IN SURVEY

Reminder One

Dear ${e://Field/RecipientFirstName},

I know you are very busy, but I wonder if you saw my email regarding the 4-H volunteer survey. **If you have a moment would you please click the link below and take about 10 minutes to complete the survey. _Respondents will be entered into a drawing for a $50 Amazon gift card if complete by Wednesday March 3rd at 5:00 PM._**

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

You are being asked to participate in a research study as a certified Montana 4-H volunteer led by Brett Schomer, on behalf of the 4-H Center for Youth Development as part of her Masters of Science in Agriculture Education.

The purpose of this questionnaire is to identify the perceptions of Montana volunteers on distance learning and the distance delivery of Montana 4-H learning experiences across our large state. The need has become even more timely due to recent restrictions on 4-H staff and volunteers. The information gained from this study will help to inform future decisions and resources regarding program design and delivery.

Thank you,
Brett Schomer

Follow the link to opt out of future emails:
${l://OptOutLink?d=Click here to unsubscribe}

<u>Reminder Two</u>

Dear 4-H Volunteer,

Please click the link below and complete the 4-H volunteer survey. This is your last chance to be entered into the drawing for a $50 Amazon gift card if you are able to complete the short survey by March 3rd at 5:00PM. I really don't want you to miss your chance. The survey should take about 10 minutes to complete.

The information collected from this survey will help Montana 4-H better meet the needs of 4-H volunteers across Montana and serve our amazing 4-H members.

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

Thank you for your time and service to the youth of Montana.
Brett Schomer

Follow the link to opt out of future emails:
${l://OptOutLink?d=Click here to unsubscribe}