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A Case Study Comparing the Life Skills Development and Knowledge in Youth Participants of Horseless and Traditional Horse Programs in Utah

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This study compared four horseless and seven traditional horse participants from Washington County 4-H in Utah for horse knowledge gained and for the development of 10 life skills from Hendricks's Targeting Life Skills Model: leadership, teamwork, self-responsibility, personal safety, problem-solving, decision-making, critical thinking, goal setting, communication, and concern for others. This study's mixed methods design employed interviews to learn about life skill development and quantitative data from a 20-item horse knowledge quiz and demographic survey. The traditional horse youth showed greater development of leadership, self-responsibility, decision-making, goal setting, and communication than the horseless youth. Roughly half of the participants in both groups experienced having concern for others in their program, but both programs lacked the development of critical thinking and problem-solving. As for horse knowledge, traditional horse participant scores were 15% to 40% better than horseless participants. The horseless participants lacked knowledge on the parts of a western saddle and horsemanship. Recommendations for future research include observational research in addition to participants' self-perceived data, perspectives of the adult leaders, and pre-post test data to track the growth of life skills and horse knowledge in horseless and traditional horse participants.

Keywords: mixed-method, life skills, horse knowledge, 4-H, horse program

Introduction

Research has documented a major shift in Extension due to urbanization of the United States (Brandon et al., 2018). As more urban and suburban communities form, Utah 4-H is offering new clubs to more urban youth, including dog clubs, shooting sports clubs, and horseless horse programs (B. Scow, personal communication, October 25, 2018). These clubs offer youth new opportunities in which to practice life skills, foster citizenship, and promote leadership opportunities while maintaining a commitment to the 4-H mission and tradition. Washington County Utah 4-H Needs Assessment Committee examined the county's decreasing traditional horse program enrollment. Changing demographics, socioeconomics, and land developments contributed to more horseless youth. Thus the 4-H county agent created a horseless horse

program in 2018 (Scow & Johnson, 2018). Horseless horse programs are designed for 4-H youth members who do not lease or own horses (Washington State University Extension & US Department of Agriculture, 2003). Animal ownership, care, and riding are not required to participate in horseless horse programs.

The development of life skills and knowledge in youth is a primary goal of 4-H horse programming. Research shows that youth programs, including 4-H, that emphasize horse topics such as horsemanship, safety, health management, and nutrition help to develop life skills such as decision-making, communicating, goal setting, thinking, and problem-solving in youth (Smith et al., 2006). Traditional 4-H horse clubs are intended to develop life skills and knowledge in youth who participate, but the benefits of life skills and horse knowledge developed from the traditionally mounted 4-H horse programs are only accessible to youth who have regular access to horses through ownership or lease.

4-H horseless horse programs can be found in several states, including Colorado, Kansas, Kentucky, Minnesota, Nevada, Ohio, Utah, Virginia, Washington, and Wisconsin. Despite the rising popularity of these programs, there is currently a lack of research and literature that empirically compares 4-H horseless horse programs to traditional horse programs to discover their impact on life skill development and horse knowledge in youth. It is important to show measurable impacts using empirical data that specifies life skill development because of participation in specific 4-H projects (Boleman et al., 2004). Furthermore, Cavinder et al. (2010) encouraged the development of knowledge-based horse programming in Extension by stating, "…in an era where many people do not come from a rural, horse-owning background, thus having minimal experience in horse ownership and care, it is vital that Extension programs continue to provide effective, educational opportunities to interested persons" (p. 7). Lack of prior literature and empirical research on the development of life skills and horse knowledge in youth participants of horseless horse programs presents a problem for stakeholders with a vested interest in the creation and success of programs of this nature. Therefore, the comparative evaluation of Washington County's horseless horse program and traditional horse program serves as an essential step toward meaningful horse programming for youth in which positive life skill development and horse knowledge can be measured, and a wider audience of youth may be reached in Utah.

Theoretical Framework

The theoretical framework was experiential learning with 4-H's Targeting Life Skills Model. Hendricks (1998) defined life skills as "abilities individuals can learn that will help them to be successful in living a productive and satisfying life" (p. 4). Hendricks' Targeting Life Skills Model organized 35 life skills into four quadrants, which align with the 4-H Pledge: head, heart, hands, and health (Hendricks, 1996). The purpose of the Targeting Life Skills Model was to simplify the coordination of life skill development with age-appropriate behaviors to be more

effective in achieving identified outcomes (Hendricks, 1998). Hendricks provided several age-appropriate indicator examples for each of the 35 life skills on the Targeting Life Skills Model.

4-H-based studies using the Targeting Life Skills Model found that participation in 4-H activities was positively related to youths' life skill development (Ferrari et al., 2004; Fitzpatrick et al., 2005; Fox et al., 2003; Smith et al., 2005). In this study, 10 life skills from the Targeting Life Skills Model were identified as prominent in the horse and horseless programs by the supervising Washington County Extension agent: leadership, teamwork, self-responsibility, personal safety, problem-solving, decision-making, critical thinking, goal setting, communication, and concern for others (B. Scow, personal communication, October 25, 2018).

Literature Review

Within the hands quadrant of the Targeting Life Skills Model, leadership and teamwork were commonly addressed throughout the literature. Youth participation in livestock and horse exhibition activities has repeatedly shown at least moderate gains in self-perceived leadership (Anderson et al., 2015; Davis et al., 2016; Harris et al., 2016; Walker, 2006). When evaluating leadership life skills, the following has been recommended: "state-wide and county extension programming might be reevaluated for educational events like demonstrations, leadership training and state contests to attract youth with livestock projects" (Holmgren & Reid, 2007, p. 7). Teamwork has been moderately to highly influenced by 4-H and youth organization participation (Maass, 2004). Among the 35 life skills, teamwork tied for the third most influential life skill developed by participating in 4-H for more than one year, alongside self-discipline and self-responsibility (Maass, 2004). This trend continues with activities like 4-H horse camps, which have been shown to improve teamwork in youth, as reported by 26 out of 52 surveyed Extension staff and volunteer leaders affiliated with an Arkansas 4-H summer horse camp (Kurtzo et al., 2017).

Involvement with livestock increases opportunities to learn and practice the skill of self-responsibility and personal safety, which are in the health quadrant of the Targeting Life Skills Model. In Rusk et al. (2003), 65 of 149 youth respondents (44%) indicated the responsibility they learned from participating in a 4-H animal project helped them complete homework assignments and school projects on time. Cole (2005) stated that "by learning responsibility and respect for a 1,000-pound horse, youth will also learn responsibility for their own actions and self-respect" (p. 2). Youth respondents indicated 4-H horse projects influenced them to have "learned a greater responsibility by working with a horse" (Anderson & Karr-Lilienthal, 2011, p. 3). Kurtzo et al. (2017) noted that "horsemanship and safety-based horse camps were developed in response to a statewide challenge to develop competitive 4-H members and retain those members as they approach adolescence" (p. 55). Participants increased safety and safety knowledge were accomplished goals of the 2016 Arkansas 4-H summer horse camp in Arkansas

(Kurtzo et al., 2017). Similarly, 4-H youth who participated in a one-week equine camp showed significant increases in self-perceived responsibility development (Prechter et al., 2016).

As life skills within the head quadrant of the Targeting Life Skills Model, critical thinking, problem-solving, and decision-making are prominent in 4-H research and are often studied together. 4-H horse programs and camps show greater increased growth in decision-making, critical thinking, and especially problem-solving when compared to non-4-H or non-horse groups (Cole, 2005; Kurtzo et al., 2017; Prechter et al., 2016). In one study evaluating life skill growth in at-risk youth participants of a 4-H horse and a no horse comparison program, only the horse group participants showed a significant increase in problem-solving skills compared to the control group's no horse participants (Cole, 2005). This phenomenon of life skills development in 4-H horse youth excelling beyond their non-4-H peers was also seen in Prechter et al. (2016), where 4-H youth showed significant increases in perceived problem-solving and critical thinking, and non-4-H youth did not. As for decision-making, Smith et al. (2006) measured the growth of this skill in youth participants of several horse/youth programs, including 4-H, the American Quarter Horse Youth Association, the United States Pony Clubs, and the National High School Rodeo Association in Pennsylvania and Colorado. In that study, a significant positive relationship ($r = 0.50$; $p < .01$) was found between overall horsemanship and the skills of communicating, decision-making, critical thinking, problem-solving, and goal setting.

Goal setting, located in the head quadrant of the Targeting Life Skills Model, is among the life skills most influenced by 4-H horse nonriding activities like horse bowl, demonstrations, public speaking, and art (Anderson & Karr-Lilienthal, 2011). Alumni and parent volunteers agreed goal setting was influenced by 4-H club participation (Boleman et al., 2004; Fox et al., 2003; Kurtzo et al., 2017; Maass, 2004).

Within the heart quadrant of the Targeting Life Skills Model, research has shown that increased levels of 4-H involvement significantly affect growth in communication skills, especially among older female 4-H youth participants and alumni (Fitzpatrick et al., 2005; Haas et al., 2015). 4-H alumni involved between 1969 to 1998 ($n = 223$) ranked communication 17 out of the 36 life skills taught by the 4-H program (Maass, 2004). In 4-H camp settings and horse programs, youth participants showed moderate to high levels of self-perceived growth in communication (Garton et al., 2007; Smith et al., 2006).

In contrast to communication, the life skill of concern for others has been almost entirely ignored by previous researchers evaluating life skills development in 4-H and other animal/horse programming. In a study measuring concern for others among Arkansas 4-H horse club summer campers, 50 out of 51 respondents slightly to strongly agreed that "increased concern for others" was a benefited skill in youth (Kurtzo et al., 2017).

Horse knowledge subjects taught in 4-H vary according to age and membership level. Some general horse knowledge topics taught in 4-H include nutrition and feeding practices, genetics,

anatomy and physiology, reproduction and breeding, history and evolution, horse behavior and riding theory, horsemanship and safety, horse industry/careers, horse health care, diseases, veterinary science, hoof care/farrier science, horse types and breeds, coat colors and markings, and riding equipment. Nadeau et al. (2007) tested 281 New England 4-H participants over the span of three years, showing that health and disease, breeds, colors and markings, and anatomy and physiology had the highest mean scores for equine knowledge. In contrast, the categories of nutrition and reproduction showed a need for improvement based on lower test scores.

Participants in 4-H nonriding horse activities, like demonstrations, public speaking, Horse Bowl, and art, have shown increased knowledge in all these areas, particularly horsemanship skills, horse care procedures, and safety/personal behavior around a horse (Anderson & Karr-Lilienthal, 2011). An online format of the Horse Bowl was evaluated in Colorado, from which 36 youth participants (57%) showed an increase in horse knowledge pertaining to content in the Colorado 4-H Horse Project Manual and Rule Book and other equine sources (Walls & Denniston, 2003). Nonriding workshops and clinics also create growth in knowledge (Capeheart, 2015). In Texas, a 5-day, nonriding, short-tour equine ambassador course included industry professionals' demonstrations on topics of horse health, behavior, and career development opportunities, equestrian facility tours, and a look into the field of equine Extension and expectations of equine researchers. As a result of participating in this course, the 4-H equine ambassadors' knowledge grew from the intermediate level, where ambassadors understand the basics of equine knowledge, to the expert level, where ambassadors have an advanced understanding of college-level equine science principles (Capeheart, 2015).

Purpose and Research Questions

The purpose of this study was to evaluate the life skills development and horse knowledge gained by youth in a 4-H horseless horse program as compared to that of a traditional 4-H horse program. These research questions guided the study:

1. What life skills did horseless and traditional horse program participants develop?
2. What knowledge did horseless and traditional horse program participants gain about horses, horse care, and understanding the responsibilities of horse ownership?

Methods

Research Design

The Institutional Review Board at Utah State University approved the study (protocol #10302). This collective case study used a mixed-methods approach in which members of the traditional and horseless horse programs in Washington County's 4-H program participated in semi-

structured interviews to discover their life skills development, a quantitative quiz to measure their horse knowledge, and a quantitative demographic survey. A case study was defined as an in-depth description and analysis of a bound system, meaning one particular program (Merriam & Tisdell, 2016). In a collective case study, one issue or concern is selected, but the inquirer selects multiple case studies to illustrate multiple perspectives on the same issue (Creswell, 2013). Since this case study evaluated and compared two types of 4-H horse programs within the same county or site, it is considered a collective case study. This form of research has been useful for learning about the perspectives of individuals rather than the group norms of a community (Mack et al., 2005).

Population

The target population for this study consisted of the five participants of the horseless club and 32 participants of the five traditional horse clubs in the 2018 season. The Washington County Agriculture/Natural Resources/4-H Extension agent worked with an Extension intern to develop lesson plans and a horseless horse handbook so that both the horseless club and traditional horse clubs had the same learning objectives, life skills, and topics taught by the volunteer leaders. The common topics covered by both the horseless club and traditional horse clubs were horse breeds and coat colors, farrier care, parts of a western saddle, and horsemanship. The traditional horse clubs met individually with volunteer leaders, and held riding practices two or three times per month, focusing on competitive horse judging, competitive speed riding events, and nonriding demonstration events (B. Scow, personal communication, January 19, 2019). In the horseless club, five horseless youth met for 1.5 hours once a month for six months. The horseless members learned about equipment, saddling a horse, horse breeds and colors, hoof care, and basic horsemanship. At the last meeting, the horseless members groomed, saddled, and rode a horse, aided by the traditional horse youth.

The Washington County Agriculture/Natural Resources/4-H Extension agent emailed the parents of the 4-H horse program about the research study and included an option to opt out of being contacted for this study. Parents who were willing to be contacted were called by one researcher (first author) using a recruitment script, and a follow-up email confirmed the interview details. Tickets to the local rodeo were offered as an incentive. Eleven 4-H horse program participants (n = 7 traditional horse; n = 4 horseless) participated in the study. The decision not to recruit additional individuals was determined by the concept of information redundancy or saturation, which is when sampling stops because little to no new information would derive from additional data collection (Lincoln & Guba, 1985; Morse, 2015). Additionally, Stake (2006) states that an appropriate sample size for a multicase study ranges from four to 15 participants.

Instruments

Participants completed part of the 4-H Common Measures 2.0 Universal Item questionnaire developed by the National 4-H Council, 4-H National Headquarters, and representatives from

Land Grant Universities (National 4-H Council, 2016). Eleven questions were taken from the 4-H Common Measure Universal Items to gather demographic data and the amount of exposure the participants have to 4-H programs. The questions relate to the number of years in 4-H, the amount of hours youth spend in their 4-H programs, ways they participate in 4-H (fairs, clubs, camps, school programs, community involvement, other), level of involvement (county, state, or national), age, grade, gender, race, and residence (farm, rural, town, or city).

The 20-question quiz measured participants' horse knowledge gained from participating in either the traditional or horseless horse program. The quiz focused on four topics: horse breeds and coat colors, farrier care, parts of a western saddle, and horsemanship. Each of these four sections contained five questions. Intended for youth ages 11 to 13 years old, we wrote the questions based on content in the 4-H handbook, content covered in the 2018 county 4-H horse programs, and feedback from Extension faculty. This quiz took less than 30 minutes to complete.

The questions about life skills were adapted from past literature on the Targeting Life Skills Model (Hendricks, 1998). The semi-structured interview questions asked about youth participants' experiences with 10 targeting life skills: leadership, teamwork, self-responsibility, personal safety, problem-solving, decision-making, critical thinking, goal setting, communication, and concern for others. Additional questions were asked about participants' horse ownership, the activities in the programs, and future educational and career plans. The interviews lasted roughly 30 minutes.

Data Collection

The interviews and knowledge quizzes were held one-on-one at the participants' convenience on two days that two researchers were in the county. Two interviews and knowledge quizzes of traditional horse participants were conducted virtually via Zoom. The quantitative portion involved one researcher (first author) reading the 20 questions on the quiz to ensure participants were tested on their knowledge of horses and not their reading and testing capabilities. For the qualitative portion, one researcher (first author) followed a semi-structured interview guide to ensure a series of questions were asked to each participant but had the freedom to probe beyond the answers to the questions. Interviews were recorded using the Voice Memos app on the iPhone. Another researcher (second author) took notes by hand during the interviews.

Data Analysis

The demographic characteristics and knowledge quiz responses were computed using Statistical Package for the Social Sciences (SPSS) version 24 for Mac. Horse knowledge questions were scored as right or wrong. The mean and standard deviation were reported for the entire quiz for the horseless horse program participants compared to the traditional horse program participants. For each multiple-choice or true-false question on the quiz, the frequency of participants who correctly answered each answer choice was reported (Lord, 1952). The interview audio files

were transcribed by an independent service, and then two researchers (first author and second author) checked for accuracy against the recordings (Richards, 2014). Interview transcripts were analyzed by one researcher (first author) using QSR NVivo qualitative analysis software version 12. The interview transcripts were analyzed following the thematic analysis technique (Braun & Clarke, 2006). The analysis started by defining major themes *a priori*, and in this case, such themes were designed around 10 life skills from 4-H's Targeting Life Skills Model (Hendricks, 1998). One researcher (first author) carried out initial coding of the data on two transcripts to develop the major themes and their sub-themes (Braun & Clarke, 2006). Next, two researchers (first author and second author) discussed these major themes, reorganized the sub-themes, and reached a consensus and agreed upon the major themes and sub-themes. One researcher (first author) coded the major themes and sub-themes for the remaining interview transcripts. The major themes and sub-themes were analyzed by running coding queries and writing about patterns found in the themes and sub-themes.

Ethical Considerations

Face validity and content validity of the semi-structured interview guide and horse knowledge quiz were established by three faculty in Extension education, the state 4-H equine specialist, and the Washington County Extension agent supervising the 4-H horse programs. Validity concerns with the qualitative semi-structured interviews were addressed by evaluating its trustworthiness (Lincoln & Guba, 1985; Merriam, 1995). Peer debriefings and independent coder reviews throughout the data analysis process addressed credibility. We provided a detailed account of the knowledge and skills gained from participating in either a 4-H traditional horse or horseless horse club to help others to evaluate the extent to which the findings and conclusions drawn are transferable. Rich, thick descriptions and long, detailed quotations achieved transferability. The county Extension agent supervising the 4-H horse program shared the lesson plans and activities the participants did to provide context for the results of this study and triangulate the data. These documents contributed as data sources and complemented the information participants shared about the life skills they gained through participation in their club. Two researchers not involved in the data collection and analysis process conducted an external audit to confirm that the data supported the findings, interpretations, and conclusions (Creswell, 1998). The methods used to achieve confirmability of the data collection and analysis method were an audit trail, triangulation of sources, and reflexivity (Lincoln & Guba, 1985). The audit trail consisted of raw data (transcripts, field notes about the interviews, and 4-H Common Measures Universal survey results). For reflexivity, we disclosed our beliefs and experiences with horses that may impact the study's research process. No response bias existed because the researcher asking the quiz and interview questions had no relationship with the participants and lived 300 miles north of the county. One researcher (first author) was not a 4-H alumnus nor worked in Cooperative Extension. To bring forth potential biases, two researchers are horse owners recreationally, and one researcher worked in the horse industry as an equestrian facility manager. Therefore, we might have had involuntary biases about the benefits of participating in horse activities.

Results

The participants were predominantly females (*n* = 4 horseless; *n* = 6 traditional). The only male was a traditional horse participant. Most of the respondents were also Caucasian (*n* = 2 horseless; *n* = 7 traditional). Two horseless participants indicated being *more than one race*. Ages of horseless participants were not diverse, ranging from 10 to 13 years old, with a mean age of 11 years old. Traditional horse participants' ages ranged more widely from 11 to 16 years old, with a mean age of 13 years old. Overall, the grades of the participants also ranged widely, with horseless youth ranging from grades 4 to 8 and traditional horse youth ranging from grades 5 to 11. The participants in this study reported living in one of three places: a farm (*n* = 3 traditional), a non-farm rural area with a population less than 10,000 (*n* = 2 horseless; *n* = 1 traditional), or a town with a population of 10,000 to 50,000 (*n* = 2 horseless; *n* = 3 traditional).

Participants indicated how many years they had been participating in 4-H: one year (*n* = 2 horseless), two years (*n* = 1 horseless; *n* = 1 traditional), four years (*n* = 5 traditional), or five or more years (*n* = 1 horseless; *n* = 1 traditional). The horseless participant who indicated five or more years in 4-H had experience in other 4-H clubs. Participants then indicated how many hours per week they participate in 4-H activities: less than one hour per week (*n* = 2 horseless; *n* = 0 traditional), one hour per week (*n* = 1 horseless; *n* = 4 traditional), two hours per week (*n* = 0 horseless; *n* = 2 traditional), three hours per week (*n* = 0 horseless; *n* = 1 traditional), or four hours per week (*n* = 1 horseless; *n* = 0 traditional). Both groups indicated being involved in clubs (*n* = 4 horseless; *n* = 6 traditional) and working on projects at home (*n* = 2 horseless; *n* = 5 traditional). Traditional horse participants also indicated being involved in community service projects (*n* = 5), local fairs and events (*n* = 4), and after-school programs (*n* = 1). All the participants indicated being involved at the county level of 4-H, three at the state level (*n* = 1 horseless; *n* = 2 traditional), and none at the national level.

Participants were asked about their future educational and career plans. Seven participants indicated they wanted to go to college (*n* = 3 horseless; *n* = 4 traditional). One traditional horse participant, Interviewee 1, would consider college if it led to a career with horses. Whereas, horseless Interviewee 3 did not mention college, so it is unclear if that individual would attend college or not. When all participants were asked about future career plans, responses included being a veterinarian (*n* = 2 horseless; *n* = 2 traditional), having an undecided career with horses or other animals (*n* = 1 horseless; *n* = 3 traditional), having a non-horse industry career (*n* = 0 horseless; *n* = 3 traditional), ranching (*n* = 1 horseless; *n* = 0 traditional), and being a professional horse trainer/rodeo rider (*n* = 0 horseless; *n* = 1 traditional). The non-horse industry careers chosen by three traditional horse participants were hotel management, owning a recreational vehicle business, and professional singing.

What Life Skills Did Horseless and Traditional Horse Program Participants Develop?

The results for the 10 life skills measured in this study are organized by the quadrants of the targeting life skills model: hands, health, head, and heart.

Hands Quadrant

The definition of leadership is "to assist the group in meeting its goals by showing or directing along the way; using personal influence to guide the group in reaching its goals" (Hendricks, 1998, p. 30). Seven participants did not share instances of learning or practicing leadership in their 4-H club (n = 4 horseless; n = 3 traditional). Two traditional and two horseless participants indicated that adults led the 4-H activities, so these participants had no opportunities to practice leadership. Four traditional horse participants participated in formal, structured leadership roles in 4-H: leading the 4-H pledge, serving as an officer, being on the party planning committee, or being a trail ride leader. Interviewee 8 said the following:

> I was appointed trail leader, and I got to text everything out to them and led the group… As a trail leader, we find the place where we go out on the trail … we lead the group to wherever we're going: swimming in the river, going up the mountain side, et cetera.

Teamwork is defined as "work done by two or more people, each doing parts of the whole task" (Hendricks, 1998, p. 31). Three horseless and six traditional horse participants described teamwork activities. The horseless participants worked in teams to lift a western saddle with the help of an older peer and passing parts of the saddle to each other while fitting it to the horse. When horseless participants rode a horse, they helped each other mount the horse and took turns to ride. The traditional horse participant, Interviewee 8, described a mounted team racing game: "You have a piece of toilet paper, and you hold it between the two horses, and the goal is to not break it." The horseless participant, Interviewee 9, recalled an unmounted learning game where one horseless participant pretended to be a horse, and the other led that participant from the left side with a lead rope. Other participants identified service projects where they practiced teamwork (n = 0 horseless; n = 4 traditional). Specific service project activities mentioned were cleaning up wires from a farmer's field (n = 1) and cleaning up after the local rodeo (n = 1). Additional teamwork activities for traditional horse participants were setting up poles and obstacles together at riding practice (n = 1) and memorizing riding patterns as a team and helping each other to remember the patterns (n = 1). Of the 11 horse program participants, one horseless participant could not recall a teamwork experience, and one traditional horse participant did not share an experience of learning teamwork in 4-H.

Health Quadrant

Self-responsibility is defined as "taking care of oneself; being accountable for one's behavior and obligations; choosing for oneself between right and wrong" (Hendricks, 1998, p. 33). Most

participants indicated that caring for a horse is one way to practice self-responsibility (n = 4 horseless; n = 6 traditional). Examples of responsibly caring for a horse included feeding and watering on a regular schedule, washing and grooming, cleaning up, providing safe and comfortable housing, scheduling regular hoof care, using safe handling and transportation practices, and taking a rectal temperature. Six traditional horse participants experienced self-responsibility because they regularly cared for a horse and/or riding equipment. No horseless participants could practice acts of self-responsibility during their time in the horseless club. One horseless participant recalled seeing and learning about grooming and farrier equipment in a demonstration, but not actually grooming a horse. Another horseless participant recalled learning in 4-H about the importance of shutting gates to prevent horses from getting loose, then practicing this later at a non-4-H horse camp.

Personal safety is defined as "taking care to avoid danger, risk, or harm; self-protection; being cautious, careful; physically and emotionally safe" (Hendricks, 1998, p. 32). Horseless and traditional horse participants suggested wearing safe attire around horses to practice personal safety: helmet (n = 3 horseless; n = 6 traditional), boots or closed-toe shoes (n = 3 horseless; n = 3 traditional), and pants (n = 3 horseless; n = 2 traditional). The participants practiced personal safety by behaving appropriately around horses: not standing directly behind a horse, being aware of your feet when handling a horse, using proper riding position to avoid falling and/or being dragged by a horse, and being aware of things around you that may spook a horse (n = 4 horseless; n = 6 traditional). Other safety behaviors described were acting calm, speaking quietly, and avoiding loud noises (n = 3 horseless; n = 2 traditional). Two participants also shared how they gain control of an unruly horse when riding by pulling its head around to their knee (n = 1 horseless; n = 1 traditional). Four participants practiced personal safety by attending to the horse's attire. Two traditional horse participants highlighted the importance of tack-checks to ensure that tack is well-fitted and secure; one traditional horse participant named specific riding equipment (sliders and polo wraps as leg protection for reining horses), and one horseless participant said she took care to place a saddle on a horse softly and carefully to avoid laying the horse's hair in the wrong direction and causing discomfort to the horse.

Head Quadrant

Problem-solving is defined as "clearly identifying a problem and a plan of action for resolution of the problem" (Hendricks, 1998, p. 25). No horseless participants recalled a problem-solving experience in the 4-H horse program. Six traditional horse participants either indicated having no problems to solve in 4-H or gave an example that did not fit the definition of problem-solving.

Decision-making is defined as "developing good judgement, gathering information to make good decisions, and choosing among several alternatives" (Hendricks, 1998, p. 25). It is noteworthy that none of the participants were presented with opportunities to choose from several alternatives. Decision-making opportunities were limited to choosing between two alternatives (n

= 4 horseless; *n* = 5 traditional). The four horseless participants made decisions about whether to ride or not to ride the horse (*n* = 2), to walk or to trot (*n* = 2), and to turn the horse left or right (*n* = 1). Traditional horse participants were also faced with two-alternative decisions: whether or not to sell their horse (*n* = 2), whether or not to participate in a 4-H horse event (*n* = 2), whether to feed alfalfa or grass (*n* = 2), which of two horses to ride in 4-H practice (*n* = 1), and whether or not to accompany a parent when taking a horse to the vet to be euthanized (*n* = 1). One traditional horse participant did not recall decision-making experiences in the 4-H horse program.

Critical thinking is defined as "strategies for analyzing, comparing, reasoning, and reflecting focused on deciding what to believe or do; discovering meaning; building connections with past learning" (Hendricks, 1998, p. 26). Many of the participants were not familiar with critical thinking and could not share examples of practicing critical thinking in the 4-H horse program (*n* = 4 horseless; *n* = 3 traditional). Only one traditional horse participant displayed an understanding of critical thinking that aligned with this study's definition. Interviewee 10 described the critical thinking experience of thinking about where to ride in the arena, in proximity to other horses that may be acting up, saying, "You have to decide whether you want to space it out or go around them."

Goal setting is "identifying a desired purpose or result, identifying tasks or steps necessary to achieve goals, making and following an action plan, and revising the plan if the goal is not met" (Hendricks, 1998, p. 26). Two horseless participants did not set goals in the horseless program. However, the other horseless participants developed informal goals of learning how to ride a horse (*n* = 2) and one day owning a horse of their own (*n* = 1). Similarly, six traditional horse participants had informal goals of improving their riding skills. Only one traditional horse participant set a formal fundraising goal achieved by offering pony rides at the local fair.

Heart Quadrant

Communication is defined as the "exchange of thoughts, information or message between individuals; sending and receiving information using speech, writing, gestures and artistic expression" (Hendricks, 1998, p. 27). Most participants practiced verbal communication in the horse program (*n* = 2 horseless; *n* = 7 traditional). Verbal communication experiences shared by the participants were instances of them asking questions to judges, instructors, or adults (*n* = 1 horseless; *n* = 4 traditional); public speaking opportunities like demonstrations or presentations (*n* = 5 traditional); and communicating with the horse through vocal cues (*n* = 1 horseless; *n* = 3 traditional). Nonverbal communication experiences included understanding a horse's mood through the animal's body language (*n* = 3 horseless; *n* = 3 traditional) and, in turn, communicating to the horse through riding cues (*n* = 2 horseless; *n* = 3 traditional). One traditional horse participant learned eye contact by participating in a 4-H demonstration.

Concern for others is "to worry about or give attention to the well-being of others, offering assistance to those in need, being aware of their own emotions and feelings, and showing compassion and caring for others' feelings" (Hendricks, 1998, p. 29). Five participants did not identify an experience of developing concern for others (n = 2 horseless; n = 3 traditional). Five participants shared instances of having concern for peers' emotional and physical well-being and showing them compassion (n = 1 horseless; n = 4 traditional).

What Knowledge Did Horseless and Traditional Horse Program Participants Gain?

Overall, traditional horse participants had better horse knowledge scores than horseless horse participants. The average score of horseless participants was 12.75 out of 20 (SD = 2.22), and the average score of traditional horse participants was 18.86 out of 20 (SD = 0.90). As shown in Table 1, the knowledge scores are reported for each section of the quiz: (a) breeds and coat colors, (b) farrier care, (c) saddling a horse, and (d) horsemanship.

Table 1. Knowledge Scores for Traditional Horse versus Horseless Horse Participants

	Horseless		Traditional	
Sections	***M***	***SD***	***M***	***SD***
Breeds and coat colors	4.00	0.82	5.00	0.00
Farrier care	3.50	0.58	4.71	0.49
Saddling a horse	2.25	1.50	4.58	0.77
Horsemanship	3.00	0.82	4.57	0.77

All the traditional horse participants correctly responded to the questions in the breeds and coat colors section, as seen in Table 2. The horseless participants displayed partial knowledge in this area, with 25% or 50% of participants answering the questions regarding markings incorrectly.

Table 2. Correct Responses for Knowledge Questions about Breeds and Coat Colors

	Horseless		Traditional	
Knowledge Question	***n***	**%**	***n***	**%**
A golden horse with a white mane and tail is called a _____.	2	50	7	100
What horse breed always has a pinto coat pattern?	4	100	7	100
Which of these is a real horse breed?	4	100	7	100
What is the name of a white spot marking on the forehead?	3	75	7	100
What is the name of this white marking on the leg?	3	75	7	100

In the farrier care section, traditional horse participants indicated correct responses to all questions except this question: "This part of the hoof is called the _____," coupled with a black and white illustration of the hoof from the 4-H handbook and a line pointing to the frog of the hoof. As shown in Table 3, none of the horseless participants answered question 6 correctly. Among both groups, the incorrect answer indicated was the "sole."

Table 3. Correct Responses for Knowledge Questions about Farrier Care

	Horseless		Traditional	
Knowledge Question	***n***	**%**	***n***	**%**
Someone who trims and shoes horse hooves is called a _____.	3	75	7	100
This part of the hoof is called the _____.	0	0	5	71
What does it mean when a horse is lame?	3	75	7	100
The tool used to clean dirt from the inside of a horse's hoof is called a _____.	4	100	7	100
True/False: Horse hooves grow continually.	4	100	7	100

All the traditional horse participants correctly indicated the parts of the western saddle: fender, horn, and cantle, and the majority indicated the fork and skirt correctly (see Table 4). All the horseless participants correctly indicated the horn of the western saddle but displayed less understanding of the rest of the parts of the saddle, including the skirt, fender, cantle, and fork.

Table 4. Correct Responses for Knowledge Questions about Saddling a Horse

	Horseless		Traditional	
Knowledge Question	***n***	**%**	***n***	**%**
Identified the fork on a western saddle.	0	0	5	71
Identified the skirt on a western saddle.	2	50	6	86
Identified the fender on a western saddle.	2	50	7	100
Identified the horn on a western saddle.	4	100	7	100
Identified the cantle on a western saddle.	1	25	7	100

Traditional horse participants displayed good mastery of knowledge in horsemanship questions (Table 5). Only one traditional horse participant indicated the wrong definition of equitation, and two others misidentified a black and white illustration of a curry comb, from the 4-H handbook, as a sweat scraper. The horseless participants displayed moderate knowledge of horsemanship. None of the horsemanship questions received correct responses from all horseless participants.

Table 5. Correct Responses for Knowledge Questions about Horsemanship

	Horseless		Traditional	
Knowledge Question	***n***	**%**	***n***	**%**
Choose a definition for equitation.	2	50	6	86
Horse riding equipment, like saddles or bridles, are called _____.	2	50	7	100
Which of these is not considered a gait of the horse?	3	75	7	100
Identify this piece of grooming equipment.	2	50	5	71
Which of these is the definition of a riding aid?	3	75	7	100

Conclusions/Recommendations/Implications

Only traditional horse participants (n = 4; 35%) shared examples of participating in formal leadership roles in 4-H. Traditionally, 4-H clubs have youth-elected officers, and regular meetings are held after school (Enfield, 2001). The horseless horse club in this study has no official leadership positions, so this limited the participants' ability to develop formal leadership skills. These youth might have unknowingly practiced leadership through age-appropriate qualities. Hendricks described age-appropriate leadership qualities for three age groups. The 9- to 11-year-olds contributed to the group effort, helped to set group goals, valued diversity, and identified one's own competencies. The 12- to 14-year-olds negotiated personal and group needs; practiced assertiveness, used their own competencies; identified role models; and enjoyed group membership, symbols, and regalia. Finally, 15- to 19-year-olds organized groups to accomplish a purpose, recognized different ways to accomplish a task, understood personal strengths, teach others new skills, and explore opportunities for adult leadership. Based on this information, horseless participants in this program demonstrated a couple of age-appropriate leadership qualities by contributing to group effort and identifying their own talents. Traditional horse participants demonstrated more age-appropriate leadership qualities in comparison by finding roles to use their skills, practicing assertiveness around horses, identifying role models, organizing groups to accomplish a purpose, and teaching others new skills.

Both groups of participants demonstrated teamwork, which was not surprising because studies show teamwork is highly influenced by participation in 4-H (Fitzpatrick et al., 2005; Maass, 2004). Live horse interaction was a common factor between the horseless and traditional horse participants who described teamwork experiences. The three horseless participants who recalled practicing teamwork described the time they saddled a horse together, while three traditional horse participants recalled various acts and games of teamwork during their riding practices. These experiences of teamwork are expected, and these activities were also found in Arkansas 4-H horse camps, which show to improve teamwork in youth (Kurtzo et al., 2017).

Self-responsibility has been repeatedly perceived, among both youth and parents, as the number-one life skill gained from a 4-H project (Boleman et al., 2004; Holmgren & Reid, 2007). Nearly all participants in this study suggested that caring for a horse is a good way to practice self-responsibility. This idea closely aligned with Cole's (2005) theory that "by learning responsibility and respect for a 1,000-pound horse, youth will also learn responsibility for their own actions and self-respect" (p. 2). Based on this ideology, traditional horse participants developed self-responsibility more than the horseless participants because they regularly cared for a horse or riding equipment in the 4-H horse program or at home.

The findings about personal safety skills in horseless and traditional horse participants were consistent with research by Smith et al. (2006), where safety was the second highest horsemanship skill that youth in 4-H and non-4-H traditional horse programs were able to

perform. Furthermore, Washington County's leader guide stated that "safety must always be the first consideration during horseless program activities" (Washington County Extension, 2018, p. 5). Practicing personal safety was a common theme among many horseless and traditional horse curriculums throughout the nation (Minnesota State University 4-H, 2003). As expected, all participants in this study described practicing personal safety by wearing safe attire and behaving appropriately around a horse. This finding was similar to participants who increased their safety skills around horses during a 2016 Arkansas 4-H summer horse camp by participating in lessons, groundwork, group riding, and mock competitions (Kurtzo et al., 2017).

The traditional horse and horseless participants lacked development of problem-solving skills. Only one traditional horse participant shared an experience of problem-solving where the participant described scheduling the 4-H club riding practice. Furthermore, some youth feel there were no problems to solve in 4-H. This was unusual because literature showed that 4-H horse programs positively influence problem-solving (Cole, 2005; Haas et al., 2015; Kurtzo et al., 2017; Prechter et al., 2016; Smith et al., 2006). Perhaps problem-solving opportunities were overlooked by the study's participants because they looked to adult leaders to solve them. The fact that horseless participants met for 1 hour 30 minutes once a month for 6 months could explain why problem-solving was a life skill not developed because the curriculum topics did not enhance that life skill.

Decision-making experiences were shared by several of the horseless and traditional horse participants (n = 4 horseless; n = 5 traditional), showing that decision-making opportunities were often present in the horse program. The ages of horseless participants in this study ranged from 10 to 13 years old, with a mean age of 11 years old. Their decisions were whether or not to ride a horse (n = 2), to walk or to trot (n = 2), and to turn the horse left or right (n = 1). These decision-making experiences of the horseless participants were more appropriate for 5- to 8-year-olds (Hendricks, 1998). The decisions did not reflect an age-appropriate level in which the 9- to 11-year-olds would seek out information, develop their own opinions, and choose among several alternatives (Hendricks, 1998). This showed room for developing decision-making opportunities in this horseless horse program. The traditional horse participants were older (11 to 16 years old) and had more advanced decision-making experiences than the horseless participants but lacked the opportunity to choose among several alternatives. Hendricks (1998) recommended that 12- to 14-year-olds "classify information for use, compare and choose among several alternatives, and begin to make personal decisions based on forethought" (p. 36). Children 15 to 19 years old "specify goals and constraints, consider risks, generate and evaluate alternatives, apply personal values criteria to choices, and take freedom from parental control to make decisions" (p. 36). The traditional horse participants demonstrated advanced decision-making themes of making decisions based on forethought, considering risks, and applying personal values to choices (Hendricks, 1998).

The traditional horse and horseless programs lacked the development of critical thinking. Of all participants, only one traditional horse participant understood the definition of critical thinking and described how to incorporate critical thinking when handling horses. This was unusual because 4-H horse programs positively influence critical thinking (Cole, 2005; Haas et al., 2015; Kurtzo et al., 2017; Maass, 2004; Prechter et al., 2016; Smith et al., 2006). The Extension educator revealed that critical thinking should happen in the Washington County Horse Program (B. Scow, personal communication, January 19, 2019). Perhaps the volunteer leaders lacked sufficient training to encourage and develop this life skill in the participants properly.

When developing the goal-setting skill, it is important to develop an action plan with the necessary steps to achieve the goal within a certain time frame. Most participants described having personal goals that involve developing or improving horseback riding skills but have no formal process for completing these goals (n = 2 horseless; n = 6 traditional). This finding was different from previous research where goal setting was positively influenced by nonriding horse 4-H activities (Anderson & Karr-Lilienthal, 2011). The nonriding activities described in Anderson and Karr-Lilienthal involved tracking the progress of goals in a 4-H record book, as is usually required of traditional 4-H horse projects. Hendricks (1998) outlined six steps to achieving a goal, from identifying an appropriate goal to revising the plan if the intended goal was not met. In this study, only one traditional horse participant described a formal goal-setting experience where a club's specific fundraising goal was met by offering pony rides to people at the local fair. The goal-setting process was different for horseless participants because they met for about 1 hour 30 minutes for 6 months, and they did not continue lessons outside of the setting, which provided fewer goal-setting development opportunities than traditional horse participants.

The Washington County 4-H Horse Guide states that youth participants would learn communication as a life skill (Washington County Extension, 2017). This life skill was achieved by most of the participants who practiced verbal communication in the horse program (n = 2 horseless; n = 7 traditional). It was noteworthy that the horseless participants identified several ways to communicate with horses and humans nonverbally. In contrast, traditional horse participants provided more examples of how they communicated verbally. This finding might be because traditional horse participants had public speaking and demonstration opportunities that horseless participants did not have.

Roughly half of the participants in both groups experienced concern for others in their program. This moderate number of incidences in which participants used this skill simply adds to the limited literature available. Kurtzo et al. (2017) reported that nearly all the participants agreed "increased concern for others" was a benefit of participating in the Arkansas 4-H summer horse camp.

The greater horse knowledge of traditional horse participants can relate to their number of years in 4-H. Many traditional participants have been in 4-H twice as long as most of the horseless participants. This is consistent with the findings of Nadeau et al. (2007), where traditional horse participants with three or more years of 4-H experience scored higher than traditional horse participants with two or fewer years of experience. The breeds and coat colors quiz section had the highest mean scores for both horseless and traditional horse participants. Similarly, Nadeau et al. (2007) reported that the categories of breeds, coat colors, and markings were among the highest mean scores for horse knowledge from New England traditional horse participants over the course of three years.

Involvement in 4-H nonriding horse activities, like demonstrations, public speaking, horse bowl, and art, have increased knowledge of horsemanship skills (Anderson & Karr-Lilienthal, 2011). Furthermore, nonriding workshops and clinics also created growth in knowledge of horsemanship skills (Capeheart, 2015). However, results in this study show that knowledge of horsemanship and parts of a saddle are most in need of improvement based on somewhat lower test scores of both horseless and traditional horse participants. Scores on the test section that identified parts of a saddle may have been lower because we corrected one error in the drawing by hand on each quiz. Despite this, the need for horse knowledge development is greater for horseless participants than traditional horse participants because traditional participants all score 90% or higher on the quiz. The horseless participants in this study do not participate in demonstrations, horse bowl, or art activities, which can explain their lower horsemanship knowledge. Their lower quiz scores can indicate poor retention of horse knowledge because the study was conducted 10 months after these participants completed the horseless horse program.

Limitations and Recommendations for Research

The scope of this case study was limited to one county in Southwestern Utah. Washington County was the only county in Utah with a 4-H horse program that offered both horseless and traditional horse clubs. Generalizations should be considered with caution, acknowledging the demographics of this small study. Participants were not randomly sampled; they were purposefully identified through a roster of participants in the two 4-H programs provided by the Extension educator. The traditional horse participants have previous experience in 4-H horse programming, which can impact their existing knowledge of horses. We did not assess the experience levels of the adult 4-H leaders and volunteers who taught the youth participants, which could impact what life skills and horse knowledge is shared with the study's participants. Lastly, the sample might not be representative of the horseless youth who are unaware of 4-H programs in Washington County.

Existing horseless horse curriculums around the nation need empirical evaluation for their efficiency in developing life skills and knowledge in participants. If county Extension programs create or adopt existing horseless horse curricula, the Extension agent should collect both pre-

and post-program evaluation data to track the growth of life skills and horse knowledge. Observational research at the traditional and horseless horse club meetings, activities, and riding practices would document the life skills practiced rather than relying only on self-reported data from participants. In-depth interviews with the county horse program volunteers would detail life skills taught in their programs, consistency of attendance, the learning objectives, and the curriculum. Using this holistic approach to research would provide accountability and stakeholder involvement for a county 4-H horse program, which an increasing number of state Extension programs are challenged to report. Future research could implement a quasi-experimental design in which mediator and moderator variables are evaluated to compare the influence of 4-H leaders and volunteer training and parents on the development of life skills and knowledge in youth participants.

The Targeting Life Skills Model is incorporated in 4-H programming across the nation. As this model continues to gain prevalence, future research should measure skills from each quadrant of Hendricks's (1998) targeting life skills model to understand better how all 35 skills can be developed. Certain life skills need more investigation than others to have well-rounded literature. Future research should consider whether concern for others is present in the 4-H horse program curriculum, if it is developed in participants of 4-H horseless and traditional horse programs, and what activities contribute to the development of concern for others.

Recommendations for Practice

Extension educators interested in offering a horseless horse program should create a manual with an evidence-based curriculum designed for age-appropriate life skill development and horse knowledge in junior, intermediate, and senior members. New programs could adopt curriculum from existing horseless horse manuals of many states, including Colorado, Kansas, Kentucky, Minnesota, Montana, Nevada, Ohio, Pennsylvania, Virginia, Washington, or Wisconsin.

We suggested improvements or enhancements to nine of the 10 life skills evaluated in this study: leadership, teamwork, self-responsibility, problem-solving, decision-making, critical thinking, goal setting, communication, and concern for others. Upon comparison, the traditional horse participants had more opportunities with live horses, which helped them develop leadership, self-responsibility, goal setting, and communication skills more than the horseless participants. Involving horseless participants in more live-horse activities might increase their development of these life skills. Slocum (2004) found that the longer the tenure in 4-H and the more hours devoted to 4-H, the higher the level of youth participation in 4-H leadership activities, and thus the greater the level of leadership life skills gained by the youth. If horseless participants meet the same number of times per month as traditional participants, the horseless participants might gain more life skill experiences. The duration of the horseless program should match that of the traditional horse program by holding regular meetings during the school year from September to June.

To promote leadership, participants should elect officers and organize the following meetings, activities, and project plans in the first horseless club meeting. Planned activities should include meaningful incentives that increase attendance to horseless club meetings and life-skill development opportunities. Examples of meaningful incentives could be a point system that rewards time spent at meetings or on nonriding projects and life-skill development games. Involving horseless participants in the same unmounted club activities as traditional participants might increase their life skills development. Horseless participants could develop better teamwork skills by attending the same community service projects as traditional horse participants.

Youth who keep and update 4-H record books demonstrate increased goal-setting development (Diem & Devitt, 2003). Therefore, goal setting could improve for both horseless and traditional horse participants who make a goal with planned steps to reach that goal. Horseless and traditional participants should give demonstrations as an opportunity to increase communication skills. Finally, both groups of participants can practice concern for others while interacting with peers and animals at club meetings.

The results of this study suggest that 4-H leaders need training on how to help youth participants develop decision-making, problem-solving, and critical thinking skills. Decision-making opportunities can improve for both groups of participants in this age group by having opportunities to make decisions with several alternatives rather than just two. To strengthen problem-solving experiences among both traditional and horseless participants, the volunteer leaders would present more age-appropriate challenges for the youth. Michigan State University Extension (2016) suggested two activities for 4-H members to learn problem-solving: assess the care and well-being of horses on a farm and role-play ways to resolve conflict in a club or group setting. Critical thinking development could improve by educating participants on what it means to think critically and challenging them to do so, according to what can be comprehended by their age. 4-H leaders can emphasize the qualities of critical thinking by encouraging them to discover meaning or understand the “whys” behind what they are being taught and to draw connections with past learning.

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