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HOW CAN ANIMALS BENEFIT STUDENTS WITH SPECIAL NEEDS  
IN THE PRE-K-12 ACADEMIC SETTING?

A MASTER'S PROJECT  
SUBMITTED TO THE FACULTY  
OF BETHEL UNIVERSITY

BY

RUTHIE L. SCHNEIDER

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF ARTS

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BETHEL UNIVERSITY

HOW CAN ANIMALS BENEFIT STUDENTS WITH SPECIAL NEEDS  
IN THE PRE-K-12 ACADEMIC SETTING?

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December 2022

APPROVED

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*"Alone we can do so little; together we can do so much." – Helen Keller*

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## Abstract

Animals and children are often associated together because there is an innate connection between them. That connection is even more compelling concerning children with special needs. In the past few decades studies have increased involving the various ways animals are used in educational settings. Animal-assisted therapy has been shown to decrease anxiety and behavioral problems, increase prosocial interactions and engage withdrawn students with emotional behavioral disorders. Reading to canines has been shown to increase fluency, confidence, attendance, and motivation while decreasing anxiety to read out loud and negative perceptions of school in students with varied disabilities. Pets in the classroom, who were hugely popular in the 1960's and 1970's, are gaining acceptance again through experiential learning which provides evidence of better knowledge retention, increased engagement, cooperative learning opportunities and responsibility. Service animals have been used for students with vision or mobility challenges and are becoming more common in school settings for students with autism, seizures, diabetes, and anxiety. Additionally, there are outreach programs at zoological institutions, such as the AuSM program through the Autism Society of Minnesota, that target special needs and build programs geared for that unique population. Currently activities involving animals are not considered evidence-based practices. However, with increased research, that status is on track to be amended as teachers and education researchers continue to discover how animals can benefit students with special needs.

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## CHAPTER I: INTRODUCTION

A growing number of educational institutions are incorporating animal related support into everyday educational experiences. These experiences include pets in the classroom, service animals, nature center programs, zoological educational programs, and canine interventions to enhance reading skills or provide social/emotional therapeutic support. During a conference in 1987 titled “The Health Benefits of Pets”, the National Institute of Health (NIH) outlined the need for more research pertaining to the potential social and therapeutic impacts of pets on children (Gee et al., 2017). While there has been an increase in this area of research over recent decades, in comparison to other areas researched in education, little is conducted or published on human-animal interaction (HAI). The research that does exist leans towards positive impacts on students. However, Knowles et al. (2021) suggested that caution should be taken when interpreting results due to a lack of methodological rigor and variable implementation in some educational settings as compared to clinical settings. Despite these hurdles, the positive impact animals have on children with special needs is undeniable and should be researched in more educational settings.

This researcher has witnessed firsthand how animals can have a positive impact on people. Her previous career was as a zookeeper in Kentucky, Kansas, and Minnesota for 17 years. Animals are innately engaging and motivating. Some of the most dedicated volunteers she worked with were people with special needs. Animals and those with special needs have connections not dissimilar to a puzzle. For a person with special needs, animals provided continuity, comfort, predictability, curiosity, and a source of pride when interpreting the animal for the public. In turn, she has witnessed animals respond to people with special needs with more

curiosity, tenderness, and patience. They seem to have a non-verbal connection with one another. Unlike humans, animals respond without judgment or bias, which is commonly felt among persons with special needs. Therefore, it is not surprising to this researcher that the growing body of research is validating the many ways animals can help students with special needs.

### **Rationale**

There are diverse and unique ways animals can benefit a student with special needs. The most familiar to the general public is a child who requires a service animal to assist them in daily living. These may be students with autism spectrum disorder (ASD), seizures, diabetes, or those who have mobility or vision impairments (Harris & Sholtis, 2016). The implications of a service animal at school can be broad and must factor in the needs of the individual and the needs of the other children in a classroom or school setting. With the guidance of legal counsel, Ewoldt et al. (2020) encouraged school districts to create policies pertaining to service animals and/or emotional support animals as a proactive measure to fulfill their educational, legal, and ethical obligations and to avoid potential litigation. Three articles of legislation that must be considered when creating such a policy include the Americans with Disabilities Act (ADA) of 1990, the Individuals with Disabilities Education Act of 2004, and Section 504 of the Rehabilitation Act (Individuals with Disabilities Education Improvement Act, 2004).

Pets can be very popular in classrooms, especially in the elementary grades. For children with special needs, classroom animals can be impactful in social and emotional aspects to increase responsibility, teamwork, and leadership. Barr (2020) stated animals often produce a calming effect and help alleviate anxiety or stressful situations. Classroom pets can support the

increased desire for social-emotional learning (SEL) through self-awareness and empathy. Considerations for other students and staff in the areas of allergies, phobias, cultural aspects, husbandry of the animal, and financial requirements need to be considered as well (Knowles et al., 2021).

Animal-Assisted Interventions support the social, emotional, and behavioral needs of students with special needs through a variety of activities and therapeutic applications (Andreasen et al., 2014). Hippotherapy (horse therapy) has shown promising results for children with Autism Spectrum Disorder (ASD) in relation to locomotion (Lanning et al., 2014) and animal-assisted therapy has been shown to increase communication and empathy as well as de-escalate crisis situations in elementary aged students with emotional behavioral disorders (EBD) (Anderson, 2007).

Animals have been shown to positively impact students' academic performance indirectly by increasing motivation and engagement through canine-assisted programs such as reading to dogs (Gee et al., 2017). Fung (2016) stated a canine reading partner becomes "an older sibling" since the dog offers no correction or judgment and allows the student to feel a sense of accomplishment. Students receiving special education services under the category of EBD often struggle with reading as they become older so Bassette and Taber-Doughty (2013) conducted a study to determine if a dog reading program might impact academic engagement in that population. The results were encouraging and showed students' on-task engagement improved while reading at upper instruction/lower frustration levels.

Animal activities involving outside agencies can also be an asset for special needs children. These might include interventions at specific schools, zoos, or nature centers. Students with special needs, such as ASD, can take advantage of initiatives through the Autism Society of Minnesota AuSM skillshops at the Minnesota Zoo in Apple Valley, Como Zoo in St. Paul, and Lake Superior Zoo in Duluth (E. Ringgenberg, personal communication, August 4, 2022). Research-based analysis of programs outside of school, such as these, involving students with special needs are vastly lacking and further studies need to be conducted.

Research is growing involving the positive impact animals have on the unique challenges students with special needs encounter. The need is great for deeper examination and more expansive research on animal involved supports in schools. These animal-based practices currently do not fall under the umbrella of evidence-based practices. However, Fung (2016) encouraged pairing a canine-assisted reading program with an evidence-based practice such as dialogic reading, which provides an opportunity to engage in both endeavors and increase exposure for animal-assisted interventions (AAI). With more robust research that includes a cohesive and standardized methodology, animal-assisted activities and therapies can strive to achieve evidence-based status (Knowles et al., 2021). The educational community may consider advocating for continued examination and implementation of animal-related practices to provide for special needs students in new and innovative ways.

### **Definition of Terms**

Terminology pertaining to this paper are defined as follows:

Animal Assisted Activity (AAA): Andreason et al. (2017) defined animal assisted activities as an intervention that occurs when an animal is used as a companion; it is not therapeutic in nature and can be delivered in a variety of settings.

Animal Assisted Education (AAE): Fung (2017) defined animal assisted education as a goal oriented, planned, and structured intervention directed and/or delivered by educational and related service professionals.

Animal Assisted Therapy (AAT): Andreason et al (2017) defined animal assisted therapy as a goal-directed intervention wherein the animal is used during the treatment process.

Hippotherapy: Lanning et al (2014) defines hippotherapy as a physical, occupational, or speech therapy treatment strategy that utilizes equine movement.

### **Research Question**

The guiding research question for this thesis is: How can animals benefit students with special needs in the PreK-12 academic setting? After researching this topic, interactions with animals in the school setting can be grouped into the following themes: service animals; pets in the classroom; social, emotional, behavioral, and therapeutic applications; academic impact (pertaining mostly to canine reading programs); and zoo-based initiatives. The goal of this paper is to examine ways that animals can benefit students with special needs through a variety of circumstances while also including evidence-based status, policy considerations, step-by-step

practical applications and guidelines, reputable organizations for reference, and future research needs.

## CHAPTER II: LITERATURE REVIEW

During the course of this research the following keywords were searched: animals for educational support, emotional support animals in the classroom, animals/benefit/special needs, children with disabilities/animals/benefits, pets in classroom, emotional behavioral disorder and animals, zoo curriculum for children with disabilities, zoo programs for children with disabilities, special education programs and zoos, and special needs classes at zoos. These concepts and programs can be used to assist with the educational support of students.

### **Service Animals**

Service animals are becoming more commonplace in society in both public and private locations. The Americans with Disabilities Act (1990) defined a service animal as follows:

A service animal is any dog that is individually trained to do work or perform tasks for the benefit of an individual with a disability, including a physical, sensory, psychiatric, intellectual, or other mental disability. . . . The work or tasks performed by a service animal must be directly related to the handler's disability. . . . The crime deterrent effects of an animal's presence and the provision of emotional support, well-being, comfort, or companionship do not constitute work or tasks for the purposes of this definition. (Berry & Katsiyannis, 2012, p. 313)

Young people with disabilities may have service animals to assist them during the school day. Even though many universities, airlines, places of employment, and dwelling spaces (through the Fair Housing Act of 2017) have policies in place for service animals and/or emotional

support/therapy animals, most school districts do not. Without a policy in place, districts would be reactive in a response.

There are three articles of legislation that must be applied concerning service animals and the students who use them. They are the Americans with Disabilities Act (ADA) of 1990, the Individuals with Disabilities Education Act of 2004, and Section 504 of the Rehabilitation Act. Ewoldt et al. (2020) chronicled that oftentimes when referring to students with a disability, the Individuals with Disabilities Education Act (IDEA) is the only law that comes to mind. Under IDEA, students 3-21 years old are protected under 13 disability categories if they meet requirements; however, if a student does not qualify for those special education services under IDEA, a service animal may still be permitted under section 504 of ADA. School leaders are encouraged to fully examine each of these pieces of legislation to understand if a student with a disability can legally have a service animal on school grounds.

Federal law states that any students with disabilities who qualify under section 504 of the disabilities act should also receive free and appropriate public education (FAPE) (Individuals with Disabilities Education Improvement Act, 2004). Litigation cases have involved the use of service animals and FAPE. For example, in the case *Sullivan v. Vallejo City Unified School District* (1990), a student with cerebral palsy was denied the right to bring her service animal to school due to arguments that the dog was unnecessary and because of concerns about health and space considerations. The court ruled that in order for this student to receive FAPE, the dog was considered a reasonable accommodation and would be allowed (Berry & Katsiyannis, 2012). The courts have not always sided with the student/family and have denied the use of a service animal



if the dog threatens to bite, does bite, or is deemed dangerous/behaves in a threatening way (Ewoldt et al., 2020).

Ewoldt et al. (2020) further explained many court cases have been litigated to allow service animals in schools (pertaining to FAPE, discrimination, or other), including a recent ruling by the Supreme Court in 2017. After losing in both district court and the Sixth Circuit Court in the state of Michigan, the parents of Ehlana, a student born with spastic quadriplegic cerebral palsy, filed suit in the Supreme Court in *Fry v. Napoleon Community Schools* (2017) stating their daughter was being discriminated against. The lower courts believed a human aide could provide for Ehlana in lieu of her service dog, Wonder. The Supreme Court ruled in favor of Ehlana, stating that her service dog would be allowed in any other public building and had the right to be in school with her.

Ewoldt et al. (2020) conducted an online search of the five largest school districts in the country to determine if policies pertaining to service dogs and/or therapy/emotional support dogs were in place. Only two of the five districts had a policy in place, namely Los Angeles, and Miami-Dade . The other three largest districts, New York, Chicago, and Houston did not have any policies listed for service animals, emotional support animals, guide dogs, or assistance animals. Minneapolis and St. Paul districts did not have any policies pertaining to service animals or emotional support animals within their online policies. The Anoka Hennepin district does have a document that outlines service and therapy animals' policies and procedures. The guidelines define a differentiation between a service and therapy animal. A service animal includes a dog or miniature horse. It also outlines determination of need, standards to evaluate

the request, and how to respond to the request. In addition, the therapy animal portions are further divided to include therapy animals for an individual and for general use. Building administration will make final determination on both service and therapy animal requests (Anoka-Hennepin Guidelines for Service and Therapy Animals, 2021).

Ewoldt et al. (2020) provided a framework for school leadership based on legislation, best practices, and litigation to establish policies that cover students who need service animals in school. There may be policies already in place on a state level that districts could use as a starting point. The guidance of three specific laws, ADA, Section 504, and IDEA should be utilized when developing an animal policy. Special considerations for having animals on grounds must be considered (such as when/where will the dog eliminate or who can interact with the dog). There may be pushback from individuals stating that a service animal is interrupting or causing a disruption to the learning environment. Authentic service animals should not present any problems due to their extensive training. Other students or staff who are fearful of dogs or are allergic must also be considered. However, the courts have deemed those invalid reasons for denying a service dog at school. As with any new policy, legal counsel should be sought for approval. With thoughtful, proactive measures taken to construct procedures and policies, school leadership can satisfy their ethical, educational, and legal duties and curtail possible litigation (Ewoldt et al., 2020).

According to the Autism Society of Minnesota (2022), approximately 2.8% of eight-year-old children (1 in 36) in Minnesota were identified with Autism in 2018. Harris and Sholtis (2016), outlined that the number of students with Autism Spectrum Disorder (ASD) who

use a service animal, otherwise known as a companion animal, is expected to increase as research continues to outline the benefits a service animal can provide. ASD can be characterized with challenges in verbal and nonverbal communication, responses to sensory stimuli, social interactions, and can sometimes bring negative behaviors such as outbursts. A service dog trained to support children with autism can be a vital facilitator for a child learning appropriate social skills; a service dog provides a source of calm to counteract sensory overstimulation; and a service dog can increase self-confidence for a student with ASD which then facilitates social interactions. In addition, service dogs can be trained to protect a child from harm and redirect a child when unacceptable behaviors are exhibited.

Harris and Sholtis (2016) illustrated that service dogs can provide numerous therapies to a student with ASD. Service dogs can facilitate communication when other's approach the student and dog combo. In addition, the child will be trained to give commands to the dog and make eye contact, two skills that are often difficult for those with ASD. Physical therapy through feeding and walking the dog, occupational therapy through grooming and manipulating leashes/harnesses, and emotional therapy through companionship, kisses and hugs shared with the dog are all additional therapeutic ways a service animal is beneficial to a child with ASD (Harris & Sholtis, 2016).

Harris and Sholtis (2016) continued, prior to a student arriving, there are many ways a teacher can prepare for a service animal. Questions to consider include the following: Who will take the dog out to eliminate? What if other students are allergic or fearful? Could the service dog become a distraction? Where will the dog rest and who is certified to assist with the dog?

School administration should assist with legality and logistics of having a canine at school. Part of preparation should include how to introduce other children to the service dog and incorporate activities that support humane education. Fostering empathy is often challenging for students with ASD and the teacher can facilitate those social lessons through role-play, storytelling, personal narratives, and creating a social story. There are also many books available to read with the class such as *Ally's Busy Day: The Story of a Service Dog* or *Looking Out for Sarah* to help with the acclimation of a service dog into a classroom (Harris & Sholtis, 2016).

### **Pets in the Classroom**

Early childhood is a time of life when animals and learning are harmoniously connected. Meadan and Jegatheesan (2010) outlined a teaching pyramid framework for the early childhood setting to encourage social-emotional development through classroom pets. Young children learn through stories and often those stories have animals who can talk or are given human feelings and attributes. These stories foster sharing, respect, and friendship. Young children also have a natural curiosity about animals. Animals as classroom companions or classroom pets offer a unique opportunity to enhance the social emotional relationships of mainstream children and children with special needs. Integrating classroom pets into the teaching pyramid model can support social competence and help alleviate behavior issues. The teaching pyramid model outlined by Meadan and Jegatheesan (2010) is based on positive behavior support (PBS) guidelines and methodology to develop social skills. It includes four levels of operation as Level one: building positive relationships; Level two: prevention and supportive environments; Level three: social emotional learning strategies; and Level four: intense, individualized attention.

In Level one: building positive relationships, the animals are used within lessons to create safe environments, learn about caring for another, cultivate a sense of belonging, and to increase self-confidence. Classroom pets can build community. For example, the class could vote on the pet's name or create posters showing how to care for the pet in small groups. Level two is prevention and supportive environments. This stage emphasizes clear routines, explicit rules, and positive awareness to help children feel comfortable and build a ready-to-learn environment. Children working together cooperatively in a supportive environment will transfer into peer relationships. For example, the teacher might say, "I see that Mario and Lynn are working together to clean the guinea pig's home." (Meadan & Jegatheesan, 2010).

Meadan and Jegatheesan (2010) continued with Level three: social and emotional learning strategies. Some children absorb appropriate social behavior by observing and some children need a more straightforward approach to make friends, share items, have a conversation, and solve problems. Books about animals often have real life dilemmas such as a toothache, bad dreams, or getting sick. By explaining that real animals have feelings and are different from animal characters in books can lead to building bonds with the animal. Through interactions with pets children become comfortable, open up about their feelings, and become more empathetic. A child may seek out a pet for comfort when feeling alone or shy and may express their feelings more openly. Animals can also enhance peer relationships. Children who work closely together creating a book about the classroom pet, for example, producing stories, drawings, and pictures often develop friendships. Level four involves intense, individualized attention. Some students with special needs may require that level of intervention. Most general and special education students will benefit from the first three levels of this teaching pyramid model. A young child's

social emotional learning should not be overshadowed by academic endeavors. This teaching pyramid offers a recipe to encourage social emotional development and appropriate responses to difficult behaviors utilizing classroom pets.

Barr (2020) presented his own personal experiences on the positive impact animals have on students to encourage teachers to bring back classroom animals. Dr. Brady Barr is a National Geographic scientist, former high school teacher, and herpetologist who credited his elementary teachers with fueling his passion for animals. Barr (2020) explained that classroom animals of all kinds were popular in the 1960's and 1970's. This came to a halt when the Federal Drug Administration (FDA) made it illegal to possess small turtles (under four inches in diameter) claiming children could put the turtles in their mouths and contract the bacterial infection salmonella. However, many animals in addition to reptiles carry salmonella, including dogs. Cafeteria food can also harbor salmonella and pose a greater risk than animals. Proper hygiene practices of washing hands with hot, soapy water all but eliminated the risk. Nonetheless, during the 1970's, salmonella fears had set in and classroom turtles seemed to vanish overnight. In addition to the salmonella angst, classroom pets created increased liability risks, obstacles emerged with children who had allergies, People for the Ethical Treatment of Animals (PETA) held protests, and a more stringent and rigorous curriculum was being adopted by more districts. All these factors contributed to the decline of the classroom pet.

Barr (2020) asserted that animals have a magical effect, especially on children. Animals can stimulate learning in ways that are unmatched to models, charts, or replicas. Animals make learning exciting, tangible, and realistic. A science teacher named Cale Morris conducted a

simple experiment with two sections of a middle school science lab. One group had live animals for lab work, while the other had pictures of those same animals. He noticed the class with live animals had a frenzied excitement and were enthusiastic to do the lab. In sharp contrast, the other lab seemed disinterested, quiet, and discussed outside topics such as their favorite music. After the lab, both groups were given the same quiz. The animal group scored dramatically higher on both the lab itself and the quiz. Morris concluded, “It was crystal clear to me that using living organisms provided a richer learning experience for students, and that experience helps them better retain the knowledge they gain.” (Barr, 2020, p. 16).

The American Humane Society (2015) conducted a study on pets in the classroom and discovered many positive impacts, which include the following: increasing student responsibility and leadership; increasing compassion, empathy, and respect; enhancing traditional academic lessons; decreasing stress and anxiety; increasing student engagement and comfort levels; and exposing students to new opportunities and experiences. This author’s experiences as a former zookeeper training interns and staff on proper snake holding techniques provided a perfect example. While holding a corn snake, she explained how the snake’s behavior can be interpreted, how to hold the snake properly, and help it feel comfortable to settle down. For the handler, these moments are infused with feelings of excitement, pride, reluctancy, and sometimes a bit of fear. Research showed the benefits of experiential learning can be measured neurologically as well (American Humane Society, 2015). This hands-on learning invigorates the brain, specifically a part called the amygdala. While questions are developing and the person is feeling the smooth scales and powerful muscles of the snake, Willis (2015) explained the amygdala produces a neurochemical marker, like a memory chip, that enhances the brains’ ability to recall the

experience. At the same time, a neurotransmitter called dopamine is released during experiences that are enjoyable or create a sense of accomplishment. Dopamine carries electrical messages from one synapse to another and is essential for the brain to process new information. Whether a person is a novice or experienced snake handler, the event will no doubt provide a sense of accomplishment and for most, a thoroughly positive experience, which in turn increases dopamine production (Willis, 2015). These hands-on experiences create positive and fun learning moments that solidify information for a longer amount of time (Barr, 2020).

Pets in the classroom can be particularly beneficial for students with special needs. Barr (2020) explained that animals can help mitigate the challenges these students face because animals often produce a calming effect, may energize or engage withdrawn students, can decrease anxiety or behavioral problems, and increase prosocial behaviors. Social emotional learning (SEL) is vital for children with special needs and has become more commonplace in academic curriculum for all children. Animals can support SEL activities in a variety of ways. Self-awareness and goal setting can be accomplished when students determine the needs of the animal and then put those needs before their own. Social awareness and empathy can happen when a student recognizes how the animal impacts their own emotions and feelings, therefore becoming a role model for other students. Responsibility and teamwork can be obtained when the class comes together as a group to support and care for the animal as well as taking initiative with planning to care for and learn about the animal (Barr, 2020).



## **Social, Emotional, and Behavioral Therapeutic Applications**

### **Animal-Assisted Therapies and Animal-Assisted Activities**

Knowles et al. (2021) stated animals have been used to improve the lives of humans for centuries in various disciplines. In the 17th century, author John Locke posited that animals help children develop tenderness. By the 19th century animals were being incorporated in institutions to promote healthy relationships and raise morale. Psychologist Boris Levinson proposed in the 1960's and 70's that typical therapeutic applications combined with AAA could improve the social-emotional functioning of children. Thought of as the father of Animal-Assisted Therapy, Dr. Levinson noticed children who had communication challenges and often withdrawn were more at ease and often attempted speaking when his dog, Jingles, was present (Alliance of Therapy Dogs, 2018).

A pet is an island of sanity in what appears to be an insane world. Friendship retains its traditional values and securities in one's relationship with one's pet. Whether a dog, cat, bird, fish, turtle or what have you, one can rely upon the fact that one's pet will always remain a faithful, intimate, non-competitive friend, regardless of the good or ill fortune life brings us. (p. 4)

Today's medical professionals who support AAT maintain it has numerous benefits such as improved self-esteem, better mental health, enhanced social skills, and increased nurturing and empathy skills (Alliance of Therapy Dogs, 2018).

There are important distinctions between animal-assisted activities (AAA) and animal-assisted therapies (AAT). Andreasen et al. (2017) explained that the American Veterinary Medical Association (AVMA) uses the umbrella term of Animal-Assisted Interventions (AAI) to

encompass Animal Assisted Activities (AAA), Animal Assisted Therapy (AAT) and Service-Animal programs (SAP). An animal-assisted therapy must be carried out by a healthcare professional trained to facilitate specific treatment plans which have measurable goals. Examples of goals include reducing anxiety or isolation, increasing participation, expanding self-esteem and attention skills, and gaining more overall social skills. In comparison, an animal-assisted activity is companion-based, not therapeutic in nature, and conducted in various settings. An AAA does not need to be led by a medical professional and may or may not have goals.

Andreasen et al. (2014) outlined the various benefits and types of animal-assisted therapies (AAT). The following diagnoses can all benefit from AAT: Attention Deficit Hyperactivity Disorder (ADHD), Cerebral Palsy, ASD, Down Syndrome, Chronic Pain, Neglect and Abuse, and Fetal Alcohol Syndrome Disorder. Any of the previously mentioned medical conditions could pertain to special education services if the student qualifies under a specified disability label such as Emotional Behavioral Disorder (EBD). In children with Down Syndrome, the study found that hippotherapy (horse therapy) could promote torso and head stability, which could then lead to locomotion gains in mobility with walking, running, and jumping (Champagne and Dugas, 2010, as cited by Andreasen et al., 2014, p. 9). Hippotherapy has also shown promising results for children with ASD. After a 12-week equine-assisted therapy program, the parents of 13 students with ASD reported progress in their child's physical abilities, increased participation in sports, expanded focus in class, bolstered homework application, and improved school attendance (Lanning et al., 2014).

For information on pets becoming therapy animals or volunteering, multiple authors suggested Pet Partners, an international non-profit organization with 14,000 volunteers who provide education for volunteering with a pet and how to determine if that pet would be an appropriate fit for therapy work (Andreasen et al., 2014; Boe, 2008; Watts & Everly, 2009). Another organization called Therapet strives to promote health, hope, and healing by utilizing specially trained animals. Therapet also conducts a two-day seminar on how to begin an animal-assisted therapy program (Andreasen et al., 2014)

Watts and Everly (2009) agreed that an AAT must be carried out by a trained professional (such as physical therapist, occupational therapist, or teacher) and confirmed that benefits of AAT include improved mental, emotional, and physical state, increased motivation, a reduction of loneliness or anxiety, and improved fine motor skills. One example tells of a girl named “Jennifer” who had dyslexia. Jennifer was partnered with a dog named Willie for canine reading sessions. Willie helped Jennifer relax and she started to look forward to reading with the dog. Her confidence and enjoyment of reading increased and she read more. Over time, other children in the room no longer distracted Jennifer and she could read without interruption.

Baumgartner and Cho (2014) outlined six steps that need to be taken when implementing an animal-assisted activity (AAA). Step number one is to bring administration personnel and parents on board to obtain approval. Benefits and goals should be highlighted. Step two is to state the ultimate reason for having an animal-assisted activity, similar to a mission statement. Assessments of students should be conducted to address how the student’s needs will be met through the AAA. Similarly, academic needs and behavioral needs can be assessed using

Antecedent-Behavior-Consequence data collection. Step three is to establish a plan for student growth needs. Once the student's goals have been determined, the AAA should be created with clear, observable goals. These should be discussed with the animal handler if an outside agency is facilitating the AAA.

Baumgartner and Cho (2014) explained that step four is to choose the appropriate animal. Dogs are the most commonly used animal. Other animals that can be used are guinea pigs, rabbits, hamsters, fish, cats, and even larger animals in non-traditional settings such as horses, dolphins, goats, and pigs. Animal handlers may suggest certain species to correlate with the needs of the students. For example, studies have shown evidence that small animals may help students with ADHD better understand how to regulate their bodies and plan ahead (Somervill et al., 2009). This is because sometimes larger animals increase excitement whereas smaller animals have a more calming effect. Step five is to establish health and safety policies and procedures. This includes outlining how the animal will be cared for, proper handling techniques and hygiene, and factoring in cultural and allergy situations. The final step is documentation of student growth. Data should be taken on a regular basis to ascertain student's growth throughout the AAA to modify goals and objectives as needed. Anecdotal notes and observational data can also be collected for progress monitoring. The use of animal-assisted activities to enhance the learning of students with disabilities can be implemented successfully using these six steps (Baumgartner & Cho, 2014).

## **Animal-Assisted Therapies for Emotional/Behavioral Disorder**

Knowles et al. (2021) provided an overview of Animal-assisted activities (AAA) in various contexts with an outline of how to create, implement, and track an AAA in a classroom. The purpose of this paper was to provide educators with options for including animals to promote positive outcomes for students with an Emotional Behavior Disorder (EBD) while encouraging continued methodological research. Seven of the eight articles reviewed canine experiences in classrooms (reading programs, or social/emotional goals such as reduction or decreasing length of crisis episodes). One involved a bearded dragon with young women who recently lost a parent. In all the studies, results showed an improvement in reading or social skills. Despite the positive overall results, the authors stressed the need for increased control over the research framework and results should be interpreted with caution due to the lack of methodological tenacity.

After analyzing the research articles, Knowles et al., (2021) presented an elaborate preparation and design framework for schools who choose to implement an AAA. It should be noted that currently AAA is not an evidence-based practice. Nonetheless, AAA can provide a unique opportunity to enrich the lives of students with EBD. Educators are also encouraged to pair AAA with other resources (a long list of websites was provided).

Knowles et al. (2021) outlined ten key steps to examine when considering animals in educational instruction. Step one is determining the best “animal fit” to help reach the targeted goal, which typically revolves around improving social interactions, increasing academic motivation or engagement, and reinforcing desired behaviors. Step two is to evaluate the space/s

needs and costs associated with a program, factoring in basic needs of the animal. It should be noted that grant programs do exist specifically for classroom pets or similar programs. Step three is to review local rules and regulations with owning/possessing certain animals. Often there are exceptions to local municipality policies for educational purposes. Step four is determining staff and student needs considering zoonotic diseases (diseases that can be transmissible from animal to humans), phobias, allergies, and any student conduct concerns relating to an animal's welfare.

Knowles et al. (2021) continued with Step five which involves cultural considerations to provide families an opportunity to express any concerns that impact religious, health or belief systems pertaining to an animal being used during school programming. Step six is creating a plan to keep the pet healthy and cared for, especially when school is not in session. Step seven is obtaining parent/guardian permission. Step eight is creating, teaching, and practicing expectations. There needs to be buy-in from staff and students. The goals of the program must be conveyed, and clear protocols established for how the animal will be used, who is allowed to participate, and what the rules are to be eligible. Step nine is to be flexible and prepare to adapt as needed. Step ten is to collect data on the project. This final step is especially important since animal-assisted activities are not currently an evidence-based practice.

Anderson (2007) demonstrated effective implementation of a canine to support social emotional well-being in an EBD self-contained classroom serving students who receive special education services. An empirical study was conducted to determine what happens when a dog becomes a member of a classroom with students who have severe behavioral or emotional disorders. There were six students in this study, ages six to eleven, and each had one to three

diagnoses of ADHD, ASD, Bipolar Disorder, Reactive Attachment Disorder, Depression, or Intermittent Explosive Disorder. The dog for this study was a toy poodle named J.D. The dog was used specifically during social skills lessons to teach prosocial skills and strategies to replace distortions and deficits. In addition, each student was allowed individual time with the dog to collect observational data. The dog remained in the classroom for the entirety of the school day.

Anderson's (2007) study outlined how to prepare for a classroom dog. Preliminary meetings involving all participants were held to obtain support from administration and parents, explain goals and ideas, and ascertain if there were any dog allergies or phobias. Next, a dog needed to be selected. It was recommended to use a dog that had been certified by a professional organization such as Pet Partners (formerly the Delta Society). Classroom procedures and rules needed to be established and drafted in a handbook for all stakeholders to review. Parents and guardians provided written consent. Colleagues at the school were briefed on the protocols and procedures surrounding the dog. Finally, administrative support provided social validity and reassurance (Anderson, 2007).

Anderson (2007) outlined how the dog was beneficial for the students by creating an environment of respect, responsibility, and empathy. Initially, the focus was on building a relationship between the dog and each student. Each child received five to ten minutes of monitored one-on-one time with J.D. to foster positive socialization in a secluded area to prevent distractions. Next, social skills lessons taught cooperation and problem-solving skills, often including providing care for the dog. An example of empathy was from a first grader who had recently been placed into foster care and missed his mother. When J.D.'s owner left, the dog

would sit at the door and cry. This student immediately offered comfort to the dog through petting and softly speaking. During a later interview, the student stated that he knew how the dog felt since he also missed his mom. By petting the dog, he was able to cope with his own sadness. Students also enjoyed selecting activities for the dog from a menu and even created new games for J.D. to try. These social skills lessons also enhanced communication. One example detailed a socially isolated kindergartener who requested a fifth grader to accompany her on walks with J.D. so they could talk about animals.

Anderson (2007) noted how the dog was used to prevent and de-escalate emotional crisis situations. Direct instruction provided strategies and skills to replace deficits or misinterpretations. J.D. was used in various scenarios including as a catalyst for social interactions, a calming tool, and as a visual or tactile focal point for students during crisis. One example highlighted a first grader with a history of violent episodes. This student was in crisis and removed to exclusionary time out for safety reasons. Per protocol, the dog was confined to his kennel but began to bark at the student. After the environment was deemed safe, the dog was let out but avoided this student. During the debriefing session, the student shared that his behavior “scared” J.D. and he did not want to go into crisis again. This student had a baseline of five emotional crises, which was reduced to one (the situation described) after the dog was introduced to the room (Anderson, 2007).

In conclusion, Anderson’s (2007) research suggested that a dog placed in a self-contained setting for EBD students can have positive emotional effects. Each student formed a strong bond with J.D. that contributed to balancing their emotions. The dog facilitated effective behavioral



management through increased self-realization by understanding triggers and applying appropriate strategies. Additionally, all six students gained an awareness of responsibility by providing for the dog's needs; an increase in respect for another living creature; and recognition of empathy through parallels drawn between the dog's feelings and their own. Furthermore, the curriculum provided generalization skills that continued into the general education environment, the home, and outward community. Role playing situations reflected real life scenarios, skill cards listed a strategy on one side and a picture of J.D. on the opposite side. Other teachers and parents were made aware of the methods learned and the semester concluded with a service project. A parent was quoted as saying, "She enjoyed coming to school. She looked forward to her one-on-one time with J.D. She seemed to be calmer. It was just so motivating for her." (Anderson, 2007, p. 7).

Boe (2008) conducted an action research project on an 18-year-old male with EBD attending a self-contained special education school in St. Paul, Minnesota. This research explored the effects of animal assisted therapy on the classroom behavior and self-esteem of the subject. The study lasted four consecutive weeks using a baseline/intervention; baseline/intervention, or ABAB model. Behavior data was collected through daily behavior tracking logs and self-esteem data was collected at the end of each week through the Rosenberg Self-Esteem Scale and the Coopersmith Self-Esteem inventory. The researcher used the subject's target behaviors outlined in his Individual Education Plan (IEP). The three target behaviors were impolite behavior, off-task behavior, and noncompliance.

The animal-assisted therapy Boe (2008) conducted utilized one dog, named Lizzy, for the entirety of the study. The subject was solely responsible for the dog for one hour each day and given specific jobs to perform during intervention weeks (weeks two and four). The tasks consisted of grooming, walking, and playing with Lizzy. The subject was also encouraged to pet/hold the dog and learn certain commands.

At the conclusion of the study, the subject showed improvement in all three target behavior areas during intervention weeks. Impolite behavior decreased by a reduction of six tallies and 11 tallies; off-task behavior decreased by a reduction of 12 tallies and 14 tallies; and noncompliance decreased by a reduction of 8 tallies and 32 tallies. Quantitative data revealed an upward trend of self-esteem results. The Rosenberg scores increased from 28 to 30 at the end of the four weeks. The Coppersmith scores increased from 32 to 35 at the end of four weeks. Additionally, an unanticipated result occurred with improved attendance. This subject had a history of absence and truancy. During the intervention weeks, the subject had perfect attendance. Boe (2008) stated, “he had a purpose and felt responsible for her (Lizzy’s) training.” (p. 43).

The researcher selected this student because he was one of the most difficult in her classroom (Boe, 2008). When approached with the dog therapy idea, this student became interested and motivated to begin. After the first intervention week, the researcher requested that the subject reflect on the experience in a daily journal. This student rarely sat down to complete an assignment. However, when asked about his time with Lizzy, he began immediately and wrote an entire page. He then proceeded to type it out prior to turning it in. Boe (2008) wrote that it

was clear this student took pride in his work with Lizzy and that was transferring to daily academics. “After many months of attempting to teach empathy through social skills training, it only took ten days with the therapy dog to make significant progress” (Boe, 2008, p. 43). The subject connected with the therapy dog, became aware of her needs, and took his responsibility for her seriously.

Boe’s (2008) research further strengthened the evidence for schools to consider animal-assisted therapy dogs as interventions for students with an EBD. Individual treatment goals in combination with appropriate level strategies for intervention were recommended. Other considerations included aligning the energy level and size of the dog to the student and suggested Pet Partners for initial research prior to executing an AAT in the classroom. The results of this study were promising and continued research should be conducted to further validate the application of AAT for students identified with EBD.

### **Animal-Assisted Activities for Early Childhood**

Classroom therapy dogs are becoming more and more widely used. While research shows that there are positive impacts a canine can have on children with disabilities, proper protocol and best practices should be followed to ensure safety for both the canine and the humans which will decrease confusion and promote more meaningful dog therapy sessions (Sandt, 2020).

Animal Assisted Interventions (AAI) can be conducted effectively with a therapy dog even at the early childhood level. Sandt (2020) suggested to research organizations with local chapters (Pet Partners, Therapy Dogs International, and Alliance of Therapy Dogs, for example)

to find a therapy dog team consisting of the certified therapy dog and its handler. An everyday pet should not be used in the classroom, especially for children with disabilities, because it would be unknown how the dog would respond in those unique circumstances. It is critical to find an appropriate fit for the therapy dog team and classroom. The teacher should meet with a potential handler ahead of time to discuss the needs of the children, what the dog might encounter, and if the temperament of the dog will be a good fit. Once a suitable dog therapy team has been chosen, the team should meet the principal to discuss protocols concerning the office as the only point of entry and hallway rules when the dog is present.

Sandt (2020) continued there are many steps to prepare for human-animal interaction. Teaching young children how to appropriately interact with a therapy dog is vital for safety. Dogs have learned how to predict human intentions based on body language. Actions such as laying on a dog, pulling its collar, or running around it may be tolerated by a pet at home, but would not be appropriate in a classroom situation. The handler is responsible for the dog and how it is interacting with humans. The teacher is responsible for the content and preparing the children for transitions while addressing their needs. Avoid using “don’t” statements when a student’s behavior needs to be corrected. Some appropriate etiquette responses for children around dogs include, “stay in your personal space”, “stroke the dog’s side”, “use your inside voice”, or “keep your hands on your belly button”. Students should always wash their hands before and after therapy dog encounters. These behavior guidelines should be practiced beforehand with a stuffed dog or picture of the therapy dog.

Sandt (2020) continued that the teacher and handler should collaborate on several aspects of a therapy dog intervention. A protocol should be established to promote dog and student safety. In addition to frequency of dog visits and length of stay, additional items to discuss include teacher absences/substitutes, environmental clutter, removal of food, how to promote focus of both dog and students, interactions, planned departures, and emergency departures. Establishing specific goals or student learning outcomes (SLO) was an effective way to collaborate and can be part of a co-teaching format. Other factors that were considered included arrangement of the classroom itself to appropriately accommodate both the dog team and students. Questions to consider might include are there places the dog should not go? Where are the students going to be in relation to the dog (carpet squares, tape, chairs)? If guests are allowed, where will they be? (Sandt, 2020).

During implementation of a dog therapy program in the early childhood setting, each participant had a certain role to play. The teacher should be focused on the students while the handler keeps their focus on the dog and the dog's interactions with others. A reflection time should occur following visits where both parties are open to constructive criticism. Working together to optimize the therapy sessions and following best practices will provide safe and goal-oriented sessions (Sandt, 2020).

### **Academics/Reading**

#### **Human-Animal Interaction Research**

Considering the popularity of animals and the breadth of animal facts/pictures/videos in curriculum, Gee et al. (2017) discovered there was not a robust pool of research involving

animals in education compared to other fields in education that are researched. The goal of this article was to provide an overview of the research that does exist pertaining to human-animal interactions (HAI) and obtain support for a model of how the authors felt HAI can impact learning. During a conference in 1987 entitled “The Health Benefits of Pets”, the National Institute of Health (NIH) outlined the need for more research pertaining to the potential social and therapeutic impacts of pets on children. After that request, the NIH funded 21 grants on HAI, several of which involved inclusion of animals into education. Examples that pertained to students with special needs included the following groups: a controlled study of attention deficit hyperactivity disorder (ADHD) students involving inclusion of dogs into psychotherapy; an intervention study on adjudicated youth involving shelter dog training; and two studies outlining the impacts of child-horse interaction (one with neurotypical students, the other with autism spectrum disorder students). Studies reviewed outlined the natural social interactions with animals, which in turn stimulated human social interactions. Hypotheses around this area phenomenon have seeded further study of neurological mechanisms that involve stress reduction, hormone levels pertaining to social interactions, emotional regulation, empathy, and psychopathology (Gee et al., 2017).

Other research focused on learning, engagement, and motivation. Gee et al. (2017) stated that animals created intrinsic motivation through animal interaction and therefore increased task performance. This has been evident in dog reading programs, which are popular in Japan, the United States, Germany, Australia, Spain, and the United Kingdom. While some studies have been peer-reviewed, there needs to be a more robust response with larger sample group sizes, types of instruction received, and at a variety of reading levels. Little research has been

conducted on how HAI impacts executive functioning, although those that have been done show promising results for children with ADHD and autism. The research that does exist leans towards positive impacts on students. However, Knowles et al. (2021) suggested that caution should be taken when interpreting results due to a lack of methodological rigor and variable implementation in some educational settings as compared to clinical settings.

### **Special Education Canine-Assisted Reading Programs**

Fung (2016) evaluated the effectiveness of canine-assisted reading programs and further provided evidence that such programs would benefit students with special educational needs (SEN) by pairing them with dialogic reading, an evidence-based practice. One of the initial dog reading projects, called Reading Education Assistance Dogs (READ), began in 1999. READ originated as a library program and morphed into several different programs over the years, spilling into pre-school and elementary schools. Another program, called CARE to Read, recruited 136 struggling first through fifth grade readers to participate. The experimental group exhibited increased self-confidence, a higher likelihood of participation, more positive attitude about school, and increased higher-level thinking skills compared to the control group. Disadvantaged second graders from Chicago were evaluated in the Sit Stay Read program. The control group had 98 participants and the experimental group had 152 participants. A 20% increase in oral reading fluency was exhibited by the experimental group. A qualitative analysis via interview data of staff involved also revealed an increase in student engagement towards learning.

The next study Fung (2016) highlighted included 11 home-schooled and unschooled students ages 6-12 years old, called the All Ears Reading program. After a 10-week period, reading accuracy remained steady, although reading fluency had increased by 30%. Reports from students showed a transition from negative feelings of reading aloud to positive feelings due to the non-judgmental nature of the dogs and relaxation the students felt while reading. The final study spotlighted a 10-week canine-assisted reading program for low reading third grade students. Reading rate, accuracy, and comprehension were evaluated in a pre and posttest with 102 participants placed into random groups. The students read to either an adult, a teddy bear with an adult present, a dog with an adult present, or alone. Following the study, the “dog group” students read at a significantly higher rate and were also able to maintain that higher rate eight weeks later.

Based on his research, Fung (2016) observed that each participant of the canine-assisted reading programs had a unique role. A trained therapy dog is a preferred canine to use for such a program. The canine was an inherent non-judgmental listener who also provided comfort and elevated confidence. Often the student was a struggling reader, and the dog offered no ridicule or correction, but was patient and allowed the student to feel a sense of accomplishment by taking on the “older sibling” role. The role of the adult was to utilize the tools outlined in dialogic reading and to be an active listener in the scenario. The two strategies implemented were called Completion, Recall, Open-ended, Wh-questions, and Distancing (CROWD); and Prompt, Evaluate, Expand, and Repeat (PEER). The adult took data on the sessions and used the prompts to aid the student in moving from a passive role to a more active role in the reading. Ultimately, this became a story-telling process on behalf of the student and the adult’s role became less over



time. School staff, visitors, and students were prepared prior to implementing the canine-assisted reading program. Students who were allergic or fearful of dogs did not participate. Canines were in good health with current immunizations and proper hygiene followed. Parents gave permission for their child to participate (Fung, 2016).

Bassette and Taber-Doughty (2013) conducted a pilot study to determine if a dog reading program might impact academic engagement in elementary students with a primary disability of emotional behavioral disorder (EBD). Research has shown that students with an EBD often struggle with reading due to externalizing problem behaviors and attention difficulties. As students become older, those early reading struggles may broaden, impacting a lower verbal IQ and reading comprehension. The crux lies in the transition from “learning to read” to “reading to learn”. Adverse behaviors often increase while motivation decreases, including refusal of academic tasks. Previous research showed that interventions should target academic engagement and reading skills.

Due to the increased popularity with a type of animal-assisted activity (AAA) involving reading to dogs or canine reading programs, Bassette and Taber-Doughty (2013) posed their research question “to what degree does a dog reading program impact on-task-reading aloud behavior?” The research was a quantitative multiple probe single-subject design. Three students were recommended by a special education teacher and had to meet a series of criteria (behavioral difficulties, parent permission, willingness to participate, and not be allergic or fearful of dogs). The students were given baseline reading sessions to determine instructional level reading. Intervention reading sessions with the dogs were 30 minutes long, five times/week. The student was allowed to choose a book to read, although it had to be at their high instructional level or

low frustration level to ensure it was challenging. Following the reading session, a computer quiz was administered and then 5-10 minutes of interacting with the dog was provided such as playing, walking through halls, or asking commands. Two adults were also present during intervention sessions: the dog handler, and the researcher. A series of maintenance reading sessions were conducted one-month post intervention to determine how much, if any, growth was retained. Only the intervention session had the therapy dog present. In addition, student and teacher interviews were conducted during baseline and at conclusion of maintenance (Bassette & Taber-Doughty, 2013).

The results showed that all three students improved in their on-task behavior while participating in the dog reading program. Student one had a baseline of 5% of intervals and shifted to 96% of intervals during interventions; she exhibited 100% during maintenance. Student two had a baseline of 70% of intervals and increased to 92% during dog intervention; he demonstrated a maintenance of 98%. Student three scored a baseline of 72% and increased to 97% during interventions; he ranged from 89-93% during maintenance. In addition, all students shared that they enjoyed the program, student one asking if the dog could come to her math lessons (Bassette & Taber-Doughty, 2013).

Bassette and Taber-Doughty (2013) discerned that results of this study are encouraging since students' on-task engagement improved while reading at upper instructional/lower frustration level. Previous studies (Cramer & Rosenfield, 2008; Gickling & Armstrong, 1978; Treptow et al., 2007 as cited in Bassette and Taber-Doughty, 2013, p. 252) with elementary students showed that on-task time while reading at instructional or frustration levels was lower.

Bassette and Taber-Doughty (2013) suggested future studies with a larger sample size, a longer intervention duration, and an evaluation of long-term academic effects.

Three years later, Bassette and Taber-Doughty (2016) conducted another reading intervention study to examine if the presence of a dog would impact reading skills. Due to academic motivation often decreasing during the early adolescent years for students with EBD, this study involved four fifth grade boys with EBD. Concurrently, that population often exhibits underlying deficits in reading skills. This animal-assisted intervention study was designed to assess comprehension, fluency, and motivation level using an alternating intervention package of dog present (researcher and dog) and dog absent (researcher only) condition through baseline, intervention, and maintenance procedures over a five-month period. The study also incorporated error correction and performance feedback both before and after the readings. This was delivered from the dog's perspective during dog present sessions (i.e., "Can you tell Maggie what word this is again?") and from the researcher's perspective during dog absent sessions.

Bassette and Taber-Doughty (2016) found that using the evidence-based practice of repeated reading and the principles of Operant Conditioning, specifically pairing an established reinforcement (dog) with the environment/adult/materials, the reading intervention sessions provided a more positive reading experience for all four students. Three of the four students preferred and displayed slight increases in reading skills during the dog present sessions. However, teacher comments, qualitative remarks, student comments/behavior, and social validity from both students and teachers demonstrated an overall desire to have the dog present during sessions with all students. All four students indicated that reading was more fun with the dog

present, and they enjoyed doing a challenging task (reading aloud) because they liked working towards a goal and having multiple opportunities to say the words correctly. All four students stated they would like to continue reading to the dog and thought their peers would also enjoy similar animal activities. That sentiment was reflected when other students in the classroom, who were not part of this study, inquired when they could read to the dog. This suggested the dog was a preferred reinforcement and socially credible activity.

Future research utilizing animal-assisted activities should focus on motivation, compliance, engagement, or attentiveness when a preferred animal is determined to be reinforcing for a student. In addition, because there is not currently a comprehensive framework to understand the connection between humans and animals during educational opportunities, the authors suggested an operant conditioning approach that focuses on adequate pairing of a preferred animal with the instructors, materials, and environments (Bassette & Taber-Doughty, 2016).

### **Applicable General Education Canine-Assisted Reading Programs**

A general education animal assisted literacy approach out of Canada could be utilized for students with special needs. Friesen (2012) examined five programs in four French speaking elementary schools in eastern Canada that utilized the Reading Education Assistance Dogs (READ) program. In these programs, three dogs and one guinea pig were the animal assistants. The handler served as the adult mentor and initially worked to create a caring and playful learning environment between the children and animal. The mentor acted as an “interpreter” of the dogs’ feelings saying things such as, “Prince is so happy to see you again today. He really

missed you.” The child was then allowed to walk the dog and interact in a playful way to build trust and create a caring connection.

Focusing on both constrained and unconstrained literacy was a core part of these programs. Paris (2005) defined constrained skills as oral reading fluency, letter knowledge, and phonemic awareness whereas unconstrained skills include vocabulary, comprehension, critical thinking, composition, oral language development, and problem-solving skills. Friesen (2012) highlighted how animal assisted literacy learning sessions bring new and unique methods to teach both constrained and unconstrained literacy skills. A scenario might include teaching a child to pause for commas or periods during oral reading. The handler tells the child to stop reading and touch the animal for two seconds for a period and one second for a comma. To enhance a more robust written composition, the handler asked the child to first write a note to the dog or guinea pig on the board. This activity would then facilitate the writing lessons for the week focusing on punctuation, sentence structure, and spelling.

Friesen (2012) continued once a positive, caring relationship was established, the dog took on various social roles that are beneficial. The dog “learns” reading skills alongside the student, becoming a classmate; the dog accepts the child’s displays of affection becoming a friend; the dog obeys commands becoming a student; and finally, the dog becomes a role model as a teacher. In one instance, an argument broke out between two students and the handler reminded them, “Friends of Prince don’t fight.”

Despite the Canadian programs’ focus on the general student population, carry over into students with disabilities is applicable. One example outlined a student named Junior who was

easily distracted and inattentive. The handler allowed the dog to continue sniffing and roaming the room while asking the dog to come, sit down, and concentrate on the book. The adult told Junior that sometimes it was difficult for Prince to sit down and listen. The dog's behavior reflected that of Junior's behavior. When the handler gave Prince the command to sit down, she then instructed Junior to engage the dog in a calming exercise of counting down from three to one. When Prince was finally calm, Junior praised him. In this circumstance, Junior was empowered as the teacher and the focus of the behavior needing correction was on the dog instead of the student (Friesen, 2012).

Researchers Kirnan et al. (2020) examined results from four special education needs (SEN) students in an inclusive classroom that were part of a school-wide dog-assisted reading program. This elementary school aimed to increase reading performance and overall student attitude in all grades. The researchers evaluated data that had already been gathered from the academic years 2013-2014 and 2014-2015. Behavioral data charts were analyzed to compare days when the dog was present compared to days the dog was absent. Interviews with educational staff were also conducted.

Kirnan et al. (2020) determined that interview data supported both hypotheses that positive behaviors increased and negative behaviors decreased when the dog was present. These interviews reflected two recurring themes. They noted the calming effects of the dog and students staying on-task more frequently. Since reading to the dog was considered a privilege, even on days the dog was not present, there was incentive for appropriate behavior. One student kept the dog's name on his desk to remind him to behave. Other positive outcomes noted

included increased confidence and self-esteem, a sense of pride and importance, greater willingness to read aloud, more risk taking, improvements in oral fluency, and an overall greater interest in reading. Daily behavior log results showed partial support that one out of the four students had positive behaviors on the day the dog was present. This discrepancy may be attributed to cumulative daily behavior being tracked instead of focusing on the time immediately following when the dog was present.

### **Zoo-based Initiatives**

Research involving zoologically-based educational programs targeted towards children with special needs is rarely conducted. These programs do exist, however, peer-reviewed studies are limited. After extensive database searches were conducted and only a few articles acquired (one over 30 years old and consisted of a pamphlet highlighting zoo programs for “handicapped” children at San Diego Zoo), this researcher reached out to the head of the Autism Society of Minnesota, Eric Ringgenberg, to inquire about their partnership with zoos in Minnesota. Ringgenberg confirmed direct research on autism and zoo programs is non-existent. Some literature exists on sensory-friendly initiatives in the broader community, which can and often does include zoos. The Autism Society of MN partners with several zoos and the curriculum varies. It may include experiential learning, social skills learning, or natural learning and development. “There are some meaningful, therapeutic experiences since animals are a high interest area for people with autism” (E. Ringgenberg, personal communication, August 4, 2022). Two articles this researcher was able to locate pertaining to zoos and students with special needs are discussed below.

Berkovits and Greenblatt (1980) described an inspirational and collaborative partnership with the Bronx Zoo and teachers of special needs students in New York. The education of students with disabilities in the 1970's was primarily separate from their general education peers. However, with Public Law 94-142, the Education of all Handicapped Children Act, signed into law by President Ford in 1975, those standards began to shift. In response to the new law, the Bronx Zoo in The Bronx, NY held a conference in 1978 to work with local special education professionals with the mission of creating a natural science program to enrich the lives of young people with disabilities. This project was sponsored by the Board of Cooperative Educational Services (BOCES) of Nassau and Suffolk and with support from the New York State Education Department. The project received a grant from the state of New York and was approved by March of 1979.

The study outlined the various phases of the project. Phase one was an orientation held at the zoo for parents to share about their child and for zoo staff to better understand the scientific background of each teacher. Phase II was a day-long workshop at Rosemary Kennedy Center where zoo staff brought both live animals and artifacts for small group instruction. At the conclusion of this workshop, each teacher was expected to prepare three specific lesson plans. The combined lessons of 20 teachers would then be made available to all members of the BOCES staff and other schools serving disabled students. Phase III brought the students and teachers back to the zoo. This time zoo staff prepared lessons designed to expand the students' experiences through touch, smell, sound, and texture. Concepts addressed included characteristics, classifications, and adaptations of different vertebrate groups as well as life cycles, parental care, hatching, and locomotion of certain animal groups. Three trips to the zoo



were taken to complete the project. Phase IV emphasized the lessons learned at the zoo through artistic therapy projects intended to foster communication, conceptualization, and expression. The final phase concluded back at the Bronx Zoo with all 200 students, teachers, and parent assistants receiving a safari tour (Berkovits & Greenblatt, 1980).

Berkovits and Greenblatt (1980) confirmed that the project was a success. A pre-test had been given prior to any animal exposure to ascertain the level of natural science knowledge. Classroom reinforcement activities were conducted throughout the project. After the completion of the three zoo trips, the students were administered a post-test. Preliminary analysis of the post-tests revealed most students made significant gains not only in concrete areas, but also in more abstract areas. Examples included: comparing herbivorous lifestyles of prey species such as lizards, rabbits, and ducks; differentiating predatory habits of a ferret, bullfrog, and sparrow hawk; increasing vocabulary terms to include words such as amphibian, mammal, reptile, or bird; and identifying artifacts such as snake skins, porcupine quills, bird feathers, and reptile eggs. The teaching staff was thrilled at the response of the students, especially in the areas of language development and embracing new concepts. Quantitative data was not included in this article, however, a report on the data was being generated (Berkovits & Greenblatt, 1980).

Advancements toward further inclusion of students with disabilities was reflected in this project and the progressive nature of this partnership is noteworthy. The collaboration between the parents, Bronx Zoo staff, teacher staff at Rosemary Kennedy Center, BOCES, and the state of New York created a model for other communities to follow. As a result of this project, a natural science adaptive curriculum was developed and shared with disabled populations and zoos

around the country. For the student population who participated, a new, unexplored area of study was made available to them. On a broader level, projects such as this one paved the way for a more inclusive educational experience for children with special needs and the necessary involvement of outside agencies to work cooperatively with special education teachers in pursuit of more mainstream educational inclusion (Berkovits & Greenblatt, 1980).

A zoo in Argentina developed a job training program for young people with disabilities. Ojeda (2019) described a zoo called Fundación Tamaiken, a non-profit organization whose mission to protect nature also included recognizing the treasure of a diverse community. They strived to create equal learning opportunities for people with disabilities believing that protecting nature is everyone's responsibility. Seventy-five percent of disabled working age people between the ages of 14 and 65 did not have jobs (Ojeda, 2019). Beginning in 2004, this traineeship program was developed in response to that situation and in reflection of their mission. Participants were from special education schools and Laborers Training Centers that lie within Fundación Tamaiken's perimeter near the cities of Escobar and Pilar.

Ojeda (2019) noted six students were welcomed each year (April-November) into the program and attended twice a week for three hours per day. Areas of participation included animal nutrition, gardening, food service, warehouse, general maintenance, electric maintenance, visitor center, and water plant. Each year, an occupational therapist and human resources staff created an occupational profile that is then shared with education institutions for teacher teams to determine what students might work well in the positions available. Once a trainee is accepted, a

training plan is created with that person's disability in perspective. A daily task log tracked job performance and three evaluations were conducted throughout the seven-month traineeship.

The training program at Fundación Temaikén has produced impactful results. Eighty percent of teacher and student interviews asserted the program has been a valuable experience of learning how everyone plays a role in protecting animals and the environment while acquiring a unique skill set and knowledge from the daily work. The attitude of the workers at Temaikén has been impacted as well. Through the workshops and traineeships, 100% of internal working teams have altered their opinions of people with disabilities and wish to be involved with additional inclusivity programs. There are few opportunities for disabled people in Argentina to gain important work skills pertaining to animals and the environment. In addition to individual growth and development, programs such as this traineeship partnership cultivate social relationships and friendships. These collaborative efforts have proven that skill-building partnerships between people with disabilities and zoos can have a lasting impact on everyone involved (Ojeda, 2019).

## CHAPTER III: DISCUSSION AND CONCLUSION

### Summary of Literature

The purpose of this thesis was to explore current approaches that utilize animals in educational settings to assist students with disabilities. The research explored the question: How can animals benefit students with special needs in the PreK-12 academic setting? The results have shown there are a multitude of diverse and unique ways animals are being used in the field of education to support students with disabilities.

The role of service animals has expanded in recent years beyond the traditional ways of assisting for mobility or vision impairments (Gee et al., 2017). Service animals in school must be considered for any student, not only those students receiving special education services. Conditions a service dog may support include but are not limited to seizures, diabetes, anxiety, autism, deaf or visually impaired. Ewoldt et al. (2020) strongly advised districts to write a service animal protocol as a proactive measure. Three specific pieces of legislation need to be considered when adding policy on service animal protocol. They are the Americans with Disabilities Act (ADA) of 1990, the Individuals with Disabilities Education Act of 2004, and Section 504 of the Rehabilitation Act. In creating this protocol, the document may also include emotional support animals and should be created in conjunction with legal counsel (Ewoldt et al., 2020).

Pets in the classroom were popular in the 1960's and 70's. However due to concerns with salmonella, liability, and allergies, animals in classrooms declined sharply in the 1980's (Barr, 2020). Presently there has been an increase in the number of teachers bringing animals back into their classrooms and the results are incredibly positive. Animals can be used within

lessons to build community, learn about caring for another, cultivate a sense of belonging, and to increase self-confidence (Meadan & Jegatheesan, 2010). Barr (2020) asserted that animals can stimulate learning in ways that are unmatched to models, charts, or replicas. Animals make learning exciting, tangible, realistic, and seem to have a magical effect on children. The revival of pets in the classroom is supported by research and presents an exciting avenue for experiential learning (Barr, 2020).

Social, emotional, and behavior therapeutic applications for special needs students can focus on either Animal Assisted Activities (AAA) or Animal Assisted Therapy (AAT) interventions. If a licensed professional is conducting the intervention it is considered an AAT. If another staff member is conducting the intervention it is considered an AAA. Gee et al. (2017) stated that animals created intrinsic motivation through animal interaction and therefore increased task performance. In a survey of eight studies, Knowles et al. (2021) ascertained all results showed improvement in reading or social skills and stated an AAA can provide a unique and enriching opportunity for students with an EBD. Furthermore, in a self-contained EBD classroom where a dog was present daily, Anderson (2007) stated the dog facilitated effective behavioral management skills, an awareness of responsibility by providing for the dog's needs; an increase in respect for another living creature; and recognition of empathy through parallels drawn between the dog's feelings and their own. The social, emotional, and behavioral benefits of animal-assisted interventions are fascinating and compelling.

Academic programs that incorporate canine reading initiatives have become more common in special education classrooms and are showing promising results. It is highly suggested to utilize a reputable reading program that already exists such as Reading Education

Assistance Dogs (READ), Sit Stay Read, CARE to Read, or All Ears Reading. Another option is pairing canine reading programs with an evidence-based practice such as dialogic reading (Fung, 2016). Positive relationships can form between student and canine which establishes the groundwork for the student to become the “teacher” and help the dog “learn” and work through behavioral challenges (Friesen, 2012). Additionally, Bassette and Taber-Doughty (2016) found that using the evidence-based practice of repeated reading and the principles of operant conditioning by pairing an established dog into reading intervention sessions provided a more positive reading experience. The options for canine reading programs are numerous and continue to produce exciting results.

Zoological applications for special needs students is an understudied area. The research that does exist is noteworthy though. A partnership between the Bronx Zoo and the state of New York in 1979 resulted in a natural science adaptive curriculum that was shared with disabled populations and zoos around the country. This project was instrumental in paving the way for increased inclusivity and the need for outside agency collaboration in the coming decades (Berkovits & Greenblatt, 1980). Additionally, believing that protecting nature is everyone’s responsibility, a zoo in Argentina developed a job training program for young people with disabilities to create equal employment opportunities (Ojeda, 2019).

Prior to attending graduate school, this researcher was a zookeeper at Como Zoo in St. Paul, MN for 14 years. Como participated in a partnership with the Autism Society of Minnesota conducting six-week classes and a summer camp called AuSM. This was geared for both young children and teens with autism and took place at Como Zoo. This researcher visited some of

those classes as a guest speaker. The Autism Society of MN has partnered with zoos in Minnesota in a program called AuSM bringing the natural world to students with autism through experiential learning opportunities (E. Ringgenberg, personal communication, August 4, 2022).

### **Professional Application**

The applications for including animals in the educational environment for students with special needs are vast. Pets in the classroom and canine interventions that are either reading based or therapy based are the two areas that hold the most potential for practical application. Because animal-based interactions are currently not evidence-based, any AAA or AAT should consider pairing their interventions with an already established evidence-based proactive approach. This will increase buy-in from administration, parents, and school boards when considering these more novel strategies involving animals.

The research collected affirms the presence of animals in a Pre-K-12 school environment can support social, behavioral and academic advances. There will be logistical and environmental constraints. Barriers to overcome may include cultural factors involving certain animals, allergies, physical space allocated, and phobias. Possible pathways to combat those barriers include reserving certain spaces where the animal needs to remain; choosing animals students do not fear; and not pre-determining a classroom pet, but collectively electing what animal will be the most appropriate.

Pets in the classroom is an area this researcher feels particularly passionate about with her zookeeping background. However, as a new teacher, she can empathize how it could be overwhelming for teachers who already have so much on their plate. Barr (2020) is an excellent resource for any teacher who has an interest and wants to investigate adding an

animal to their classroom. Hurdles such as cost, space, and holiday care as well as curriculum applications and partnering with colleagues are all covered extensively (Barr, 2020).

Canine interventions is also an area that could also be pursued with great success. If a reading program is sought after, utilize an already existing program such as READ, (Friesen, 2012), All Ears Reading Program, or Sit Stay Read Program (Fung, 2016). These are excellent, established programs and are a great way to “get your feet wet” with animal interactions in school. Social, emotional, and behavioral therapeutic interventions are also promising and two articles have step-by-step plans for implementation considering variables such as permission, choosing an animal, individual goals/growth, allergies/phobias, training, and cultural considerations (Baumgartner & Cho, 2014; Knowles et al., 2021). The advice to utilize a canine therapy team that is certified cannot be emphasized enough. Because AAA and AAT are still in the probationary stages, it is even more important to create and conduct activities with the highest integrity and thorough consideration. Pet Partners, Therapy Dogs International (TDI), and the Alliance of Therapy Dogs (ATD) are great resources for guidance, templates, and best practices for choosing and/or becoming part of a canine therapy team (Sandt, 2020).

This researcher has worked in federal special education settings I, II, III and IV with children ages preschool through high school and can envision animal-assisted interventions in all of these scenarios and age groups. They would also work for transition aged young adults 18-21 who are still serviced under the special education umbrella after high school. This researcher believes animals allow children to express a more honest and uninhibited version of themselves and the education field needs to tap into that resource for all students, but especially children with special needs.



### **Limitations of the Research**

The primary gap with animal-assisted interventions is that it is currently not an evidence based practice. Fung (2016) encouraged pairing a canine-assisted reading program with an evidence-based practice, such as dialogic reading, which provides an opportunity to engage in both endeavors and increase exposure for animal-assisted interventions (AAI). With more robust research that includes a cohesive and standardized methodology, animal-assisted activities and therapies can strive to achieve evidence-based status (Knowles et al., 2021).

Another area of limitation is in areas that are outside of the classroom. Nature Centers, zoological institutions, science and natural history museums are some examples of other organizations that are leading developed programs for children with special needs but are not typically considered for research studies.

The research examined in this thesis is not an exhaustive summary of all data available. Risks of having animals with children do exist but were not broadly explored. The need is great for deeper examination and more expansive research on animal involved supports in schools. The educational community should advocate for continued examination and implementation of animal-related practices to provide for students with special needs in new and innovative ways.

### **Implications for Future Research**

When this researcher first began pursuing animal support in special education it was due to a passion for animals based on her first career as a zookeeper. She did not think there would be enough articles for a robust research project. On the contrary, there were an abundance of articles pertaining to animals and children with special needs, especially in the

past few decades. As previously highlighted, there is a gap because animal-assisted interventions are currently not evidence-based. As such, data collection and research on any AAT or AAA should be pursued further. Research on the brain and neurochemical reactions relating to animal interactions are particularly intriguing and are becoming a burgeoning field of study. Trauma-based initiatives is another arena where animals are being used. An example is an alternative high school where students who have trauma can participate in rehabilitating animals back to health and being responsible for their welfare. Future research possibilities involving animals in education are exciting and widespread. It is also this researcher's hypothesis that the special education and general education research will overlap even more in the future thus enhancing and strengthening the evidence to pursue animal-assisted activities in PreK-12 schools.

### **Conclusion**

The arena of animal applications in special educational settings is only on the horizon. Such promising research will continue to encourage further studies on how animals decrease stress and anxiety, improve reading outcomes, increase motivation, responsibility, and teamwork and become a social lubricant for those with special needs. Utilizing that research will help convince educators and districts to pursue animal-assisted activities in their classrooms and curriculums. Until AAA and AAT become evidence-based practices, pairing those initiatives with already established evidence-based practices provides the recipe for increased animal-based educational experiences. Animals not only benefit students with special needs, they can enhance and uplift the educational experience, increase social inclusion, and further augment acceptance of some of society's most extraordinary young people.

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