

### Llama-Assisted Research Program to Develop Empathy in Children



Llama Deara Ranch  
Learning to Love More Series

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### Guiding Light of Divine Comedy

In the abyss I saw how love held bound  
Into one volume all the lives whose flight  
Is scattered through the universe around;  
How substance, accident, and mode unite,  
Fused, so to speak, together in such wise  
That this I tell is one simple light. (Dante, circa 1308)



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### Theory and Program Methodology



- Program specifics
- Theory of development of empathy
- Interspecies collaboration

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### Program Specifics

- Pilot program to demonstrate feasibility
- Rural 97% Hispanic population with factors of addiction, violence, and trauma in families
- Field trips to llama farm in NNM for grades from 2 grammar schools over 2-yr period
- Kids interact, are, with llamas and themselves in times of observation, problem-solving, play
- Limbic resonance: One mammal can restructure limbic brain of another

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### Development of Empathy



- **Definition:** Understand how another feels, and feel emotions other experiences
- **Interpersonal Perception:** Mutual observation and confirmation
- **Perspective Taking:** Reflection on other's points of view

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### Interpersonal Perception

- **Mutual observation:** Trust established gradually.



- **Cognitive Premise:** Practice in perceiving another's perspective builds empathy; mirroring helps process

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### Mental Mirroring of Actions and Emotions



- **Somatosensory neurons:** Automatic activation drives empathy, more so than cognitive deduction
- **Result:** Empathic communication, understanding other's actions
- **Cooperative play, llamas mirroring kids:** Llamas and kids' huge capacity for play and joy are contagious

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### Mutual Mirroring

- **Increased mirroring:** Leads to mutual trust and closer interaction



- **Quiet exploration:** Without planned activity, the llama comes to the child

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### Perspective Taking



- **What llamas think of me:** Focus on similarities between self and others
- **Patience:** Allow mutual curiosity
- **Program intervention:** Being, not doing

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### Limbic Resonance

- Researched by MDs Lewis, Amini, Lannon; 2000: *A General Theory of Love*
- Anterior insula and anterior cingulate cortex in limbic brain considered neural substrates of empathy: Wicker, et al, 2003
- Mutual exchanges and internal adaptation allow resonance with other mammals, key to communal connection
- Two mammals become attuned to each other's inner states gradually; limbic states can leap from brain to brain

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### Llamas As Co-Facilitators



- Aware, gentle, and tranquil animals, who are family minded
- More like cats and humans, llamas can be aloof, particular, not so accommodating, well suited to the building of empathy
- Mythical unicorn-like appearance enhances children's innate fascination with them
- Curiosity and uniqueness restore child's sense of self-worth, leading to sense of well-being

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### Llama/Human Collaboration

- **Concurrent feelings:** Llamas peacefully model concurrent anger and commitment, for example
- **Herd social order:** Direct communication and respect for boundaries
- **Bullying:** Llama's large size gives aggressive children pause; when bullied, llamas simply move away



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### Adult and Child Participation



- Child guardians act as field chaperones
- Leads to ice-breaking in family relations
- Opens up space in closed-down relations
- Presence of unusual species - currents of possibilities

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### Empathy Assessment Tool

- **Administered:** Start of program first year, and end of program second year
- **Content:** 13 statements answered True, Untrue, Don't Know
- **Main themes:** Self-awareness, sensitivity to feeling, and inclusion

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### “What I Stand For” Tool

- **Basis:** Stages of empathy pertinent to this population
- **Empathy Factors:**
  - Sensitivity to self and others
  - Sense of importance of self and others
  - Willingness to intervene to assist others
- **Assessment Key:** Developed by author

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### Stages of Empathy

- **Stages:** Developed by Michael Lampton Commons, Ph.D, with subtle transition between each stage
- **Key Stages Addressed by Program:**
  - Sensory-motor:** Couples motor and emotional action
  - Multi-referenced:** Reacts emotionally to distress in others and self
  - Personal empathy:** Empathizes with another's situation
  - Normative Personal Sympathy:** Seeks ways to help

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### Data Analysis

- Each child commented independently on tool state-ments, answering Untrue (1), True (2), Don't Know (3)
- Raw answers for each child for each statement converted to numeric empathy coefficient from -1.0 (least empathic) to 1.0 (most empathic) using key based on tool
- Expected variance calculated using 4 classes, 1 class (third to fourth grade) from each school and year; overall student variance 0.105
- Expected variance for class of N is  $\text{var}1/\text{sqrt}(N)$ . For 11 students providing data per class, class average expected to have random width of  $0.105/\text{SQRT}(11)$ , or 0.032

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### Program Results

- Both schools showed significant change in empathy, 0.08 and 0.15 respectively, with change over twice of average
- Academic performance in science as measured by standards-based assessments also increased over 2-yr period
- For school programs, important to show academic performance improvement, too

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### Future Research

- Results in increased empathy are promising
- Work with cultures other than Hispanic needed
- Other applications of interspecies collaboration between llamas and humans encouraged
- Trauma and bereavement resolution may be well suited to such collaboration

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### Contacting Presenter

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- Visit Llama Deara Ranch web site [www.llamadeara.com](http://www.llamadeara.com)
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