



LLAMA DEARA RANCH

## **Animal-Assisted Programs to Develop Empathy In Children:**

*Improving Self-Image, Peer Relations, and  
Academic Performance*

Learning to Love More Series

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# Executive Summary

## *Program Description*

This paper describes an animal-assisted program to train children concurrently in empathy and the skills of observation and imagination. The program creates learning activities that integrate social and emotional awareness (SEL, or social emotional learning) with the development of academic skills; such programs are characterized as SEAL<sup>1</sup>, which stands for social-emotional and academic learning. The two-year pilot program was carried out at Llama Deara Ranch, a llama farm situated on the Chama River in Northern New Mexico.

## *Outcome*

Data analysis provided in the paper shows quantitatively that ventures into nature and time spent with large animals and in wildlife refuges can increase a child's ability to relate empathetically to self and others, as measured by the What I Stand For empathy instrument.

## *Benefits of Program*

Over time, humans are more accepting and relaxed when they empathize with themselves and others. Increased empathy leads to the following benefits I observed in the subject schools during the pilot program:

- Better classroom and playground behavior
- Reduced bullying and violence in schools and families
- More classroom time spent in academic lessons
- Improved self-image and awareness of self worth

Additionally, programs based in nature may engender respect for ancestors in many participants of the pilot population, given its roots in land-based traditions of agriculture and forestry.

## *Overall Conclusions*

Programs that provide children interaction with other animals can improve their enjoyment of the educational process and can result in increased empathy in the views and behavior of both student and adult participants. This program has shown that collaboration between llamas and children resulted in a significant gain in empathy in the pilot population. The initial work looks promising; more work needs to be done in other applications and with other cultures, however.

The development of empathy through similar animal-assisted programs may also help lead to a better resolution to trauma in participants. In my work with traumatized children and adults, I have seen that the more individuals observe their thoughts, feelings, and behavior and empathize with themselves and others, the sooner they may be motivated to release the effects of trauma.<sup>2</sup> The use of animal-assisted programs to reduce the effects of trauma will be explored in a future paper.<sup>3</sup>

## Theoretical Perspective

*A politics of place is emerging. Not radical, but conservative, a politics rooted in empathy in which we extend our notion of community, as Aldo Leopold has urged, to include all life forms—plants, animals, rivers, and soils. The enterprise of conservation is a revolution, an evolution of the spirit.*

*Terry Tempest Williams, 1994.*

### Premise

Interaction with and investigation of animal and plant species help children to enlarge their world; learn to observe, understand, and empathize with themselves and other creatures; and develop a more open attitude toward diversity. This program is theoretically based on interspecies collaboration and experience of nature.

### Interspecies Collaboration

At Llama Deara Ranch (LDR), family and child counseling and educational services are enhanced through interspecies collaboration; the resident llama herd and therapist collaborate in the work with children and families at the ranch, where feasible and appropriate. Many researchers acknowledge children's innate fascination with animals<sup>4</sup> and document that pets reduce tension.<sup>5</sup> The use of large animals in therapeutic and educational settings is beginning to see results in the resolution of trauma and its consequent afflictions: depression, anxiety, somatization, and challenging behavior, among others<sup>6</sup> (Bull 2002).



Llamas engage people, young and old.<sup>7</sup> Their natural curiosity with regard to humans can restore a child's awareness of her innate worth and value, which in turn improves her sense of well being. Additionally, interaction with llamas has helped individuals and families reduce stress, empathize, and relax their defenses. The llama herd social order demonstrates direct communication and respect for personal boundaries—behaviors that people can adapt to their own familial circumstances. Llamas are by nature curious, alert, and aware, traits that can be generalized in humans through association with the llama.



Llamas are large and therefore command a measure of respect from the child; aggressive children pause in their presence; when bullied, the llama simply moves away. When the llama senses his boundaries have been transgressed seriously, he spits. In addition to being gentle, llamas are also very curious animals. If a child sits quietly reading a book or drawing in the middle of a meadow at Llama Deara, when she looks up, she is likely to find that she has been circled by curious llamas, who have noiselessly gathered to observe her at very close quarters—a thrilling experience. Like many other

species, the llama's capacity for play is enormous and exhilarating to watch—and their apparent joy is contagious.

The integration of adult family participants and multiple-family interactions leads to a collaborative approach to problem solving, growth, and understanding, in which participants become more aware of themselves and each other, empathize with individual needs, and form cohesive, supportive communities.<sup>8</sup> Just as interspecies collaboration with the llamas at a family-unit level has an ice-breaking and habit-breaking effect when it comes to intra-family relations, it can also provide a fresh context for large groups of children and their guardians and caregivers to experience and express tender emotions to one another, providing “breathing room”—opening up a space—in relationships that have shut down.

### ***Experience of Nature***

Few would disagree that modern urban and suburban life has created a “disconnect” between humans and natural environments. It is not unreasonable to conclude that this separation has contributed to the health issues of our children.



The futurist and child advocate, Richard Louv, notes that “children of the digital age have become increasingly alienated from the natural world” and has coined the term, *Nature-Deficit Disorder*. Though undocumented in the Diagnostic and Statistical Manual of Mental Disorders, NDD captures our attention. Young people and adults gain from returning to experiences in nature: increased attention span, less obesity, reduced stress, decreased depressive and anxiety symptoms, a heightened curiosity about life (Louv 2005), and empathy for all living beings including themselves.

## Objectives

This program shows that observation of and interaction with farm animals can help children learn to

- Empathize with their own feelings and those of others
- Understand the motivations of their own behavior and the motivations of others
- Develop a more open attitude toward differences and diversity

The program teaches the participants about the natural environment, lifestyles of other animal species, riparian cultures, food chains, habitats, and other scientific topics through educational and animal-assisted games at ranches and farms.

## What Empathy Is and How the Tool Was Developed

Definitions for empathy vary. For the purposes of this paper, it is considered the dual ability to understand how another feels, and to feel the emotions that the other is experiencing. Empathetic individuals are generally sensitive to another's distress, respectful of another's right to be understood on his or her terms, and reluctant to judge others as all-good or all-bad<sup>9</sup> (Bengtssen and Johnson 1992). They are able to put aside their own personal concerns to focus on the concerns of others. At the same time, they have developed a capacity to feel and understand their own feelings, which allows them to listen and interact with another from a place of commonality.

Empathetic individuals are less likely to blame and project onto others, and more likely to be interested in the feelings and personal circumstances of others. They are often good listeners.

Given this characterization of empathy, the empathy instrument used in this project, What I Stand For, measures the child's

- Sensitivity to self and others
- Willingness to intervene to assist others
- Motivation to understand what a person is saying
- Ways of resolving conflict
- Sense of importance of self and others



## **Empathy-Building Program at Llama Deara**

The pilot program was carried out at Llama Deara Ranch, where I live with a small herd of llamas. The program spanned all grades, with trips to Llama Deara Ranch in Medanales for grades K-6.

### ***Participating Rural Population***

In Rio Arriba County, the students of the subject district, with elementary schools in two local villages, are primarily (97%) Hispanic; Anglos are counted as 2%, and African American/American Indian/Asian, 1%. Poverty and government support are common. Social factors of addiction, violence, and trauma affect the well being of the family. Trauma itself may be the source of the rise of symptoms of obesity, decreased attention span, stress, anxiety, and depression seen in children (Bull 2007).

Some statistics about Rio Arriba County may serve to illuminate the challenges the population faces.

### **Statistics from US Census 2000 for Rio Arriba County**

- 71.9% households are families; 31.4% householders are female without a male present.
- 31.3% finished high school, in population of 25 and over.
- 57.8% grandparents are guardians of grandchildren.
- 69.9% drive alone to work.
- 24.3% of families with children under 5 live at poverty level.
- 10.3% of families have income of less than \$10,000.

## Selected 2003 New Mexico Health Profiles for Rio Arriba County

- 40.5% of investigations into adult abuse are substantiated.
- 28.6% of all child abuse cases are substantiated.
- 14.8% of deaths of children 1-14 years old are due to motor vehicle accidents (MVAs).
- 28.6% of deaths of youth 19 or younger are due to MVAs involving alcohol, with 40.1% of all individuals in alcohol-related MVAs being killed and 27.1% injured.
- 390 babies are born to single mothers.
- \$22,153 is average annual salary.
- \$16,350 is average per capita personal income.
- 10.4% of adults have diabetes (2002).

## Strengths of Population

In addition to these sometimes sobering statistics, the community exhibits the following strengths:

- The area has a long history of agriculture and forestry, and in the past, families made their living and centered their lives on the cycles of nature.
- Extended families rally together in crisis and often can effectively solve immediate challenges.
- In cases where the biological parents of children are engaged in at-risk behaviors, grandparents often step in to help both their children and grandchildren. This raises its own issues of the stress the grandparents sustain at a time when they might be winding down their own work lives, and also shows the solidarity of the family.
- Pride of culture exists, and may result in denial of the implications of poverty, drug and alcohol abuse and addiction, and violence; however, this pride can also set a foundation for rising to the challenges<sup>10</sup> (Bull 2007).

## Specifics of Program

The Llama Deara program entails field trips that give children experiences with large animals—llamas—and takes them out of the formal rural school campus to be immersed in a natural river environment. The term *rural* sometimes suggests natural settings and wilderness. However, many children in rural settings spend the greater part of their days on school campus and then at home in front of their play stations, TVs, or computers. The animal-assisted program offers an emotionally and mentally engaging alternative and supplement to this routine of school and TV, where the child is active as opposed to passive. In this program, activities include feeding, playing with, and allowing observation by the llamas, who approach, sniff, and study them.



These programs can be adapted to all elementary grades, K-6, as well as adolescents. The academic portion of the program provides instruction aligned with the standards-based curriculum, which is now a requirement in our public schools. For the specific standards addressed in this program, see “Relevant Content Standards and Benchmarks.”

### ***Therapeutic Program at Llama Deara***

In addition to the groups of school children who have come to Llama Deara for the pilot programs, I also see individual children and their families for llama-assisted therapy at the ranch. The Tales of Healing series documents the trauma work done at Llama Deara (Bull 2002 and 2006).

## **Outcome of Two-Year Study**

During the period that I organized and implemented the Llama Deara program, I worked at a local school district in Rio Arriba County. I followed the progress and changes in responses in the students both qualitatively (my own observation of shifts in behavior day by day as well as self-report through conversations, notes and drawings), and quantitatively through my assessment tool, the questionnaire What I Stand For. For a copy of that questionnaire, see Appendix A.

### ***Data Sources***

In that period, I worked at two elementary schools as the Guidance Counselor. For data analysis, I chose the third and fourth graders at each of the elementary schools.

I administered the What I Stand For assessment tool at the start of the program the first year, and at the end of the program the second year.

The tool provides 13 statements related to empathetic behavior, including indicators of self-awareness, sensitivity to others’ feelings, inclusion, diversity, and approaches to

conflict resolution. Each child commented on the validity of each statement for himself or herself independently, by answering Untrue (1), True (2), or Don't Know (3).

I chose to focus data analysis of the pilot program on the quantitative side because a pencil-and-paper measure is conceivably less subjective than personal observations and the self-report of human participants and more easily transferable to future programs. Pencil-and-paper measures may also mitigate the possible confusion between actually experiencing the emotions of others and the willingness to report experiencing another's emotions<sup>11</sup> (Bryant 1982).

However, it is important to keep in mind that multiple measures, including observation of physiological and facial reactions to affect and self-report of internal affective experience, may prove more predictive of social behavior than a single measure of empathy<sup>12</sup> (Bryant, 1982).

## Results/Conclusions

I administered the assessment tool in the Spring of 2005 to third graders at the two elementary schools and in the Fall of 2005 to the same students, then fourth graders in the same schools.

### Data Tables

Tables 1 through 4 resulted from the analysis for the two schools. Blanks indicate children who were absent, *dis-enrolled*, or enrolled at the district only for one year and whose data were excluded from the study. In each table, the rightmost column reflects the average empathy coefficient for each child while the bottom row reflects the class average for each statement.

#### School 1 Third Grade Answer Scores, BEFORE Animal-Assisted Program

Statements	1	2	3	4	5	6	7	8	9	10	11	12	13	Average
Child1	-1	1	1	1	1	1	1	1	0	0	1	-1	1	0.500
Child2	-1	-1	1	1	1	1	1	0	1	-1	1	-1	1	0.250
Child3														
Child4														
Child5	1	1	1	1	1	1	1	1	1	-1	1	-1	1	0.667
Child6	1	1	1	1	1	1	0	1	1	-1	1	1	1	0.750
Child7	-1	1	1	1	1	1	1	1	1	-1	1	1	1	0.667
Child8	1	1	1	1	1	1	1	1	1	-1	1	1	1	0.833
Child9	1	-1	1	1	0	1	1	1	0	0	1	-1	1	0.417
Child10	1	-1	1	1	1	1	1	1	0	-1	0	-1	1	0.333
Child11	1	-1	1	1	1	1	1	1	1	-1	1	1	1	0.667
Child12	0	1	1	1	1	1	1	1	1	-1	1	1	1	0.750
Child13	1	-1	1	1	1	1	1	1	1	-1	1	1	1	0.667
Child14														
Child15	1	1	1	1	1	1	1	1	1	0	1	1	1	0.917
Statement Average	0.364	0.091	1.000	1.000	0.909	1.000	0.909	0.909	0.727	-0.818	0.909	0.091	1.000	0.591

**School 1 Fourth Grade Answer Scores, AFTER Animal-Assisted Program**

Statements	1	2	3	4	5	6	7	8	9	10	11	12	13	Average
Child1	0	-1	-1	1	1	1	1	1	-1	1	0	1	1	0.385
Child2	1	1	1	1	1	1	1	1	1	1	1	1	1	1.000
Child3														
Child4														
Child5	0	1	1	1	1	1	1	1	1	1	1	1	1	0.923
Child6	1	-1	1	1	0	1	1	0	1	1	0	1	1	0.615
Child7	1	-1	1	1	1	1	1	1	1	0	1	1	1	0.769
Child8	1	1	1	1	1	1	1	1	1	1	1	1	1	1.000
Child9	1	-1	1	1	1	1	1	1	1	1	1	1	1	0.846
Child10	1	1	1	0	1	1	1	1	1	-1	1	-1	-1	0.462
Child11	1	-1	1	1	1	1	1	1	0	1	1	1	1	0.769
Child12	1	-1	-1	1	0	1	1	1	0	-1	0	1	-1	0.154
Child13														
Child14														
Child15	1	1	-1	-1	0	1	1	0	0	1	1	1	1	0.462
<b>Statement Average</b>	<b>0.818</b>	<b>-0.091</b>	<b>0.455</b>	<b>0.727</b>	<b>0.727</b>	<b>1.000</b>	<b>1.000</b>	<b>0.818</b>	<b>0.545</b>	<b>0.545</b>	<b>0.727</b>	<b>0.818</b>	<b>0.636</b>	<b>0.671</b>

Median 0.769

**School 2 Third Grade Answer Scores, BEFORE Animal-Assisted Program**

Statements	1	2	3	4	5	6	7	8	9	10	11	12	13	Average
Child1	1	-1	-1	-1	0	-1	1	1	1	-1	1	1	1	0.083
Child2	1	-1	1	1	1	1	1	1	1	0	1	1	1	0.750
Child3	1	-1	1	1	1	1	1	-1	-1	-1	1	-1	1	0.167
Child4	1	-1	1	1	1	1	1	1	1	-1	1	1	1	0.667
Child5	1	-1	1	1	1	1	1	1	1	-1	1	1	1	0.667
Child6	1	1	1	1	1	-1	1	1	1	-1	1	1	1	0.667
Child7	0	1	1	1	1	1	1	1	1	0	1	-1	1	0.667
Child8														
Child9														
Child10	1	-1	-1	-1	1	-1	1	1	1	-1	1	1	1	0.167
Child11	1	1	1	1	1	1	1	1	1	-1	1	1	1	0.833
Child12														
Child13	1	-1	-1	-1	1	1	1	1	1	-1	1	1	1	0.333
Child14														
<b>Statement Average</b>	<b>0.900</b>	<b>-0.400</b>	<b>0.400</b>	<b>0.400</b>	<b>0.900</b>	<b>0.400</b>	<b>1.000</b>	<b>0.800</b>	<b>0.800</b>	<b>-0.800</b>	<b>1.000</b>	<b>0.600</b>	<b>1.000</b>	<b>0.500</b>

**School 2 Fourth Grade Answer Scores, AFTER Animal-Assisted Program**

Statements	1	2	3	4	5	6	7	8	9	10	11	12	13	Average
Child0														
Child1	1	1	1	-1	1	1	-1	1	1	1	1	1	1	0.692
Child2	1	-1	1	0	1	1	1	-1	1	0	1	1	1	0.538
Child3	1	1	-1	0	0	1	-1	0	0	1	0	1	1	0.308
Child4	1	1	1	-1	1	1	1	1	-1	0	1	1	1	0.615
Child5	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	1	-1	-1	-0.692
Child6	-1	1	1	1	1	1	1	1	1	1	1	1	1	0.846
Child7	1	1	1	0	1	1	1	1	1	1	1	1	1	0.923
Child8														
Child9														
Child10	1	1	1	1	1	1	1	1	1	1	0	1	1	0.923
Child11	1	1	1	0	1	1	1	1	1	0	0	-1	1	0.615
Child12														
Child13	1	-1	-1	0	0	1	-1	1	0	1	-1	-1	1	0.000
Child14	1	1	1	1	1	1	1	0	1	1	0	1	1	0.846
<b>Statement Average</b>	<b>0.636</b>	<b>0.455</b>	<b>0.455</b>	<b>0.000</b>	<b>0.636</b>	<b>0.818</b>	<b>0.273</b>	<b>0.455</b>	<b>0.455</b>	<b>0.727</b>	<b>0.455</b>	<b>0.455</b>	<b>0.818</b>	<b>0.510</b>

Median 0.615

## **SEL Results**

The quantitative changes in the third grader responses in both schools show an increase in caring and empathy through the fourth grade.

The expected variance was calculated using all four classes, two for each year. The overall student variance was 0.105.

The expected variance for a class of N is  $\text{var}/\sqrt{N}$ . For 11 students providing data in a class, the class average would be expected to have a random width of  $0.105/\sqrt{11} = 0.032$ . A change of average that is at least twice this or more is considered significant.

School 1 shows a significant change of 0.08.

School 2 shows a small change of 0.01. However, the data of Child 5 are so skewed in the second year as to be unreliable. If Child 5 is dropped from calculations for School 2, the class averages change to 0.481 and 0.631 for the third and fourth grades, with a significant change in average of 0.15.

## ***Factors Affecting the Validity of the Assessment Tool***

A number of factors could affect a student's responses to these questionnaires, even with good intention:

1. The student could not read the questionnaire and was reluctant to say so.
2. The student did not understand statements in the questionnaire.
3. The student was under emotional stress at home, at school, or both. Teachers, administrators, and family situations can change during the school year.
4. The student was exhausted and answering without thinking, just to finish the questionnaire.
5. The student had just experienced something upsetting in a friendship or test.
6. The shift from third to fourth grade is very demanding academically; in public schools, much more involved cognitive and numerical comprehension and coursework are launched in the fourth grade. If a student is under stress at home, this coupled with the stress at school, can diminish the validity of questionnaire results.
7. Fourth grade standards-based assessment (SBA) scores are pivotal in evaluating a school's performance on the SBA testing overall. This adds more stress to student life, especially in the Spring quarter.

**Note:** Although the pilot program showed an increase in empathy quantitatively and I saw, qualitatively, prosocial changes in the behavior of my students, it is possible that prosocial behavior may also result from other factors, such as external pressure or a need for social approval<sup>13</sup> (Bengtssen and Johnson 1992).

## ***How the Data Was Analyzed***

The raw answers (1, 2, or 3) for each child for each statement were converted to a numeric empathy coefficient from -1.0 (least emphatic) to 1.0 (most empathic) using a key based on the tool provided in Appendix A. The empathy weight given an answer was subjective because it was derived from my perspective. Other clinicians and educators may have chosen different weights based on their life experiences and reasoning.

## ***Preliminary Observations on Academic Improvement***

I have inadequate data to assume academic improvement through animal-assisted programs, but anecdotal evidence suggests that such programs may contribute to academic improvement.

In the years that the animal-assisted program unfolded, the third and fourth grade teachers reported that the students shared more in all the classes including science and seemed excited about what they had learned in the field trips to Llama Deara. Additionally, notes that the students sent me after the program suggest a synthesis of scientific concepts into their knowledge base as well as a delight in the time spent at the ranch.

In terms of the Standards-Based Assessments, the elementary school students as a whole improved or were proficient in the science tests during the years of the pilot program. In both years, the students performed near the state average.

For example, in 2005, the third grade state average for science was 79%, and the district's third grade science average was 83%. In 2006, the fourth grade state average for science was 55%, and the district's fourth grade science average was 50%. Data for the years 2003-2004 and 2006-2007 were unavailable for use as a comparison at the time of completing this paper.<sup>14</sup>

## ***Educational Importance***

This research shows that education involving animals in natural settings can provide a means of developing scientific and empathetic skills concurrently and easily. Children's natural attraction to animals is the foundation of animal-assisted programs; further, llamas are very curious about humans, leading to a mutual attraction between the two species. The subsequent interaction between the two species typically results in more attentiveness, reduced stress, fewer defenses, and exhilaration in children. Often debilitating defenses and attitudes are cleared through these interactions so that the child returns to a natural, cooperative state and enjoys the clarity to perceive and understand more about the environment, his or her classmates, and important adults.

Further application of the curricula in other natural environments and communities is needed to assess the relevance to schools in cultures other than the primarily Hispanic culture in New Mexico. Therapeutically, this program could also be enhanced to assess

its benefits to children suffering from Post Traumatic Stress Disorder or complex trauma symptoms.

## **Methods, Techniques, Modes of Inquiry**

Quantitative inquiry is the primary mode of inquiry documented in this research paper. As the data section above shows, I tabulated quantitative results based on the What I Stand For assessment tool described in the paper. Because I also used the average results of the standards-based tests for specific grades to assess the outcome of this study, the academic portion of the program relied on content standards and benchmarks.

### ***Methods for Building Empathy Through Animal Assistance***

Daily training in interpersonal perception and empathetic responding builds a facility to resonate with the experiences of others, whether in indoor traditional classrooms or in animal-assisted programs in nature. The training usually starts from the position of the individual's own feelings, focusing on similarities between self and others<sup>15</sup>: both *homo sapiens* and other species, such as llamas, cattle, chickens, other farm animals, and the plant life of the ranch's ecosystems, including pasture, river forest, garden, vegetable patch, and other areas where life grows, either naturally or through human intervention and modification.

Ongoing practice in imagining and perceiving another's perspective<sup>16</sup> helps to build empathy, even if the individual seems to be initially numb to others' feelings and their own. Children's innate attraction to animals is a key factor enhancing the experience of interspecies collaboration. Sometimes past experiences may make a child more reserved with humans; the sight of a large unusual animal can help the child open up. One fun activity is to have children imagine what the llamas think of *them*, which can bring on belly laughs and help children move out of the center of their universe and empathize.

### ***Specifics of Program Methods***

The pilot program was funded through a state truancy intervention/prevention grant, and figured in the academic enrichment and the social emotional learning (SEL) parts of that grant.

The program incorporated field trips to my river-based llama farm and specific in-classroom activities before and after the learning experiences at the farm. For a baseline of the children's views toward empathetic relating, I administered the What I Stand For tool before taking the students to the farm the first year of the study. The second year I administered the tool after the last field trip to gauge the children's progress in learning to empathize.

I took groups of students by grade, K through 6, and organized field trips to allow an early lunch in the farm's "relationship garden," an outdoor classroom set among pine trees. This gave all participants—facilitators, parent chaperones, teachers, and students—an opportunity to explore what is meant by *relationship*, both with self and others, and to

set the foundation for exploring the value of empathy in a relationship. Then I divided the group of students into two subgroups, with each group having two lessons, one with the scientist in the riverfront wildlife refuge, one with me in collaboration with the llamas and other life elsewhere on the ranch. Each session lasted an hour, with students, parents, and teachers all experiencing each lesson. The whole group came together for snacks, sharing, and an experiential enactment, usually a communication game where the participants tangibly create their web of relationships and life at the end of the day.

### **Llama Activities**

Llama activities focus initially on mutual observation and trust establishment. Llamas, like humans, have personalities, so the human participants are able to learn by the llamas' behavior and communications—hums, clucks, ear movement, eye contact—whether the llama is interested in actively engaging with them. In many ways, the introduction of the humans to the llamas mirrors what occurs in solely human interactions. Individuals achieve connection with a llama (and with humans and other species) often by being with the other without a structured agenda.

Gradually, through mutual observation, the students come to understand the llama's needs and their own, which usually is to have fun with the llama. If a child wants urgently to engage with someone and comes running up to a llama squealing with pleasure, the llama may move away because llamas generally prefer quieter movements and sounds; the child may learn to sit quietly under a tree and let the llama come up to him or her, for example. The more the child observes an animal's needs and accommodates them to his or her desire to connect, the more empathy is built. Reconciling differences can be stressful but is doable in the presence of llamas, who naturally seem to defuse the tensions in situations. These types of experiences can gradually be generalized to the child's human relationships.

Some structure is necessary when working with large groups of children—this can be as simple as ending the day sitting under a tree looking at the llamas and discussing their role in the ecosystem, the services they provide both humans and the natural environment in which they live, the benefits of having them in our life. These discussions add to the development of a perception of value in themselves and others.

Cooperative games unfold in the pastures with the llamas, providing another opportunity for the human participants to move with the llamas, and if the mood strikes, to dance with the llamas, which is truly an exciting experience. Games encourage teamwork, problem solving, trust-building, and a respect for the interdependence and dignity of all creatures.



In subsequent visits, mutual observation is expanded to include assistance with feeding, petting, and possibly other animal- or land-related activities, which facilitate a greater understanding of the needs of others and innately bring balance to the participant by virtue of being outdoors and helping.

### **Science Activities**

Science activities are interspersed with empathy, awareness, and observation games, such as Scavenger Hunt and Food Chain Game. The visiting scientists have included astronomers, physicists, and ecologists.

On the core academic side, the field trips covered natural habitat, the web of relationships of all life, the solar system, zoology, and botany, and correlated to the outlined standards and benchmarks.

### **Diverse Contributors and Project Sustainability**

The diversity of contributors, including scientists, therapists, parents, teachers, farmers and ranchers, animals and plants, provides an interspecies collaboration framework to promote the sustainability of relationships through social, emotional and academic learning (SEAL). Families, schools, and peers exert influence on educational success and are essential to SEAL interventions<sup>17</sup> (Zins et al 2004). For this reason, I recommend a diversity of contributors in these field trips to help instill more ease in relations within and among families, schools, and community. Also, the more families and diverse stakeholders are involved in a project, the more likely the project will be sustainable over time, with or without grant funds.

## **Relevant Content Standards and Benchmarks**

The curriculum developed for the program field trips was in line with the benchmarks and standards outlined by the New Mexico Public Education Department<sup>18</sup> (Center for the Education and Study of Diverse Populations 2004). The specifics addressed in the curriculum fell under these rubrics: Science, Social Studies, and Civics and Government.

I considered the group's overall proficiency in the Science portion of the standards-based assessments and did not provide ongoing assessment of the knowledge gained from the field trips.

This section describes the main strands, standards, and benchmarks addressed in the Llama Deara program. For a complete definition of the performance standards, see Center for the Education and Study of Diverse Populations, 2004.

**Note:** This research paper focuses only on the benchmarks and standards for K-4, given that the author analyzed the data only for two groups of children over a two year period, in third and fourth grades.

## **Science**

### **Strand I: Specific Thinking and Practice**

*Standard I:* Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

K-4 Benchmark I: Use scientific methods to observe, collect, record, analyze, predict, interpret, and determine reasonableness of data.

### **Strand II: Content of Science**

*Standard II (Life Science):* Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

K-4 Benchmark I: Know that living things have diverse forms, structures, functions and habitats.

K-4 Benchmark II: Know that living things have similarities and differences and that things change over time.

K-4 Benchmark III: Know the parts of the human body and their functions.

*Standard II (Earth and Space Science):* Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.

K-4 Benchmark I: Know the structure of the solar system and the objects in the universe.

K-4 Benchmark II: Know the structure and formation of Earth and its atmosphere and the processes that shape them.

### **Strand III: Science and Society**

*Standard I:* Understand how scientific discoveries, inventions, practices, and knowledge influence, and our influenced by, individuals and societies.

K-4 Benchmark I: Describe how science influences decisions made by individuals and societies.

### **Social Studies**

#### **Strand: Geography**

*Content Standard II:* Students understand how physical, natural, and cultural processes influence where people live, the ways in which people live, and how societies interact with one another and their environments.

K-4 Benchmark II-B: Distinguish between natural and human characteristics of places and use this knowledge to define regions, their relationships with other regions, and patterns of change.

K-4 Benchmark II-C: Be familiar with aspects of human behavior and man-made and natural environments in order to recognize their impact on the past and present.

K-4 Benchmark II-D: Understand how physical processes shape the Earth's surface patterns and biosystems.

K-4 Benchmark II-F: Describe how natural and man-made changes affect the meaning, use, distribution, and value of resources.

#### **Strand: Civics and Government**

*Content Standard III:* Students understand the ideals, rights, and responsibilities of citizenship....

K-4 Benchmark III-D: Understand the rights and responsibilities of “good citizenship” as members of a family, school, and community.

## **Launching an Animal-Assisted Program**

Programs of this kind may be an answer for ranchers or farmers who are looking to do more with their land and animals. Appropriate funding and staff are essential to the success of the program.

### **Funding**

Barnyard programs must at least be revenue neutral<sup>19</sup>..They must not represent a financial liability to the organizers.

The funding for the Llama Deara programs came from the New Mexico State government under the truancy prevention grant. When applying for the grant, I included progressive programs that would enhance the desire of the children to come to school, such as the Llama Deara Ranch field trips. These grant monies covered transportation, snacks, and the scientist stipend for the Llama Deara program. As an employee of the district, I waived compensation for my services at Llama Deara.

The Llama Deara program came under the rubric of educational enrichment, in addition to a number of other upbeat SEL programs (Bull 2005). Federal, state, and local governments may require a school employee to apply for education-related grants from the government agencies in certain cases.

Other funding is available to organizations that may not be licensed educational institutions or non-profit organizations. Federal government agencies such as the US Forest Service and Department of Fish and Game have given grants to cover transportation and other costs, for example. In New Mexico, both state agencies (for example, NM State Parks) and NGOs (such as NM Community Foundation, Building Bridges to the Outdoors, and Sierra Club) are possibilities for funding. Many non-profit foundations disperse money for programs that engage underserved youth.

## **Staffing**

For the programs that build empathy through scientific observation and cooperative games, I recommend staff members with the following skills:

- A professional trained in the awareness and expression of emotions and thoughts, such as a counselor, psychotherapist, doctor or teacher.
- A scientist adept in one or more of these fields: Ecosystems, environmental science, astronomy, biology.
- Supervisors, such as classroom teachers and chaperone parents. One adult supervisor per five students is ideal.

I recommend that facilitators encourage parent participation on these field trips as much as possible. A parent, for example, may be able to fulfill one of the first two roles above, in addition to providing supervisory help. The more parents that participate, the more the community grows in understanding. The students typically look forward to their parents or guardians accompanying them on these field trips.

**Note:** The facilitator may want to verify that any participant in SEAL programs of this sort is not registered in the database of offenders by searching the appropriate Department of Public Safety Web site, such as [www.dps.nm.org](http://www.dps.nm.org).

## ***Liaison in Schools***

I advise aligning with a teacher or counselor who has been with a district more than three years and has tenure. A committed teacher can help set up ongoing field trips year after year, and meaningful relationships can be established in the children's and educators' lives. Sometimes superintendents and administrators (principals, directors of Special Education, and so on) are sensitive to the beneficial results from these types of programs; however, these professionals also readily change every few years, at least in the USA.

## ***Liability***

Several issues of liability are important: Releases of liability, insurance, adequate supervision, photograph permissions, and appropriate signs.

### **Releases**

At school registration, districts often ask parents to sign a release of district liability for any injury that might occur on a field trip. Ranchers and independent educators should also consult a lawyer and draft their own form that the parents or guardians of the students will sign just prior to the field trip. Any student whose parent has not submitted a signed release of liability form cannot participate in the field trip.

### **Research**

Including in the release a clause related to research is a good idea. This allows guardians to consent to the anonymous collection of data and statistics during the program without identification of the individual students involved. In this way, educational procedures can be improved on the basis of the results of the program.

### **Photography Permissions**

With the release of liability form, a letter requesting permission to photograph the students at the ranch can be submitted to the parent or guardian. These photographs may later be used in papers, brochures, or Web sites describing the program.

### **Insurance**

A large personal liability umbrella insurance policy may serve ranch or farm owners well, especially for peace of mind. Additionally, depending on the insurance carrier, any ranch or farm owner who is also working in education can include within his or her property insurance an extra coverage that extends educational liability coverage to his or her own property.

### **Adequate Supervision**

Typically, adequate supervision can be provided by designated staff and parents or guardians accompanying the students. One alert responsible adult to every five students is an ideal ratio.

## Signs

Depending on the state and the domestic animals and livestock that are raised on a property, the owner may be required by law to post signs that indicate the inherent risks in certain animal activities. In New Mexico, for example, state law protects operators, owners, promoters, trainers, and other professionals from liability for injuries resulting from equine animal behavior. By *equine* is meant various animals, including horses, donkeys, and llamas. This law is known as the Equine Liability Act and requires owners to post signs educating the public about this.

## Other Logistics

### Food

Often arrangements can be made with the school cafeteria to make sack lunches for the students, or students can be encouraged to bring their own lunch. Eating at a beautiful natural place on a property, near trees, animals, or a body of water inherently encourages harmony and good companionship.

Snacks can be provided at breaks and can be kept healthy and economical. Low-fat and low-sugar snacks are preferable, and honey lemonade, dried fruit, and nuts, go over well with most participants. Honey lemonade can be made in large beverage cooler/dispensers. It is good to have choices for the participants, especially because food allergies may prevent some individuals from eating peanuts, for example, or other foods that cause allergic reactions.

### Restrooms

Where possible provide separate restrooms for girls and boys. In rural areas, it is common to post signs with pointers about being mindful of the septic system and conserving water.

It is a good idea to ask a supervisory teacher or parent to stand near the line for each bathroom, in case there is an emergency or problem.

### First Aid

Having a kit of homeopathic as well as standard medical supplies for treating minor cuts and bruises can come in handy. Knowing the hospital and clinics in the area, and a doctor to consult in an accident, is also a good idea.



## Appendix A: LDR Field Trip Curriculum

This animal-assisted program curriculum develops along two main threads:

- Social Emotional Learning (SEL): Building empathy through interaction with the llamas and cooperative games
- Academic: Learning science, ecosystems, history

Each group of students is divided in two, with each group having two lessons, one with the scientist/parent volunteer in the *bosque* (river forest), one with a ranch owner or educator in other parts of the ranch or farm. Each session lasts 45-60 minutes, depending on arrangements.

### **SEL Session**

#### **I. How the Ranch Operates in a Cohesive and Cooperative System**

This part of the curriculum is provided by the ranch owner, educator, and counselor. Sometimes a parent volunteer can also co-lead this session.

##### **1. Water**

**Objective:** Acquaint participants with a primary resource, water, and how it is harvested and used on the property. Correlate water to emotions, how emotions are fluid, and how they can be tended.

**Benefit:** Normalization and correlation of emotions with natural environment.

*(Starting at top of property and working down to orchard)*

Well

Collection Tanks

Acequia

Ditches

River

##### **2. Observations About Geological Organization of the Property**

*(At the corrals)*

**Objective:** Begin to development observation skills.

**Benefit:** Attention to details without judgment.

How the elevation of the property changes and what functions each elevation provides

### 3. Animals

*(In the orchard)*

**Objective:** Learn about self in relation to animals and foster a respect for animals.

**Benefit:** Respect for animals can evolve into self-caring and acceptance.

Llamas: What is their origin and role on the property? What are their jobs? What services do they provide? (organic manure, burning fuel, wool, companionship)

How do they interact? (emphasis on harmony, respect, setting limits)

What are the facets of their character? (curiosity, caution, sense of humor, joy, protection, observation, attention to detail, sensitivity)

Family values, sense of whole, nervousness of the males if they can't see the females and young, how they benefit from each other

Intelligence (how intelligence correlates to checking things out)

*As time permits, discussion of the cohabitation of other creatures, including:*

Insects

Snakes

Squirrels and other rodents

Skunks, opossums, raccoons

Cats

Dogs

Birds

## II. In-depth Look at One Species (Llamas)

**Objective:** Focus mind and imagination on the way of life of one species.

Keep attentive. Practice taking perspectives and perceiving what the other may be experiencing.

**Benefit:** Increased curiosity, ability to consider own circumstances objectively, better facility at interpersonal perceptions.

### 1. Behavior

Affection

Touching

Kissing

Sparring

### 2. Communication

Body awareness and language (dancing, stepping back)

Movement of head and facial features  
Facial expressions  
Audible speech (humming, clicking and clucking, auggles, screams)

Handout: “What About Our Furry Llama Friends?”

### 3. What You Imagine the Llamas Think About You

Putting oneself in others’ positions  
Stoking the fire of the imagination  
Expressing feelings about being around such large and gentle animals  
Self reflection to increase skill at perspective-taking

## III. Trust

**Objective:** Help students gauge and develop trust in themselves and with each other, building on the caution that the llamas are likely to exhibit with a large group of children.

**Benefits:** Awareness of how patience and respect promotes healthy relationships. Understanding of how trust depends on how we treat each other. Collective thinking as a means of resolving group challenges.

To develop trust, the students engage in cooperative games.

### *Possible Cooperative Games*

- Car-Car, which helps people learn how they feel about trust (from David Earl Platts of Findhorn)
- Human knot
- Log Navigation

### *Reasoning for Cooperative Games*

Based on Dada Maheshvaranda’s article *Cooperative Games that Teach Solidarity*:

- Work together as a group for both individual and collective development, on the physical, mental and spiritual levels.
- Serve others by giving support and constructive feedback.
- Overcome fears that arise in the game, and gain the courage to confront other fears in one’s life.
- Work together as a group in attempting what seems impossible, and feel good about efforts and successes.
- Have a lot of fun together.

### *Safety Ground Rules*

- No one may devalue or discount others or oneself.
- Anyone may choose not to do any activity at any time.

## *Car-Car*

(from David Earl Platts of the Findhorn Foundation)

This is a fun, very simple *trust and responsibility* challenge, and almost every group takes to it right away.

One can present the activity reflecting on how trust and responsibility are two very important qualities contributing to harmony. This activity will help the students experience how they feel about trust. It is a silent exercise.

Project Adventure encourages Challenge by Choice, which empowers students to decide for themselves whether to keep eyes open. Closed-eyes activities develop trust and help to overcome fear.

- 1) Facilitators can divide the group into dyads or the students can choose a partner.
- 2) One person, *the car*, stands in front with eyes closed and hands held in front of the chest with palms outward as the car's bumpers.
- 3) The second person, *the driver*, with eyes open, stands behind with hands on the shoulders of the car. Keeping eyes open, the driver will steer the sightless car around the area, avoiding collisions with other pairs and elements of the natural setting.
- 4) Facilitator reminds students that the safety of the other person is the driver's responsibility, so the driver must show compassion and care.
- 5) With one volunteer, the facilitator demonstrates compassionate, slow *driving*, reminding the group that most people with eyes closed are going to feel nervous.

The facilitator should remind the students about no talking, and announce in a loud voice, "Begin."

After 3-4 minutes, the facilitator announces, "Stop. Open your eyes, and now switch roles with your partner. OK? Begin."

- 6) At the end, everyone sits or stands in pairs and talks about how they felt in both roles, as the car and as the driver.

If it is a small group, a circle works well for this discussion. It is useful if each participant shares some individual or group experience. This debriefing of the event is a very important part of the learning process.

### *Human Knot*

This is a fairly easy *initiative* challenge. It is important in this and other initiative challenges that the leader offer a positive perspective to the frustration involved at the difficulty level, however. Students are allowed to talk in this activity.

- 1) Ask the participants to form circles of 8-14 people each.
- 2) Have them stand close together, shoulder-to-shoulder, and put their arms out in front of them.
- 3) Join hands with the hand of two different people who are on the opposite side of the circle. Don't take the hand of someone standing beside you. Now you have created a human knot.
- 4) Have them untangle the knot without letting go of the hands they are holding, thus rising to the challenge.

After some hesitation, members of the group will start to duck under or step over the linked arms of others. Eventually the group should end up with a big circle, or sometimes with two circles.

It can sometimes take 10-15 minutes, and occasionally a knot cannot be unraveled. In this case, the participants have a real-time experience of how completely interconnected all humans are! This also ties in nicely with the food chain knot that the students might later create in the bosque.

### *Critical and Intuitive Thinking Log*

This is a *cooperative* challenge in which a medium-size group of students (10-12 max) work together to get the person at each end of a log to the other end without stepping onto the ground. Students are allowed to talk in this activity. They can negotiate with each other how best to get to the other end without anyone falling off the log.

- 1) Ask the participants to stand on a log roughly shoulder to shoulder, leaving some space at each end of the log (or railroad tie).
- 2) The person at each end begins to move to the opposite end with the aid of all other students standing on the log.

The goal is to help children see that they can balance themselves through cooperation and mutual support and use their collective brain power to strategize and intuit the solution.

**Note:** Locking arms and holding on to each other for support are desirable outcomes!

## **Academic (Bosque) Session**

This part of the curriculum is provided for the parent co-leader or visiting scientist.

**Note:** Language and content of sessions with individual grades must be adapted to cognitive level of students. It is OK that the students don't understand everything said; they are being exposed to new experiences and scientific observation and thought. That counts.

### **I. Getting to Know You**

Use the walk down to the bosque to learn names of students and talk about what the students have been doing in their science classes. Share that the theme for the day is "Observation in Nature."

### **II. Solar System (Enhanced by Presence of Astronomer)**

Once at the bosque, sit the students down and talk about the Earth's place in the solar system. Talk about the Sun, Moon, and Earth and how they are related and then talk about Mars and the fact that even though we can't go to Mars, we can make indirect observations and then compare to our direct observations on Earth, for instance volcanoes, stream formation, erosion processes, and so on.

For the Sun, stress the Sun's importance to life on Earth, talk about our atmosphere and contrast it to Mars, and then talk about the seasons and how by measuring the different angles the sun made with the horizon at different times of the year, scientists were able to get an idea of the angle of tilt of the Earth's axis.

For the Moon, talk about lunar eclipses and how, had Columbus paid attention to the shadow of the Earth on the Moon, he may not have thought the Earth were flat when he set off across the Atlantic. These are simple observations that can be made from Earth with no tools or special knowledge but that tell us fundamental things about our place in the Solar System.

### **III. Skills in Observation**

Explain what observation is, that it is more than just looking at what's in front of you, although that is a good start. Explain that planetary science is all about comparison and contrast by a combination of indirect and direct observations of these things on Earth and applying them to other planets (and vice-versa). We know that Mars must have had an atmosphere if it once had water, so we can apply what we learn about its evolution to the changes occurring on Earth (global warming, atmospheric evolution, and so on).

It helps at this point to make analogies to observations about self and other humans: That observations are not judgments but that we can learn about ourselves by comparing and contrasting our various choices in different conditions, by observing others and the

emotions they may be feeling, by asking questions to verify whether our observations are correct, and so on.

#### **IV. Habitat**

Move the observations and comparisons to their present environment, the *bosque*: What is a habitat? What habitats exist in the bosque and on what scales? What animals and plants live here? Have the students name a few (cottonwoods, willows, woodpeckers, insects, and so on)

If the students seem stuck, this is a good place for a scavenger hunt.



#### ***Scavenger Hunt***

Ask for only two or three *signs* of life and stress that they should leave them in place, but tell us about them when we regroup. Signs of life can be human and not the life itself (a chewed leaf, the beaver stumps, termite holes), an animal's home (which could double as the first item), and finally, something the students liked simply because of its color, texture, shape and more. They explain why and try to say what it is if they don't know. The leader goes around and helps them individually during the scavenger hunt, offers clues, especially emphasizing what life needs to live (food, home, water, sun). This gets the kids thinking more specifically about where to look, for instance for the source of food and not necessarily the animal in question.

Does the animal need lots of sun or little sun and consequently will it be under the trees or out in the open? When they find things, question them on specifics. For instance, if they pointed out a spider web close to the ground, ask what the spider was probably eating more of—flying bugs or crawling bugs? Who was she competing with for food

and where might they live? This way they begin to piece together all the ingredients in the ecosystem that makes up the bosque. Allow a "show-and-tell" of their favorites.

You might plant the log with the wood-pecker dens somewhere where it can be found and then congratulate the students on identifying it, which they like and which seems to encourage more in-depth searches in other areas.

## **V. Food Chain and Interdependencies**

Have students pretend they are their chosen insect, animal, plant, or bird and then identify possible food and energy source in the other students. This leads into a game about interdependency and the food chain, which can be explained briefly.

### *Food Chain Game*

- 1) Have students stand in a circle, holding one hand with another student at least one person away who has chosen an animal or plant that they can eat or be eaten by.
- 2) Soon they end up with a tangled knot of crossed arms. No one should have a free hand or be holding hands with his or her immediate neighbor.
- 3) This reinforces how dependent everything is on everything else and how all animals are actually connected, even if it doesn't immediately seem like it.
- 4) Once they are tangled, they have to untangle without letting go.



Some students have to go under arms, step over, twist around. Everyone has to talk and cooperate to get untangled. Usually they can do it, and in the rare case that they can't work it out in time, cut it short by telling them that they are so completely linked that the ecosystem can't be untangled from itself without destroying it all together!

### *Web of Relationships Game*

If there's time:

- 1) Students pick a natural object, big or small.
- 2) Gently guide them in identifying the relationships among all of them, building a web of relationships to see how changes to one of their choices affect all the rest.
- 3) Can incorporate a drawing project.
- 4) Can also lead into activities on how we affect ecosystems that are distant from us and how they affect us, for instance New Mexico's relationship to the ocean.





## Appendix B: What I Stand For Assessment Tool

After reading the following sentences, decide whether for you it is untrue (1) or true (2) and write a 1 or a 2 in the space at the start of the sentence. If you don't know whether it is true or untrue, write 3 for Don't Know:

Untrue

True

Don't Know

1

2

3

- 1) \_\_\_\_\_ I usually know what I am feeling (mad, sad, confused).
- 2) \_\_\_\_\_ I am sometimes confused and like to talk with someone about things.
- 3) \_\_\_\_\_ I don't like to hurt others by biting, hitting, calling names, or in other ways.
- 4) \_\_\_\_\_ I try to settle conflicts kindly without threats, insults, or physical pain.
- 5) \_\_\_\_\_ When I hurt someone's feelings or I fight, I try to make up for it by saying something nice or apologizing.
- 6) \_\_\_\_\_ When I see another student being picked on, I try to stop it.
- 7) \_\_\_\_\_ When I see an animal who needs care, I try to get help.
- 8) \_\_\_\_\_ When someone seems sad, I want to help.
- 9) \_\_\_\_\_ All of us are important and must be treated with respect.
- 10) \_\_\_\_\_ I feel more important than others.
- 11) \_\_\_\_\_ I like to invite other people to play with me.
- 12) \_\_\_\_\_ I try to understand what other people are saying.
- 13) \_\_\_\_\_ I feel good when I am kind to others.



## Notes

<sup>1</sup> Zins, Joseph E et al. 2004. The Scientific Base Linking Social and Emotional Learning to School Success. In *Building Academic Success on Social Emotional Learning: What Does the Research Say?*, p. 19, eds Zins et al. New York, NY: Teachers College, Columbia University. The editors introduced the term SEAL in the book because its research-based findings solidly linked social emotional learning to academic success.

<sup>2</sup>This conclusion results from my synthesis of confidential therapy notes taken after my sessions with children, families, couples, and individual adults.

<sup>3</sup>Additionally, Shoen in his book *Kindred Spirits* coins the term *cospecies healing* and provides anecdotal evidence of the effectiveness of interspecies collaboration in restoring physical and mental balance.

<sup>4</sup>*Biophilia* is the term coined by Edward O. Wilson to describe humanity's innate affinity to animals. In Kellert, Stephen R. and Wilson, Edward O. 1995, *The Biophilia Hypothesis*, p. 175: "An intense interest, not cruelty, was found in all children in our study. The study of cruelty to animals as well as the study of pet keeping would profit from the recognition that both activities are alternative and learned means of dealing with an innate attraction to animals."

<sup>5</sup>Interactions Magazine Fall 2008: 26: 2. Bellevue, Washington: Delta Society. This particular issue honors the organization's thirty years researching and supporting human-animal collaboration.

<sup>6</sup>2002. Medanales, NM: Llama Deara Ranch. My first collection of stories of the work at Llama Deara Ranch describes initial studies of interspecies collaboration and the resolution of life-threatening illness, trauma, and grief.

<sup>7</sup>Llamas are my companion animals and adapted well to the educational work of Llama Deara Ranch. Researchers before me have used large animals such as horses and dolphins. See DeMares, Ryan. 1997, Interview with Mother Hildegard George, Shaw Island, Washington: "I really wish I had had llamas when I was working with those kids at Green Chimneys, because I think llamas are a lot more intelligent than horses and also because they are so unusual. It would give a lot of those inner city kids something unusual. With horses, I think it is a body thing. With dolphins, I think there is a sensing. A lot of the children don't interact with them, they are just there, just present." DeMares herself is a dolphin researcher.

<sup>8</sup>In A Community Wide Program to Promote Child Safety, Health, and Creative Wonder. Paper presented at the National Rural Mental Health 2005 Conference in Oahu, HI. Summarizes author's work in building community through integration of families in school activities.

<sup>9</sup>Bengtsson, Hans and Johnson, Lena. 1992. Perspective taking, empathy, and prosocial behavior in late childhood. *Child Study Journal* 22: 1. In Discussion, on p. 20.

<sup>10</sup>In PTSD in the Family: Breaking the Cycle Through Alternative Approaches, I first describe the statistics defining the population in Rio Arriba County in Northern New Mexico and then summarize the progressive approaches used to resolve the cycle of PTSD in the family.

<sup>11</sup>Bryant, Brenda. 1983. An index of empathy for children and adolescents. *Child Development* 53: 413-425. On p. 414, Brenda Bryant points out that self-report has its limitations, where the actual experience of emotions can be "confounded with the willingness to report."

<sup>12</sup>Ibid, p. 423.

<sup>13</sup>In *Child Study Journal* 22: 1, p. 19, Bengtsson and Johnson also caution that “measures of affective empathy in children usually do not differentiate between other-directed feelings of empathetic concern and self-directed feelings of personal distress.” Also, prosocial behavior is not necessarily caused by empathy.

<sup>14</sup>For test results in percentages and other data related to the ethnic breakdown of schools in New Mexico, see <http://www.ped.state.nm.us/>.

<sup>15</sup>Zins, Joseph E et al. 2004. The Scientific Base Linking Social and Emotional Learning to School Success. In *Building Academic Success on Social Emotional Learning: What Does the Research Say?*, p. 16, eds Zins et al.

<sup>16</sup>Cotton, Kathleen. 1992. Developing empathy in children and youth. School Improvement Research Series (SIRS Close-up No. 13). Portland, OR: Northwest Regional Educational Laboratory. (ERIC Document Reproduction Service No. ED361876). Cotton’s review of the literature on the development of empathy in children documents research supporting “the provision of empathy training to enhance empathetic feelings and understanding and increase prosocial behavior.”

<sup>17</sup>Ibid.

<sup>18</sup>Each spring in the United States, school counselors and principals in grades 3 through 12 administer Standards-Based Assessments (SBAs). These tests are based on content standards and benchmarks developed by each state’s Department of Education.

<sup>19</sup>From a talk given by the Quivira Coalition Executive Director at the 2007 annual conference in Albuquerque, New Mexico, at “No Child Left Inside: A Roundtable on Farms and Ranches as Outdoor Schoolyards.”

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