
Humane Education for Students with Visual Impairments: Learning About Working Dogs

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Structured abstract: *Introduction:* This study examined the effect of an animal-assisted humane education course on the knowledge of students about caring for dogs physically and psychologically and making informed decisions about dog ownership, including working dogs. *Method:* This collaborative action-research study employed case study design to examine the effect of an eight-week animal-assisted humane education course on the knowledge and skills of four secondary students with visual impairments. Two independent raters applied constant comparative analysis for all of the following data sources: pre- and postintervention interviews, pre- and postintervention tests, videotaped observations, and field notes. Findings were determined for individual students and the class as a whole. *Results:* The greatest gains made by students included learning how to greet, feed, play with, obtain, and pay for dogs; they also learned about appropriate equipment and the roles of working dogs. Effective instructional strategies included assessing prior knowledge and experience with dogs, practicing skills, using tactile techniques, using routines and repetition, and correcting misconceptions. *Discussion:* Findings indicate that although students did not master all of the knowledge and skills taught in the course, they became more knowledgeable about care and ownership of dogs. Limitations of this study are the small sample size and short intervention time. Future research may feature longer intervention periods and make connections between humane education, orientation and mobility, and the core content areas of science and mathematics. *Implications for practitioners:* Students with visual impairments must be provided with experiences with different types of working dogs. Ample time should be given to explore equipment and to practice skills that are essential to responsible care and ownership of dogs.

The Institute for Humane Education (2015) defines *humane education* as, “a

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lens, body of knowledge, and set of tools and strategies for teaching about human rights, animal protection, environmental stewardship, and cultural issues as interconnected and integral dimensions of a just, healthy society” (para. 4). The

humane education movement promotes taking action to create a more just and compassionate world (Faver, 2009; Szecsi, Barbero, Del Campo, & Toledo, 2010), including emphasis on the responsibilities of humans toward animals. The benefits of animal-assisted humane education include increased empathy (toward animals and people) and improved self-esteem (Arkow, 2010; Daly & Suggs, 2010).

Animal-assisted humane education, with appropriately screened dogs, is particularly important for individuals with visual impairments (that is, those who are blind or have low vision), who are more likely than sighted individuals to seek a working dog (Young, 1997). Lack of experience or negative experiences with dogs may evoke fears that create barriers to such individuals recognizing the potential benefits of having a working dog. Additionally, individuals with visual impairments can benefit from direct instruction on animal care skills that sighted individuals learn through visual observation. Instruction should include opportunities for applied animal care experiences. Thus, animal-assisted humane education can prepare learners to make informed decisions about the purchase of a companion or working dog (Young, 1997).

This article describes findings on student learning and instructional strategies from a collaborative action research study on humane education. The intervention addressed how to take care of dogs physically, have positive interactions with dogs, and make informed decisions about dog ownership.

Methods

Action research is a recursive, problem-solving form of research that is highly

responsive to complex settings such as classrooms (Bruce & Pine, 2010). This collaborative action research study employed collective case study design and constant comparative analysis (McHatton, 2009). Four cases were considered individually (to examine individual learning over time) and collectively (for identification of themes about learning and instructional strategies). The two primary research questions for this study were: How will an eight-week humane education course impact the knowledge and skills of secondary students with visual impairments? and What are effective ways of teaching students with visual impairments about dogs? This study was reviewed and approved by the Institutional Review Board at Boston College.

PARTICIPANTS

This purposive sample included four secondary education students with visual impairments who attended the same school. Two participants were also hard of hearing, but were able to respond to speech when wearing their hearing aids. Pseudonyms are used for all participants. Abigail was 14 years old, had a visual acuity of 20/1400 (due to septo-optic dysplasia and optic nerve hypoplasia), had typical hearing, and was a braille reader. Hannah was 20 years old, had no light perception (due to retinopathy of prematurity), had mild-to-moderate hearing loss, and was a braille reader. Elizabeth was 14 years old, had a 20/150 progressive visual impairment (due to retinitis pigmentosa), had typical hearing, and was a print reader. Dylan was 16 years old, had a 20/800 progressive visual impairment and a mild-moderate hearing loss, and was an auditory reader. Dylan was diagnosed

with cerebral palsy and used a wheelchair. Each of the participants provided informed assent after their parents had signed consent forms.

INTERVENTION

The intervention was an eight-week animal-assisted humane education course with these primary aims: provide basic knowledge about dogs and dog care; promote positive interactions with dogs; and impart knowledge that would support students in making informed choices about dog ownership (companion and working dogs). Terms for different types of working dogs were introduced. *Therapy dogs* were defined as dogs that are specially trained to provide emotional comfort. *Service dogs* were defined as dogs that are specially trained to perform specific tasks that assist people with disabilities. Students were already familiar with the concepts of companion dogs and dog guides. Each class session included the following components: a review of the previous session, a brief lecture, application opportunities, and relaxation activities with the therapy dog. The course instructor was a licensed occupational therapist and a trained dog handler. Norm, the certified therapy dog, was familiar to the students because he regularly came to school with his handler and had been included in occupational therapy sessions. Please see the curriculum by Feinstein, Bruce, and Kennedy (2015) for details about the topics addressed each week, the application exercises, the contents of the course kit, and the instructional adaptations and accommodations necessary to meet the learning needs of individuals with visual impairments.

DATA SOURCES

Pre- and postintervention interviews provided information about the students' personal experiences with dogs, including dog care and how the students would make decisions about dog ownership in the future. Data from the interviews helped us understand the students' positive and negative experiences with dogs and to differentiate instruction. The interview questions were: (1) What experience do you have with dogs? (2) Do you have a dog at home? (If not, the interviewer asked: Would you like to have a dog at home?) (3) How do you take care of your dog? (Students without a dog at home were asked: How would you take care of a dog?) (4) Would you want a pet (companion) dog, a therapy dog, or a service dog? (5) Why would you choose to have a dog? The interviews were audiotaped for later transcription.

Pre- and posttests measured student knowledge before and after the intervention. These tests were administered in the student's strongest reading format (braille, print, or auditory). Please see Box 1 for the list of questions.

Each intervention class session was captured on video. These videos were essential to identifying student learning, misconceptions, and effective instructional strategies.

Brief field notes were taken to note information that was mentioned during transitions before video recording commenced. Occasionally, field notes were also used to record thoughts about the observations captured on video.

DATA ANALYSIS

Constant comparative analysis (McHatton, 2009) was used to identify themes across

Humane education, pre- and posttest

What do you do when you meet a dog?

How would you take care of a dog's health needs?

How often do you need to feed an adult dog?

What does it mean to "groom" a dog? What does grooming include?

How would you take care of a dog's emotional needs to feel happy and loved?

What kind of play do dogs like?

How do you know when a dog is sick or hurt?

What would you do if your dog were sick or hurt?

Can you name five pieces of equipment you'd need to take care of a dog?

- 1.
- 2.
- 3.
- 4.
- 5.

What is the difference between a pet and a therapy dog?

What is a dog guide?

Where would you go to get a dog?

What kinds of expenses or costs would you have if you got a dog?

What would you like to know about dogs and about dog care?

Note: This test should be offered in the appropriate reading format (braille, print, or auditory).

Box 1

the data sources for each student and across students. Two independent raters analyzed the pre- and postintervention interviews for changes in responses by each student. Themes across students also were identified. Consensus was then reached on findings comparing the pre- and postintervention interviews.

The same two raters analyzed the pre- and posttests for evidence of learning by each student and across students. Each rater examined each question for improved, unchanged, or weaker responses by each student. The raters shared their findings and reached consensus on student learning. This same process of independent identification of

themes, discussion, and consensus was applied to the analysis of the brief field notes.

Two raters independently analyzed the videotaped observations of each course session. Each rater constructed a set of notes based on viewing the videos at least twice. The following questions structured this video review: How did the students interact with Norm and the equipment? What questions and comments did the students make? Which of their questions or comments reflected learning from the course? The questions and comments made by each student were coded for topics or themes. Each researcher then reviewed the notes for each student across

sessions and across students to identify collective findings across cases. The two researchers discussed and reached consensus, collapsing and renaming some themes.

Results

Study findings are organized here by the following headings: previous experiences with dogs; students' prior and new knowledge; questions and misconceptions; future plans; and effective instructional strategies. The first four headings correspond with the first research question on the effect of the course on student knowledge and skills, and the final heading corresponds with the second research question on effective teaching strategies.

PREVIOUS EXPERIENCES WITH DOGS

Data about the students' previous experiences with dogs emerged primarily in the interviews, with additional information coming from class sessions. Hannah's family had two pet dogs, but she did not interact much with them. Hannah spoke about enjoyable times with her family dogs, but she more often spoke about dogs jumping on her, on the table and couch, and over the fence. Hannah and Abigail had both been attacked by dogs. Abigail's interactions with dogs were limited to neighborhood dogs, encounters in stores, and a couple of dog guides. Elizabeth did not currently have a dog in her home. She spoke about dogs that did not "work out" in her family home and were given up soon after adoption, commenting, "I've had really good experiences, but have been disappointed." Dylan reported positive experiences with three family dogs over the years, including playing and feeding experiences. Dy-

lan had also attended a few sessions of a dog obedience course.

Three of the four students had very limited animal care responsibilities in the family home. Hannah only occasionally fed her dogs. Elizabeth had some experience with feeding and play. Dylan had the most experience with animal care in the family home, saying, "I fed them, gave them water. I hugged them and I rubbed them sometimes and played with them." All four students lacked experiences with dog care professionals such as veterinarians and groomers.

STUDENTS' PRIOR AND NEW KNOWLEDGE

Evidence about student knowledge and learning came from the interviews, tests, videos, and field notes. Students entered the course with varying levels of general knowledge about dogs. Due to their lack of positive experiences with dogs, Hannah and Abigail were more hesitant to interact with Norm and required more encouragement. Each of the students learned the terms and location of the croup, crest, and withers. Although both Hannah and Dylan knew the breeds of their current family dogs, Hannah did not know that black Labradors were the color black. She knew that her family members were part of her dogs' pack. Abigail knew that dogs and wolves are canines. Elizabeth had some knowledge of dog breeds, mentioning the bulldog as a small dog and a Bernese Mountain dog as an example of a large dog. She recognized that dogs were social, and was familiar with the concept of the pack. Dylan knew the concept of alpha dog and was able to name the members of his dog's pack. When asked about the species, he remarked,

“Dogs are related to wolves, foxes and coyotes.”

The four students’ physical care knowledge varied. After being oriented to the items in the dog kit (ball, bowl, brush, gloves, scarf, and waste bag) all of the students were able to locate items when requested. Hannah needed the instructor to model skills, such as how to invert the waste pickup bag. Abigail did not know where to purchase dog food or a scoop. She asked, “Don’t you get it with the dog?” Abigail was also uncertain about how often dogs eliminated and what behaviors they used to indicate a need to go outside. Elizabeth explained the purpose of a portable dish, saying, “You can use it if you’re on a plane and you do not have a dish.” Elizabeth, Abigail, and Dylan knew the term “shedding,” and Abigail was able to compare it to how people shed. Dylan understood that an untreated cut could lead to infection. None of the students had experience with brushing a dog’s teeth, although Dylan knew his dog did not like it. Each student practiced brushing Norm’s teeth.

All four students had very limited knowledge about veterinarians and groomers. None of the students knew what to do if a dog became sick when the veterinarian’s office was closed. They also required clarification about what one could expect from a veterinarian and a groomer. Dylan was able to name several veterinarian roles, but also thought they gave haircuts. At the beginning of the course, none of the students had realistic ideas about the costs of dog care services.

Hannah, Abigail, and Dylan had very limited knowledge about where to obtain dogs or about working dogs and the organizations that trained them. Abigail

only knew about obtaining dogs in pet stores. Elizabeth had the most knowledge about where to obtain dogs and about working dogs and organizations. She advised the others, “Never get a dog from a pet shop. You don’t know their history and background.” Elizabeth understood that working dogs could enter businesses. She remarked, “A pet dog, you cannot bring it into a store. A therapy dog, . . . you can bring them into some places, but not all the time; a guide dog, you can bring them anywhere.” Dylan recalled meeting a man with a dog guide on a plane.

All of the students needed instruction about reasonable expectations of puppies and dogs, appropriate discipline, and psychological care. Hannah originally thought she could meet a dog by saying hello and shaking its paw. In the first session, she simply said to Norm, “Shake my hand, shake my hand,” with the expectation he would comply. The instructor demonstrated how to initiate a greeting, prompting students to ask owner permission prior to greeting a dog. She taught Hannah to simplify her verbal commands and to sound more assertive. Hannah’s commands were much improved in later sessions. In the seventh session, she said, “Come up, Norm” in an assertive, but friendly tone. In the final class session, Hannah showed her growing comfort with dogs by remarking, “If my dogs are all alone at my house maybe while my parents are gone, I can keep an eye on them.” Abigail also grew more comfortable in her interactions with Norm, but required feedback on discipline. She was corrected to gently physically guide the dog off the table and to pair that action with an appropriate verbal message. Elizabeth was confident in her interactions with Norm

from the first class and she consistently exhibited appropriate handling. Dylan was aware that psychological care included being gentle. He was confident and assertive in giving commands to Norm, but in one session had to be reminded to use a happy-sounding voice in play.

In comparing the pre- and posttest scores, the greatest student gains were on learning to greet dogs, frequency of feeding, kinds of play, knowledge about dog guides, where to obtain a dog, and costs. Three of the four students learned to ask owner permission before greeting a dog. Although none of the students knew how often to feed a dog on the pretest, they all learned to feed a dog twice daily by the posttest. They all had new ideas about how to play with or exercise a dog on the posttest (with two mentioning going outside only on posttest). On the posttest, all four students indicated basic understanding of the role of the dog guide, but only two mentioned visual impairment in their responses. Dylan said, "A guide dog can go anywhere. It helps their owners." Abigail said, "A guide dog helps blind or visually impaired people get around safely." Each of the students learned more about where to obtain a dog. Whereas one student had no response and the other three all suggested stores as a place to buy dogs on the pretest (with one also suggesting a shelter), they all recorded a variety of options on the posttest, including shelters, kennels, breeders, and specific organizations such as Seeing Eye. On the pretest, two of the four students had no response to the question about dog care costs, but in the posttest they were all able to name specific dog care expenses (such as the vet, grooming, food, toys, bedding, and cleanup bags). One student's pretest

cost estimate was \$70-80 yearly, but her posttest yearly estimate was \$1,000 (which was the estimate given in class).

In comparing pre- and postintervention interviews, learning gains were evident. Hannah expanded her ideas about dog play and equipment. When asked what she would like to learn in the future, she answered, "I would like to know how to give a dog a bath and brush its teeth. I would like to take a dog for a walk." (She had her first experience in walking a dog during the course.) During the postintervention interview, Abigail reflected on the relative costs of having a child versus a dog. Elizabeth made many gains, with more detailed responses about grooming, emotional care, play, illness, and costs. Like Elizabeth, Dylan became more aware of emotional care and about signs of canine illness. He also gained information about where to obtain dogs, expenses of dog care, and where dog guides are allowed to go in the community.

QUESTIONS AND MISCONCEPTIONS

During the course sessions, students posed questions that were categorized as: (1) questions about dogs and their characteristics; (2) questions about equipment and care; and (3) questions about working dogs and organizations.

Within the category of dogs and their characteristics, students sometimes extended their knowledge about other animals and humans to dogs. In one session, Norm was corrected by his handler and Hannah remarked, "I think Norm's cheeks are getting red." This comment prompted a discussion about whether or not dogs become embarrassed. Abigail asked, "Does he ever bring in dead animals?" (perhaps due to her familiarity

with cats). During one session, the instructor remarked that she would encourage Norm to sing happy birthday too. Abigail exclaimed, "Norm can sing!" She clearly didn't know how dogs sing. Elizabeth asked, "Was Norm smaller when you got him?" even though she knew his age and that the instructor had obtained him as a puppy. Dylan asked about how dogs with three legs could walk, which prompted a brief discussion about dogs with amputated limbs and the equipment they use.

Within the category of questions about equipment and care, Hannah was able to compare humans and dogs going to a physician for a yearly checkup unless ill. Hannah extended her knowledge of human toothbrushes when asking, "Does the toothbrush vibrate or is it just regular?" Elizabeth asked about why one of the toothbrushes had two sides. All of the students were curious about why Norm's toothpaste was poultry flavored.

Within the category of questions about working dogs and organizations, Elizabeth asked what could happen if someone brought a dog guide into a restaurant and were told to leave. She wanted to know if a 15-year-old could obtain a dog guide and how to apply. She also asked, "What organizations would give people guide dogs?"

Estimation emerged as a troublesome area for all four learners. Students made errors when estimating weight, quantity, costs, animal care responsibilities, and their own knowledge about dogs. Hannah was unable to estimate the height of her dog. Abigail responded to the instructor's comment that Norm weighed about 70 pounds by saying, "That's probably a little above my cat's weight." When

asked about her cat's weight, she replied, "probably 50 or something." Dylan was not able to estimate the size of a scoop or the amount of food to feed a dog.

Some errors or misconceptions were due to vocabulary issues. For example, Hannah asked, "What does it mean to bathe a dog?" This was an error based on not associating the word "bath" with "bathe." Another vocabulary barrier occurred when Hannah did not know the term "shedding" even though she knew that she did not like dogs on the furniture and that dogs left hair on furniture. When playing with Norm, the instructor remarked that she was wearing black (an inference about Norm's hair getting on her clothes), but Hannah did not know that shed fur was more visible on black clothing. The instructor explained the meaning of her comment.

Elizabeth and Dylan struggled to evaluate their own knowledge and skills. During the last class session, the course instructor remarked that one should be completely independent in dog care before obtaining a dog. Elizabeth and Dylan remarked that they were ready. On the posttest Dylan responded to the question about what else he would like to know about dog care by saying, "I know everything I need to know about it." It was clear (from observation) that all four students needed additional training prior to becoming completely independent in dog care.

FUTURE PLANS

The students' future plans for dog companionship were revealed in the interviews. Hannah indicated she wanted a pet dog in the pre- and postintervention interviews. On the pretest she mentioned

playing with and petting the dog and on the posttest she added comments about how dogs bark to let people know others are coming to the house.

During the preintervention interview, Abigail indicated that she would like a therapy dog or pet for companionship. However, on the postintervention interview she indicated that a dog would help her to be more active and that she would prefer a pet to a working dog. She said, "It would be kind of like a therapy dog, but I wouldn't have to worry about it losing its training." She had taken the responsibility of maintaining a dog's training to heart.

During the preintervention interview, Elizabeth expressed her desire for a service dog, saying, "I have a hard time seeing downwards and upwards on my sides in the night, so I think a service dog would help me." During the postintervention interview, she indicated an interest in having both pets and working dogs. She remarked, "A dog would make me feel safe" and "It would keep me active; I'm not the most active person." During the course and in the postintervention interview Elizabeth revealed that her mother had submitted an application for a companion dog.

During the preintervention interview, Dylan indicated that he wanted both a pet dog and a service dog. He explained his choice with a detailed description of his functional vision. During the postintervention interview, he said that he planned to have a service dog. On the posttest, he described how it was becoming more difficult for him to see and that a service dog could be helpful either for street crossings or to bring him dropped objects. His explanation may be indicative of some con-

fusion about the roles of service dogs and dog guides.

EFFECTIVE INSTRUCTIONAL STRATEGIES

Effective instructional strategies were identified from all the class sessions. Assessing the knowledge of students before, during, and after the course was central to shaping the curriculum and differentiating instruction. The preintervention interviews provided students with opportunities to share their experiences with dogs, which we used to shape our expectations during the application phase of each class session.

Being explicit about the importance of course topics coupled with opportunities to explore materials and practice skills were important strategies to attract the attention of students, maintain their motivation, and support their mastery of the content. For example, the instructor explained that knowing the name and location of each part of the dog's body would be helpful when describing a dog's injury to the veterinarian. Ample time was provided for students to tactually explore equipment during the application phase of each class, which supported them in making connections to prior knowledge. For example, after exploring a zippered crate, Hannah remarked, "It's like a big backpack almost." Motivation was also maintained through opportunities to make choices, including opportunities to choose when to perform a skill, choices about equipment (such as which toothbrush to use), and choices about casual interactions with Norm.

Each session had the same routine. Students were asked what they learned and what they liked best about the previous class session. Repetition of content

through weekly review was important to student learning. Each session included an application component, but additional practice was sometimes necessary during the lecture component. Each session closed with students choosing how to relax with Norm.

Listening to the students' comments and correcting the misconceptions they held because of their visual impairments or lack of experiences with dogs was essential to student learning. For example, Hannah easily identified Norm's front legs when he was standing, but had trouble identifying them when he was lying (because the position of his legs in relationship to his head had changed).

A variety of behavioral principles were applied in this course, such as the system of least-to-most prompting. Thus, students relied on verbal explanations when possible, but modeling and graduated guidance were provided as needed. Students received reinforcements based on the efforts they made.

Specialized techniques for students who are blind included locating the parts of the dog when his position varied, tracing the dog's back after elimination, measuring and pouring food and water, and putting a hand over the dog's eyes when brushing. The importance of listening was emphasized. For example, the health care component of the course created opportunities for students to listen to the sounds dogs make that may indicate illness (such as coughing).

Students were encouraged to solve problems, especially about how to obtain additional information and resources. The instructor regularly posed questions such as, "Who could you ask?" and "Where would you go?" Finally, students were

supported in considering how their levels of visual impairment might influence how they would approach various dog care tasks. Examples included the need to arrange a ride in the case of an emergency and decisions about nail care.

Discussion

Although the students who participated in the intervention did not master all of the concepts and skills they were taught during the course, they gained knowledge and skills in dog care, both physical and psychological. Although the participants made gains in basic dog care, how to greet dogs, how to play with dogs, where to obtain dogs, and the costs associated with dog ownership, the posttest results indicate that they needed additional instruction on health care, grooming, psychological care, and the roles of working dogs and the organizations that provide such dogs to people with visual impairments. This need for additional instruction is indicative of the need for a more extensive course that occurs over a longer period of time and provides students more opportunities to practice skills.

Most of the errors the students made were due to their lack of experience with dogs or because of their visual impairments. Some errors were related to vocabulary, and others occurred as students attempted to apply their knowledge about other animals or people to dogs.

This course combined behavioral and child-guided teaching methodologies. Behavioral strategies included modeling, reinforcement, and least-to-most prompting systems. Although we followed a preset structure for course topics, we allowed the students' interests and ongoing assessment to influence the course curriculum. There

was a need to differentiate instruction due to vast differences in background knowledge and experience with dogs. Instructors' knowledge of blindness and specialized techniques for dog handling related to blindness were essential to learning.

Implications for research

Due to the small sample size, the findings of this study cannot be generalized to all learners who are visually impaired. Future research can address the impact of animal-assisted humane education courses on larger samples in different settings. Future research might include long-term follow-up to determine the impact the course had on the decisions the participants made regarding future dog ownership. It might also address connections between humane education, orientation and mobility training, and core content knowledge in science and mathematics.

IMPLICATIONS FOR TEACHING

Animal-assisted humane education is especially important for students with visual impairments, because they are more likely to consider using working dogs. The course presented here provided introductory experience; however, the need for more instruction was indicated. Students with visual impairments need opportunities to connect with adults who have various types of working dogs. Time for tactual exploration of dog-care equipment and to practice dog-care skills is necessary to ensure that students can not only describe what they learned, but can demonstrate it. General education science teachers may collaborate with special education professionals to develop and implement humane education courses that meet the needs of all learners.

Conclusion

Visual impairment limits incidental learning. Thus, children and youths with visual impairments require direct instruction about dogs, with ample opportunities to practice skills with them. Instructors must provide accurate verbal descriptions paired with opportunities for tactual exploration. They must listen and correct misconceptions instead of ignoring verbal errors. Exposure to working dogs in childhood may support decisions made in adulthood about dog ownership. Animal-assisted humane education courses can be connected to concepts in the core content areas of science (such as knowledge about species) and mathematics (such as knowledge about estimation). Finally, animal-assisted humane education courses need to be taught in a way that encourages a student to think beyond how the dog will benefit him or her and to realistically evaluate the responsibilities of being a dog owner.

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