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Actor-Network Theory and Animal Therapy: Uncovering the Relational Ecology of the Exceptional Student Classroom

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ACTOR-NETWORK THEORY AND ANIMAL THERAPY: UNCOVERING THE RELATIONAL ECOLOGY OF THE EXCEPTIONAL STUDENT CLASSROOM

by

KRISTIN BLANTON

(Under the Direction of Jonathan Hilpert)

ABSTRACT

Expanding upon the research on ecology in curriculum studies and companion animals, this mixed methods case study aimed to explore how the incorporation of a nonhuman entity impacted the relational ecology of the exceptional student classroom. Utilizing actor-network theory as a theoretical guideline, the goal of this study was to gain a deeper understanding of how the introduction of a therapy dog as a student affected the relational ecology of the classroom by analyzing the dynamic networks of relationships formed between the students and the therapy dog. Relational ecology acted as a conceptual framework within the field of curriculum studies to better understand the implications of those networks of relationships observed and documented between the students and a therapy dog. I aimed to determine whether the expansion of the classroom ecology to include a therapy dog would disrupt oppressive patterns of relating and interacting for exceptional students such as aggression, defiance, and power struggles, or, facilitate empowering patterns of relating and interacting such as on-task behaviors and cooperation. Using a mixed methods observational case study with two-time series, it was found that the therapy dog's presence improved the overall relational ecology of the classroom and demonstrated how animals can help shape identities and promote well-being in terms of social interactions. Data showed an increase in the formation of social networks, as well as an increase in behaviors of empowerment, decrease in oppressive behaviors, and a flattening of the social hierarchy previously exhibited in the classroom.

INDEX WORDS: Therapy animals, Exceptional students, Agency, Social network analysis, Power, Relational ecology

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ECOLOGY OF THE EXCEPTIONAL STUDENT CLASSROOM

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DOCTOR OF EDUCATION

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DEDICATION

To all of the animals who hold a special place in our hearts.

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CHAPTER 1

INTRODUCTION

Purpose of Study

The intent of this mixed methods time-series observational case study was to understand and analyze how the incorporation of a therapy dog as a student into a self-contained exceptional student classroom impacted the relational ecology of the classroom. Within the field of curriculum studies, work on the human-animal bond and the push away from anthropocentric viewpoints better allows us to view the classroom as an ecology of interdependent relationships between humans and nonhumans (Hensley, 2011; Jardine, 2011; Krall, 1994; & Morris, 2016). Moving away from an anthropocentric viewpoint allows us to restructure the power dynamics of the classroom in which humans are not superior but are equal in nature to the nonhuman entities that are present. This can be demonstrated through the interdependent relations between living and nonhuman entities, in which relational ecology highlights.

Within the context of this study, relational ecology acted as a conceptual framework within the field of curriculum studies to better understand the interaction between humans and companion animals and demonstrate how animals can help shape identities and promote well-being (Putney, 2013). Relational ecology, as according to Vandering (2012), can be defined as “a framework for nurturing human capacity that focuses on reconnecting people to each other highlighting inherent relational qualities and emphasizing social engagement,” (as cited in Brown, 2015).

In order to best assess the relational ecology of the exceptional student classroom with the incorporation of a therapy dog as student, Actor-Network Theory (ANT) acted as the theoretical framework in which this case study was analyzed. ANT further allows us to analyze and interpret the concept of relational ecology within the context of the exceptional student classroom. ANT, as according to Law (2007):

describes the enactment of materially and discursively heterogeneous relations that produce and reshuffle all kinds of actors including objects, subjects, human beings, machines, animals, 'nature', ideas, organizations, inequalities, scale and sizes, and geographical arrangements. (p. 1)

As Law (2007) described, ANT breaks down anthropocentric barriers by acknowledging the heterogeneous relations that have the potential to form between all human and nonhuman entities. This allows us to treat humans and nonhuman agents as equals, as it looks at relationality among all entities. It is the relational effects between humans and nonhumans, or more specifically, high school-aged exceptional students and a therapy dog, in which this mixed methods time-series case study will analyze and interpret for the purposes of gaining a better understanding of the implications in which human and nonhuman relations impact the relational ecology of the exceptional student classroom. By treating the therapy dog as a student metaphorically speaking, we can best understand how the therapy dog impacts the relational ecology of the classroom by specifically analyzing patterns of interacting and relating through ANT.

ANT allows us to view the therapy dog in terms of equal agency to the students through the concept of symmetry. Symmetry allows for all entities to be recognized in terms of having an equal ability to influence the creation or dissolving of networks. By identifying the therapy dog as a student rather than continue to use terminology such as therapy dog, we are removing aspects of unintentional othering by ridding classifications that differ nonhumans from humans, thus allowing for the concept of symmetry through the interdependent relationships between humans and animals to naturally occur.

Currently, our schools follow a "carbon copy of curriculum" (Hensley, 2011). According to Hensley (2011), schools are "grounded in perpetuating a business-as-usual approach and dismantling the human-Earth relationship, this type of curriculum advances anthropocentric thinking," (p. 31). By moving away from carbon copy of curriculum we are better able to restructure the exceptional student classroom to one in which the "human-Earth relationship" is at the forefront (Hensley, 2011, Krall, 1994, Morris, 2016).

These human-earth relationships can further be developed in our schools. Within the context of this case study, I aim to uncover the implications of these human-earth relations within the context of the exceptional student classroom. As a self-contained exceptional student educator at the high school level, I am witness to the struggles that my students face not only academically. With a range of diagnoses from mild and moderate intellectual disabilities to Autism Spectrum Disorders, social skills are constantly having to be addressed within the exceptional student classroom. Appropriate and empowering relations and interactions are a deficit for many of the students I serve, negatively impacting the relational ecology of the classroom. Adverse relations and interactions within the context of the exceptional student classroom I serve range from interruptions and inappropriate language, to inappropriate behaviors of interacting and relating with one another such as verbal and physical aggression.

While there are many lessons conducted that are structured to address these antisocial behaviors, there is not a set intervention in which the students I serve collectively respond to, as they all have different triggers and motivators. As an educator, I am continuously trying to find an intervention that is beneficiary to improving the relational ecology of the exceptional student classroom as a whole.

With typical interventions such as social stories and positive behavior interventions and supports not consistently working to improve student behavior and the relational ecology of the exceptional student classroom, I had to take a step back to assess what else could be done to better help my students in terms of forming appropriate relations through their interactions. This is where my idea to incorporate a therapy dog into the exceptional student classroom comes into play. As an exceptional student teacher, therapy dogs are not a foreign concept. Once a year, we have therapy dogs visit our classrooms and it is always the highlight of the day.

According to research, therapy dogs have significant positive benefits on humans which in application can potentially improve the relational ecology of the exceptional student classroom in terms of student behaviors and interactions. This research clearly demonstrates positive attributes that therapy dogs can have in terms of interacting and relating, and additionally, situates therapy dogs as an entity capable of acting upon humans, which goes against anthropocentric views of human superiority.

In short, research on companion animals demonstrate benefits that range from physiological to social-emotional, which can impact how one interacts and relates, and thus, the relational ecology within the context of the setting in which the studies were conducted. Physiological effects such as reduced blood pressure (Allen et al., 2002; Anderson et al., 1992; Baun et al., 1984; Breslford et al., 2017; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Vormbrock & Grossberg, 1988), reduced heart rate (Allen et al., 2002; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Somervill et al., 2009; Vormbrock & Grossberg, 1988; & Walsh et al., 1995), decrease in cortisol (Breslford et al., 2017; Handlin et al., 2011; & Viau et al., 2010), increase in oxytocin (Breslford et al., 2017), and a decrease in stress and anxiety (Allen et al., 2002; Barker & Dawson, 1998; Beck, 2015; Breslford et al., 2017; Chandler, 2001; Friesen, 2009; Geist, 2011; Hansen et al., 1999; & Nagengast et al., 1997).

In addition to positive physiological benefits that could positively impact the relational ecology of the exceptional student classroom, positive impacts were also found on on-task behaviors such as attentiveness and concentration (Bass et al., 2009; Bassette & Taber-Doughty, 2013; Chandler, 2001; Friesen, 2009; Gee et al., 2010; Geist, 2011; Heimlich, 2001; Kotrschal & Ortbauer, 2003; Martin & Farnum, 2002; & Schuck et al., 2015), improvement in prosocial behaviors such as empathy (Anderson & Olson, 2006; Daly & Suggs, 2010; Hergovich et al., 2002; Tissen et al., 2007; & Vidovic et al., 1999), socioemotional development such as improvement in mood and well-being (Anderson & Olson, 2006; Bass et al., 2009; Beck, 2015; Chandler, 2001; Daly & Suggs, 2010; Geist, 2011; Grandgeorge et al., 2012; Haughie et al., 1992; Kelly & Cozzolino, 2014; Kotrschal & Ortbauer, 2003; Putney, 2013; Sanford, 2014; Schuck et al., 2015; Stevenson et al., 2015; Tissen et al., 2007; & Wodder, 2014), decrease in aggression (Anderson & Olson, 2006; Chandler, 2001; Hergovich et al., 2002; Kotrschal & Ortbauer, 2003; & Tissen et al., 2007), an improvement in academics or confidence in the classroom (Bassette & Taber-Doughty, 2013; Beck, 2015; DeNisco, 2016; Kirman et al., 2015; & Scheckler, 2017), and an increase in positive attitudes towards school (Beetz et al., 2013; Chandler, 2001; DeNisco, 2016; Friesen, 2009; & Geist, 2011). These benefits can be described in terms of prosocial behaviors that have

the potential to shift the relational ecology of the classroom into one that fosters a positive classroom ecology.

Having recently adopted a Border Collie we named Jackson, I wondered whether we could train him for therapy work and integrate him into the ecology of my exceptional student classroom. Since Border Collies are known to be highly intelligent and easily trained, the wheels started turning that perhaps, Jackson could do therapy work and I could bring him into my classroom. Having Jackson in my classroom as a student could potentially improve patterns of interacting and relating and thus shifting the relational ecology of the exceptional student classroom into one that fosters empowerment and prosocial behaviors (caring, empathy, cooperation). After then deciding to enroll Jackson, our Border Collie, in obedience training courses at PetSmart, it was clear that he had the potential for therapy work. After a year and a half of training, Jackson was tested and passed his therapy dog certification test in May of 2018 through one of the top two therapy dog organizations in the country, Therapy Dog International.

Much like the students in the classroom that I serve have had years of schooling before they enter high school, Jackson's obedience training was his education. In order to pass the therapy dog certification test, what I consider his "high school entrance exam," he needed to be able to demonstrate certain skills, an awareness of what was around him, all while being attentive to myself as his partner so that we are able to effectively communicate with one another. Specifically, testing requirements for therapy dog certification through Therapy Dog International are geared to ensure that the dogs are comfortable around people, assistive technology, loud noises, and are extremely obedient, even in the midst of distractions (See Appendix A, Therapy Dog International Testing Requirements).

In order for Jackson to come to my school, he had to pass the above examination, many of which his training classes, or rather schooling, trained him for. As you can see above, these tests measure not only obedience, but the ability to comfortably navigate around wheel chairs, walkers, and other assistive technology devices that are common in an exceptional student classroom. Additionally, loud noises and being rushed by a group of people were also assessed to ensure that the therapy dog would react in a calm, non-aggressive or stressed fashion. This test is crucial for schools where fire alarms and bells are

frequent background noise, as well as an area in which there are masses of people. The exam was stressful; however, Jackson maintained his composure and was excited when it was his turn to perform the tests, allowing him to pass and obtain his certification.

With the time that Jackson and I spent together during his schooling and testing, we formed a special bond and partnership. In relation to shepherds and sheep, Despret and Meuret (2016) state, “The shepherds did not become sheep, but they did begin to talk with them and for them- they became *with* them, and they now form a flock,” (p. 31). This resonated with me because Jackson and I became a pair, a pair in which are able to read each other’s cues, a pair in which only he and I can practice therapy work together in an interdependent relationship. Much like a “flock is a memory,” (Despret & Meuret, 2016, p. 31), Jackson and I are a memory, a memory in which no other dog nor any other human can replace and replicate the interdependent relationship that we share; it is a special bond that therapy animals and their handlers have.

With Jackson as a certified therapy dog and myself as his established handler per Therapy Dog International, I had the opportunity to adopt a new ecology in the classroom by incorporating this nonhuman entity to share the same space as human entities, with the acknowledgement that all entities are more equal in power according to the tenets of ANT. I shifted the curriculum away from one that is heavily anthropocentric to one that instead highlights the interactions and relations between humans and nonhumans, while acknowledging the interdependence between the two. The aim of this study will therefore uncover what the implications of human and nonhuman entities interacting and relating within the context of the exceptional student classroom have on its relational ecology as analyzed through ANT.

Significance of Research and Research Questions

This dissertation is significant in that it will add research to the field of curriculum studies by studying the human-animal bond in relation to networks of relations and their implications on exceptional student behaviors. Using relational ecology and actor-network theory as my theoretical guidelines, I aim to analyze the interdependent relationships that develop as a result of the incorporation of Jackson into the

exceptional student classroom to determine whether social interactions and prosocial behaviors will improve amongst the exceptional students in my classroom.

This mixed methods case study will uncover how the introduction of a nonhuman agent, a therapy dog, will affect the relational ecology of the exceptional student classroom by acknowledging equal agency between human and nonhuman agents. In general, my research question is how does the introduction and interaction of a nonhuman agent affect the relational ecology of the exceptional student classroom? More specifically, does the expansion of the classroom ecology to include the identification of a nonhuman agent as a fellow student disrupt oppressive patterns of relating and interacting for exceptional students? In other words, how does the therapy dog disrupt aggression, defiance, power struggles, meltdowns, estrangement, and other adverse classroom behaviors? Additionally, in what ways does the expansion of a nonhuman agent facilitate empowering patterns of relating and interacting in the classroom? More specifically, how does the therapy dog facilitate motivation, calmness, cooperation, caring, empathy, and other positive behaviors of relating and interacting?

These research questions will help us gain a deeper understanding of how expanding the ecology of the classroom to include a nonhuman entity as a student impact the ecology of relationships for students diagnosed with special needs in an exceptional student classroom. In this case study, the nonhuman agent, a therapy dog, may facilitate empowering patterns of relating. The non-threatening relationship between the therapy dog and students may also flatten the hierarchy of classroom relationships resulting in a sense of student empowerment.

Theoretical Perspective

Using Relational Ecology as my conceptual framework within the field of curriculum studies and Actor-Network Theory (ANT) as a theoretical guideline in which to situate my case study, I aim to study how the introduction and incorporation of a nonhuman agent as a student in the exceptional student classroom affects the network relationships for high-school aged students diagnosed with Autism and/or mild/moderate intellectual disabilities. ANT is an appropriate theoretical lens in which to study relational ecology in that, “ANT views of the world is that all objects, as well as all persons, knowledgeable and

locations, are relational effects,” (Fenwick & Edwards, 2012, p. xv). By simultaneously collecting data on the relational networks that form around Jackson and data on observable behaviors, I aim to explore how the presence of a nonhuman agent impacts the relational ecology of the exceptional student classroom by analyzing behaviors of interacting and relating in what is known as ecological intelligence (Bowers, 2011). As Bowers (2001) states, “When we pay attention to contexts, interactions, and the consequences that follow from these actions, we are also exercising ecological intelligence (p. 4).

When one thinks of the classroom ecology, one must think of all the living and nonliving organisms that the classroom environment is comprised of. I like to think of the classroom as its own biome, consisting of microorganisms and macro organisms cohabitating and interacting within the same space. I believe that by studying the ecology of the classroom, the relational ecology to be specific, one can better understand how the living and nonliving organisms interact and relate with one another. The analyzing of the relational ecology of a classroom can better help to understand the implications of these relationships and interactions, and how that impacts the overall classroom environment, and the individuals’ experiences within the classroom environment.

While looking at the classroom through an ecological lens is not new and has since taken off from the works of Florance Krall (1994), we continue to have much to gain by looking at the classroom through a relational ecological lens through the tenets of Actor-Network Theory (ANT). In this paper, I provided a comprehensive literature review on what has been done since the work of Florance Krall (1994) on work within curriculum studies on ecology, and how my work will provide new contributions to the field of curriculum studies by studying classroom ecology through the conceptual theory of relational ecology through the tenets of Actor-Network Theory (ANT).

The concept of looking at the classroom as a relational ecology through Actor-Network theory is unique within the field of curriculum studies in that historically, Actor-Network Theory has mainly been used in science and technology studies until recently it has been used to analyze educational issues (Hamilton, 2012, p. 41). One can study the relational ecology of the exceptional student classroom by using Actor-Network Theory to determine networks and relationships that form throughout the course of

two separate time-series, one before Jackson is integrated into the classroom and one in which Jackson is integrated as a student in the classroom. The two-time series will then demonstrate the fluidity of relations and networks in the exceptional student classroom as we witness the networks evolve and change over-time to those more dynamic in nature. Additionally, it will allow us to better understand the link between nature and politics which ANT highlights, in that one cannot exist without the other. By allowing a nonhuman entity into the classroom, we can study the implications that it has on the political aspects of relating and interacting. Do students have more freedom and autonomy or are they more restricted with the presence of the nonhuman entity?

As Hamilton (2012) states, “As a philosophical and theoretical approach ANT recognizes and validates this picture of the mess, fluidity, contingency and vitality of everyday social practice, and offers resources to explore pathways through it to uncover the workings of power,” (Fenwick & Edwards, 2012, p. 43). Further representing this fluidity is what Latour (1993) describes as “the parliament of things,” (1993). The “Parliament of Things (1993) brings together the science and the political, where the argument is that quasi-objects and nonhumans should have rights, much like humans do. According to Latour (1993), politics should not be centered around humans but should be a representation or rather recognition of all entities, as our networks demonstrate the continuous shifting and evolving of relationships between humans and quasi-objects and animals, for example. Within the context of this case study, quasi-objects such as assistive technology and classroom materials my exceptional students require, as well as an animal as a fellow classmate, impact the relations formed in the classroom, which is why it is important to recognize these nonhuman entities as equals to the human entities. Acknowledging the importance of these quasi objects allows for the classroom ecology to become more symmetrical. Furthermore, this symmetry demonstrates the fluidity between ecologies.

According to Hamilton (2012), “ANT asserts that the effects of power can be traced through assemblies, or mixtures, of objects, animals, people, machines, discourses and so on to which agency is delegated,” (Fenwick & Edwards, 2012, p. 42). In the context of the exceptional student classroom, all the entities noted above are present within the classroom ecology through the students, teachers, Jackson,

classroom curriculum, textbooks, discourse, rules and expectations, technology, and the list goes on and on. Interactions with any of these entities as analyzed through ANT can demonstrate the formation and/or breakdown of social networks and the implications those networks have on the relational ecology of the exceptional student classroom as evidenced based upon student behavior collected through daily behavior charts, field notes, and observations.

Definition of Ecology

The study of ecology within the field of curriculum studies is not a new concept; however, there is a lot to be gained by specifically exploring the networks of relations between human and nonhuman entities within the relational ecology of the classroom. With an ecological shift to include a therapy dog into the classroom and the tenets of ANT which identifies all entities as having the capability to act or be acted on, I will better be able to understand how these interactions and relations impact the relational ecology of the exceptional student classroom.

Before analyzing the classroom as an ecology, we must first define it. Defining ecology is difficult in terms of how much emphasis one puts on the scientific tenets versus the political tenets. More specifically, one must ask themselves whether humankind belongs to nature, or if nature belongs to humankind (Latour, 2017)? Must we learn to conform to nature, or do we use nature's resources to benefit our cultural and societal beliefs and needs? It is therefore challenging to truly define ecology without leaning towards a scientific definition in which humans are a part of this world and must adhere to the workings of nature for longevity and survival, or a political definition in which we as humans have the right to utilize nature's resources to survive according to our wants and needs.

We need to redefine ecology and merge the scientific and political definitions into a cohesive one, understanding that ecology is neither strictly scientific nor is it solely political as Latour (2017) argues. In fact, nature is cultural construct, as according to Haraway (1989). According to Latour (2017), "Efforts have been made in the past to distinguish *scientific* ecology from *political* ecology, by assuming that the first is concerned only with the "natural world" and the second only with the moral, ideological, and political consequences that must be drawn-or not- from the first," (p. 34). These efforts do not however,

take into account the interrelationship between the two as we are culturally conditioned to differentiate and define what is nature (Haraway, 1989), nor does it consider that one cannot exist without the other. “Only if we place ourselves inside this world would we be able to recognize as one particular arrangement the choice of existents and their ways of connecting that we call Nature/Culture and that has served us as a long time to format our collective understanding,” (Latour, 2017, p. 36). It is therefore evident that one does not exist without implications of the other.

When addressing these concepts, politics and nature, Latour (1993, 2017) argues that they exist due to our human need to classify and argues that this must end. Latour’s (1993, 2017) arguments of ending the dichotomy between nature and politics and instead view them in terms of interdependence or as a collective, is what influences the theoretical framework for this case study. We, as humans, have a tendency to view ourselves as *distinguished from* nature, (Latour, 2017), rather than natural entities *within* nature. More specifically, as Latour (2017) states:

Every time we attempt to “bring humans closer to nature,” we are prevented from doing so by the objection that a human is above all, or is also, a cultural being who has to escape from, nature, or in any case *be distinguished from* nature. (p. 14)

Therefore, when we define ecology, we have a tendency to not be able to define nature without tying in a cultural component to guarantee ourselves, as humans, are *distinguished from* the nonliving entities of the natural world, maintaining anthropomorphic beliefs. Since we have acknowledged our inability as humans to accept ourselves as natural entities and instead, believe we are of relation to nature (Latour, 2017), we must better understand how to navigate through this world without disrupting the natural processes that take place within the networks of nature.

We as humans have a tendency to view ourselves at the center of the world, the most powerful living creature on earth. This concept, known as anthropocentrism “is a position that suggests that human beings are the central topic of conversation,” (Morris, 2015, p. 43). This anthropocentric view dates back to hundreds of years. Calarco (2008) states:

The human is distinguished from its others (animal, nature, childhood, infancy, madness, and so on) in as much as the human, through consciousness and self-awareness, is deemed to have more or less direct and transparent access to itself and the other and is able to maintain self-identity in encounters with the other. (p. 129)

As Calarco (2008) states, humans are above all other entities due to the ability to be self-aware and have a conscious. However, this statement is contradicted by findings that argue otherwise (Brosnan, 2003; Bekoff & Pierce, 2010; Despret, 2016; Haraway, 1989, Haraway, 2008; Pearson, 2013; & Rowland, 2008).

Latour (2017) brings up an excellent point when addressing the anthropocentric limits of ecology. Even if, in the context of a classroom for example, we tend to gravitate towards recognizing the students as the main agents and actors, and all the other entities as the actants. We are failing to recognize agency in its natural sense. “We can understand that it is not by adding the world “soul” to an agent that you are going to make it something more, nor by calling it inanimate are you going to make it something less, depriving it of its actions or its animation. Agents act!” (P. 172). Therefore, it is important to understand that all entities can be influenced to be subjected, or acted upon, and that agency is shared, where all entities possess equal opportunities for being subjected to and/or influencing other entities. We have to acknowledge the power of all agencies to act on other agents, regardless if they are human in nature or not. In regard to relational ecology, we must accept the presence of an animal, a therapy dog to be specific, as an equal agent to the students in terms of influencing the relational ecology of the exceptional student classroom. We must acknowledge that the dog can act as an actor or actant within the networks in which it relates, even though the dog is an unfamiliar presence in the classroom.

According to Latour (2017), we must look at nonhuman entities in terms of “actors” in addition to solely humans as “actors.” We can learn so much through our interactions with other nonhuman entities. According to Putney (2003):

The relationships between humans and companion animals function similarly to impactful and sustaining human relationships: they help inform and nurture an individual's sense of self and a

sense of social connectedness that may not otherwise be possible. Animals provide a kind of mirror whereby individuals can cultivate self-efficacy and accept their strengths and flaws. (p. 71)

By accepting “inanimate “actors”,” (Latour, 2017), we can then better understand the relationships between ourselves and other actors.

Having now a clearer understanding of the anthropocentric limits of ecology, we can better define the classroom as a relational ecology, acknowledging the codependence of human and nonhuman entities, as they relate and interact, therefore bridging the scientific and political aspects of ecology. By incorporating a therapy dog into the relational ecology of the exceptional student classroom, nature and species are interacting in an environment in which they have historically been separated within the confines of the classroom. The idea of mixing ecological communities can be very beneficial to the dynamics and workings of the exceptional student classroom. According to Hensley (2011):

One of the most important lessons from nature is the value of community. We can learn a lot from the interconnectivity that makes up a healthy ecosystem. The symbiotic (mutually beneficial) relationships in nature illustrate an important point. Life does not exist in a way that is fragmented and isolated, rather it is nurtured through an interdependent and dynamic interchange and exchange of food and waste. (p. 46)

It is important to note how impactful interdependent relations can be on student behaviors in the classroom, and by focusing on the relational ecology of the exceptional student classroom, this study differentiates itself from previous studies within the field of curriculum studies. Additionally, ecology is extremely significant within the curriculum studies field, hence the need for continuous exploration. According to Morris (2002), “An ecological paradigm recognizes our integration with the world and others,” (as cited in Hensely, 2011, p. 56). This idea of interconnectedness is imperative within the context of the exceptional student classroom due to the continuous engagement and interaction that is warranted through the learning and developmental process of students.

More specifically, it is important to note that ecology and interconnectedness is not limited to other beings (both human and nonhuman). As Morris (2001) demonstrates, “[e]cological doesn’t only

signify rats and snakes, etcetera, it also concerns our complex inter-relations with one another, with our everydayness and scholarly pursuits and the complex inter-relations of reading, writing, and thinking,” (as cited in Hensely, 2011, pp. 57-58). Within the context of this case study, the classroom is an ecology of interacting species with each other, with themselves, and with academic and social concepts in which they are immersed in as a part of their daily educational routine.

Without emphasizing, least of all acknowledging, the ecological significance within curriculum studies, specifically to this case study, we are unable to break down the implications of the interconnectedness within the context of the exceptional student classroom. According to Jardine (2001):

Ecology can also provide images of what it would mean to talk of the classroom as a real, living community, full of traces of the old and the young, the new and the established and the often difficult conversations between them. (p. 48)

Within the concept of relational ecology for the purposes of this case study, is to identify the classroom as an ecology of interacting and relating beings and species. As Haraway (1989) states, "An organism works by internal principles consequent upon its organization, not by external direction like a puppet," (p. 84). If we then acknowledge the classroom itself as a living and breathing entity, we are better able to determine the consequences or benefits of the relating beings and species within the ecology of the classroom, understanding that these workings may differ within the context of another ecology.

Research Design

In order to best assess the relational ecology of an exceptional student classroom through Actor-Network Theory, a mixed method, time-series, observational, case study was specifically designed to answer my research questions. Since I am currently employed as a high school self-contained exceptional student instructor, I conducted a time-series mixed methods case study on the networks formed within my own personal exceptional student classroom.

During the current 2018-2019 school year, I serve twenty students with exceptionalities that warrant specialized instruction on a modified curriculum outside of the general education setting (self-contained). I work with another exceptional student education instructor as well as two paraprofessionals

that help to support the unique and individualized needs of each student. The twenty students have diagnoses of the one of more of the following: Autism, Other Health Impairment, Mild Intellectual Disability, Moderate Intellectual Disability, Emotional and Behavioral Disorder, Speech and Language Deficit, Maple Syrup Urine Disease, Down Syndrome, Reactive Attachment Disorder, Oppositional Defiance Disorder, Attention Deficit Disorder, Attention Deficit Hyperactive Disorder, Fragile X Syndrome, and Post Traumatic Stress Disorder to name a few. While all students have at least one of these (Autism, Other Health Impairment, Mild Intellectual Disability, Moderate Intellectual Disability, Emotional and Behavioral Disorder), the majority of them have one or more of the other disorders listed above, which can create challenges in the classroom.

Due to the unique student makeup of my classroom and my research goals, a mixed methods case study best addressed my research questions outlined above, although it contributes to the tension between the curriculum theorists I drew upon and the quantitative aspect of my study. With the acknowledgement of this tension, the benefits of utilizing a mixed methods approach allowed for me to provide more evidence to address the implications that the nonhuman agent had on the relational ecology of the exceptional student classroom.

Case studies are a form of qualitative research that focus on a particular case. Historically, case studies have been relevant and resourceful in practice-oriented fields. Examples of practice-oriented fields are those such as education, management, public administration, and social work, just to name a few (Starman, 2013). "Qualitative case study methodology provides tools for researchers to study complex phenomena within their contexts," (Baxter & Jack, 2008, p. 544). In other words, a case study allows a researcher to further develop ideas about a particular case, person, group of people, or phenomena, making it an appropriate methodology for my study.

Case studies are a useful form of qualitative research when you want to answer how or why questions. It also enables one to discover possible contextual conditions related to a phenomenon (Baxter & Jack, 2008). Additionally, case studies "allows the researcher to explore individuals or organizations, simple through complex interventions, relationships, communities, or programs," (Yin, 2003, as cited in

Baxter & Jack, 2008, p. 544). In accordance to my research area of interest, a case study would therefore best help address how the presence of a nonhuman entity, Jackson, in a self-contained, exceptional student classroom, impacts the relational ecology of the classroom by studying relations and interactions. By aiming to get a clearer insight of the networks of relationships analyzed through ANT within my exceptional student classroom when Jackson is present, I can then identify the impact that those networks of relations have on student behaviors of interacting and relating.

Goals of case studies relate to answering questions such as how or why. Case studies allow for researchers to grasp a better understanding of their case, gain more knowledge of a case, or to determine how it may be influenced by various context. Case studies are unique in that there is no set method. The method in which to conduct a case study is up by the researcher and based on the research question which will determine the method and direction in which the case study will go (Starman, 2013). Since my study combines mixed methods and time-series observations, a case study will allow me to develop a methodology most appropriate for my research needs since there is no universal method within case studies. Specifics regarding participant consent, study populations, data collection and analysis techniques utilized, and safety measures are more specifically detailed in Chapter 3: METHODOLOGY.

Summary

There is a lot that can be gained from an expansion of research and literature within the field of curriculum studies under the ecology umbrella regarding human-animal relationships. Animals have feelings and emotions (Bekoff & Pierce, 2010), from which we might be able to learn from them. Animals have been shown to demonstrate empathy, fair play, cooperation, and companionship, many of the very traits that the students in the exceptional student classroom struggle with. Since our students learn a lot from modeling and observation, time spent interacting with and observing Jackson might translate onto themselves through their social networks of interactions.

Bekoff and Pierce (2010) demonstrated the likeliness between humans and animals in terms of emotionality. According to Rowland (2008); “Humans are the animals that believe the stories they tell about themselves. Humans are credulous animals.” (p. 2). Some of the “stories” that Rowland (2008) is

referring to, are the beliefs that humans are superior in that we have language, we have free will, have the ability to reason, and the ability to love (Rowland, 2008, p. 2), however, animals demonstrate many of these traits and characteristics as well (Bekoff and Pierce, 2010). By highlighting the likeness between humans and nonhuman entities, we are more fit to look at ecology through the perspective of actor-network theory and relational ecology within the context of this case study.

In order to assess the relational ecology of the exceptional student classroom through the tenets of ANT, it is important to define and understand specific terminology such as actor and actant, and the concepts of translation, symmetry, and power which are going to be explored and analyzed throughout this paper. The actor is the working entity (human or nonhuman) who influences other entities to either join or leave a network of relations. The actant on the other hand is the worked upon entity (human or nonhuman) that is influenced by an actor to join or leave a network of relations. Translation looks at the formation of networks between human and nonhuman actors. Translation demonstrates how change occurs. The concept of symmetry demonstrates the power of any entity (nonhuman or human), to exert power over another entity. This term is important within the context of this case study because it positions Jackson and students with an identical power to influence one another, regardless of being human versus nonhuman. Finally, power defines the strength of relations of networks. These concepts will better help to analyze the social networks formed and their implications on the relational ecology of the exceptional student classroom.

CHAPTER 2

REVIEW OF LITERATURE

Review of Literature: Ecology and Curriculum Studies

The review of literature explores ecology within the field of curriculum as well as studies on companion animals, and how the two can be integrated for the purpose of studying relational ecology within the exceptional student classroom when Jackson is incorporated. In order to best assess and analyze literature regarding ecology and curriculum, it is best to start at the beginning with Aristotle and naturalism, due to the fact that “Ecology has its deepest roots in naturalism and natural history,” (Morris, 2016, p. 129), touching then on the works of Darwin and Jean-Baptiste Lamarck whom identify the constant evolving of nature. From there I will progress to Florence Krall (1994) who explored the fluidity about ecology in terms of space, to Jardine’s (2000) focus on ecological communities and Hensley’s (2011) concept of eco-curriculum. Bower’s (2011) insight on ecological thinking will then be explored with highlights on interdependence. Finally, I will conclude with an analysis of studies conducted on relational ecology and therapy animals to demonstrates the benefits of when political and natural ecologies collide, and power dynamics shift from human superiority to an equal share of power between humans and nonhumans.

Upon analyzing the literature, I will more deeply explore the concept of relational ecology by first breaking down ANT as a theoretical framework in which I will position my research through, to give a better understanding of how my study directly relates to the human-animal bond in curriculum studies. I will begin by documenting and describing the origins and background of Actor-Network Theory, followed by how it can be applied within the context of a classroom, and then finally, how animals come into play within the tenets of this theory. This will provide a clear representation how relational ecology within the field of curriculum studies will be analyzed and interpreted. With an education system dominated by a "materialistic and atomistic worldview," (Gough, 1989, as cited in Hensley, 2011, p. 226),

the incorporation of Jackson as a student into the relational ecology of the classroom helps to diverge from this viewpoint.

Naturalism and Evolution

The literature review on ecology and curriculum studies will begin with Aristotle. Aristotle is known as one of the first naturalists, and therefore significant to mention in this review of literature. According to Brittain (2007), “As a natural historian, Aristotle covered many topics, but favoured zoology, writing extensively on animal life in various works, including *Historia Animalium*, an ambitious nine-volume account of many zoological phenomena, which encompassed everything from fascinating tales of animal behavior to graphic details of physiology,” (p. 24) as cited in Morris (2016, p. 129).

Aristotle’s (1883) *History of Animals*, as translated by Richard Creswell, provides an in-depth history of animals and classifies them through observation. The importance of this work is that Aristotle (1883) acknowledges similarities that animals share, while highlighting the differences. As Aristotle (1883) states:

All of the compound parts are also made up of simple parts, the hand, for example, of flesh, and sinew, and blood. Some animals have all these parts the same, in others they are different from each other,” (p. 1).

However, similarities can be found even if the parts are different, as Aristotle acknowledges (1883), “Man, and the bee, the wasp, and the ant, and the stork belong to this class. Some of these obey a leader, others are anarchical...” (p. 4). The acknowledgement of finding commonalities either in the physiological or social aspect of species links our similarities, as ANT proponents argue.

However, Aristotle’s (1883) classification of species does highlight the differences among them, even though similarities are identified. According to Gough (2009):

Modern science maintains clear distinctions between subject and object and, thus, between humans and other beings, plant and animal, living and non-living, and so on. These distinctions are sustained by the deliberate act of naming, which divides the world into that which is named and everything else. Naming is not just a matter of labelling distinctions that are already thought

to exist. Assigning a name to something constructs the illusion that what has been named is genuinely distinguishable from all else. In creating these distinctions, humans can all too easily lose sight of the seamlessness of that which is signified by their words and abstractions. (p. 78)

In other words, the classification of animals, or naming, could potentially position species against one another in terms of superiority, whereas the leading idea behind ANT in which Gough (2009) emphasizes is that these differences between species makes interconnectivity less visible.

It is also important to note that similarities and differences between species continually change, much like the continual evolving of networks of relations, known as translation, through ANT. With the concept of evolution comes Darwin and Jean-Baptiste Lamarck. “Like Darwin, Jean-Baptiste Lamarck understood that the natural world is always evolving,” (Morris, 2016, p. 131). Additionally, as Morris (2016) states, “Nature is- in some ways- beyond comprehension because everything is always evolving and changing,” (Morris, 2016, p. 131). The continual changing reflects the fluidity of our relations and networks that we form or break on a daily basis.

Ecological Communities and Eco-Curriculum

By understanding the fluidity of ecology and our relations (Krall, 1994), we can better understand the classroom as an ecology of interacting and relating species. When thinking about ecology and curriculum, Florence Krall was a pioneer in education and opened the doors for looking at the classroom as an ecology, or biological ecotone (1994). Ecotone represents the merging of the nature/political dichotomy into one that is described as a “webbing of gender, race, politics, economics, and spirituality that preoccupies wayfaring humans on this planet,” (Krall, 1994, p. 6). More specifically, Krall (1994) defines ecotone as, “That place of crossing over, provides sanctuary, solitude and peace, growth and transformation, as well as isolation and inner or outer conflict,” (p. 6). While in definition, an ecotone is a friction of two ecologies merging together, I argue that the merge can be successful and therefor create a fluid ecology of interacting entities.

Krall (1994) has allowed us to see the boundaries of places as fluid and not concrete, as inside and outside influences impact the ecology within the parameters of that boundary. This very fluidity or

merging of boundaries provide the most abundant ecologies. As Krall (1994) states, “In the natural world, edges where differences come together are the richest of habitats,” (p. 4). The classroom can therefore be seen as an ecology in which learning is fluid in that it is not necessarily defined within the confines of the classroom.

However, within the fluidity of the ecology in which boundaries are merged, we are "caught in a web that wasn't entirely our making," (Krall, 1994, p. 204), meaning that the invisible restraints placed within the context of the ecology by the institution that is the public-school system still defines the ecology, from which we are trying to break out of that mold. Furthermore, as Gough and Gough (in press) state regarding ecology in the broader sense of environmental education in that, “...it does not neatly fit into any traditional subject areas of the curriculum, and its interdisciplinary or multidisciplinary nature has meant that it has often been marginalized in traditional schooling as a result,” (p. 1).

While marginalized, ecology is extremely important within the contexts of curriculum studies. According to Jardine (2000):

Ecology can also provide images of what it would mean to talk of the classroom as a real, living community, full of traces of the old and the young, the new and the established and the often difficult conversations between them. (p. 48)

In addition, if we are to look at the classroom as an ecological setting, there is almost a contradiction in what we are currently seeing as educators in the classroom. More specifically, as Jardine (2000) states:

It is fascinating to consider how, in these ecological desperate days, just as ecology is heralding the need for a continuity of attention and devotion, our schools are, in so many cases, full of attention deficits (itself a wonderfully co-opted marketing term along with its dark twin, “paying attention”). This is coupled with a sort of hyperactivity that precludes the slowing of pace and the broadening of attention to relations and interdependencies that love and devotion to a place require of us. (p. 49)

Jardine’s (2000) statement links to relational ecology. By allowing these open interactions between ALL species in the classroom, and the understanding that ALL entities play an equal role of

influencing one another through interactions and relations), the students may benefit from their interactions Jackson and improve these impulsive behaviors mentioned such as distraction and hyperactivity. The implications of these relations and interactions can therefore impact student behavior based on how the individual agents interpret these relations. Afterall, as Gough and Robottom (1993), “Knowledge is seen as constructed through social interaction and thus as historically, culturally, politically and economically located...” (p. 305).

Therefore, there needs to be a shift in in curriculum, one that acknowledges both the presence and importance of ecology within the classroom. Hensley (2011) argues for an eco-curriculum shift.

According to Hensley (2011):

An eco-curriculum for sustainability embraces the kind of educational experiences that foster a greater sense of place within a more complicated, participatory, and democratic framework. An eco-curriculum has evolved as a form of education that responds to the need to understand and preserve the ecological complexities that help maintain and restore biospheric wellness. (p. 1)

The idea of an eco-curriculum relates to Jardine’s (2001) concept of viewing the classroom as a living community. If we view the classroom as an ecological place, there is a greater sense of place and community as Hensley (2011) argues above. A greater sense of place and community may help for exceptional students feel more comfortable and in turn, improve their social interactions with others. However, there are challenges. A “‘materialistic and atomistic worldview’ still dominates ‘formal education in Western Society,’” (N. Gough, 1989, as cited in Hensley, 2011, p. 226).

Despite that, it is important that we continue to move towards curriculum in a more environmental way. Pinar (2007) stresses the importance of doing just that. According to Hensley (2011), education historically has been “anthropocentrically oriented,” (p. 45), and as Pinar (2007) states:

Appreciating that the biosphere subtends the species on whose behalf we must now conduct our educational labor... [requires] subjectivity expansive enough to welcome what is foreign, including the non-human. (as cited in Hensley, 2011, p. 45)

The idea of breaking away from the anthropocentric views that the field of education has historically placed themselves in follows the tenets of ANT. In order to continue to move towards a more environmental or eco-curriculum (Hensley, 2011). By letting go anthropocentric views, we can identify how similar we are to animals in terms of traits that were once solely thought to belong to human beings.

Ecological Thinking

Not only is it important to view the classroom in terms of an ecological community which is fluid, it is also essential to focus on ecological thinking (Bowers, 2011) within the ecological community of our schools. According to Bowers (2011):

Ecological intelligence takes into account the interacting patterns, ranging from how behaviors ripple through the field of social relationships in ways that introduce changes that are ignored by non-ecological thinking, to how an individual's actions introduce changes in the energy flows and alter the patterns of interdependence within natural systems. (p. 4)

Essentially, as according to Bowers (2011), the understanding of how interactions impact and alter relational patterns further demonstrates how interacting entities within an ecological community can have implications on the environment, or rather, the relational ecology through ANT's concept of symmetry. By analyzing social networks and student behaviors, we are utilizing the concept of ecological thinking to assess and interpret the relational ecology of the exceptional student classroom. Additionally, it allows us to analyze these changes in terms of social networks being formed, and which interacting patterns contribute to the translation and power of these very networks.

Merge to ANT and Current Studies (Natural World as Interdependent)

With the perspective that nature is constantly evolving, we must also acknowledge the interdependence of living and nonliving entities within nature. Looking at the classroom environment through an ecological lens, or more specifically a relational ecological lens through actor-network theory, we can analyze the interdependence between human and nonhuman entities by analyzing the interactions and relations between exceptional students and Jackson in the environment of the exceptional student classroom.

Using actor-network theory, I aim to bring a naturalist approach back to ecology within curriculum studies through the use of rich field notes describing the habitat of the exceptional student classroom. According to Dayton, Dayton, and Greene (2011), as cited in Morris (2016):

The “art” of describing the natural world is rarely taught in contemporary ecology, now often characterized by brief, concise reports of highly focused tests. There is much to be learned from the early naturalists about perceiving details in nature and keeping meticulous records of observations, and it is important that our educational system recover the tradition of experiencing nature firsthand. (p. 134)

By incorporating a therapy animal into the exceptional student classroom and acknowledging the students and Jackson as equal entities under actor-network theory, we are bringing back experiencing nature firsthand in that I am studying the interactions in their natural, school habitat through the premise of relational ecology. This merging of ecologies demonstrated our interdependence with nature as I analyzed how the students benefited from the presence and their interactions with Jackson.

In order to analyze the literature that focuses on relational ecology, it is best to further break the concept of relational ecology down more specifically to peer and social ecologies, keeping in mind that these definitions are political rather than natural, and fall outside of curriculum studies. However, the information provided can be situated within the realm of curriculum studies as they relate to interactions and relations within a political ecology that currently drives our education system today in terms of social ideology and culturally defined expectations. Seven out of the eight articles I chose to focus on investigated the peer/social ecologies of the classroom and how it related to behavior, while one study investigated the relational ecology of two schools regarding the impacts that restorative practices had on the schools’ dynamics (see Appendix A, Studies Investigating Relational Ecology). Themes that emerged from my findings were how teachers influenced the social dynamics of the classroom (Brendgen & Troop-Gordon, 2014; & Hendricks et al., 2016), classrooms with a positive social climate nurtured better peer relations and change (Ahn, 2011; Brown, 2015; Serdiouk et al., 2013; & Yudron, 2015), and classrooms with high prosocial norms fosters inclusion (Mehtaji, 2015; & Kontos et al., 1998).

Teachers' Influence on Social Ecologies in the Classroom

A review of the literature demonstrated the impacts that a teacher has on the social ecology of the school and classroom (Brendgen & Troop-Gordon, 2014; Hendrickx et al., 2016). Brendgen and Troop-Gordon (2014) investigated the social ecologies in the classroom to determine which contextual features within schools heighten or minimize incidents of bullying and aggression. According to their findings, it was reported that peer victimization was directly impacted by the classroom peer ecology and teacher behavior. Teachers' with perceived control of bullying and aggression had lower victimization rates in their classrooms. Student perceptions of teachers' bullying beliefs additionally impacted the peer ecology of the classroom.

Additionally, Hendrickx et al. (2016) studied the relationships between teacher behavior and peer relations and investigated how the teacher shapes the peer ecology of the classroom. After studying fifty-eight 5th grade Dutch classrooms, findings showed a positive relationship between teacher support and peer relations. More specifically, it was reported that the more supportive the teacher was, the more the students demonstrated positive attributions to their peers. Teacher support promoted a more positive peer social ecology than when teacher conflict was noted and observed.

Positive Social Climates Fosters Growth and Change

Within the school setting, when there is trust among students and teachers, students and students, and students and other school personnel, it fosters a warm relational ecology in which change and growth can be made. However, when that relational ecology shifts into a negative one, where relationships lack trust or there is fear, adverse behaviors are more likely to be demonstrated and acted out (Brown, 2015).

Brown (2015) studied the relational ecology of two urban middle schools who were undergoing school-wide restorative practices and noted the interrelatedness between relational ecology and change. A school that has a positive relational ecology in which trust is valued and displayed, restorative practices were more successful which demonstrated the direct effect that relational ecology has on behavior and change, which is crucial to understand within the school setting.

Additionally, classroom ecologies are essential in fostering prosocial behaviors or adverse behaviors such as peer victimization and aggression. According to Ahn (2011), in a study of forty-six 4th-5th grade classrooms, it was evident that there is a positive relationship between perceived aggression and popularity. Those students who were perceived as aggressive, grew in popularity overtime, signifying a climate that is anti-prosocial. However, also noted, this was reported in classrooms where friendship density was low. Classes that fostered higher friendship density and valued prosocial behaviors noted a decrease in popularity for students perceived as aggressive. This is important in that it demonstrates how classroom ecologies help to shape peer relations and peer perceptions overtime.

The social ecology of the classroom directly impacts student relations. Findings show that there is a direct relationship between peer rejection and victimization (Serdiouk et al., 2011 & Yudron, 2015). Serdiouk et al. (2011) examined how classroom peer ecologies and teaching practices may prevent or foster peer rejection, which may later lead to lower academic achievement, depression, and school avoidance. In a year-long study of fifty-four elementary schools, it was found that victimization was higher in classrooms with higher levels of peer rejection. These findings were higher in classrooms that did not promote peer diversity or acceptance, which demonstrates how a teachers' actions and motives can adversely impact the social ecology and peer ecology within the context of an elementary school classroom. Similarly, a study by Yudron (2011) found that preschool classrooms that had a more positive emotional climate produced higher social competence among its students. Students in the classroom with a high positive emotional climate demonstrated more social competence through their externalization of behavior, which in turn decreased the number of peer rejections.

Classrooms with High Prosocial Norms Foster Inclusion

For students with disabilities, social norms can be a challenge as some lack basic social skills. Due to this, the risk of peer rejection tends to be higher for students with disabilities in an inclusive setting than their nondisabled peers. Mehtaji (2003) investigated how the peer ecology and natural social dynamics of the classroom contributed to the social experiences of students with disabilities. After studying fifty 5th grade elementary classes, Mehtaji (2003) noted that students with disabilities felt more

inclusive and welcome in classrooms with high academic and prosocial norms. In other words, classroom ecologies that fostered positive climates of inclusion, caring, and empathy, accepted students with disabilities, which therefore allowed students with disabilities to have more positive classroom experiences.

In research conducted by Kontos et al. (1998) on the ecology of experiences that children with disabilities have during inclusive free play in comparison to children without disabilities did not show any significant differences between the ecologies of experiences between the two groups of students. I am curious if the findings are a result of a social ecology that promotes prosocial norms of inclusion and acceptance since the forty elementary students studied reported similar ecologies of experiences as their nondisabled peers.

ANT and Relational Ecology

As the review of literature on social and peer ecologies demonstrate the impact that relations and interactions have not only on the power dynamics of the environment in which they are studied, but the relational ecology as well, it is clear how the ecology of the classroom directly impacts students' perceptions and experiences. Prosocial and adverse behaviors are therefore a result of the ecology of the classroom, whether it be a result of the teachers' behaviors or behaviors of the students.

Looking specifically at the tenets of ANT, in particular 'symmetry,' (Latour, 1987), one can justify Jackson as a peer within the context of the exceptional student classroom. If one looks at a review of literature on the impacts of therapy dogs/companion animals and humans, one can gain a better understanding as to the potential positive implications that Jackson would have on the relational ecology of the exceptional student classroom through ANT.

According to Salk (1986), "the social world cannot exist on one side and the scientific world on the other because the scientific realm is merely the end result of many other operations that are in the social realm," (p.13). The following section in turn looks at a review of literature on therapy animals, combining both the social and the natural world. This review of literature will provide an insight as to

potential implications of what may happen when the classroom ecology breaks away from anthropocentric views by accepting an animal as a student.

Impacts of Therapy Dogs/Companion Animals on Human Health

A review of forty-two literature articles on animal studies, as shown in Appendix B, *Studies Investigating the Impacts of Therapy Dogs/Animal-Assisted Therapy*, instrumental positive impacts that animals have on human behavior and health, as evidenced through animal-assisted therapy and therapy dogs in schools. According to the review of literature, animals tend to have a profound positive effect on one's health, which demonstrates the positive implications that can occur when one moves away from anthropocentric views and realizes the importance of the interdependent relations that humans form with nonhuman entities. While the following review of literature highlights benefits that do not fall under the curriculum studies branch, they do however demonstrate the positive implications of what happens when an animal is integrated into the classroom ecology, which in turn can impact relational ecology. When the power dynamics shifted, positive health impacts noted were reduced blood pressure (Allen et al., 2002; Anderson et al., 1992; Baun et al., 1984; Breslford et al., 2017; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Vormbrock & Grossberg, 1988) and reduced heart rate (Allen et al., 2002; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Somervill et al., 2009; Vormbrock & Grossberg, 1988; & Walsh et al., 1995). Among these studies, the population studied ranged from students, to married couples, to elderly patients. In all of the studies, there was a reduction in either and or both, one's blood pressure and one's heart rate, insinuating the calming effects that animals have on humans when ecologies are fluid to include the natural and the political.

Of particular interest were the studies conducted in a school setting or on children with disabilities in particular, as it applies to the environment and human population in which my case study researches. Freisen (2009) studied the benefits of animal-assisted therapy on students and found that the therapy dogs lowered not only blood pressure and heart rate during reading activities, but the impacts also transferred to behavior and emotional benefits, as well as an increased alertness and concentration during school-related activities. Somervill et al. (2009) investigated the physiological effects of testing sessions with

both the presence and absence of a dog on seventeen children with ADHD. Somervill et al. (2009) reported that while there was an increase in blood pressure when the children did handle a dog initially, there was a decrease in heart rate. This data insinuates that while the children may have initially gotten excited at the time of the initial interaction with the therapy dog, overtime, calming effects were evident based upon the interaction due to the decrease in their heart rates. The calming effects that the nonhuman entity had on the human entities demonstrates the significance of acknowledging the importance of human and nonhuman interdependent relations.

In addition to a reduction in blood pressure and heart rate, studies show that animals can potentially reduce one's stress and anxiety levels (Allen et al., 2002; Barker & Dawson, 1998; Beck, 2015; Breslford et al., 2015; Chandler, 2001; Friesen, 2009; Geist, 2011; Hansen et al., 1999; & Nagengast et al., 1997). Barker & Dawson (1998) investigated differences in anxiety levels on adult psychiatric patients after a dog-assisted therapy session versus a recreational therapy session. It was found that dog-assisted therapy resulted in reduced anxiety levels for patients with all types of disorders, whereas the non-animal-assisted session resulted in lower anxiety rates only for patients with mood disorders. This is significant because the sample size of the study consisted of two-hundred and thirty patients, all with various disorders, and demonstrated how anxiety levels were reduced across all different disabilities through the interdependent relations that were formed between the human and nonhuman entities within these studies.

Geist (2011) studied the impacts of an animal-assisted therapy intervention program implemented in an Emotional Support Program in a K-12 setting. It was found that the therapy dogs offered temporary healing, improved positive comments, decreased student distractibility, increased in students' ability to make eye contact, and improved appropriateness of tone. Students also showed an increase in self-control, improved attendance, decreased stress levels, and greater self-awareness. It is evident that the therapy dogs had an overall positive impact not only physiologically, but socioemotionally and behaviorally as well, therefore can be argued that the relational ecology within the environments in which these studies were conducted improved as well.

Both Hansen et al. (1999) and Nagengast et al. (1997) investigated the impacts that a therapy dog would have on children during a potential time of stress, which in both cases was a physical examination. In both studies, the presence of the therapy dog calmed the students as their stress levels were reported to be lower than the control group that did not have a therapy dog present during the examination. Additionally, Sanford (2014) analyzed the impacts that therapy dogs have on collegiate students as a therapy dog program was created as an alternate to counseling was piloted at Bowdoin College. Sanford (2014) found that the therapy dogs decreased symptoms of depression, decreased feelings of anxiety, and there was an overall positive experience for the patients.

Improvement in Prosocial Behaviors

Vidovic et al. (1999) compared the socioemotional development of children who were pet owners versus children that did not own pets. They found that children who owned pets were more likely to be empathetic and demonstrated more prosocial behaviors than the children who did not own pets. Prosocial behaviors are behaviors that exhibit an invested interest in the well-being of others, such as caring and generosity (Eisenberg & Mussen, 1989).

According to the review of literature, animals had a positive impact on prosocial behaviors as evident by an increase in empathy (Anderson & Olson, 2006; Daly & Suggs, 2010; Hergovich et al., 2002; Tissen et al., 2007; & Vidovic et al., 1999), improvement in socioemotional development such as improvement in mood and well-being (Anderson & Olson, 2006; Bass et al., 2009; Beck, 2015; Chandler, 2001; Daly & Suggs, 2010; Geist, 2011; Grandgeorge et al., 2012; Haughie et al., 1992; Kelly & Cozzolino, 2014; Kotrschal & Ortbauer, 2003; Putney, 2013; Sanford, 2014; Schuck et al., 2015; Stevenson et al., 2015; Tissen et al., 2007; & Wodder, 2014), and a decrease in aggression (Anderson & Olson, 2006; Chandler, 2001; Hergovich et al., 2002; Kotrschal & Ortbauer, 2003; & Tissen et al., 2007).

These results are profound in that it demonstrates that nonhuman agents, specifically dogs, can offer intrinsic support to a range of struggling students, whereas other common interventions such as applied behavioral analysis and positive behavior intervention rely on extrinsic manipulation of reinforcers. After all, as Beck (2015) reported, therapy dogs generally have a calming effect on students

resulting in improvements both behaviorally and academically, according to their research on the impacts of therapy dogs on students.

In a study done by Anderson and Olson (2006), they investigated the emotional and academic impacts of a therapy dog incorporated into an elementary self-contained exceptional student classroom for students with diagnosed emotional behavioral disorders. Anderson and Olson (2006) found that the therapy dog had overall positive emotional impacts on the students, as they reported a decrease in the number of aggressive occurrences. In addition, the students showed an increase in emotional stability, and an increase in levels of personal responsibility, empathy, and respect.

Hergovich et al. (2002) also found overall positive effects, in particular a decrease in aggression and an increase in independence and empathy for first graders who had a therapy dog in their classrooms. Kotrschal and Ortbauer (2003) additionally reported similar findings after studying changes in elementary children's behaviors after a therapy dog was implemented into their classroom, and reported decreases in aggression, withdrawal, and hyperactivity, and an increase in socialization skills when the dog was present. Schuck et al. (2015) also reported decreases in hyperactivity symptoms on children with ADHD, as well as improvements in social skills and prosocial behaviors, while Tissen et al. (2007) noted decreases in aggression and increases in prosocial behaviors and social skills among the two hundred and thirty third grade students that were studied.

In a school setting, children with Autism typically struggle the most with socializing appropriately among their peers. According to *Autism Speaks*, most children who develop autism struggle with daily human interactions, and struggle with basic social skills such as interpreting social situations, and often play alone. Grandgeorge et al. (2016) studied the association between pet and prosocial behaviors in two hundred and sixty individuals with autism and found that after the individuals pet the dog or interacted with the therapy dog, they showed an improvement in prosocial behaviors such as offering comfort and offering to share.

Stevenson et al. (2015) also investigated the social impacts that a therapy dog would have on students with autism and found that the students who had therapy sessions with a therapy dog showed

greater improvement in interactive play, an increase in socialization, and a decrease in sensory behaviors. This data is really important as it demonstrates how a therapy dog can positively impact the social relational ecology of the classroom environment for students with autism.

Even though not collected in a school setting, data collected by Kelly and Cozzolino (2014) is still relevant in that they demonstrated the positive results from animal-assisted therapy on at-risk students. The eight-week animal-assisted therapy program was part of a residential/outpatient program. Kelly and Cozzolino (2014) found that after the eight-week program, the youths who participated in animal-assisted therapy had a greater sense of responsibility and accountability for their actions, showed improvements in self-control and impulse control, improved their social skills and interpersonal awareness, and also demonstrated decreases in depressive symptoms.

While studying the perceptions of staff and therapy dogs or pets in schools, similar results of positive prosocial behaviors were reported. Daly and Suggs (2010) studied the experiences and attitudes of seventy-five elementary school teachers regarding the use of pets in their classrooms. The teachers reported positive feelings of pets in the classroom as they increased empathy among their students and increased their students' socioemotional development. Wodder (2014) reported similar findings in the staff who served students with autism who perceived that the students' behaviors had improved, in particular their social skills and overall emotional functioning due to the presence of a therapy dog.

Improvement in Academics and Feelings Towards School

Positive benefits on health and well-being are not the only impacts that animals have on humans. Studies report how animals have the potential to improve concentration and attentiveness (Bass et al., 2009; Bassette & Taber-Doughty, 2013; Chandler, 2001; Friesen, 2009; Gee et al., 2010; Geist, 2011; Heimlich, 2001; Kotrschal & Ortbauer, 2003; Martin & Farnum, 2002; & Schuck et al., 2015), academic achievement (Bassette & Taber-Doughty, 2013; Bassette & Taber-Doughty, 2016; Beck, 2015; DeNisco, 2016; Kirman et al., 2015; & Scheckler, 2017), and improve attitudes towards school (Beetz et al., 2013; Chandler, 2001; DeNisco, 2016; Friesen, 2009; & Geist, 2011).

The concept that an animal, in particular a dog, can help students focus, concentrate, and show an improvement in academics just by being present is pretty amazing. There is a lot of data and research to support this concept. Bassette and Taber-Doughty (2013) conducted a study that investigated the impacts of dog reading visitation programs. Bassette and Taber-Doughty (2013) conducted this study on students with emotional and behavioral disorders. In the study Bassette and Taber-Doughty conducted in (2013), they reported improvements in on-task behaviors and an increased confidence in reading when reading to the dog. While not significant for the older students, Kirnan et al. (2015) also found improvements in reading fluency, accuracy, and comprehension for younger students when they read to a therapy dog versus when they read independently.

In addition to academic improvements, namely in reading, overall improvement in concentration and alertness due to a therapy dog present in the classroom can have a positive impact on the access of education children are receiving. Gee et al. (2010) studied memory recall on preschoolers and noted that the preschoolers required fewer instructional prompts when in the presence of a dog, and ironically, required an increase in instructional prompts while in the presence of a human. Results from Gee et al. (2010) were comparable to data Heimlich (2001) collected on behavioral outcomes after children participated in therapy dog interventions. Heimlich (2001) reported that the children demonstrated an increase in attention span when the therapy dog was present. Martin and Farnum (2002) further demonstrates validity in this emergence of data when they reported children were more focused and aware of their social environments when they were in the presence of a therapy dog as opposed to being less focused and more distracted when the dog was absent. Friesen (2009) additionally reported positive attitudes regarding school, and increased alertness when in the presence of a dog.

Theoretical Framework: Actor-Network Theory

The studies interpreted above demonstrate the positive influence that therapy dogs had on humans. With the many benefits through the human and therapy dog interactions as evidenced above, one can utilize the theoretical perspective of Actor-Network Theory to further understand those findings in terms of the implications between human and nonhuman interactions. Actor-Network Theory (ANT),

coined by Michael Callon in 1982, is relatively new theory with its origins beginning approximately between 1978-1982 (Law, 2007). ANT will better help us to study and analyze the relational ecology of the exceptional student classroom between a nonhuman and human agents. ANT “is not ‘applied’ like a theoretical technology, but is more like a sensibility, a way to sense and draw (nearer) to a phenomenon,” (Fenwick & Edwards, 2017, p. IX). In other words, it identifies relationships that are simultaneously material, meaning between things, and semiotic, meaning between concepts. As Law (2007) states, “It assumes that nothing has reality or form outside the enactment of those relations,” (p. 1) and focuses more on ontology (Fenwick & Edwards, 2007). According to Fenwick and Edwards (2007):

The objective is to understand how these things come together-and manage to hold together-to assemble collectives or ‘networks’ that produce force and other effects: knowledge, identities, routines, behaviours, policies, curricula, innovations, oppressions, reforms, illnesses, and on and on. (p. x).

Within the context of the exceptional student classroom, there are a lot of relationships formed between my students and nonhuman entities, such as assistive technology devices, behavior plans, school rules, computers, calendars, schedules, and timers, just to name a few. It is their relationships with these entities in which has effects on the students in terms of their behaviors, interactions, and relations, not only with the entity in speaking, but with their peers as well.

This will be particularly interesting to study within the context of a high school exceptional student classroom where the students interact with one another, themselves, their teachers, and Jackson, while abiding by (or attempting to abide by) classroom rules and expectations. The question there in turn is what effects on the relational ecology of the exceptional student classroom, if any, will be seen through ANT? What implications do these networks of relating and interacting have on student behavior? Do some networks bring forth oppressive behavioral patterns while some produce empowering behavioral patterns of interacting and relating? Additionally, what can ANT tell us about the fluidity of relationships and interacting?

More ontological in nature, “Actor-Network Theory is a disparate (different) family of material-semiotic tools, sensibilities and methods of analysis that treat everything in social and natural worlds as a continuously generated effect of the webs of relations within which they are located,” (Law, 2007, p. 1). ANT is unique in the sense that it does treat both human and nonhuman entities as one, as it studies relationality and productivity among those entities. This process, known as symmetry, therefore asserts “that all events and entities (both human and nonhuman) are potential agents and should be treated in equivalent ways within an analysis,” (Hamilton, 2012, p. 41). This is crucial for the context of my case study where Jackson is to be incorporated into the classroom not only as a support for students with special needs, but as a peer.

In order to best understand the workings of ANT, one must understand common terminology used within this framework. In ANT, there are actors and actants that form networks, or “an assemblage or gathering of materials brought together and linked through processes of translation...” (Fenwick & Edwards, 2012, p. xiii). Fenwick and Edwards (2012) define actor as “the working entity (p. xii) and actant as “the worked upon entity,” (p. xii). Latour (1999) further explains the relationship between the actor and the actant as, “When the actant becomes translated to become a performing part of the network, the actant behaves with what appears to be particular intentions, morals, even consciousness and subjectivity,” (as cited in Fenwick & Edwards, 2012, p. xii). In other words, once translation occurs, or the forming of a network, the actant then has the potential to become the actor. It will be interesting to see how different networks form within the exceptional student classroom, and if there is a pattern between certain students or Jackson as being primarily the actors, acting upon other students in the classroom.

Application of ANT in the Classroom

ANT looks at the characteristics of the webs, how they are formed, and what continues to form and develop them. There are several tenets of ANT in which I am particularly interested in focusing on for this case study that will better help uncover the relational ecology of the exceptional student classroom through the analysis of student interactions and relations. In particular, translation, symmetry, and power,

are components of ANT in which I aim to focus on as I identify and analyze the ever-changing and evolving networks of relations within the exceptional student classroom.

Translation is key in that it demonstrates how change occurs, which is crucial when one analyzes the formation and breakdowns of links and relationships. Translation looks at the formation of networks between human and nonhuman actors. More specifically, according to Fenwick and Edwards (2012), translation describes “what happens when entities, human and nonhuman, come together and connect, changing one other to form links,” (p. xii). Translation therefore demonstrates the power that one entity (human or nonhuman) has on another as it translates it or changes it to fit within the network. The entity that demonstrates the power over another entity is known as the actor while the changing entity is referred to as the actant. According to Fenwick (2012), translation allows us to better understand “how an entity, human or nonhuman, becomes selected, enticed, persuaded and partially or fully changed in ways that mobilize it to join the network’s movements,” (p. 100). Of particular interest would be to analyze under what context does translation most often occur within the classroom (i.e. small group work, free time, partnered work), if a particular student or students (Jackson to be considered within this group as he will be an active classroom participant) have a pattern of being actors or actants, and if some students have patterns of being the actor on some students but the actant with others in terms of their interactions and relationships.

Symmetry, termed by Latour (1987), is another key component to ANT and this study in that it places human and nonhumans on the same playing field, where one does not have more power than the other. In fact, as Fenwick and Edwards (2012) state:

Everyday objects and parts of objects, memories, intentions, technologies, bacteria, texts, furniture, bodies, chemicals, plants... all things are assumed to be capable of exerting force and joining together changing and being changed by each other. (p. x)

Symmetry is crucial because it shows an understanding of the potential power that all entities have on influencing behavior and interactions showing that “the human and physical worlds are elaborately intertwined and cannot be analyzed separate from each other,” (Edwards, 2012, p. 27).

This concept of symmetry will play a crucial role in this time-series observational case study as Jackson is to be incorporated into the ecology of the classroom who will participate in the formation of relationships and interactions just as the students. By understanding Jackson as an equal force of influence and power, like any of the other students, we can better determine the strength and implications that Jackson may have on the relational ecology of the classroom. Even though Jackson is identified as a student, it is used as a metaphor to represent his role in the classroom in terms of having equal agency to influence the classroom ecology.

Another common tenet in ANT is power, which I believe will be extremely important as I define various networks formed in the classroom and compare the networks to behaviors observed during those times of interactions. As Fenwick and Edwards (2012) define, “Power is central to any understanding of space and context as produced through networks of socio-material relations,” (p. xiv). In other words, ANT can help track how certain networks solidify or enhance relations of power. Power can therefore tell us a lot about classroom dynamics and which networks are powerful in eliciting oppressive patterns of behaviors versus those networks that elicit powerful patterns of empowering behaviors of interacting.

Overall, ANT’s perspective of the world is that “all objects, as well as all persons, knowledge and locations, are relational effects,” (Fenwick and Edwards, 2012, xv). All of the interactions and relating of all of the human and nonhuman entities within the exceptional student classroom, with a particular focus on the students and Jackson, can better help us understand the relational ecology of the exceptional student classroom. More specifically, relational ecology binds together the physiological and psychological aspects in which to analyze the relationships between humans and organisms in the context of the environments in which they share (Putney, 2013). Specifically, Putney (2013) outlines relational ecology as the following:

It is a term that bridges developmental theory (growth-task) ... anthropology (the concept of liminal spaces) with the science of ecology, which investigates the human and non-human worlds with a particular focus on dynamic relationships between organisms and/or species, and their environment. (p. 68)

In the context of this case study, the “dynamic relationships between organisms and/or species” will be defined as the relationships between the students and Jackson within the context of the exceptional student classroom as the environment in which their interactions and relations will be observed and documented through ANT.

Animals as Meaningful Agents

As Latour states, (1993), “Nature and society are not two distinct poles, but one and the same production of successive states of societies, natures, of collectives,” (as cited in Pearson, 2013, pp. 131-132). Yet, many humans hold the notion of their superiority due to language and the ability to rationalize. This mindset adds to the anthropocentric limit of understanding ecology. Morris (2016) defines the terms of anthropomorphism and speciesism as the following:

Anthropomorphism is a position that suggests that human beings are the central topic of conversation. Speciesism is the assumption that human beings are better than any other species based on the fallacy that we have reason and other nonhuman animals do not. (43)

According to Ingold, “Animals act as conscious, intentional agents, much as we do; that is, their actions are directed by *practical* consciousness,” (as cited in Pearson, 2013, p. 134). Pearson (2013) defines agency as, “the ability to think and act independently and follow free will...” (p. 133). In other words, agency and therefore intentionality go hand in hand. Therefore, animals are agents in that they are able to “direct their own activities,” (Pearson, 2013, p. 135), which symbolizes rationality and intentionality. Latour (2004) further demonstrates the power that nonhuman entities have on agency in that they are equally capable of transmitting ideas and therefore have the power to make changes. However, it is important to note that agency can differ between species as in addition to within species.

Pearson (2013), reiterates this point by stating that, “animals become agents when they enable or thwart activities, thereby partly shaping society and history,” (p. 134). Furthermore, as Hill (2013) states, “the actions of animals play a fundamental role in shaping of integrated histories, cultures, and ontologies of foraging societies,” (as cited in Bekoff & Pierce, 2010, p. 89). Our relationships with animals go back as far as we can date back to our existence. It is through different contexts in which the relationships are

formed that shapes the meaning behind these given human-animal relationships. These relationships make it difficult not to acknowledge animals as agents, as they have impacted our well-being and to some extent shaped our lives throughout the history of time.

If one looks at the history of human-animal interactions through foraging communities, “Animals have the potential for a spirit or soul that is intrinsically identical to that of humans and are viewed as persons “endowed with the same set of cognitive and volitional capacities,” (Betts, Hardenberg, & Stirling, 2015 p. 91). This statement likens animals to human in a way that equalizes the two. Not one is superior than the other because both have souls and the ability to think or rationalize. These characteristic traits debunk the idea of human superiority due to humans’ ability to rationalize, as it acknowledges the power of animals to also hold cognitive capacities.

Additionally, while looking at American history on the Western front, Pearson (2013) acknowledges the important role that animals, dogs specifically, played in shaping the well-being of their lives. Pearson (2013):

The dogs were not purposeless objects that were simply manipulated by human intelligence.

Instead, they were agents who were unwittingly drawn into the conflict, but whose abilities and characteristics allowed them to perform varied and skilled work in conjunction with human animals. (p. 129).

Note how Pearson (2013) defines the role and jobs that the dogs played as “in conjunction with human animals,” (p. 129), rather than *for* humans, and identifies them as agents. By aligning dogs with humans, it likens the similarities between the two entities.

When looking at relational ecology and actor-network theory, we are further able to liken humans and nonhumans in terms of agency by studying students and their relationships and interactions with Jackson in the exceptional student classroom. It is therefore understood that Jackson plays an equal role into shaping the relational ecology of the exceptional student classroom as do the students do, despite psychological or physiological differences. In fact, I believe that animals have the potential to shape our actions and social world more so than we believe to be true, and argue that they are as just, rational, and

have the ability to communicate as much as we do, therefore making them meaningful and purposeful agents within the relational ecology of the exceptional student classroom.

Animals as Rational Agents

As mentioned earlier, it is often thought that humans are superior due to their ability to rationalize and communicate. However, as according to Betts et al. (2015), animals have the same capacity to think and therefore rationalize, just as humans do. An example of animals acting as rational beings can be seen in research done by Brosnan (2003).

Brosnan (2003) conducted an experiment on female capuchin monkeys. Within this (2003) study, the monkeys were given slices of cucumbers in exchange for a cooperative act. However, Brosnan (2003) decided to then give some of the female monkeys grapes for performing the same cooperative acts as their fellow monkeys who were only given a slice of a cucumber for those acts. The monkeys that witnessed the transaction of the grape over the cucumber would then either turn their backs to the researchers when presented with a cucumber, or, grab the cucumber and throw it. This refusal demonstrates how monkeys have this sense of what is fair and not fair, or just and unjust (Despret, 2016, p. 77). By being able to identify that some of the monkeys were receiving something different than they were, they determined meaning from that and in turn refused the cucumber.

Animals as Agents Capable of Communicating and Creating Meaning

A common thought of human superiority over other living things is our ability to communicate. However, it has been noted through research that certain species of animals have the ability to communicate, such as dolphins, bees, and primates. Whether the communication is communicated through sound, sonar, or movement, it demonstrates animal superiority. As stated, like humans, animals enjoy playing and communicate boundaries within their play to keep it safe. Despret (2016) describes animal play as the following:

When animals play, they employ a range of behaviors that are relevant to their other spheres of activity: they attack, play dead, roll on the ground, lie down, wrestle, follow one another, growl,

threaten, run away. They are the same gestures found in predation, aggression, or fighting, but they have changed the meaning. (p. 78)

As Despret (2016) is stating, boundaries are set prior to play to keep it safe. When an animal oversteps the boundaries, and becomes too physical, they become ostracized, or left with no one to play with them in the future (pp. 78-79). This shows us that not only animals have the ability to communicate through play, it also demonstrates how animals have a sense of morality, fairness, cooperation, trust, and justice, much like humans do when engaging in a form of play with one another. For animals to have this sense of morality, it enables us to compare ourselves to animals in likeness and demonstrates them as potentially positive agents on student interactions within the relational ecology of the exceptional student classroom.

Morality, as Bekoff and Pierce (2010) defines as, “A suite of interrelated other-regarding behaviors that cultivate and regulate complex interactions within social groups. These behaviors relate to well-being and harm, and norms of right and wrong attach to many of them,” (p. 7). Like humans, animals continue to demonstrate a sense of morality, just as demonstrated in how they play.

Animals as Just and Moral Agents

In addition to play, animals demonstrate a sense of morality when it comes to cooperation, another human characteristic trait that was once thought to separate humans from animals. Animals have been shown to cooperate with one another to gather food, for example, and will even change those patterns to help another animal in need (Bekoff & Pierce, 2010, pp. 55-56). For cooperation to happen, trust is needed. As Bekoff and Pierce (2010) states, “Animals are more likely to cooperate with those whom they trust, and the complex cooperative relationships found in animal societies likely rest upon a foundation of stable, enduring relationships,” (p.78). As noted through research, trust and cooperation go hand in hand which demonstrate a relational ecology that is beneficial to the organisms within the context of that environment. When there is trust and cooperation, the more positive the relational ecology is (Brown, 2015).

Animals as Empathetic Agents

In addition, as research shows that animal interaction increases empathy in humans (Anderson & Olson, 2006; Daly & Suggs, 2010; Hergovich et al., 2002; Tissen et al., 2007; & Vidovic et al., 1999), one can liken animals to empathetic creatures. As Bekoff (2009) defines, “Empathy is the ability to perceive and feel the emotion of another,” (p. 87). excitement by running around, wagging their tails, and play. Looking at empathy in animals, studies on rodents comes to mind.

Bekoff and Pierce (2010) discusses research done by Russell Church (1959) which looks at the emotional levels of rats when another rat is subjected to pain. For his research, Church (1959) taught rats how to access food by pressing a lever. Once the rats learned the correlation between the lever and the reward of food, he put another cage next to them where a rat was then subjected to electrical shocks when they would press the lever in their own cage to receive the food. Once the rats made the connection that the pressing of the lever was causing distress and harm to their neighboring rat, they would stop pressing the lever, knowing that meant they would not receive the food reward (as cited in Bekoff & Pierce, 2010, p. 96). By failing to continue to press the lever, the rats demonstrated empathy towards their neighboring rat, and were willing to give up food if it meant that their neighboring rat would not be subjected to pain as a direct result.

Bekoff and Pierce (2010) also studied Knuckles, a chimpanzee with cerebral palsy. Knuckles was treated much more gently than other male chimpanzees are generally subjected to, inferring that they were aware that he needed to be cared for in a much gentler manner (pp. 97-98). That example of how empathetic the other chimpanzees were to him proves how consciously aware they are of the strengths and weaknesses of others, and how their behaviors needed to be adjusted accordingly. This is interesting to note in relation to the exceptional student classroom, and if Jackson will pick up on the unique emotional, medical, psychological, and physical needs of the students.

Dogs as Meaningful and Purposeful Agents

As it is evident above, animals have proven through history and observations to be rational, just, empathetic and communicative. As Latour states, if we find ways to separate humans from nonhumans,

rather through language, rationality, or intentionality, “it disguises their interconnected agencies; “*any thing*” that makes a difference to other actors (intentionally or not) can be considered an agent,” (Pearson, 2013, p. 134). Due to this, it is clear that animals are worthy agents and must be recognized as so. The ANT tenet of symmetry allows us to look at all entities in terms of equal agency, and in this particular case, drives the point that any entity has the potential to influence the relational ecology of the exceptional student classroom.

According to Chris Pearson (2013), we need to conceptualize animals as agents, specifically dogs. Dogs have the potential to be purposeful agents within their interactions with human agents, because dogs possess a level of initiative and intelligence that allows them to work with human agents, an example being in military. Dogs differ in agency in comparison to other species, and even more importantly, within their species. As Pearson (2013) states, “Certain dogs, through their sense of smell, trainability, or intelligence could also be said to possess more agency than other dogs, even those of the same breed.” Furthermore, one could argue that therapy dogs in particular, could be said to have more agency than non-therapy dogs due to the rigorous training and temperament needed to pass certification requirements.

There is this false assumption that only humans possess rationality and reasoning skills, however, new claims of animal rationality, consciousness, and language (Desperet, 2012), break down the barriers that once separated humans from nonhumans as the superior being. Haraway (2008) further argues that, “Species co-shape one another in a “dance of relating” in which dogs (and other creatures) are “actors and not just recipients of action,” (p. 134). “Of perhaps all the domesticated animals, dogs lay bare most forcefully the fiction of a fundamental human-animal divide.... Dogs have helped us to become “human,” (Pearson, 2013, p. 132), just as humans have helped dogs become domesticated. In other words, there is a reciprocation between humans and animals, specifically dogs.

Furthermore, dogs have a sense of intentionality in their behavior, evidence by their visual and vocal cues designed to get human attention or the attention of other dogs (Pearson, 2013). According to Pearson (2013), dogs have shown the ability to problem-solve (F. Range, Z. Viranyi, & L. Huber, 2007) and are capable of navigating by recognizing landmarks, then in turn creating shortcuts (N. Chapius & C.

Varlet, 1987). This demonstrates not only intentional behavior, but behavior that is self-directed and therefore *rational*.

Through the domestication of dogs, our close companionship and cohabitation demonstrates a closeness between humans and dogs unlike any other animals. Due to this, dogs have an awareness of humans, allowing for dogs to act as both the actors and the actants through the formations for networks of relating and interacting. In fact, overtime, dogs have become to rely on human guidance, and have learned that often times it proves to be more beneficial to look to humans to help perform tasks rather than solve independently. It is this co-dependence that dogs have with humans in which make agency reciprocal (Pearson, 2013).

Historically, the role of animals in history has been downplayed, yet another example of anthropomorphism. In other words, historically speaking, agency has been shared unevenly between humans and nonhumans. When looking at dogs in particular, one has to recognize the roles that dogs have played as agents in the military, beginning as early as World War I. Dogs were trained to locate corpses and mines, and even acted as guard and messenger dogs (Pearson, 2013). According to Pearson (2013), “A 1916 German publication estimated that 600 dogs saved over 3,000 lives in this way,” (p. 139).

Presently, we see dogs acting as agents in the classroom more and more frequently. Recent studies demonstrate academic improvement when students interact with a dog in the classroom (Bassette & Taber-Doughty, 2016; Beck, 2015; DeNisco, 2016; and Scheckler, 2017), as well as an improvement in on-task behavior (Bass et al., 2009; Bassette & Taber-Doughty, 2013; Chandler, 2001; Friesen, 2009; Gee et al., 2010; Geist, 2011; Heimlich, 2001; Kotschal & Ortbauer, 2003; Martin & Farnum, 2002; & Schuck et al., 2015), and increased positive attitudes towards school (Beetz et al., 2013; Chandler, 2001; DeNisco, 2016; Friesen, 2009; & Geist, 2011). These studies demonstrate the importance of our reciprocal relationships with dogs, which provide beneficial outcomes to students’ success in school. These studies are also important in demonstrating the potential that a therapy dog has to shift the relational ecology of the exceptional student classroom into one that facilitates empowering interactions of interacting and relating as analyzed through actor-network theory.

It is important to note that as a collective, these studies in which have been reviewed as part of the literature are anthropomorphic in nature, but are important in that they highlight the positive impacts that companion animals have on humans which can impact relational ecology and patterns of interacting and learning. The companion animals appear to be more of an object used to assess the impacts that they have on the human participants. How the companion animal was impacted was not considered, whereas in this case study, both human and nonhuman entities are seen as equal agents, where implications of interactions and behaviors of both are reported. I had to be careful not to objectify Jackson and treat him as a subject with the sole purpose to test student interaction and relations. However, this is challenging in that no matter how conscious I was to situate Jackson as an equal agent in power, the continuous classification of him as a therapy dog or in terms of ANT, the nonhuman entity, separates himself from his human peers.

Criticisms of ANT

There are several criticisms of ANT. One critique as noted by Fenwick and Edwards (2012) is that historically, it appears that ANT focused more on the powerful, visible relations and how doing so, they were able to reproduce networks. This criticism brings to light the implausibility of reproducing networks as networks are not as stable and durable in reality, due to the continuous shifting and evolving of these semiotic-material relations.

Additionally, Law (2007) brings up the criticism that ANT can contribute to othering, where the human and/or nonhuman entities that do not join a network would stand out. According to Law (2007), “realities hold solid by relating through discontinuity, or by Othering one another...They also hold together because they flow into one another,” (p. 13). Therefore, ANT is unaware of the implications that its own perspective/views may translate onto the analyses of these networks (Law, 2007).

Another critique of ANT is within its standing of symmetry, which states that all entities, human and nonhumans have equal forces which act on one another. What ANT fails to recognize, according to Fenwick and Edwards (2012), is that symmetry does not recognize that humans are in fact different than nonhumans because of their ability to rationalize and make reason of events. This anthropomorphic

understanding causes intentional and conscious actions from humans (p. xvi). However, as Latour (2005) points out, “Action is not done under the full control of consciousness... It is a venerable source of uncertainty that we wish to render vivid again in the odd expression of actor-network,” (as cited in Fenwick & Edwards, 2012, p. xvi). In other words, one must understand that agency is impacted by many different forces, networks do not impact one’s actions.

Within the context of this case study, students’ and Jackson’s relations and interactions were analyzed using ANT to better understand the relational ecology of the exceptional student classroom. However, as criticisms of ANT state, myself as the teacher must be aware of how my actions, mannerisms, lesson plans, curriculum design, teaching methods and so on can impact the networks formed and how powerful and durable they are. By knowing and understanding that my actions and curriculum become nature obligatory points of passage (Latour, 1987), all networks formed within the classroom will all have to pass through these obligatory points of passage. Therefore, understanding that all networks formed will be influenced by myself as a teacher and the effects that the curriculum, school, county, and so on have on me, the criticism of my views translating onto these networks becomes null and void, as every network will be impacted in some way or the other by myself.

Summary

Historically speaking, humans have this notion of superiority towards other animals, due to our ability to communicate and rationalize. However, if one closely looks at the role of humans in the natural world, or in relation to the natural world, one has to acknowledge the impact that other nonhuman entities have on our being. Therefore, the concept of utilizing animals in the classroom has become more frequent in recent years. According to a study conducted by Brelsford, Meints, Gee, and Pfeffer (2017) on animal-assisted student interventions in the classroom, out of 1400 teachers surveyed in Austria, which recently implemented a policy allowing for teachers to bring their dogs to school, 70% utilized this policy by bringing their pet dogs into the classroom (p. 2).

Through actor-network theory (ANT), one is able to view animals, specifically dogs, in terms of agency, and therefore having equal power to shift the relational ecology of the exceptional student

classroom into one that is empowering. ANT allows us to view Jackson in terms of equal power to the students in through symmetry and agency, therefore giving up the notion of animal inferiority and human superiority.

According to Law (2007), ANT “describes the enactment of materially and discursively heterogeneous relations that produce and reshuffle all kinds of actors including objects, subjects, human beings, machines, animals, ‘nature’, ideas, organizations, inequalities, scale and sizes, and geographical arrangements,” (p. 1). In other words, ANT does not recognize humans as superior to all other entities, rather this theory recognizes the heterogeneous relationships between entities, and the fluid and continuously shifting nature of those relationships.

Humans and animals, or in the context of my research interests, students and Jackson, play equal roles in determining the relational ecology of the classroom. According to Latour (1996), “An actor in ANT is a semiotic definition- an actant- that is something that acts or to which activity is granted by another... an actant can literally be anything provided it is granted to be the source of action,” (as cited in Cressman, 2009, p.3). Additionally, as Cressman (2009) states, “Humans all play equally important roles in the construction of actor-networks. This particular aspect of ANT, called generalized symmetry, (Callon, 1986a), remind us that although we recognize that the social is materially heterogeneous and the technical is socially heterogeneous these ideas rarely applied,” (p. 4). In other words, actor-networks are created by all agents, and the extent of the networks depends on the power and longevity in which they hold true.

Within the context of my research interests, redefining the human ecology of the classroom into a relational ecology through actor-network theory, I am acknowledging the anthropomorphic limits of a human ecology by recognizing both the students and Jackson as equal actors and agents within the context of the exceptional student classroom. With research demonstrating how important our human-animal interactions are, both in and outside of the classroom, it is evident that animals do in fact possess similar character traits that we value in humans such as the ability to communicate, rationalize, be just, and show empathy. If certain species of animals are capable of demonstrating those traits through their

interactions both within and outside of their species, it is clear that those traits may be more pronounced when interacting outside of their species, with humans.

Looking at dogs in particular, the history of domestication and breeding has resulted in most dogs to look to humans to form a co-dependence. Studies have shown dogs to understand and feed off of our emotions (Pearson, 2013), which can be very beneficial in the context of an exceptional student classroom, where many of the students struggle with emotional regulation and patterns of interacting and relating appropriately. Understanding this allows us to rethink our relationships with animals. Based on the research presented, our relationships are reciprocal, and when we let go of the false idea of human superiority in relation to other animals, one can better understand our relationships with other entities, animals in particular.

The comprehensive review of literature on classroom ecologies and animal studies showed a common theme in terms of our interconnectedness with nature, specifically animals. One's behaviors and experiences are a reflection of relational ecology and the fluid networks which are produced within the context of their environment. Actor-Network theory can therefore undercover the relational ecology of the classroom by analyzing the networks of relations formed, and the implications that those relations have on student behavior. Based on current research of ecology and curriculum studies, as well as animal studies, there is much that can be gained by incorporating a therapy dog into the ecology of the classroom in terms of relational ecology, as evident through the facilitation of student behaviors analyzed through Actor-Network Theory.

I anticipate that networks in which human agents and the nonhuman agent interacts will provide the most positive relational ecologies within the context of the exceptional student classroom, based on the reported benefits that animals have on human health, both physiological and emotional when political and natural ecologies merge.

It is evident that when one incorporates an animal into the classroom ecology, it can positively impact the relational ecology of the exceptional student classroom through Actor-Network Theory as a theoretical guideline. In my study, I aim to contribute to the present literature on ecology within

curriculum studies by expanding the research upon the human-animal bond. By shifting the power dynamics away from human superiority to one that highlights the interdependency between humans and animals, I aim to study the impacts that these very interdependent relations have on the relational ecology of the exceptional student classroom. I anticipate that the results will show that the networks in which the students are interacting with or influenced by Jackson will provide empowering behaviors of interacting and relating such as an increase in empathy and focus, and a decrease in antisocial behaviors such as aggression and withdrawal.

CHAPTER 3

METHODOLOGY

This case study aimed to uncover how the introduction of a nonhuman agent, who will be referred to as Jackson, would affect the relational ecology of the exceptional student classroom through his incorporation into the classroom as a student. This study is unique in that it merges the social sciences within the field of curriculum studies as it addresses the integration of a nonhuman entity into an exceptional student classroom as a fellow student to the human entities using a mixed methods case study approach.

Mixed methods, as defined by Tashakkori and Creswell (2007) is, "research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both quantitative and qualitative approaches," (as cited in McCrudden, Marchand, & Schutz, 2019, p. 1). Using both student surveys and observational behavior charts to collect the data, I am combining both quantitative data and qualitative data together, as those two measures bring forth the most detailed analysis of the relational ecology of the exceptional student classroom. These measures were carefully designed in what is known as methodological eclecticism. According to Johnson and Onwuegbuzie (2004), "*Methodological eclecticism* means that researchers knowledgeably select, use, and integrate the most appropriate methods from a wide variety of quantitative, qualitative and mixed approaches to thoroughly investigate the phenomena of interest," (as cited in McCrudden, Marchand, & Schutz, 2019, p. 2).

Since this phenomenon has yet to be explored within the field of curriculum studies in terms of identifying a therapy dog as a student, there are benefits to using mixed methods to investigate this phenomenon. According to McCrudden, Marchand, and Schutz (2019), benefits include gaining deeper insight into specific phenomenon, and allows for readers to have greater confidence and clear understanding of the findings and the significance of those findings (p. 2). Importantly, this very integration of employing both qualitative and quantitative methods is an ecotone in itself, or rather a friction between two separate methods merging together. However, incorporating a mixed methods

approach, my aim was to not reduce my findings to a number, which can be limiting. Rather, the quantitative aspects were employed to provide additional evidence as to how influential nonhuman entities can have on classroom ecologies, specifically the relational ecology.

This case study took place at a public high school in South Georgia where I am currently employed as an exceptional student educator. I currently serve twenty students throughout the course of the day and it is those students who participated in the study. My students are between the ages of fifteen and twenty, and in grades nine, ten, eleven, and twelve. It is important to note that these students have cognitive, social, and medical deficits that adversely impact them from successfully accessing the general curriculum independently. Table 1 details exceptional student eligibility and medical diagnoses per student participant in this case study.

Table 1

Participant Demographics

Student	Age	Eligibility Category/Medical Diagnoses
Joe	17	Other Health Impairment, Speech or Language Impairment, Neurofibromatosis Type 1, Complex Partial Epilepsy
Sadie	15	Mild Intellectual Disability, Speech or Language Impairment
Mike	18	Other Health Impairment, Devic's Disease, Attention-Deficit Disorder
Daisy	19	Other Health Impairment, Mild Intellectual Disability, Macrocephaly
Frank	18	Autism, Speech or Language Impairment

Thomas	20	Autism, Speech or Language Impairment, Attention-Deficit/Hyperactivity Disorder, Obsessive Compulsive Disorder
Kyle	18	Emotional and Behavioral Disorder
Trey	20	Autism, Speech or Language Impairment, Sensory and Fine Motor Impairment
Josie	19	Moderate Intellectual Disability, Speech or Language Impairment, Attention-Deficit/Hyperactivity Disorder, Pervasive Developmental Disorder, Mitral Valve Prolapse
Patty	18	Moderate Intellectual Disability, Speech or Language Impairment, Down Syndrome
Mandi	16	Moderate Intellectual Disability, Speech or Language Impairment, Down Syndrome
Brett	17	Autism, Mild Intellectual Disability, Other Health Impairment, Speech or Language Impairment, Attention-Deficit/Hyperactivity Disorder, Fragile-X Syndrome, Strabismus, Anxiety Disorder, Sleep Disorder, Impulsivity Disorder, Mixed Receptive-Expressive Language Disorder, Papilledema, and Symbolic Dysfunction
Hank	18	Autism, Speech and Language Impairment, Anxiety Disorder
Olivia	19	Autism, Speech or Language Impairment

Danny	17	Other Health Impairment, Spastic Diplegia Cerebral Palsy, Post-Traumatic Stress Disorder, Reactive Attachment Disorder
Chuck	15	Autism, Speech or Language Impairment
Devon	19	Autism
Kelsey	20	Moderate Intellectual Disability, Maple Syrup Urine Disease, Myopia, Encephalopathy
Emma	15	Autism, Speech or Language Impairment, Obsessive Compulsive Disorder, Anxiety Disorder
Cody	18	Autism, Speech or Language Impairment, Pervasive Developmental Disorder

These students receive academic, social, and behavioral supports outside of the general education setting in an exceptional education classroom. The students that I serve are considered vulnerable due to their diagnoses/disorders that warrant instruction as per their least restrictive environment in a small-group, exceptional student classroom with modifications. Due to student vulnerability, appropriate measures were taken for informed consent purposes. I required that all students I teach receive consent from their parents or guardians. To better inform my students' parents/guardians, I sent out a recruitment letter. The recruitment letter (Appendix D, Recruitment Letter) was a brief overview of the study along with a description of what the parents and students could expect from Jackson. I explained the study, roles of the students, and the roles of Jackson to the class in case they are unable to comprehend the recruitment notice. I addressed any questions they may had. I also sent an email home to the parents with the recruitment plan attached as well as sent a hard copy home.

In addition, I sent home the informed consent (Appendix E, Informed Consent) which outlined the study in more detail. I went over the contents of the email with the students in person and addressed any questions they had. In the email with the recruitment letter and informed consent, I explained how I

needed both guardian and student consent. I made it clear that if the student consented, but the parent/guardian did not, the student, regardless of age, would not be able to participate in the study. Both forms of consent must be acknowledged and signed for participation. All twenty students that I serve returned in the signed consent forms.

In order to address my research questions, I created two measures in which to collect and analyze my data, in addition to taking field notes which aided in documenting students' reactions and interactions to Jackson, as well as his reactions and interactions to his classroom peers. The first measure, a social network analysis survey (Appendix F, Social Network Analysis Measure) was created to document classroom networks and was designed to represent best practices for social network analysis in the classroom (Grunspan, et al, 2014; Sweet, 2016). A social network is defined as "a specific relationship or tie among a group of individuals or *nodes*..." (Sweet, 2016, p. 381). According to Grunspan, Wiggins, and Goodreau (2014):

The classroom is a principal domain wherein working relationships form between students. These relationships, and the larger networks they create, have effects on student behavior. Network analysis can inform our understanding of student network formation in classrooms and the types of impacts these networks have on students. (p. 167)

Therefore, the networks can be used in conjunction with the behavior data to analyze and interpret student behaviors and the relational ecology of the exceptional student classroom. For this social network survey data measure, students were responsible for documenting which student(s) they worked with, if any, during each ninety-minute class block that they had with myself or co-teacher (classes in which Jackson would be integrated in during the second time-series, with a maximum of four classes).

These measures are both qualitative and quantitative, and together, their integration is crucial in interpreting the data. Integration is vital in mixed methods studies in that "plays an essential role in establishing the quality of the study design, and ultimately of the quality of the inferences and conclusions drawn from the study (*Mixed methods in educational inquiry*, 2019, p. 2). Additionally, with the quantitative and qualitative data collected simultaneously in terms of field notes, student social network

surveys, and behavior frequencies, I employed a convergent mixed methods design. More specifically, this design allows for the collection of qualitative and quantitative data to occur both independently and simultaneously within the same time period. Then, the data is integrated where the findings are then interpreted, allowing for an extension of "the breadth and range of inquiry," according to Creswell & Plano (2018) (as cited in McCrudden, Marchand, & Schutz, P., 2019, p. 4).

At the conclusion of every week, I uploaded the social network survey file that consisted of frequencies of student reported interactions with each of their peers. Once uploaded into RStudio, I created network plots of each week that consisted of nodes and edges. Each node represented a student and each edge represented reported social interactions between each student. For the first time-series, the pre-test, a total of five social networks were created. One for each individual week within the four-week time-series and one collapsed network that consisted of the compilation of all four weeks. For the second time-series, the post-test, six social networks were created. One for each individual week within the four-week time-series and one collapsed network that consisted of the compilation of all four weeks. The final network highlights the connections that Jackson specifically had with other students because it is the impact of his classroom integration specifically in which we are analyzing. Since Jackson was unable to report his social interactions via the social network survey, his measures in the post-test were a reflection of the number of recorded interactions that each student reported for him.

Descriptive statistics were then computed to further interpret the social networks. Specifically, edge count, density count, transivity count, and measures of centrality were reported and analyzed. The edge count looks at the number of connections between each student, density count is the sum of tie values divided by the number of possible ties, and transivity count measures the likelihood that the adjacent vertices of a vertex are linked.

These measures of descriptive statistics are important when analyzing networks. Since edges represent the number of ties or connections within a network between nodes, in this case student agents, this measure is important when comparing the two time-series to one another. Additionally, density, as Sweet (2016) describes as a "measure of how well connected a network is," (p. 383) by measuring the

proportion of reported connections to possible connections within the network. If the density measure increases from the pre-test to the post-test, that would indicate growth towards closing the gap between reported interactions and possible interactions.

The measures of centrality that were recorded and analyzed were in-degree, out-degree, degree centrality, closeness and betweenness. In-degree refers to the number of reported interactions that each student received while out-degree refers to the number of their individual reported interactions. According to Sweet (2016), "Nodes with high in-degree are often considered more popular and therefore more central," (p. 384). Degree centrality is the total number of student interactions, both given and received. The higher the degree centrality is, the more likely this student was to engage in social interactions, and the more central the student is in relation to the network. Closeness measures how close each student is to other students in the classroom. A higher closeness measure would suggest that the student is easy to interact with, or, interacts easily with their peers. A lower measure would then indicate a preference for isolation or a struggle with socially interacting with their peers. Finally, betweenness, as defined by Sweet (2016), "quantifies the number of times each node connects two other nodes as measured by the shortest path between them," (p. 384). In other words, betweenness measures the number of times a student aided in directing social interactions among peers that would not normally interact. A lower betweenness score is a sign of difficulty or indifference in reaching out to other members, while a higher betweenness score would signify social ease and those who help to maintain the longevity of networks.

The second instrument that will be used in this study is a behavior chart (Appendix G, Behavior Chart Measure), that I have created for my own purposes as a classroom teacher to monitor classroom behaviors. The behavior data collection charts are comprised of seven observable behaviors considered to be antisocial behaviors and four behaviors considered to be observable prosocial behaviors. The antisocial behaviors are as follows: physical aggression (shoving, hitting, biting, etc.), verbal aggression (yelling, teasing, threatening, etc.), destruction of property (school, personal), temper tantrums (crying, stomping, feet, etc.), interrupts lessons (verbal or physical), uncooperative (defiant, will not follow instruction, blames others), and avoidance (puts head down, sleeps, frequent requests to use restroom, frequent

requests to go to the nurse, out of seat frequently, etc.). These antisocial behaviors adversely impact the relational ecology of the exceptional student classroom by creating an environment that hinders appropriate relations and patterns of interactions.

Prosocial behaviors documented and reported, those that would positively impact the relational ecology of the classroom, consisted of on-task behaviors such as working, asking appropriate questions, cooperating with peers and/or teachers, follows directions, and personal complaints are minimal.

Myself, co-teacher, and two paraprofessionals were responsible for filling out these behavior charts where we would put tallies next to each behavior observed during our time with them. The frequencies were totaled and separated by a collective prosocial behavior total and collective antisocial behavior total. In other words, we were able to determine what percentage of student behaviors observed were prosocial behaviors and what percentage were antisocial behaviors per student. This overall behavior profile could then be compared between the two time-series to determine how much of an impact Jackson had on student behaviors and the relational ecology of the classroom. If a student's behavior profile increased in overall prosocial behaviors and decreased in overall antisocial behaviors, then it could be determined that Jackson had a positive impact on that particular student, thus shifting the relational ecology of the classroom to one that is more positive and productive in terms of relating and interacting.

To determine whether there was a significant improvement in overall prosocial behaviors and a decrease in antisocial behaviors, a paired sample t-test was calculated. In addition, a chi-square test of independence was calculated to determine whether there was an association between the nonhuman entity's presence on the student agents' behavior. In order to calculate the chi-square test of independence, data needed to be transformed from interval measures to nominal measures. To do so, forty measures of data were to be calculated and transformed. Forty represents the forty observed prosocial behavior profiles for each individual student agent (twenty from the pre-test and twenty from the post-test). Since the behavior profiles were made up of prosocial and antisocial behaviors proportioned to one another per student, I only focused on the prosocial behavior aspect, and divided it up into three

categories. The three categories were as follows: prosocial behaviors representing 90% and above of observed behaviors, prosocial behaviors representing 80-89% of observed behaviors, and prosocial behaviors representing 79% and below of observed behaviors. Next to each measure, Jackson's presence was indicated as a yes or a no. In addition to the student social network surveys and behavior charts that were filled at the conclusion of/during the class block, I was taking field notes as supplemental data to help interpret the behavior charts and social network analysis.

In order to promote validity and remove any potential personal bias, a balance between objectification and subjectivity must be in play. In order to collect data with personal expectations/bias aside, I must look at the agents objectively without objectifying them in terms of agency and power. In other words, I must interpret the data collected objectively in terms of subjectivity to maintain the agents' feelings and experiences in relation to the data collected.

Consequently, with Jackson being my personal pet and the subjects being my personal students, I had to also be careful that my personal expectations and excitement did not impact student behaviors or relations between them and Jackson. In addition, I had to be cautious with my excitement as well about the study as it could potentially act as a reminder that Jackson is in the classroom for research, and that in turn, remind the students that they are being observed. Known as the Hawthorne Effect, students' awareness or reminders of the study could impact or modify their behaviors as they are aware that they are being observed.

Prior to beginning the data collection portion of my research, I had to get approval through the IRB and the IACUC. The IACUC application (see Appendix H, IACUC Application) was challenging in that it required me to identify Jackson as an animal whose sole purpose was to be used as an object for research, which goes against the theoretical framework of ANT and my identification of Jackson as a student in my classroom. The IACUC application failed to treat Jackson in the same respect as the researcher and in terms of equal agency, even though the questions and information that was to be provided were intentional to promote the well-being and ethical treatment of Jackson. Identifying a method of disposal of Jackson, even after marking that he would not be euthanized, for example, proved

to be extremely uncomfortable as this was my own personal pet, and the idea of having to acknowledge a way to ethically and humanely put him down was very disturbing. In addition, in the IACUC application in the Characteristics of Animals and Category of Research, the researcher had to identify the different levels of pain/stress that were to be inflicted upon the animal(s). Fortunately, I was able to mark this section as N/A, but it made me extremely uncomfortable to think about having to categorize the purpose of using Jackson in this study in terms of inflicting or not inflicting pain on him.

It was therefore a challenge to fill the required documentation out by having to use anthropomorphic language and verbiage that identifies Jackson as an animal and myself as the researcher, and therefore able to manipulate Jackson as I please within their ethical realm. As Despret (2004) states, “If we define expectations in terms of ‘who authorizes’, we can see that everything is shifting, articulating many more things, giving chances to many more entities to belong to the real world,” (p. 120). In the context of this case study, ALL human and nonhuman entities are identified and understood as equal in terms of authorization. This is evident in the networks produced between the students which has is continually shifting from week to week as according to the pre and post-test data and observations. Labeling and identifying Jackson in terms of a student is allowing two ecologies to emerge, blending the social and natural world within the context of the exceptional student classroom. However, there is disconnect within the IACUC as there is a separation between the human researcher and the animal subject, therefore neglecting to identify the intermixing of natural ecologies that are at the forefront of the research in this mixed methods case study.

Jackson is more than a test animal to me both personally and professionally in relation to this case study. If the IACUC recognizes humans as those with rational thought by being able to justify and put into practice our respective studies, at what point would the IACUC recognize animals as more than just the subject? Jackson has proven to not only be intelligent and disciplined, much like the researchers in which the IACUC recognizes as such, he is also able to feel, empathize, and understand different human emotions and feelings and therefore respond accordingly.

According to Despret and Meuret (2016), “Identities are transformed but not confused: each critter still differentiates, but differentiates differently- this is involution, an ongoing process,” (pp. 31-32). With each new network of relation that is formed, identities are transformed as a result of the relations and interactions. This is especially evident in witnessing and observing how Jackson related to his classroom peers at school and his newborn baby brother at home. At school, Jackson was faster to approach the students by watching his gait, whereas at home, he appears to be calmer and gentler in his movements and actions. Observing him interact with the newborn, he lays within five feet of him, and whenever the baby laughs or cries, Jackson’s ears perk up, and he calmly approaches the baby, trying to give him a gentle nudge or a quick lick. At school with the students, he appeared to differentiate in his interactions with them. He is quicker to approach them and engages in rougher play. It is as if he is able to gauge vulnerability and mood and differentiates his interactions accordingly.

To introduce Jackson into the classroom, this case study utilized a pre-post design. In the pre-test phase (one-month) students were observed as they participated in their normal daily routine. In the post-test phase (one-month), Jackson was incorporated into the classroom as a new student, whose role was to interact and engage with his classroom peers (at his peers wishes to interact with him and his wish to interact with them). The students were not forced to engage in classroom activity with Jackson, nor was Jackson required to engage against his will. By giving students and Jackson the freedom to allow interactions to naturally occur and unfold, I was better able to take field notes and observe the consequences of those interactions. In Appendix I, IRB Application, the following was my estimated timeline of the post-test that I developed during the IRB process, as found under section 7. Research Procedures and Timeline, in my IRB application.

Due to the unpredictable nature of animals, this procedure was an important part of the IRB process to ensure the safety and well-being of both Jackson and his classmates. Ironically, I quickly realized that Jackson had his own agenda, as did his classmates, which made following the procedural path of his introduction into the relational ecology of the exceptional student classroom challenging.

Approximately five minutes on day 1 of the post-test, Josie and Mandi begged to walk Jackson around the classroom, which I allowed. At this point, approximately 7:10am, Jackson was no longer by my side, but happily trotting alongside two of his classmates with his tail tagging, stopping to greet and lick the other students as they entered the classroom. School had not yet even begun, yet Jackson was quickly making friends with all of the students. By the time 7:30am rolled around and the bell rang three times, thus signaling the start of first block, the students not in my first block were reluctant to leave to class as they hovered around Jackson, who at this point, was returned to me so that the sixteen students who had classes elsewhere could grab their belongings and leave. Only Daisy, Thomas, Olivia and Kelsey were left.

With the newness and excitement taking a toll on Jackson, he proceeded to plop at my feet under my desk as I took attendance, closing his eyes (a smile remained on his face as he slowly panted away). When I got up, Jackson startled, and quickly got up as well to follow me to the front of the classroom where I was about to address the four students. “Mrs. Blanton, can I pet Jackson?” Kelsey asked. “Please! He is my heart!” I proceeded to ask the other three students if they would also like to pet Jackson. I realized rather quickly how challenging it was to keep ahold of Jackson’s leash while dashing around the classroom getting journals and grammar folders. It was 7:34am, only four minutes into the beginning of the first block on the first day. Four minutes was all it took for Jackson to be fully integrated into the classroom, freely able to meander and socialize as I allowed him to lead where he wished to go.

CHAPTER 4

RESULTS

On Jackson's first day as a student in the exceptional student classroom, I arrived early at approximately 6:47am. It was still dark outside, and it was raining. I was feeling rushed and anxious as this was my first day back at work from maternity leave, and consequently my newborn's first day at daycare and Jackson's first day of high school. Frazzled, I opened the door in which Jackson pulled to explore his new classroom and all of the smells associated. Once the lights turned on, I noticed a large, rectangular poster taped onto my whiteboard. On yellow paper and in big green paint lettering, the poster read, "Welcome Back Mrs. Blanton and Jackson." A smile immediately fell across my face and I began to relax.

During my first block class, students were given a writing prompt that instructed them to share their feelings about having Jackson as a classmate for the next four weeks. All student agents except for one, Thomas, expressed excitement about having Jackson present in the classroom. Thomas wrote, "I don't know how I feel about Jasen. I don't mind him. I wouldn't mind petting him, but I don't feel like it." The rest of the student agents responded to Jackson's newfound presence with excitement. Chuck wrote, "he the dog that I navrer had and I love hime. He is a good dog and I love him so much..." Hank also wrote about positive feelings towards Jackson when he stated, "I like Jackson because he is kind and playful and nice I like playing with him because he is really nice and sweet." Appendix J, Student Artifacts Day 1 of Post-Test, contains these pieces, as well as entries from Mike, Cody, Brett, Mandi, and Devon who wrote the entry during second block. From my observations, these feelings towards Jackson did not change except for in growth or attachment.

At the conclusion of the pre-test and post-test time series, data was collected and computed to create social networks and an overall classroom behavior profile. The figures created represent social network analysis (SNA) which is commonly used to assess social structures through the use of networks (Sweet, 2016; Grunspan, et al, 2014). To interpret the figures, the nodes represent student participants and

the edges that link them to one another within the context of a given setting (in this case, the self-contained exceptional student classroom). Their placement in the graph is a representation of their ability/willingness to engage in social interactions with their peers. The more central a node is, the more ties it has to other student agents, while the further out a node is, it represents social isolation or an unwillingness to engage with their peers.

Figure 1., shown below, represents a weekly breakdown of the networks formed during the pre-test and the post-test. Each figure represents one week of student reported social interactions per time-series. It is evident from the figures the evolution and change within the social networks formed within the exceptional student classroom. Looking specifically at the top row of social networks which reflect the pre-test, week one, week two, and week four all have one outlier. This indicates that one student reported no social interactions with his/her peers, nor did any of his/her peers reported interaction with him/her as well. In addition, the black edges connecting the red nodes appears sparse in comparison to the networks in the post-test, suggesting fewer social interactions amongst the student agents, both received and given.

Looking at the second row which represents the post-test where Jackson was incorporated, there are many more edges linking nodes. This suggests an increase in student reported interactions when Jackson was incorporated as a student. Regarding specifically at the post-test networks, the networks show a couple of students on the outside of the network, however, they are still within one connection to another student. In addition, these networks reflect how dynamic the social relations became once Jackson was integrated into the exceptional student classroom.

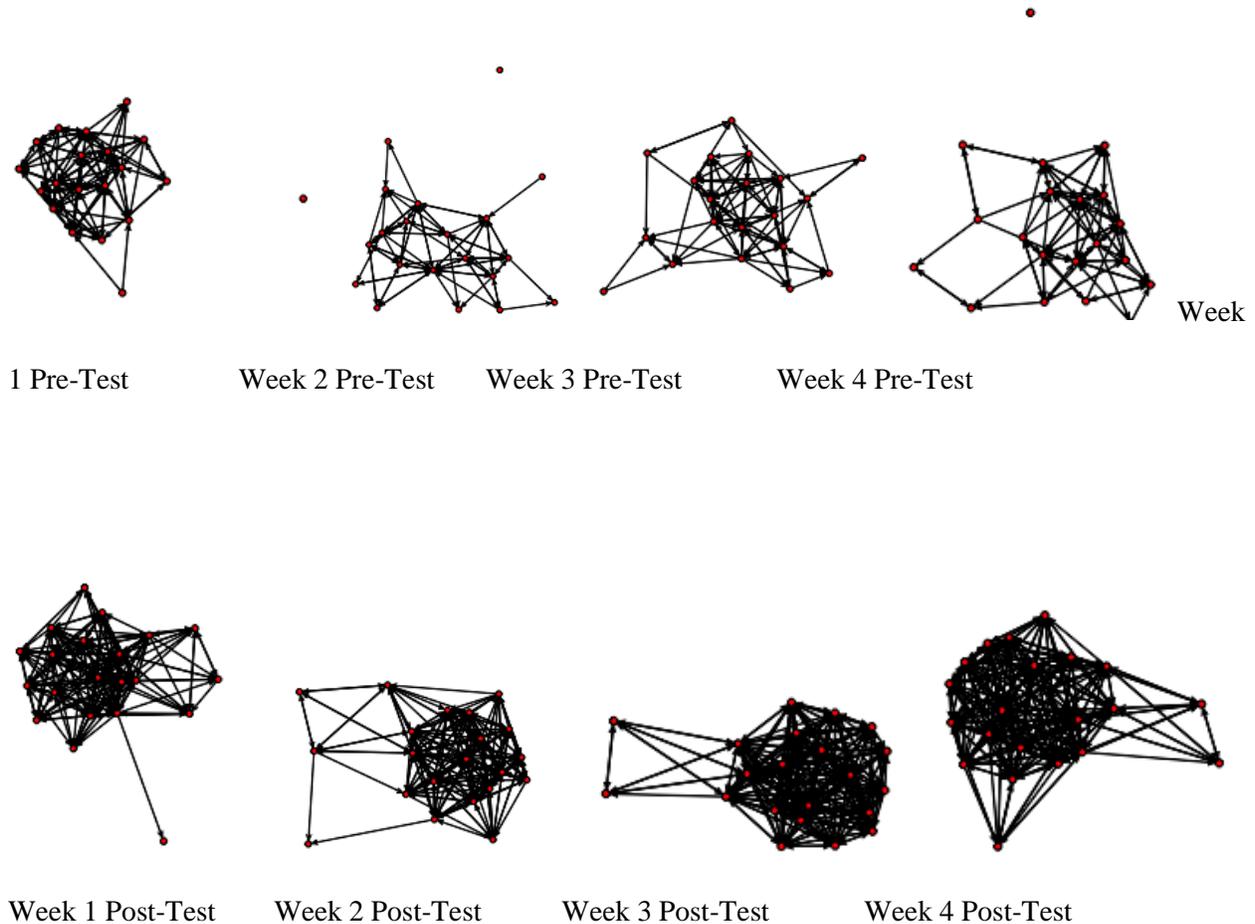
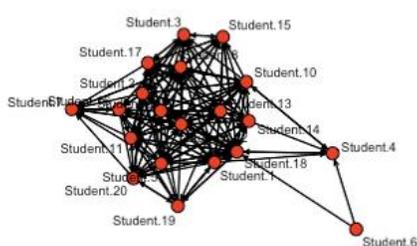


Figure 1. Social Networks by Time-Series

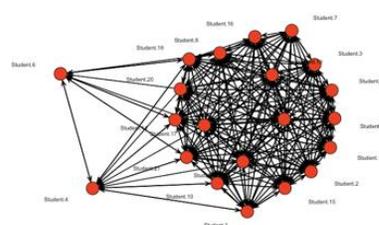
The social networks that are displayed in the post-test time series as shown above in *Figure 1* display close-knit networks that are dynamic. These networks reflect more inclusivity in regard to the active social participation of all student agents than the first-time series reflected, as every student agent is connected to at least one other agent.

Much like the image of a more cohesive group that I detailed above, *Figure 2*, shown below, represents this newfound cohesiveness in the representation of a collapsed network of the two time-series in which this case study utilized, as computed from the student reported social network surveys. Each figure represents the culmination of the four weeks of student reported social interactions per time-series.

Looking at the post-test, representing the time-series in which Jackson was integrated, details a significant increase in links between nodes, as also evident in the weekly breakup represented in *Figure 1*. This highlights the positive impact that Jackson had on the social and relational ecology of the classroom. Jackson can be identified as Student 21 in the Post-Test Weeks 1-4 Collapsed figure. His placement within the network is centralized, which further demonstrates his impact on overall patterns of interacting and relating reported in the exceptional student classroom. With the exceptional students that participated in this case study, the increase in patterns of relating and interacting is significant in that overall, these students struggle to appropriately interact and engage with their peers.



Pre-Test Weeks 1-4 Collapsed



Post-Test Weeks 1-4 Collapsed

Figure 2. Collapsed Social Networks

Table 2, *Mean Network Analysis*, looks at the average descriptive statistic measures from the pre-test and the post-test social networks shown in Figures 1 and 2. When Jackson was integrated into the ecology of the exceptional student classroom, student reported interactions increased by more than three times, as evident from an increase in edge count from 96.5 in the pre-test to 259.8 in the post-test. The number of connections, or network configurations formed, demonstrates the positive impact that the nonhuman entity had on the student agents in terms of interacting and relating. In addition to the creation of new connections, network density count increased by approximately 37%. Network density, which

measures the potential connections to actual connections, jumped from 0.25 to 0.62, indicating that approximately 62% of potential interactions and connections actually occurred versus only approximately 25% of possible connections were made prior to the introduction of a nonhuman entity as a student. This indicates an overall improvement in the patterns of relating and interacting within the classroom.

Also, reported in Table 2 *Mean Network Analysis*, is the dyad count which is a representation of the amount of two-person connections within the network. The dyad count grew by forty, indicating forty new student pairs within the network. The transivity count, as computed from the triangle count, increased from 0.46 to 0.78, indicating that on average, the chance that two students that shared a common link to another student, had a 78% chance of occurring, as opposed to a 46% likelihood in the pre-test before Jackson was integrated as a student.

Table 2

Mean Network Analysis

Data Measure	Pre-Test Average	Post-Test Average
Network Edge Count	96.5	259.8
Network Density Count	0.2539475	0.618453
Network Dyad Count	380	420
Network Transivity Count	0.461525	0.775725
Network Triangle Count	303.5	3498.3

The social network data collected agrees with my field notes and observations. When Jackson was present, students were more social with one another, and interacted more frequently. Student agents would elect to work with the peers with whom Jackson would be situated around. From my observations, these student agents did not connect with the intention of interacting amongst themselves, rather, they interacted with Jackson who was the link between them. By allowing Jackson to roam freely around the exceptional student classroom just as any other student agent is allowed, this allowed for the continuous

shift of networks to be formed, also known as translation in ANT. Jackson is not one to sit still unless I was at my desk. In which case, he would plop himself down under my desk and nap. However, if I was up and moving, Jackson would migrate from student to student as he pleased, and as he did, students, especially Mandi and Emma, would follow him, therefore giving the opportunity for new networks to continuously be formed.

During the pre-test, I observed very little willingness from the students to engage in forming new connections. As data showed as well, there was not nearly as many networks being translated as were evident during the post-test. The students in this mixed methods case study are very routine regimen, and while we do not have assigned seats, they tend to sit in the same area, next to the same students every day. Even when they are prompted to try to sit with a new group, they never appear eager or interested to do so. It is more than just getting out of their comfort zone as the students that participated do have social deficits as related to their diagnoses, Autism for example, that hinders their ability/desire to form new relationships, or on a more of a surface level, just strictly to interact.

It wasn't until Jackson started as a student in which seating arrangements started to shake up and the students demonstrated more flexibility in their workspaces as determined by Jackson's whereabouts. There was a newfound eagerness and excitement to move around the classroom as most of the students followed Jackson's movements. The coveted yoga ball chairs that were once highly sought out lay neglected in the library nook, as instead the students piled closest with their reading books to the very spot that Jackson would plop down. That meant students abandoning chairs and desk and instead, laying on the floor or on his dog bed, calling his name softly or enticing him with one of his rope toys or balls to draw him nearer to where they lay. It is as if the students were flies drawn to light, the light being Jackson. All but a few couldn't get close enough to him and they appeared mesmerized and enchanted by him as they'd gawk at him with sparkling eyes and giant smiles. Together in a group would they migrate, with students leaving or joining the pack as necessary. It was clear that the students appeared to become more engaged and socially aware of those in which they were surrounded by while in the presence of

Jackson. He was the leader, and the students, the followers. This led to the translation of many new social networks to form within the confines of this exceptional student classroom.

As quickly and eagerly as the students adjusted to Jackson's presence, Jackson adjusted into the classroom ecology. It didn't take Jackson long to get settled and situated in his new environment. By the start of week 2 of the post-test, Jackson would pull on his leash and rush towards his classroom, disregarding his "loose-leash" training. Once we would arrive, he would nose the door as I would struggle to insert my key as I balanced my backpack, coffee, and Jackson's school belongings. Once I finally got the door unlocked and opened, I would unleash Jackson and allow him to do his morning sprint routine from one side of the portable to the connecting classroom, frantically smelling as he rushed from side to side. After around thirty seconds, like clockwork, he would conclude his routine morning sprint by racing to the open spot under my desk where my feet rest. It was as if he was accustomed to his personal seat in the classroom, much as the students are.

As the students would slowly start trickling in around 7:00am, Jackson would run to the door and greet each of his classmates as they entered. Each student that he greeted appeared equally excited as they greeted him and called him by his name. This went on every morning for the four-week post-test with the exception of the one day during week 3, March 25, 2019, in which he didn't feel like going to school that day. Much like his classmates need a day off from time to time, Jackson's refusal to get out of his bed in the morning indicated the need for a break.

Students asked where he was, but it was Kelsey who appeared the most upset about his absence. "Why is Jackson not here?" Kelsey asked me as soon as she strolled in at 7:24am. "He wouldn't get out of bed," I replied. "Mrs. Blanton, you're going to make me cry. I miss him," Student 18 continued, "You better give me your keys so I can go to your house and play with him. He's my cheer in the morning."

To further analyze the social networks that were formed during the pre-test and the post-test, measures of centrality were computed. Centrality measures look at the individual nodes within the networks and their specific links to other nodes. Within the context of this case study, measures of centrality are an important measure in being able to identify which agents more socially engaged with

their classroom peers. Specifically, was there a difference between the nonhuman agent and the human agent in terms of centrality?

Table 3 shows an average classroom increase of interactions, both given and received, indicating that on average, each student agent connected with another student agent twenty-five times as opposed to approximately ten times. This number is taken from the degree centrality, which is a combination of the in-degree (reported interactions received) and out-degree (reported interactions given).

Also reported in Table 3 is closeness centrality, which looks at how close the student agents are to one another based on the sum of the links between them. Results indicate an overall classroom average increase in closeness centrality from 0.58 to 0.78, indicating a shift towards a more centralized network. This increase in closeness measures demonstrates an improvement in student interactions as a collective, which was observed as well.

Additionally, represented in Table 3 is the betweenness measure. Betweenness centrality shows individuals who have higher agency over other agents based on acting upon other agents. There was an overall decrease in measures from an average of 6.50 to 2.89 from the pre-test to the post-test, according to Table 3. Since betweenness measures the number of times a student aided in directing social interactions among peers that would not normally interact, the lower score could represent a leveling out of power within the hierarchy of the exceptional student classroom. Rather than several student agents having high power as evident by their ability to act upon others, the lower betweenness measure of 2.89 indicates a more flattened classroom hierarchy, one in which students share more of an equal agency in relation to be actors and to be actants.

Table 3

Measures of Centrality Classroom Average

Time Series	In-Degree	Out-Degree	Degree Centrality	Closeness	Betweenness
Pre-Test	4.94	4.83	9.77	0.58	6.50

Post-Test	12.37	12.67	25.01	0.78	2.89
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Comparing the two time-series on an individual basis, as seen in Table 4 and Table 5, the betweenness measures by the individual students were much closer linked than in the pre-test, with the exception of Jackson whose score significantly higher than the others. Jackson's betweenness measure of 12.87 indicates a high level of the ability to act on his classroom peers. This is important when addressing the significance towards a positive change in creating more opportunities for formerly oppressed students when a nonhuman entity interacts with human entities. More students had the opportunity to act upon others, where in the pre-test, scores were much more widely dispersed indicating less equal agency among the students. This data also demonstrates the influence of nonhuman entities on classroom ecologies.

These measures are important in that they suggest two things. The first being that the presence of a nonhuman entity as a student allows for students to have more power in the classroom in terms of equal agency, or the ability to act upon others or be acted on. This breaks down the power hierarchy of the exceptional student classroom to one that suggests more cooperation and a sense of belongingness than before. Additionally, Jackson's high betweenness measure indicates how powerful a nonhuman entity can be in relation to human entities. With the highest betweenness measure in the class, Jackson as the nonhuman entity had the most power when it came to the creation of networks. His score indicates a high ability to bring two agents together who otherwise would not interact.

According to field notes and observations, there was what appeared to be more students initiating social interactions in the post-test, much like the betweenness measure demonstrates. Sadie, Patty, and Mandi, are what one would define as classroom leaders, however, they appeared to be more laid back when Jackson was around, thus allowing some of their peers to show an increase in power in terms of being actors rather than being acted upon as influenced by Sadie, Patty, and Mandi.

Table 4

Measures of Centrality Student Average Pre-Test

Student	In-Degree	Out-Degree	Degree	Closeness	Betweenness
Centrality					
Joe	3.00	5.25	8.25	0.70	8.13
Sadie	7.25	6.75	14.00	0.73	11.26
Mike	5.50	3.50	9.00	0.66	3.64
Daisy	2.00	1.25	3.25	0.56	3.63
Frank	6.25	7.25	13.50	0.61	3.78
Thomas	0.00	0.50	0.50	0.39	0.00
Kyle	3.50	1.00	4.50	0.44	1.43
Trey	5.00	5.75	10.75	0.59	8.02
Josie	3.75	5.50	9.25	0.53	4.91
Patty	5.50	7.00	12.50	0.73	14.49
Mandi	7.75	7.50	15.25	0.63	13.84
Brett	7.75	7.50	15.25	0.63	7.87
Hank	7.00	5.00	12.00	0.54	7.02
Olivia	3.00	4.50	7.50	0.49	2.66
Danny	6.00	4.75	10.75	0.63	6.71
Chuck	2.75	3.75	6.50	0.58	7.54
Devon	5.75	8.00	13.75	0.61	4.38
Kelsey	7.25	5.25	12.50	0.58	17.75
Emma	2.25	2.25	5.00	0.49	0.47
Cody	5.25	4.25	9.50	0.51	2.54

Table 5

Measures of Centrality Student Average Post-Test

Student	In-Degree	Out-Degree	Degree	Closeness	Betweenness
Centrality					
Joe	10.75	9.25	20.00	0.73	1.56
Sadie	15.75	12.75	28.50	0.86	1.75
Mike	13.75	9.00	22.75	0.80	1.20
Daisy	5.75	5.00	10.75	0.59	1.62
Frank	14.50	16.25	30.75	0.85	1.51
Thomas	4.50	3.25	7.75	0.57	0.06
Kyle	10.25	7.75	18.00	0.71	0.61
Trey	12.00	16.75	28.25	0.87	7.42
Josie	13.00	14.00	27.00	0.82	1.26
Patty	13.50	15.25	28.75	0.87	3.72
Mandi	14.00	14.00	28.00	0.81	0.98
Brett	14.50	14.75	29.25	0.84	1.65
Hank	14.25	12.25	26.50	0.82	0.94
Oliva	11.25	23.00	34.25	0.78	5.60
Danny	14.25	13.75	28.00	0.82	1.09
Chuck	10.00	6.75	16.75	0.71	0.30
Devon	13.25	17.50	30.75	0.90	3.52
Kelsey	9.50	10.00	19.50	0.74	4.46
Emma	11.75	10.00	21.75	0.77	0.60

Cody	13.75	15.25	29.00	0.90	7.93
Jackson	19.50	19.50	39.00	0.98	12.87

Looking more specifically at the individual student agents to determine whether there are patterns between centrality and disability and whether the incorporation of the nonhuman agent, Jackson, played a role in the overall increase in reported interactions. Referring to Table 5, the top five agents that had the highest degree of centrality were Frank, Brett, Olivia, Devon, and Jackson, slightly different than the pre-test in which Sadie and Mandi had the highest measures of degree centrality, along with Frank, Devon, and Brett that also had the top five highest measures in the post-test. Out of those five agents that were reported as having the largest influence within the social networks of the exceptional student classroom, Jackson had the highest measure of degree centrality at thirty-nine, which can be seen in *Figure 3*. *Figure 3* shows how Jackson connects to all twenty other student agents which is significant in that it further indicates how influential a nonhuman entity's presence was on the relational ecology of the exceptional student classroom in terms of interacting and relating.

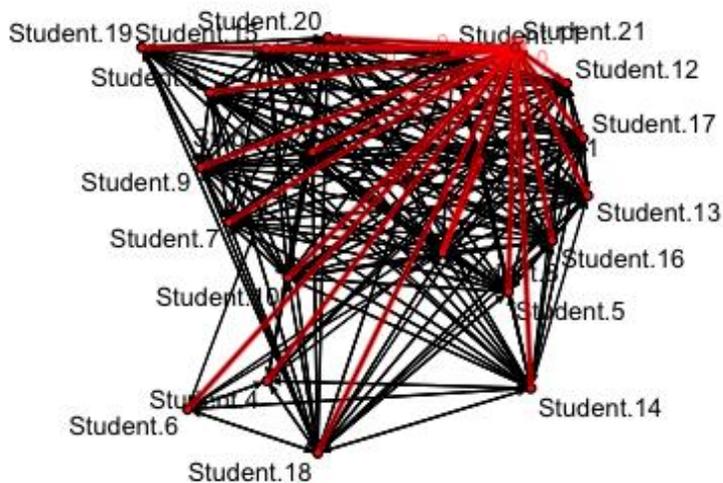


Figure 3. Overlaid Reachable-set Jackson

In regard to the remain four top agents in terms of degree centrality, a commonality was detected. All four of those student agents have medical diagnoses of Autism, which symptoms typically link to social deficits, unlike the other medical diagnoses that their peers share. In other words, the student agents who have the highest likelihood of disengaging with their peers interacted or were interacted with the most by the other student agents when Jackson was integrated into the classroom ecology.

This is crucial in terms of relating and interacting within the field of exceptional student services, because social deficits are common within the Autism Spectrum, and this demonstrates how a therapy dog can provide social supports. According to the Georgia Department of Education, Autism is defined as:

A developmental disability, generally evident before the age of three, that adversely affects a student's educational performance and significantly affects developmental rates and sequences, verbal and non-verbal communication and social interaction and participation. (Eligibility Categories)

Also, interesting to note was that those students also all had higher out-degree scores than in-degree scores. This is interesting because out-degree measures the number of connections that others report to have made with them. In other words, while they had the highest number of combined interactions (given and received), they reported fewer connections given than the number of connections received, as according to the in-degree number reported in Table 5. With social deficits as a commonality among them, I am curious if that explains the in-degree versus out-degree score. They did not report themselves as overly social, however, their peers did. For the top networking agents to therefor be those with Autism is significant in that it further demonstrates the positive benefits that a nonhuman entity, specifically Jackson, has on patterns of interacting and relating.

Another important factor found in Table 4 and Table 5, the top 5 student agents which showed the largest growth in degree centrality were Olivia, Cody, Josie, Trey, and a tie between Frank and Danny. Out of those six agents, two of them, Frank and Olivia, were also ones who had the highest overall degree centrality in the post-test as stated above. Additionally, it is important to note that three out of the six agents listed with the largest growth in social interactions have Autism diagnoses, which as interpreted

above, demonstrates how a therapy animal can act as a support for the challenges related to their diagnosis.

To further demonstrate what an impact Jackson had on the students, these four students with the highest growth in reported interactions shared what they were going to miss most when Jackson would no longer be one of their classmates (see Appendix K, Student Artifacts Day 20 of Post-Test). Frank wrote (2019), “I’m going to miss him. He’s going to miss me.” Brett wrote, “Jackson is awesome and cool...”, while Olivia wrote, “Jackson is nice, and playful, and gentle. I am going to miss him so much.” Finally, Devon wrote, “I love to pet the dog Jackson because he is so kind, he’s a pet, and he’s happy.”

In terms of what society has identified as deficits as associated with their medical diagnoses of Autism, this finding in centrality measures is significant in that Jackson’s presence alleviated some of these very deficits. What this looks like in a student with Autism is an increase in social engagement with others, whether it be through initiated social interactions or the actual social response to a social interaction. The increase in interactions, both given and received could therefor positively address other deficits that are typically associated with Autism such as communication skills, both verbal and nonverbal. With many interventions currently being used to work upon the challenges that these students with Autism face such as applied behavior analysis therapy and speech therapy which focus on receptive and expressive skills, Jackson’s presence alone has shown to improve upon the very skills they might find challenging.

In addition to SNA, an overall classroom behavior profile was computed to determine what percentage of overall observed behaviors were prosocial (those that foster a positive learning environment such as on-task behaviors, cooperation, empathy, etc.) and antisocial (those that adversely impact student learning such as verbal and physical aggression, avoidance, interruptions, etc.). The behavior profiles could be used as a further reference to determine whether the classroom shift from a predominantly human-centered ecology to one in which nature is integrated in the form of a therapy dog impacted the relational ecology of the exceptional student classroom. If so, was the impact positive or negative, not

only in terms of patterns of relating and interactions through networks, but the behavioral consequences of those networks and relationships.

Prior to analyzing the data, a paired-samples t-test was calculated to compare the pre-test prosocial and antisocial behavior frequency means to the post-test prosocial and antisocial frequency means to test whether there was a significance change in the behavior profile of the exceptional student classroom. The prosocial mean on the pre-test, the time-series before the nonhuman entity was integrated, was 215.9 (SD=94.99) and the mean on the post-test was 259.45 (SD=85.54). One can argue that there was a significant increase in prosocial behavior frequencies once a nonhuman was integrated into the classroom and identified as a student ($t(19) = -2.07, p > .05$). Looking at antisocial behavior frequencies, the mean on the pre-test was 77.50 (SD=96.98) and the mean on the post-test was 33.65 (SD=42.07). The decrease in mean antisocial behavior frequencies is also significant ($t(19) = 3.107, p < .05$).

In addition to the paired-samples t-test, a Chi-Squares Test of Association was calculated in order to measure whether there is an association between Jackson's presence and student behavior. In order to calculate this measure, data had to be configured into categorical measures. The first category was the time-series where Jackson's presence was marked as yes or no. The second category regarded individual student behaviors which were broken up into three categories. The three categories are as follows: total observed prosocial frequencies being 90% or greater, total observed prosocial frequencies being between 80-89%, and total observed prosocial frequencies being 79% or below.

In the context of this case study, the null hypothesis would state that there is no association between a nonhuman entity's presence and student behavior. Looking at the tables below, it demonstrates an increase in prosocial behaviors and a decrease in antisocial behaviors once Jackson was integrated into the ecology of the exceptional student classroom. The relationship between Jackson's presence as the nonhuman entity on student behavior is borderline significant ($N = 40$) = 5.712, $p > .05$ at .057. Based on the behavior chart data measures, the majority of prosocial behaviors occurred during first and second block, with third and fourth block producing more antisocial behaviors on average. This may be due to students feeling tired or over energized after lunch, or medications wearing off as the day ends.

With significance established in terms of the change in prosocial and antisocial observable behaviors and Jackson's presence as arguably significant in relation to the change in behaviors, it can be argued that the relational ecology of the exceptional student classroom shifted to a more positive environment once the nonhuman entity was incorporated. Approximately 77% of all behaviors observed and recorded represented prosocial behaviors, which is up from approximately 89% of classroom behaviors observed and recorded as prosocial in the pre-test, as evident in Table 6.

With the nonhuman entity, Jackson, as a classmate, students exhibited more examples of prosocial behaviors such as cooperation and on-task behaviors. These behaviors foster nurture and growth in the classroom, allowing for less interruptions and more academic and social instruction. Additionally, Jackson's presence had a calming effect on the students which is evident through the decrease in observable antisocial behaviors such as aggression and defiance. With fewer observable antisocial behaviors recorded, the relational ecology of the classroom can be deemed as one that fosters growth and positive relationships.

Table 6

Behavior Analysis

Time-Series	Prosocial Frequency Average	Antisocial Frequency Average
Pre-Test	76.9%	23.1%
Post-Test	88.67%	11.33%

Looking more specifically at the individual student agents, only three of the twenty student agents did not show growth in terms of prosocial behaviors in the post-test, as evident in Table 7 and Table 8. Specifically, Sadie, Oliva, and Emma showed regression. However, this data is not significant in that the change was by less than 6%. Two of those three students, Sadie and Olivia still demonstrated over 90% of

all observed behavior to be prosocial, while Emma decreased from 66.4% to 60.6% of observed behaviors being those that are defined as prosocial.

The five student actors that had the largest growth in terms of prosocial behaviors were Mike, Thomas, Josie, Brett and Chuck as evident in Table 7 and Table 8. Out of those five student agents, the majority at three students have Autism diagnoses, while the other two have diagnoses of Other Health Impairment (Mike) and a Moderate Intellectual disability (Josie). Additionally, two of those five students, Thomas and Brett, have behavior plans. Behavior plans are put into place to address behaviors that adversely impact the individual from accessing the curriculum or working towards academic and social goals. This could potentially indicate a couple of things: Jackson's presence helped to alleviate triggers to offset disruptive student behaviors from occurring, and/or Jackson's presence allowed for behavioral disruptions to deescalate.

Table 7

Behavior Analysis Pre-Test

Student	Prosocial Frequency Average	Antisocial Frequency Average
Joe	94.3%	5.7%
Sadie	93.9%	6.1%
Mike	72.1%	27.9%
Daisy	100%	0%
Frank	99.3%	0.7%
Thomas	53.6%	46.4%
Kyle	75.3%	24.7%
Trey	79.2%	20.8%
Josie	40.5%	59.5%
Patty	82.6%	17.4%
Mandi	90.5%	9.5%

Brett	68.3%	31.7%
Hank	87.2%	12.8%
Olivia	92.8%	7.2%
Danny	85.5%	14.5%
Chuck	61.4%	38.6%
Devon	97.9%	2.1%
Kelsey	66.9%	33.1%
Emma	66.4%	33.6%
Cody	30.5%	69.5%

Table 8

Behavior Analysis Post-Test

Student	Prosocial Frequency Average	Antisocial Frequency Average
Joe	98.8%	1.2%
Sadie	90.8%	9.2%
Mike	96.4%	3.6%
Daisy	100%	0%
Frank	100%	0%
Thomas	88.2%	11.8%
Kyle	90.6%	9.4%
Trey	92.6%	7.4%
Josie	91.5%	8.5%
Patty	95.6%	4.4%
Mandi	93.5%	6.5%
Brett	88.8%	11.2%

Hank	88.4%	11.4%
Olivia	91.6%	8.4%
Danny	96.3%	3.7%
Chuck	82.9%	17.1%
Devon	99.2%	0.8%
Kelsey	77.9%	22.1%
Emma	60.6%	39.4%
Cody	49.6%	50.4%

As evident by the increase in antisocial behaviors and decrease in antisocial behaviors, incorporating and identifying Jackson as a student into the exceptional student classroom had an overall significant impact on the positive shift of the relational ecology of the exceptional student classroom. Based on the data from the two time-series, it is clear how much of an impact Jackson had on the formation of networks and developing relations and interactions in the class. His very presence contributed towards the establishment of new networks, known as translation within ANT, that were not present in the first time series. Through the concept of symmetry where Jackson had equal agency as the other students, it allowed for translation to take place as his presence triggered many of those new networks formed.

The translation of new networks continued to grow over time with Jackson's presence. Looking at Table 9, the number of network connections increased with each passing week of the post-test, whereas growth was inconsistent during the pre-test. This suggests that the longer that Jackson was present, the more of a positive impact it had on social interactions. Social interactions consistently increased overtime throughout the post-test as evident by the weekly increases in edge count, density count, and transitivity

count which further demonstrates that the longer the nonhuman entity was present, the more benefits on the classroom ecology in terms of social interactions were determined.

Table 9

Social Network Analysis by Week

Time-Series	Edge Count	Density Count	Transivity Count
Week 1 Pre-Test	122	0.321053	0.460154
Week 2 Pre-Test	85	0.223684	0.489311
Week 3 Pre-Test	91	0.239474	0.425481
Week 4 Pre-Test	88	0.231579	0.471154
Week 1 Post-Test	215	0.511905	0.732938
Week 2 Post-Test	234	0.557143	0.740701
Week 3 Post-Test	292	0.695238	0.813255
Week 4 Post-Test	298	0.709524	0.816116

This consistent growth is also seen in density count. In terms of the growth in the density count in the post-trial, this suggests that with each passing week of the nonhuman entity's present, more possible connections actually connected. In the pre-trial, these measures were inconsistent, in that they did not consistently increase or decrease. Additionally, a consistent increase in transivity count indicates that students that shared common links were more likely to connect and interact themselves, which suggests an overall improvement in the expansion of networks overtime when Jackson was present.

Observed data of students increased interactions with one another aligns with student sentiments in regard to Jackson's presence as well. Students were asked to write what they would miss most about Jackson on the last day of the post-test (see Appendix K, Student Artifacts Day 20 of Post-Test). Josie wrote, "I love becus he give me kiss and he help me wane I'm sad and mad." Cody wrote, "Is my favorite

Dog ever in United State and Loved to Played together.” Chuck also voiced similar feelings when he stated, “We miss Ms. ---- and my dog Jackson!” Finally, Mike wrote, “I like Jackson in the room he makes us happy... we don’t want Jackson to leave us we going to miss him,” while Thomas wrote, “I kinda liked Jackson... Jackson is a nice dog. People like playing with him.”

When the day came in which Jackson was no longer an official student, the student agents asked where he was and when he was coming back. Brett, Kelsey, and Emma appeared to be the most affected with Jackson’s absence. Kelsey came to me and said, “Mrs. Blanton, how could you take away my cheer. I need Jackson. He is my cheer. He is my heart.” Brett reacted to Jackson’s absence similarly. Less vocal about her sadness, Emma would come to his dog bed still in the room and sit with her book, much like she did when Jackson was there, and she would read to him. I had to gently remind her that he wasn’t there when she came and sat down one morning on his bed. “I know. I just miss him.” (Emma).

It is hard to put in words how much Jackson impacted the relational ecology of the classroom. Seeing the students arrive early and search for him, their faces lighting up with excitement when he rounded the corner and pranced to greet them with kisses and a wagging tail. It is important to note that the students weren’t the only ones who were positively affected with their relationships with Jackson. Jackson himself enjoyed coming to school every morning. As I would get ready for work, Jackson would closely follow me, watching me intently. We would lock eyes and he would stare as if he was communicating to me that he was going with me, and I need not to forget him. This happened every morning during the four-week post-test, and even the days after, except for one day in which he did not want to get out of his dog bed in the living room. Even with some encouraging and me grabbing his leash to entice him, he refused to move, communicating with me that he just was not feeling up to it. I didn’t push it because it appears that even Jackson needed a day off, much like his fellow student peers who struggle to roll out of bed some mornings.

The rest of the post-test Jackson anxiously waited to be lifted into his bucket seat in the car next to his human brother who he helped to send off to daycare every morning. Once we dropped Jackson’s brother off and we would arrive to his school, he would frantically dance in his bucket seat in my car

anxiously waiting for me to let him out with a few howls to hurry the process up. Once I gathered our belongings (both mine and Jackson's as he did come to school prepared with his school supplies being his toys and snacks), he would eagerly lead the way to my classroom, pulling me into a near jog. Jackson was this eager and excited to get in the room every day without fail. As the students would slowly trickle in beginning at 7:00am, he would continue the pattern of racing from one side of the portable to the other, greeting every student that entered with a few licks and wiggles before moving onto the next. Jackson loved being there and never once appeared stressed or nervous. His relaxing demeanor, as well as the student agents' excitement and joy of having him around contributed to the success of his stay in the classroom, allowing for positive changes to occur.

The students begged for his return and Jackson struggled to understand why I began to leave for work without him as he would sit patiently next to the garage door without breaking his gaze away from me, and so on occasion, Jackson would make an appearance. After one week passed between visits, I brought Jackson in. During morning work time of journal writing and grammar review, while the students were working and I was taking attendance, Jackson had laid down next to my desk. With no prompting or warning, Thomas, the one student who self-reported to be indifferent towards Jackson and wasn't sure if he wanted to pet him or not, silently came to my desk, plopped on the floor, and grabbed hold of Jackson in a bear hug with a smile on his face and his eyes squinted shut. I asked him if he missed Jackson and he nodded furiously, without saying a word. Even the other students took notice and stared before finally, Frank quipped, "Wow, he has never done that before." It was a special moment to witness as Thomas bonded with Jackson, unprompted and on his own will.

CHAPTER 5

DISCUSSION AND INTERPRETATION

Within the context of this mixed methods case study, ANT allowed for us to focus on the environmental aspect of education and its implications on the relational ecology of the exceptional student classroom. Regarding curriculum studies and ecology, Gough, A. and Gough, N. (in press) state, “The environmental focus which has shifted from the biophysical environment to the total environment- natural and built, technological and social...” (p. 2). By shifting the classroom ecology to fully accepting an animal as a student in the exceptional student classroom and acknowledging the equal agency between all entities present in the classroom (technology, supplies, students, etc.), we are emphasizing the total environment and its impacts on the relational ecology, and were therefore better equipped to answer the overreaching research question regarding the impact that a nonhuman entity had on the relational ecology of the exceptional student classroom utilizing ecological thinking (Bowers, 2011) to interpret the findings.

Emerging Themes

The integration of Jackson positively impacted the overall relational ecology of the exceptional student classroom as evident by an increase in social networks and patterns of relating and student behaviors as analyzed from the data above. When Jackson was incorporated into the ecology of the exceptional student classroom, social networks among the human agents translated to include the formation of new networks, there in turn flattening out the social hierarchy of the exceptional student classroom. The flattening out of the social hierarchy represents more student autonomy, agency, and freedom, relating to the political component of ANT. In addition, the longer that the nonhuman entity was present as a student in the classroom, the more positive impact it had on students interacting and relating as evident by an increase in reported social interactions, and an increase in prosocial behaviors and a decrease in antisocial behaviors. Finally, the students reported to enjoy having Jackson present amongst them and acknowledge how he helped them emotionally and academically.

The Classroom as an Ecology of Interdependent Species

Moving forward, much like any ecosystem, the exceptional student classroom should be viewed as a dynamic ecological system or ecotone (Krall, 1994) in which species and entities co-exist, interact, and relate. With the purpose of this mixed methods case study being to determine the implications of opening the environment of the exceptional student classroom to incorporate a therapy dog as a student, it is important to identify and recognize all of the human and nonhuman entities present within the classroom as equal agents through the ANT concept of symmetry, which rejects the anthropomorphic view that places humans over nonhuman entities. Similar to Harman's (1999) object-oriented ontology which places objects as independent of the culturally constructed perceptions that humankind forms, symmetry likens objects to humankind in terms of having equal power and agency. Symmetry played an important role not only in establishing equal agency between the human and nonhuman entities present in the exceptional student classroom, but more specifically, allowed us to identify Jackson and the students as having equal abilities to act upon others in terms of creating social networks, or be acted upon in terms of joining social networks within the classroom.

Cressman (2009) drives the idea that networks are heterogenous and argues that "...both humans and nonhumans actors be understood within a network wherein their identity is defined through their interaction with others," (pp. 3-4). The integration of Jackson and the positive impact he had in terms of helping to create these very heterogenous networks allows us to breakdown anthropocentric barriers as it is evident how powerful a nonhuman entity could have in terms of influencing the patterns of interacting and relating of human agents.

When we break down the barriers between humans and animals that are established through anthropomorphic thinking, we are better able to create, as Haraway (1991) states, "a cyborg world . . . in which people are not afraid of their joint kinship with animals and machines, not afraid of permanently partial identities and contradictory standpoints" (as cited in Gough, N., 1997, p. 156). It needs to be understood that any and all networks are involved and/or influenced by nonhuman entities such as ideas, concepts, technology, machines, animals, etc.

Not only did Jackson promote the formation of new connections through the ANT concept of translation with his presence in the classroom, the implications of those networks proved to be positive overtime. Looking specifically at the closeness measure within the social network analysis as evident in Table 4 and Table 5 which indicates how close our connections are, the closeness measure increased for every student from the course of the pre-test to the post-test. This increase indicates a shift from loosely connected social networks to networks with more stability within the context of the exceptional student classroom.

In relation to ANT, the social network analysis measure of closeness relates to the ANT tenet of power, which looks at the strength of the networks. Since the results indicated an increase in the closeness between the student connections, it can also be argued that the networks became stronger overtime. The stronger the network, the longer the duration of the network. In other words, not only did Jackson help to strengthen the networks formed between students in the classroom, his presence contributed to the power of those networks which can lead to them lasting for a longer duration, which has positive implications on the relational ecology of the exceptional student classroom.

Additionally, as the results demonstrated, Jackson had a significant impact on the positive shift of the relational ecology of the exceptional student classroom where students interacted at a higher rate with one another and their interactions and relations were defined as prosocial, or ones that foster empathy, kindness, and respect. The improvements that the overall classroom behavior profile align with the review of literature on studies that looked at the prosocial behavioral and socioemotional benefits (Anderson & Olson, 2006; Bass et al., 2009; Beck, 2015; Chandler, 2001; Daly & Suggs, 2010; Geist, 2011; Grandgeorge et al., 2012; Haughie et al., 1992; Hergovich et al., 2002; Kelly & Cozzolino, 2014; Kotrschal & Ortbauer, 2003; Putney, 2013; Sanford, 2014; Schuck et al., 2015; Stevenson et al., 2015; Tissen et al., 2007; Vidovic et al., 1999; & Wodder, 2014)

Prior to Jackson's integration as a student, results from the first time-series reveal an "asymmetrical dependence" (Gough, 1989, p. 14) between the students as evidence by the classroom social hierarchy in which a few students appeared to have more agency over the other students. While

looking at the betweenness measures in Table 4, it is evident by the wide range of scores between the students that several students had more power over other students in the form of creating networks and connecting with others. This demonstrates an “asymmetrical dependence” (Gough, 1989, p. 14) within the formation of networks and a lack of autonomy and equal agency amongst the human agents.

Once Jackson was integrated as a student into the exceptional student classroom, we see a flattening out of the social hierarchy within the classroom. Looking at Table 5, the betweenness measures for each student are very similar and lower than seen in the pre-test. This shows that the students had similar power in relation to forming networks than before.

In terms of Jackson’s high closeness betweenness measures, it illustrates his ability to both connect with the others and to connect others to each other. This finding is crucial in that within the tenets of ANT and ecology within the field of curriculum studies, it demonstrates the “symmetrical dependence” between human and nonhuman entities (Gough, 1989, p. 14). This “symmetrical dependence,” acknowledges the interrelatedness and interdependence between all present agents within the classroom. In addition, since the idea of symmetry through ANT gives equal agency to all entities which are the students and Jackson within the context of this mixed methods case study, it demonstrates how dependent we are with other entities in terms of forming networks and relationships.

Potential Limitations

With any case study, there are potential limitations. Looking more closely at the method, it is important to note that there are limitations within methodology. By conducting a case study and emerging myself directly within the environment in which my study is conducted, I am limiting as to what I can observe. However, as the educator for the population of the study, I could not necessarily remove myself from the environment in that it is my job to teach them. This dual positionality between both the researcher and potentially influencer leads to limitations.

In addition, the nonhuman entity we incorporated as a student happened to also be my personal pet. In order to ensure any potential bias in the recording of student behavior occurred, I had multiple teachers aid in the behavior data collection, such as my co-teacher and two paraprofessionals. This gave a

broader perspective in interpretations of behaviors observed. However, my enthusiasm towards Jackson, could impact the students' perspectives and behaviors. As Gough, (1994) states, "Recognizing the intertextual mediation of experience is significant for curriculum and pedagogy. As teachers, we exercise some influence on the intertextual 'scaffolding' which supports the production of meaning by learners. We do this by privileging some texts in our interactions with learners and ignoring or diminishing others," (p. 7). My excitement, enthusiasm, and personal link to Jackson could've therefore impacted the construct of knowledge that students made of their networks and relations.

In addition, the behaviors observed, and student agent reported social interactions may vary depending on the courses the students are being observed in/reporting in. Subject, content, and teacher can have an impact on student behaviors as well as the formation of student networks. In addition, I was out on maternity leave the last two weeks of time-series one. The change in having a substitute teacher maybe reflected in student behaviors. Additionally, depending on the class structure, students may have had more opportunities to socialize or fewer opportunities. In order to address this potential limitation, data was collected among two semesters, meaning that students were observed/reported in up to eight different courses. The number of courses helps to balance out subject content, teacher, and other miscellaneous triggers that may impact student behaviors or social interactions.

A final potential limitation would be error in student reported social interactions. Students were responsible for documenting their social networks at the conclusion of every block, Monday-Friday. Even with teacher assistance, student agents may have not 100% accurately documented their interactions for each block. Student error could be a result of accidentally marking the wrong student's name, for example. Additionally, response bias overtime may have occurred as the students became more comfortable filling out the surveys.

Suggestions for Future Research

This study contributes to the field of curriculum studies, specifically relational ecology and the human-animal bond by introducing a therapy dog as a student in the exceptional student classroom. The aim of this study was to analyze the relational ecology of the classroom by looking at patterns of relating

and interacting through social network analysis and student behaviors. Based on the data collected, incorporating Jackson as a student agent in the exceptional student classroom proved to improve the relational ecology of the exceptional student classroom. An increase in networks were formed suggesting more social interactions between student agents, and classroom behaviors improved as evident by an increase in observed prosocial behaviors and a decrease in observed antisocial behaviors. This data suggests that not only were students interacting and relating with one another more frequently once the nonhuman entity was incorporated, but those interactions were more prosocial, indicating an increase in on-task behaviors, caring, empathy, and empowerment, and a decrease in oppressive behaviors such as aggression, defiance, and off-task behaviors that would otherwise adversely impact the relational ecology of the classroom.

There are several suggestions to expand upon this research, for which I have intentions of exploring. One suggestion for future research would be to determine the duration of growth before student interactions and improvements reached homeostasis. This case study collected data for two, four-week time-series. In the post-test time-series, social network analysis data showed consistent growth from week to week. How long would this growth increase? If social network formations do plateau, would they remain at that level? Additionally, a second future research suggestion to expand this study would be to include studies in primary grades. Would a nonhuman entity incorporated as a student also show statistically significant impacts on student agents' patterns of interacting and relating? Finally, would other nonhuman entities, such as a bunny, snake, gerbil, etc. have the same impact on social interactions and behaviors as Jackson did?

This area of study has plenty of room for expansion. The integration of natural and political classroom ecologies with the focus on the impact that a nonhuman entity has on behaviors and patterns of interacting and relating has many directions for expansion and future contributions to the field of curriculum studies.

Closing Remarks

Research demonstrates animals as meaning and purposeful agents (Bekoff & Pierce, 2010; Betts, Hardenberg, & Stirling, 2015; Pearson, 2013), as rational agents (Betts et al., 2015; Brosnan, 2003; Despret, 2016), as having the ability to communicate and determine meaning (Despret, 2016), as just and moral agents (Bekoff & Pierce, 2010), and as empathetic agents or agents that have the potential to increase empathy in others (Anderson & Olson, Bekoff & Pierce, 2010; 2006; Daly & Suggs, 2010; Hergovich et al., 2002; Tissen et al., 2007; & Vidovic et al., 1999). As evident by the significant impact that Jackson had on the relational ecology of the classroom as a whole and the students at an individual level, I argue that he demonstrated these very characteristics such as meaningful, empathetic, moral, and just, as stated above. When it came to student interactions, Jackson did not discriminate nor exclude. Rather he looked at each of his classmates in terms of equality, thus aiding in the transformation of new social networks in the exceptional student classroom.

Even though Jackson was not able to communicate verbally with the other students, or the students with him to a certain extent, I argue that this allowed Jackson to have more potential to act upon his classmates through “learned adjustments” (Sunuara, 2017). As Sunuara (2017) explains, learned adjustment is a “process of learning how another being moves and acts without prior assumptions or stereotypes,” (p. 29). I was unable to communicate to Jackson the deficits that his classmates have, however, through observation, I observed that he was able to pick up on them through observation or intuition, and act accordingly.

For instance, when I became pregnant, Jackson quickly stopped jumping on me to greet me and became gentler in our play interactions. In addition, he became my shadow and followed me wherever I would go, whereas before, he maintained proximity to my husband. As soon as the baby was born, he continued to follow me around and became enamored with the newborn, resting his head carefully within inches of the baby. He displayed control in that he did not rush towards the baby like he does others, but carefully and gently greets him. When the baby laughs, his tail wags, and when the baby is upset, he is right there as close as he can be as if trying to comfort him. We did not have to tell him that he couldn't

jump on the newborn or bring him toys to play tug of war. Rather it was through “learned assumptions” in which he was able to learn to be gentle with the baby. I’ve noticed this in the classroom as well with his interactions between himself and his classmates.

In relation to Mr. von Osten’s famous pupil in the early 1900’s in Berlin, a horse named Hans who was able to solve mathematical problems, spell words, and differentiate between colors, I believe that companion animals too have the ability, not to solve problems per say, but help to alleviate them, based upon my experiences conducting this study with Jackson. The politically speaking human would question these abilities. However, as Despret (2004) states, “their bodies were talking and moving against their will, outside the frame of their consciousness,” (p. 113). Humans were therefore communicating the answers to Hans unknowingly so. This phenomenon could be transferred to other animals besides Hans, the horse, as evident by animals’ abilities to care for the sick. Within the context of this case study, Jackson could also potentially read students’ nonverbal communication (tone, gestures, expressions, body language) and react accordingly, hence approaching his peers or communicating his wish for them to come and interact with himself, as evident by him having the highest degree centrality representing interactions, and betweenness and closeness measures representing his ability to bring others together to form connections and for those connections to be closer and more sustainable.

I believe that Jackson was able to read the nonverbal communication cues that we gave off, hence allowing him to be viewed as a source of comfort and joy, depending on what we needed him to be for us at a given time. Much like Hans who, “Not only could he read bodies, but he could make human bodies be moved and be effected, and move and effect other beings and perform things without their owners’ knowledge,” (Despret, 2004, p. 113), Jackson appeared to have the same effect on his classmates, as his high closeness and betweenness measures of centrality indicate. Jackson’s overall enthusiasm upon my observations of him, and the eagerness to greet and address every human entity that walked into the door as well as the human entities’ eagerness to see him, further validates these very measures.

Both the Hans the horse and Jackson are excellent examples of how a nonhuman entity has the power to enact upon a human entity which is an important and crucial concept to close this paper with. In

the context of this research, viewing the exceptional student classroom in terms of an ecology of interdependent species, both human and nonhuman, allowed for the relational ecology of the classroom to shift to one that fosters compassion, empathy, and growth. By acknowledging Jackson as an equal in terms of agency through ANT, it allowed us to see the flaws in anthropocentric thinking and see how influential a nonhuman entity can be on the formation of social networks within the context of an exceptional student classroom.

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APPENDIX A

THERAPY DOG INTERNATIONAL TESTING REQUIREMENTS

Phase I

- TEST 1: TDI ENTRY TABLE (Simulated as a Hospital Reception Desk) The dog/handler teams are lined up to be checked in (simulating a visit). The evaluator (“volunteer coordinator”) will go down the line of registrants and greet each new arrival including each dog. At the same time the collars will be checked, as well as nails, ears and grooming and lifting of all 4 paws and tail, which must be lifted if applicable. If the dog has a short cropped tail it should be touched.
- TEST 2: CHECK-IN AND OUT OF SIGHT (time: One Minute) The handler will be asked to check in. After the check-in has been completed the handler will be escorted by a helper to where the handler is supposed to sit. All dogs will be placed in a down position on the handler’s left side keeping teams at least 8 feet apart. Now the handler will start completing the paperwork. Once all teams have been placed, the helper(s) will ask the handler(s) if they can hold their dogs. Now the handler(s) will leave for “one minute”. The handler(s) can give the “stay” command verbally or by hand signal or both. The helper(s) can talk to and pet the dog(s). The dog(s) can sit, lie down, stand or walk around within the confines of the leash.
- TEST 3: GETTING AROUND PEOPLE As the dog/handler team walks toward the patients’ rooms, there will be various people standing around. Some of the people will try visiting with the dog. The dog/handler team must demonstrate that the dog can withstand the approach and touching by several people from all sides at the same time and is willing to visit and walk around a group of people.
- TEST 4: GROUP SIT/STAY The evaluator will ask all the participants to line up with their dogs in a heel position (w/dog on left or right), with 8 ft. between each team. Now the handlers will put their dogs in a sit/stay position. The handlers will give the sit command to the dogs. The evaluator will tell the handlers to leave their *If the dog is on a longer leash, a knot must be made in the leash to mark 6 ft. The handler must drop the extra leash. dogs. The handlers will step out to the

end of their 6 ft. leash, turn around and face the dog(s) and wait for the evaluator's command to return to their dog(s). (The evaluator will give the return command immediately).

- TEST 5: GROUP DOWN/STAY Same as test number 4, except dogs will now be in a down/stay.
- TEST 6: RECALL ON A 20 FT. LEASH All handlers will be seated. Three dogs at a time will be fitted with a long line. The reason we fit more than one dog with a long line at the same time is to save time. The handler will continue to hold the 6 ft leash while the long line is fitted by a helper. To avoid any kind of incident, the evaluator will make sure that the handler is holding the 6 ft leash until the dog has been placed and is ready to be tested for the recall. One handler at a time will take the dog to a designated area which is out of reach of the other dogs even with a 20 ft. line. The evaluator will then give the command: Down your dog!. The handler can down the dog either by voice and or by hand signal. The evaluator will give the command: Leave your dog!. The handler will tell the dog to stay either by voice and or by hand signal. The handler now will turn away from the dog and walk in a straight line to the end of the 20 ft. lead. The handler will turn and face the dog. The evaluator immediately will tell the handler to call the dog. The handler will call the dog, either by voice, hand signal or both.
- TEST 7: VISITING WITH A PATIENT The dog should show willingness to visit a person and demonstrate that it can be made readily accessible for petting (i.e. small dogs will be placed on a person's lap or held; medium dogs will sit on a chair or stand close to the patient to be easily reached, and larger dogs will be standing).

Phase II

- TEST 8: TESTING OF REACTIONS TO UNUSUAL SITUATIONS The dog handler team will be walking in a straight line. The dog can be on either side, or slightly behind the handler; the leash must not be tight. The evaluator will ask the handler to have the dog sit (the handler may say sit or use a hand signal or both). Next the evaluator will ask the handler to down the dog (the

handler may say down or use a hand signal or both). Next continuing walking in a straight line, the handler will be asked to make a right, left and an about turn at the evaluator's discretion. The following distractions will be added to the heel on a loose leash. a. The team will be passing a person on crutches. b. Someone running by calling "excuse me, excuse me" waving hands (this person is running up from behind the dog. It could also be a person on a bicycle, roller blades, or a skateboard etc). c. Another person will be walking by and drop something making a loud startling noise (a tin can filled with pebbles or a clipboard). At an indoor test there may be a running vacuum cleaner (realistic in a facility). d. Next the team will be requested to make an about turn. e. And then a left turn. f. Then the team should be requested to make a right turn, going back parallel toward the starting point in a straight line.

- TEST 9: LEAVE-IT; PART ONE The dog handler/team meets a person in a wheelchair. The dog should approach the person and visit. The person in the wheelchair, after briefly interacting with the dog, will offer the dog a treat by holding the treat steady in the hand while enticing the dog. The handler must instruct the dog to leave it. It is up to the handler as to what kind of verbal command they use to keep the dog from licking or taking the food. The handler should explain to the patient why the dog cannot eat a treat while visiting (i.e. dog has food allergies).
- TEST 10: LEAVE-IT; PART TWO The dog handler will be walking in a straight line with the dog at heel. There will be a piece of food in the path of the dog. The dog is not allowed to lick or eat the food. There should also be a bowl of water in the path of the dog. The dog is not allowed to drink.
- TEST 11: MEETING ANOTHER DOG A volunteer with a demo dog will walk past the dog handler/team, turn around and ask the handler a question. After a brief conversation, the two handlers part.
- TEST 12: ENTERING THROUGH A DOOR TO VISIT AT THE FACILITY A person should be able to go through the entrance ahead of the dog/handler team. The dog handler team is ready

to enter through a door to a facility. The handler first has to put the dog in a sit, stand, or down stay, whatever is most comfortable for the dog.

- TEST 13: REACTION TO CHILDREN The children will be running and yelling, playing ball, dropping objects, and doing what children usually do while playing. 1. The handler will walk with the dog past playing children (distance from the children must be at least 20 feet). 2. a. The dog must lie down beside the handler. b. The handler will simulate reading a book while the dog is lying down. c. The dog **MUST** have his back to the children."

APPENDIX B
STUDIES INVESTIGATING RELATIONAL ECOLOGY

Studies Investigating Ecology within Curriculum Studies

Author(s)	Study Objective	Population/Setting	Main Conclusions
Ahn (2011)	Analyze peer dynamics related between popularity and aggression and popularity and prosociality, and how classroom dynamics shape these behaviors	46 4 th -5 th grade classrooms	Positive relationship between perceived aggression and overall popularity. Those perceived aggressive at the beginning of the study gained popularity throughout the course of the study in classrooms where friendship density was low. Classroom ecologies therefore played a role in whether prosocial or aggressive students gained popularity overtime.
Brendgen and Troop-Gordon (2014)	To analyze social ecologies in the classroom to determine which contextual features within schools heighten or minimize incidents of bullying and aggression	Data from U.S., Canada, Finland, and the Netherlands from preschool-early adolescent students	Peer victimization is directly impacted by the classroom peer ecology and teacher behavior. Teacher's with perceived control of bullying and aggression have lower victimization rates in their classrooms. Students perceptions on teachers' bullying beliefs additionally impact the peer ecology of the classroom.
Brown (2015)	To better understand the relational ecology of two urban middle schools that adopted school-wide restorative practices, and the impacts the	Two urban middle schools in Oakland Unified School District	Relational Ecology and school-wide change were interrelated; positive relational ecology resulted in positive changes and succeeded in transforming school cultures that

	restorative practices had on the schools		embraced change; relational ecologies were built on trust between stakeholders within the schools
Hendrickx et al. (2016)	To study the relationships between teacher behavior and peer relations. Investigates how the teacher shapes the peer ecology of the classroom.	58 Dutch 5 th Grade Classrooms	Positive relationship between teacher support and peer relations. Reported that the more supportive the teacher was, the more the students demonstrated positive attributions to their peers. Teacher support promoted a more positive peer social ecology than when teacher conflict was noted and observed.
Kontos et al. (1998)	Investigates the ecology of experiences that children with disabilities have during inclusive free-play in comparison to their nondisabled peers	40 elementary-aged children with Mild-Moderate Intellectual Disabilities from four school districts	No real differences were reported in the ecologies of experiences between students with disabilities and students without disabilities.
Mehtaji (2003)	Investigates how the peer ecology and natural social dynamics of the classroom contribute to the social experiences of students with disabilities	50 5 th grade elementary schools	Students with disabilities felt more inclusive and welcome in classrooms with high academic/prosocial norms but were more likely to “get their way” in high aggression norm salience classes.
Serdiouk et al. (2011)	To examine how classroom peer ecologies and teaching practices may prevent or foster peer rejection, which may later lead to	54 elementary schools for one academic year	Victimization was higher in classrooms with higher levels of peer rejection, demonstrating how hierarchical networks can foster adverse outcomes. These results were higher

	victimization, lower academic achievement, depression, and school avoidance.		in classrooms that did not promote peer diversity and acceptance.
Yudron (2015)	To determine how the social ecology of the classroom impacts children's social experiences in schools regarding peer rejection and social competence. This was studied through social behaviors and the relational climate of the classroom.	Preschool-Aged Students	Social competence was higher in classrooms with a more positive emotional climate. Students in this classroom demonstrated fewer peer rejections and demonstrated more social competence through their externalization of behavior

APPENDIX C

STUDIES INVESTIGATING THE IMPACTS OF THERAPY DOGS/ANIMAL-ASSISTED THERAPY

Studies Investigating Impacts of Therapy Dog/Animal-Assisted Therapy

Author(s)	Study Objective	Population/Setting	Main Conclusions
Allen et al. (2002)	Investigated the physical and physiological effects of cats and dogs on friends and spouses	Married adult couples	Lower heart rate, lower blood pressure, and faster recovery from stress in the presence of their pets
Anderson and Olson (2006)	Investigated the emotional and academic impacts of a therapy dog incorporated into a self-contained exceptional student classroom for students with EBD	North Dakota elementary school self-contained exceptional student classroom	Positive emotional impacts on the students, decrease in aggression, increased emotional stability, increased levels of responsibility, empathy and respect
Anderson et al. (1992)	Investigated whether there was a difference between pet owners and non-pet owners for cardiovascular disease	784 pet owners 4957 non-pet owners	Significant difference in blood pressure between pet owners and non-pet owners. Pet owners had lower blood pressure and plasma triglycerides
Barker & Dawson (1998)	Investigated differences in anxiety levels after a dog-assisted therapy session versus a recreational therapy session	230 adult psychiatric patients	Dog-assisted therapy resulted in reduced anxiety levels for patients with all types of disorders whereas the non-animal-assisted session resulted in lower anxiety rates only for patients with mood disorders
Bass et al. (2009)	Evaluated effects of therapeutic horseback riding on social functioning in children with an autism spectrum disorder	Children with Autism involved in a 12-week horseback riding therapy intervention	Children demonstrated greater sensory seeking, sensory sensitivity, social motivation, and a decrease in inattention and distractibility

Bassette and Taber-Doughty (2013)	Investigated the impacts of a dog reading visitation program	3 elementary students with a diagnosed emotional and behavioral disorder	Improvement in on-task behaviors, increased confidence in reading
Baun et al. (1984)	Investigated the physiological effects of adults when they read to an unfamiliar dog or their own dog	24 adults (3, 9-minute reading sessions)	Participants that read to their own dog had greatest decrease in blood pressure
Beck (2015)	Investigate the impacts that therapy dogs have on students academically, socially, emotionally, behaviorally, and physically	Primary and Intermediate School in upstate New York that utilizes a therapy dog	Therapy dogs generally have a calming effect on students resulting in improvements behaviorally and academically
Beetz et al. (2013)	Investigated the effects on socioemotional experiences of school in a 3 rd grade classroom that had a dog present for 1 day a week in comparison to a control group who did not have access to a dog weekly	3 rd grade classroom	Students in the classroom with the dog reported stronger improvement in a positive attitude towards school and positive emotions related to learning
Breslford et al. (2017)	Analyzed animal-assisted empirical research literature	25 papers on animal-assorted therapy and child and adolescent health and well-being	Increase in positive behavioral improvements from teenagers with mood disorders, increase in oxytocin, decrease in cortisol, decrease in blood pressure, decrease in stress and anxiety.
Chandler (2001)	Analyzed benefits of animal-assisted therapy in counseling and school settings	Counseling settings	Goals would be to improve socialization, communication, reduce isolation, loneliness, improve mood, decrease depression, improve memory and recall, improve self-esteem, improve

			cooperation, improve concentration and attentiveness, increase engagement, reduce anxiety, reduce aggression, improve trust
Daly & Suggs (2010)	Analyzed experiences and attitudes of teachers regarding use of pets in their classrooms	75 elementary teachers	Reported that pets increased empathy among their students as well as increased the students' socioemotional development
DeMello (1999)	Investigated physiological recovery from stressors in 3 different conditions: unfamiliar pet absent, pet present and visual interaction allowed, pet present and tactual interaction allowed	50 adults	Decrease in blood pressure and heart rate when visual contact was made with a dog
DeNisco (2016)	Analyzed reading skill impacts on students who are involved in canine reading programs	Elementary schools in San Francisco who participate in Readers of the Pack program	Improvement in responsibility, increased excitement to read when dog was present, increase in classroom engagement
Friesen (2009)	Investigated benefits of animal-assisted therapy on students	Animal-assisted therapy study in home, school, and therapeutic environments	Therapy dogs lower behavioral, emotional, and verbal distress, lower blood pressure and heart rate during reading activities, improvement in positive attitudes regarding school, increased alertness, less distractibility

Gee et al. (2010)	Investigated memory in the presence of a stuffed animal, a dog, and a human	12 preschoolers	Decrease in instructional prompts when in the presence of the dog, and, an increase in prompts in the presence of a human
Geist (2011)	Emotional Support Program at Hill atop Academy for k-12	Program added animal-assisted therapy as a new intervention program to try; uses attachment theory as a proposed unified framework for A-AT studies	Therapy dogs offered temporary healing, improved positive comments, decrease in distractibility, increase in eye contact, improved appropriateness of tone, and an increase in self-control, improved attendance, decreased stress levels, greater self-awareness
Grandgeorge et al. (2012)	Evaluated the association between pet and prosocial behaviors in individuals with Autism	260 individuals with Autism	Results showed an improvement in the prosocial behaviors of offering comfort and offering to share after they got a pet dog
Handlin et al. (2010)	Investigated physiological differences when dog owners interacted with their dogs versus did not interact with their dogs	20 female dog owners	Decrease in cortisol and insulin levels after interaction with their dog
Hansen et al. (1999)	Investigated physiological differences during a physical examination in the presence or absence of a therapy dog	34 children ages 2-6	Reported less stress when the therapy dog was present, but noted no major differences between blood pressure and heart rate
Haughie et al. (1992)	Investigated changes in behavior of psychiatric residents during the presence of a dog	37 elderly psychiatric patients	Increased in social interaction when in the presence of a dog

	versus a photograph of a dog		versus just a photograph of a dog
Heimlich (2001)	Investigated behavioral outcomes after children with disabilities participated in therapy dog interventions	14 children with disabilities	Increase in attention span, physical movement, communication, and compliance
Hergovich et al. (2002)	Examined the effects of a therapy dog in a classroom, in particular the social benefits	46 first graders from two schools	Overall positive effects, namely a decrease in aggression and an increase in independence and empathy
Kaminski et al. (2002)	Investigated the physical and emotional effects of dog therapy versus play on hospitalized children	70 hospitalized children	Increased moods after pet therapy. Children in pet therapy were rated happier, although it did increase their heart rate as compared to those in the play group
Kelly and Cozzolino (2014)	Investigated animal-assisted therapy benefits on at-risk students	Youths who participate in residential or outpatient treatment program. Program is 8 weeks long with 1.25 hour long weekly sessions	Greater sense of responsibility and accountability for their actions, improve impulse control, self-esteem, social skills, as well as improve in interpersonal awareness, decrease in depressive symptoms
Kirnan et al. (2015)	Investigated the effects of a therapy dog incorporated into a reading program	169 students in k-4 th grade	Improvement in reading fluency, accuracy, and comprehension for the younger students, less significant results for 4 th grade students
Kotrschal & Ortbauer (2003)	Compared behavior observations between 1-month without the presence of a dog to 1-month with a dog in the classroom	24 elementary students	Reported a decrease in aggression, withdrawal, and hyperactivity, and an increase in socialization skills

			when the dog was present
Martin & Farnum (2002)	Observed daily routines of children with developmental disorders for 5 days without a dog and five days with a dog	10 children with development disorders over a 10-day period	When the dog was present, it was reported that the children were more focused, aware of social environments, and happier than when the dog was absent
McCullough et al. (2017)	Investigated physiological and behavioral stress indicators in therapy dogs who participated in AAI sessions	Pediatric oncology settings	No statistically significance stress indicators reported
Nagengast et al. (1997)	Investigated the physiological effects during a physical examination in the presence of a dog as compared to the absence of a dog	23 preschoolers	When the dog was present, it was reported that the children had lower blood pressure, heart rate, and stress levels
Putney (2013)	Impact of companion animals on one's physiological well-being	Lesbian women over the age of 65	Added meaning to life, helped to alleviate physical and emotional pain, helped them develop a stronger sense of self
Sanford (2014)	Development of a pilot therapy dog study on a college campus as an alternate to counseling	Bowdoin College	Therapy dogs decreased symptoms of depression, decreased feelings of anxiety, and there was an overall positive experience for the patients
Scheckler (2017)	Analyzed benefits and risks of having a therapy dog in the classroom.	10 schools that utilized therapy dog programs	Results of improved student learning, 100% reported that it the therapy dog program specifically helped students with special needs

Schuck et al. (2015)	Analyzed whether there were differences in ADHD symptoms after a 12-week therapy session with or without therapy dog intervention	12 week cognitive and behavioral group therapy on 24 children with ADHD	The children that received the therapy dog intervention displayed a decrease in ADHD symptoms, and an increase in social skills and prosocial behaviors
Somervill et al. (2009)	Investigated the physiological effects of testing sessions with both the presence and absence of a dog	17 children with ADHD, 2 15-minute testing sessions	Increase in blood pressure when the children handled the dog, however, there was a decrease in heart rate during both the interaction with the dog and when the dog was absent
Stevenson et al. (2015)	Investigated social and motivational engagement with students with Autism and sessions in the classroom with a therapy dog	3 male students with Autism who attended a special school for students with disabilities	Overall the students demonstrated improvement in interactive play, a positive interest in the dog, increase in socialization, decrease in sensory behaviors.
Tissen et al. (2007)	Investigated social behaviors on children over a 10-week period during training with a dog or without a dog	230 third grade students	Reported a decrease in aggression for the group that received the social training with the dog, and an increase in prosocial behaviors and empathy between both groups
Viau et al. (2010)	Investigated the physiological effects of children with autism when a service dog was introduced or removed	42 children with Autism	Decrease in cortisol when the service dog was introduced, and an increase in cortisol when the dog was removed
Vidovic et al. (1999)	Compared the socioemotional development of children that were pet	826 children aged 10-15	Reported that children who owned pets were more empathetic and demonstrated more prosocial behaviors

	owners versus non-pet owners		than those who did not own pets
Vormbrock & Grossberg (1988)	Investigated the physiological effects of undergrad students who interacted with a dog	60 undergraduate college students	Decrease in blood pressure when interacting with the dog, and a decrease in heart rate when either touching or talking to the dog, but it increased if they did both behaviors simultaneously
Walsh et al. (1995)	Investigated the physiological effects of adults with dementia during a 12-week pet therapy program versus the control group who did not participate in pet therapy	14 adults with dementia; 12-week pet therapy	Reported lower heart rates for group that was provided the pet therapy
Wodder (2014)	Analyzed school staff's perceptions of a therapy dog program in a private school that serves students with Autism	four teachers, two administrators, and one neuropsychologist	Perceptions that students' behaviors improved, as well as social skills, and emotional functioning

APPENDIX D

RECRUITMENT LETTER

Permission to Participate in Activities Involving a Certified Therapy Dog

Dissertation Research:

Actor-Network Theory and Animal Therapy: Uncovering the Relational Ecology of the Exceptional Student Classroom

Richmond Hill High School: Kristin Blanton

As most of you are aware, I am working on my Ed.D. in Curriculum Studies through Georgia Southern University. For my dissertation research project, Actor-Network Theory and Animal Therapy: Uncovering the Relational Ecology of the Exceptional Student Classroom, I would like to bring Jackson, my certified therapy dog, into the classroom to interact with the students.

The purpose of this dissertation research project is to gain a better understanding of the relational ecology of the exceptional student classroom, and whether the interactions and relations between students and a therapy dog will shift that relational ecology into a more positive and empowering one that fosters prosocial behaviors such as empathy, care, and on-task behaviors.

I am asking all of the students I teach to participate in this study, as I work to complete requirements for the Ed.D. Curriculum Studies Program. For this project, you will grant permission for me to conduct observations of your child to document classroom behaviors, much like I do as part of the daily classroom routine. These observations will consist of me documenting behaviors through confidential behavior charts and field notes. In addition, I will ask students to fill out surveys documenting which classmates (the therapy dog included) they worked with each block of the day.

All efforts will be made to ensure that student information will be kept private and used only for research purposes.

- I understand that my child may be working with a Therapy Dog under the supervision of Kristin Blanton. Kristin Blanton trained and certified Border Collie, Jackson, through the Therapy Dog International Organization, ID number: 18163. This animal has completed behavioral and health testing requirements of Therapy Dog International allowing it to be in the school and is currently certified and will continue working with Kristin Blanton. Kristin Blanton is registered as a handler for Therapy Dog, Jackson.
- I have discussed with Kristin Blanton any allergies or aversions I am aware my child has for dogs. I am aware that any information will be kept confidential except in certain situations in which there is an ethical/legal responsibility to limit confidentiality due to Kristin Blanton being a mandated reporter as an educator in Bryan County Schools

Therapy Dog Rationale in Mrs. Blanton's Class

What is Jackson's Role?

Jackson is a trained and certified therapy dog through Therapy Dog International. His role in the classroom will be as follows, but not limited to:

- Jackson will provide comfort and supports for students in distress
- Jackson will help to breakdown many barriers that naturally exist when students interact with other students and/or adults
- Jackson will act as a student advocate by providing a welcoming environment and making students feel recognized and supported.
- Jackson will assist in helping children interact and socialize with others
- Jackson will help those that may feel isolated or alone feel supported and loved
- Jackson will act as a motivator for academic and social achievement through his positive and supportive demeanor

Research on therapy animals provide evidence of calming physiological effects, increased socialization, and decreased distractibility, stress, and aggression.

- Positive physiological effects are: reduced blood pressure, reduced heart, decrease in cortisol, increase in oxytocin, and a decrease in stress and anxiety
- Positive impacts were also found on on-task behaviors such as attentiveness and concentration, improvement in prosocial behaviors such as empathy, socioemotional development such as improvement in mood and well-being, decrease in aggression, an improvement in academics or confidence in the classroom, and an increase in positive attitudes towards school

APPENDIX E
INFORMED CONSENT

INFORMED CONSENT FORM

TITLE OF STUDY

Actor-Network Theory and Animal Therapy: Uncovering the Relational Ecology of the Exceptional Student Classroom

PURPOSE

The purpose of this research is to determine whether having a therapy dog present in the classroom positively impacts the relationships and interactions of the students between themselves, their peers, and their teachers. More specifically, I plan to determine if the presence of a therapy dog facilitates positive patterns and behaviors such as motivation, calmness, cooperation, caring, and empathy, and reduces negative behaviors such as distractibility, anxiety, or aggression.

PARTICIPATION

Participation for this research study is voluntary.

DESCRIPTION OF THE PROCEDURES

For students interested in participating in this research study, the study will take place in two parts: a pre-test and a post-test. The pre-test is a four week period (Monday-Fridays) in which the students will continue with their everyday routines. Like I typically do, I will continue to progress monitor student behaviors. I will also take field notes of my observations of the student behaviors and interactions. Students will be responsible for filling out a daily survey in which they will document which students they worked with. Following the pre-test is the four week post-test (Monday-Fridays) at which point the therapy dog will be introduced to the students, and slowly incorporated into the classroom. Again, student and classroom routines will remain the same with the exception of the therapy dog as an addition to the classroom. Students have the daily option as to whether or not they wish to interact with the therapy dog. Direct interaction is not a requirement. Students will be responsible for completing the same daily survey they did during the pre-study while I will continue to progress monitor behaviors and take field notes. The purpose of the student surveys is to compare their behaviors and interactions when they reported working with the therapy dog to other students to see if there is a positive effect on them with their interaction with the therapy dog.

RISKS AND DISCOMFORTS Whenever dealing with animals, it is important to note that behaviors can be unpredictable. Potential risks are the therapy dog is in distress/danger, a student is in distress or in danger, a student is harmed by the therapy dog (i.e. a scratch/bite), there is an allergic reaction to the therapy dog, or the therapy dog has an unsanitary accident in the classroom. To mitigate these risks, Jackson, the therapy dog that will be used in this study has undergone extensive training through PetSmart in Savannah under Robert Olsen, former police canine trainer. Jackson has undergone three training classes including a therapy dog training course under Robert Olsen, earning training class completions and the Canine Good Citizen certification. In addition, Jackson tested with Therapy Dog International and passed, officially becoming a certified therapy dog in May, 2018. This allows for Jackson to go to schools as he has passed the medical, behavioral, temperament, and training requirements of the Therapy Dog

International organization. The training and certification that Jackson has undergone minimizes the risk associated with working with animals. However, in case of an emergency, a safety plan will be in place that will remove the dog and/or student(s) from the environment as quickly and safely as possible.

POTENTIAL BENEFITS Students may experience significant physiological benefits and socio-emotional benefits from participating in this study. Research indicates that interacting with therapy dogs can decrease stress levels, blood pressure, increase attentiveness and concentration, increase in empathy, overall boost to mood and well-being, a decrease in aggression, and an increase in positive attitudes towards schools. These benefits are not guaranteed; however, research suggests that these are common themes that have emerged when studying the impact of therapy dogs on human health and behavior.

ALTERNATIVES If you choose to participate in this study, there is no alternative procedure for participating other than the one outlined here. If you choose not to participate in this study, then your academic schedule will stay the same, however, any classes with me will be instead be taught in the connecting classroom next door by my co-teacher as to avoid any student-dog interaction. Parents/guardians will be notified of the change of teacher of record for any class in which we need to switch the student for the 4-week post-test period. Since my co-teacher and I collaborate on lesson plans and team teach, this will not adversely impact the student from accessing any academic content during the post-test period.

COMPENSATION You will not be paid for participating in this study.

CONFIDENTIALITY The participants, school, and county will all be protected by using information that will not identify the students, school, or county directly. The students will be identified by number (i.e. Student 1 interacted with Students 5 and 12), and the school and county will be given new names as to protect identity. All data will be kept in a locked filing cabinet throughout the duration of this study.

I agree to participate in this study.

Signature of Student: _____ Date: _____

I agree for my child to participate in this study.

Signature of Parent/Guardian: _____ Date: _____

# 10								
Student # 11								
Student # 12								
Student # 13								
Student # 14								
Student # 15								
Student # 16								
Student # 17								
Student # 18								
Student # 19								
Student # 20								
Therapy Dog								

APPENDIX G
BEHAVIOR CHART MEASURE

Daily Behavior Checklist

Student Name: _____ *Teacher* _____

Please list positive behaviors or behavior strengths that the student displayed:

Please note if the behavior was observed during the block by placing a check in the space provided and document the frequencies if the behavior occurs more than once.

<i>Behavior</i>	<i>1st Block</i>	<i>2nd Block</i>	<i>3rd Block</i>	<i>4th Block</i>
<i>Physical aggression (shoving, hitting, biting, etc.)</i>				
<i>Verbal aggression (yelling, teasing, threatening, etc.)</i>				
<i>Destruction of property (school, personal, or another's)</i>				
<i>Temper Tantrums (crying, stomping feet, etc.)</i>				
<i>Interrupts lessons (verbal or physical)</i>				
<i>Uncooperative (defiant, will not follow instructions, blames others)</i>				
<i>Avoidance (puts head down, sleeps, frequent requests)</i>				

<i>to use restroom, frequent requests to go to the nurse, out of seat frequently)</i>				
---	--	--	--	--

<i>Demonstrates on- task behaviors (working, asking appropriate questions)</i>				
--	--	--	--	--

<i>Cooperative with peers and/or teachers</i>				
---	--	--	--	--

<i>Follows directions</i>				
<i>Personal complaints are minimal</i>				

APPENDIX H
IACUC APPLICATION

IACUC Application



**Institutional Animal Care & Use Committee
(IACUC)**

PHS #A3902-01; USDA #57R121

Application for Research Approval



Investigator Information:	
Name of Principal Investigator: Kristin Blanton	Phone: (305)807-1581
Email: ka03729@georgiasouthern.edu <small>(Note: Georgia Southern email addresses will be used for all correspondance.)</small>	Department Name: Curriculum Studies: College of Education
<input type="checkbox"/> Faculty <input type="checkbox"/> Doctoral <input type="checkbox"/> Specialist <input type="checkbox"/> Masters <input type="checkbox"/> Undergraduate <input type="checkbox"/> Other:	
Name(s) of Co-Investigators:	Phone:
Email address(es):	Department Name:
<input type="checkbox"/> Faculty; <input type="checkbox"/> Doctoral; <input type="checkbox"/> Specialist; <input type="checkbox"/> Masters <input type="checkbox"/> Undergraduate <input type="checkbox"/> Other: <i>(If multiple: identify by initial letter behind name. E.g., F for faculty)</i>	
Personnel and/or Institutions Outside of Georgia Southern University involved in this research (Attach training certification and medical or waiver):	
Project Information: (Note: funded project titles MUST match grant title)	
Title: Actor-Network Theory and Animal Therapy: Uncovering the Relational Ecology of the Exceptional Student Classroom	

Brief (less than 50 words) Project Summary: The goal of my study is to gain a deeper understanding of how the introduction of a therapy dog may affect the relational ecology of the classroom by analyzing the network of relationships within the context of the exceptional student classroom.

Compliance Information:

Please indicate which of the following will be used in your research: (application may be submitted simultaneously)

- Human Subjects (Complete Section A: Human Subjects below)**
- Care and Use of Vertebrate Animals (Complete Section B: Care and Use of Vertebrate Animals below)
- Biohazards (Complete Section C: Biohazards below)

Yes No **Do you or any investigator on this project have a financial interest in the subjects, study outcome, or**

project sponsor. (A disclosed conflict of interest will not preclude approval. An undisclosed conflict of interest will result in disciplinary action.).

Funding Source: Federal State Private Internal GSU Self-funded/non-funded

Funding Agency/Department: Grant Number:

Grant Title: Same as above Enter here:

Section A: Human Subjects Not Applicable

Number of Subjects (Maximum) 30

Please indicate if the following are included in the study (Check all that apply):

- Survey delivered by email to .georgiasouthern.edu addresses
- Human Subjects Incentives
- Deception
- At Risk Populations (prisoners, children, pregnant women, etc)
- Video or Audio Tapes
- Medical Procedures, including exercise, administering drugs/dietary supplements, and other procedures, or ingestion of any substance

Section B: Care and Use of Vertebrate Animals Not Applicable

<i>Purpose of use/care of animals:</i>	<i>Please indicate if the following are included in the study:</i>
<input type="checkbox"/> Research <input type="checkbox"/> Teaching <input type="checkbox"/> Demo only <input type="checkbox"/> Student participation in faculty work <input type="checkbox"/> Class Project <input type="checkbox"/> Exhibition <input type="checkbox"/> Display	<input type="checkbox"/> Physical intervention with vertebrate animals <input type="checkbox"/> Housing of vertebrate animals <input type="checkbox"/> Euthanasia of vertebrate animals <input type="checkbox"/> Use of sedation, analgesia, or anesthesia <input type="checkbox"/> Surgery <input type="checkbox"/> Farm animals for biomedical research (e.g., diseases, organs, etc.) <input type="checkbox"/> Farm animals for agricultural research (e.g., food/fiber production, etc.) <input type="checkbox"/> Observation of vertebrate animals in their natural setting

Section C: Biological Research <input type="checkbox"/> Not Applicable	
<i>Biosafety Level:</i>	<i>Please indicate if the following are included in the study:</i>
<input type="checkbox"/> Exempt <input type="checkbox"/> BSL 1 <input type="checkbox"/> BSL 2 <input type="checkbox"/> BSL 3	<input type="checkbox"/> Use of rDNA <input type="checkbox"/> Non native/invasive plant species <input type="checkbox"/> Last EHS lab safety inspection date: <input type="checkbox"/> Last IBC biosafety lab inspection date:

Signature of Applicant(s)(PI, CoPI):	Date:
If <u>student</u> project, please complete research advisor's information below (note that advisor signature must be received before application will be reviewed.)	
If <u>faculty</u> project, please complete department chair's information below.	
By signing this cover page I acknowledge that I have reviewed and approved this protocol for scientific merit, rational and significance. I further acknowledge that I approve the ethical basis for the study.	
Department Chair or Research Advisor's Name (Print or Type):	Jonathan Hilpert
Signature of Committee Chair/Research Advisor (if student)/Department Chair(if faculty):	Date:

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Please submit this protocol to IRB@georgiasouthern.edu in a single email; scanned signatures and official Adobe electronic signatures are accepted. Applications may also be submitted via mail to the Georgia Southern University Office of Research Integrity, P.O. Box 8005.

(Note: The title of this IACUC application must match the title of the grant that supports this research. If the described activity involving animals is supported by multiple grants with different titles, or a grant is awarded later during the approval period of this protocol that supports this research, inform the IACUC by completing and submitting a *Request to Amend an Animal Use Protocol* form. (The approval letter supplied to the funding agency must include the grant funded title.)

Save this form to your computer as a word file. Type all responses. Fields are expandable. **Questions or comments can be directed to (912)478-5465 or IRB@georgiasouthern.edu.**

APPLICATION FOR THE USE OF ANIMALS IN RESEARCH

Submitted to the Georgia Southern University, Institutional Animal Care & Use Committee,

P.O. Box 8005, phone 912-478-5465, fax 912-478-0719, email IRB@georgiasouthern.edu

(Save this form to your computer as a word file. Type all responses. Fields are expandable.)

1. PERSONNEL

Principal Investigator (Include Degree)	Position (Academic Appointment)	Department
Kristin Blanton (Doctoral Candidate)		Curriculum Studies: College of Education

Email Address	Phone	Primary Animal Handler
ka03729@georgiasouthern.edu	305-807-1581	Kristin Blanton

Principal Co-Investigator (Include Degree)	Position (Academic Appointment)	Department

Email Address	Phone	Primary Animal Handler

2. QUALIFICATIONS of Personnel working on project (Including Students)

Name & Email address	Role	Species Experience	Ye ars	<i>For Office Use Only</i>	
				Tr ain	Med
Kristin Blanton ka03729@georgiasouthern.edu	principal investigator and animal handler	Trained Border Collie for two years for therapy work. In addition, I took Therapy Dog International test with Border Collie and therefore paired as his handler for therapy work	2.0	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

(Note: Indicate role of involved personnel as Principal (PI), Co-Investigators (CI), Graduate Student (GS), Undergraduate Student (US) or technicians/assistants (T). Indicate each individual's years of experience with species described herein (e.g., 6 yrs/mice, 4 yrs/rabbits).

***Training and Clearance: Attach a copy of the training and occupational health clearance receipt for each person working on the project.**

3. Personnel participating in research outside of GS

Name & Email address	R ol e	Species Experience	Ye ars	<i>For Office Use Only</i>	
				Train	Med
N/A				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

***Training and Clearance: Attach a copy of the CV, training and occupational health clearance receipt or waiver (if eligible) for each person working on the project.**

4. FUNDING SOURCE

Indicate funding agency, grant # or GS Grant account # if known

A G
g r
e a
n n
c t
y #
: :
— —

If not externally funded:

This project is internally funded Maintenance colony only Funded by student or faculty funds

5. LOCATION The Principal Investigator requests that this protocol be conducted at facilities within GS. Please check and put the room number where the animal will be housed for the study:

<input type="checkbox"/> Biology-Animal	<input type="checkbox"/> Biology-Aquatics	<input type="checkbox"/> Wildlife Center	<input type="checkbox"/> Armstrong Science Center	<input type="checkbox"/> Off Campus	<input type="checkbox"/> Field Study (No Housing)
Room #	Room #		Room #	Location: Richmond Hill High School	Location:

5A. Will any aspect of this animal experiment be performed at another institution?

No

Yes: If yes, attach a copy of the animal care and use section of the relevant grant (e.g., PHS application form 398, Section F) and IACUC approval (or pending application).

5B. Please list all State and/or Federal Animal Permits that you hold:

Indicate State/Federal	Permit Type	Permit Number	Expiration Date
<input type="checkbox"/> State <input type="checkbox"/> Federal			
<input type="checkbox"/> State <input type="checkbox"/> Federal			
<input type="checkbox"/> State <input type="checkbox"/> Federal			

6. PROTOCOL CLASSIFICATION

Please check one.

- a. New Project
- Annual renewal – Stop and complete IACUC Continuing Review form
- 3rd year renewal replacing previous approved IACUC Protocol #
- b. Check all that apply
- Research
- Lab Studies
- Field Studies (animals held less than 12 hours)
- Field Studies (animals held more than 12 hours)
- Teaching
- Lab Studies
- Field project (animals held less than 12 hours)
- Field Studies (animals held more than 12 hours)
- Class projects- individual (use class projects form)

Indicate course title, course number and attach syllabus)

- Demonstration only
- Display animal training, maintenance and/or care

- c. To verify unnecessary duplication, please provide a brief summary (a few sentences) describing work accomplished during the last approval period and how the work proposed in this renewal extends the previous studies.

JUSTIFICATION FOR THE USE OF ANIMALS

- 7a. **Briefly** state in lay terms the **purpose** of this request (i.e., research hypothesis or teaching objectives).

(Note: Your response must be in language that a high school senior could understand.)

The goal of my study is to gain a deeper understanding of how the introduction of a therapy dog influences student interaction in a self-contained special education classroom. Using a pre-post study design, I will observe how the students interact and the number of disruptive outbursts and adverse behaviors before and after the dog is introduced into the classroom.

My research question is how does the introduction and interaction of a therapy dog affect the classroom ecological relationships among students in a special education classroom?

Using observation protocol, I will determine if the introduction of a therapy dog reduces aggression, defiance, and other adverse classroom behaviors. Using a social network survey technique, I will determine if the introduction of a therapy dog changes patterns of relating and interacting in the classroom. Using field notes, I will determine if the introduction of the therapy dog influences classroom climate (i.e. calmness, cooperation, caring, empathy, and other positive behaviors).

7b Provide a summary of existing research that is relevant to your study. Follow the summary with citations for the relevant references. Cited works should place your research in the literature and identify the need for this study

According to recent studies, there are many positive benefits between animal and human interactions. Health benefits such as lower blood pressure (Allen et al., 2002; Anderson et al., 1992; Baun et al., 1984; Breslford et al., 2017; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Vormbrock & Grossberg, 1988), lower heart rate (Allen et al., 2002; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Somervill et al., 2009; Vormbrock & Grossberg, 1988; & Walsh et al., 1995), and lower cortisol levels (Breslford et al., 2017; Handlin et al., 2011; & Viau et al., 2010), have been noted when a human interacts with an animal.

In addition to physiological benefits, literature demonstrates behavioral benefits through the interaction with a therapy animal. Examples of behavioral benefits noted were reduced anxiety (Allen et al., 2002; Barker & Dawson, 1998; Beck, 2015; Breslford et al., 2017; Chandler, 2001; Friesen, 2009; Geist, 2011; Hansen et al., 1999; & Nagengast et al., 1997), reduced aggression (Anderson & Olson, 2006; Chandler, 2001; Hergovich et al., 2002; Kotrschal & Ortbauer, 2003; & Tissen et al., 2007), increased motivation (Beetz, 2013), increases in social interactions with others when a therapy dog was present (Bass et al., 2009; Grandgeorge et al., 2012; Haughie et al., 1992; Hergovich et al., 2002; Kotrschal & Ortbauer, 2003; Schuck et al., 2015; Tissen et al., 2007), less distractibility/inattentiveness (Bass et al., 2009; Gee, Crist, & Carr, 2010; Heimlich, 2001; Kotrschal & Ortbauer, 2003; Martin & Farnum, 2002; & Schuck et al., 2015), and an increase in empathy (Daly & Suggs, 2010; Hergovich et al., 2002; Tissen et al., 2007; Vidovic et al., 1999).

Bush, C., Talarovicova, A., Fuermaier, A., Lewis-Evans, B., & Tucha, O. (2016) suggest that the mechanism for these positive effects is that, "Humans have an innate predisposition to be attracted by and attend to other living organisms such as animals... Friendly and calm animals were considered to have calming effects on humans," (p. 306). Bush et al. (2016) also noted that, "In addition, biophilia suggests that animals increase

alertness and attention in humans, which might promote enhanced concentration and task persistence in the presence of an animal” (p. 306).

Therapy dogs are trained to be friendly, social, and calm, and to provide comfort and support for human companions that it comes into contact with. Training requirements that must be met in order to pass therapy dog certification include basic commands such as sit, stay, down, and walking on a leash without pulling. In addition, animals are trained to safely meet willing people in a variety of settings, and are trained to be comfortable around loud bangs, crowds of people rushing them, other dogs approaching them, and a variety of medical equipment such as wheelchairs and walkers. When therapy dogs come into contact with a willing visitor, they are trained to sit and provide comfort through being petted, talked to, or played with. With this in mind, a therapy dog can have many positive implications when incorporated into the natural environment of a special education classroom.

A therapy dog can potentially have a positive impact on student behavior in a special education classroom because, “Animals [have been] found to often function as important attachment figures... Attachment behavior aims at obtaining social support and protection from the relationships with specified attachment figures...Moreover, the attachment figure is a source of comfort and safety, and can alleviate stress” (Bush et al., 2016, p. 306). With students who suffer from behavioral and cognitive disorders such as ADHD, Autism, Emotional Behavioral Disorder, and Mild-Moderate Intellectual Disabilities, inattentiveness and distractions are frequent occurrences. With students who struggle with Autism in particular, social comforts are difficult to find with other humans, where students gravitate more towards nonhuman entities such as animals or technology to alleviate stress when frustrated as a sense of comfort, based on my experiences and observations from the last five years of teaching special education.

Calming physiological effects, increased socialization, and decreased distractibility, stress, and aggression were all noted when humans interact with a therapy animal. However, there is a need to expand this literature to demonstrate the effects of therapy animals, particularly therapy dogs, on students with special needs in the school setting. With a lack of literature on therapy dogs and the behaviors of students with special needs, this research could contribute to the present research, and possibly act as a framework for classrooms with special needs students that exhibit adverse behaviors to the learning environment.

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Heimlich, K. (2001). Animal-assisted therapy and the severely disabled child: A quantitative study. *Journal of Rehabilitation, 67*(4), 48-54.

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Martin, F., & Farnum, J. (2002). Animal-Assisted Therapy for Children with Pervasive Developmental Disorders. *Western Journal of Nursing Research, 24*(6), 657-670. doi:10.1177/019394502320555403

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Vidović, V. V., Štetić, V. V., & Bratko, D. (1999). Pet Ownership, Type of Pet and Socio-Emotional Development of School Children. *Anthrozoös*, *12*(4), 211-217. doi:10.2752/089279399787000129

Vormbrock, J. K., & Grossberg, J. M. (1988). Cardiovascular effects of human-pet dog interactions. *Journal of Behavioral Medicine*, *11*(5), 509-517. doi:10.1007/bf00844843

Walsh, P. G., Mertin, P. G., Verlander, D. F., & Pollard, C. F. (1995). The effects of a 'pets as therapy' dog on persons with dementia in a psychiatric ward. *Australian Occupational Therapy Journal*, *42*(4), 161-166.

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:SEP:SEP:SEP:SEP:

8. Briefly outline or describe in lay terms the **procedures** in which animals will be used (i.e., the general sequence and schedule of what will be done to the animals and effects on animal health and well being). Provide reference citations in (parenthesis).

(Note: For complicated experimental designs, include a flow chart, diagram, timeline, or table that depicts the experiments or sequence of events. **Your response must be in language that a high school senior could understand. Please do not simply list procedures; a brief description of each procedure is more useful.**

I have spent the past year and a half training my Border Collie for therapy work with the hope that I can use him for classroom work. Jackson, the Border Collie, took three training classes through a trainer at PetSmart in Savannah, Ga who is a retired dog trainer for the Chatham County police force. Two of the classes were obedience training while the third class was therapy work training. Once his final therapy training class concluded this April, 2017, Jackson took and passed the Canine Good Citizen exam, a requirement for therapy work. This exam consisted of ten tests that ranged from obedience skills, to grooming, to demeanor when greeting a stranger and another dog. In order to make sure that Jackson is sufficiently prepared for therapy work, and to fully legitimize his role in this study, we decided to have him test through a certified therapy group that is established in the United States, Therapy Dog International. According to Therapy Dog International, "All dogs must be tested and evaluated by a Certified TDI Evaluator. A dog must be a minimum of one (1) year of age and have a sound temperament. Each dog must pass a TDI temperament evaluation for suitability to become a Therapy Dog. The test will also include the evaluation of the dog's behavior around people with the use of some type of service equipment (wheelchairs, crutches, etc.)," (About TDI). In addition, TDI requires an annual update of the therapy dog's health records signed by their veterinarian. The testing requirements are strict, however ensure that the dog testing is of appropriate temperament (calm and friendly) and obedient. Below please find a list of the testing requirements for therapy dog certification through Therapy Dog International, according to the Therapy Dog International Testing Requirements Brochure. Following this is a description of how the therapy dog will be introduced and integrated into the classroom. Combined these two section provide a comprehensive description of the procedures the animal will be used.

"Phase I

- TEST 1: TDI ENTRY TABLE (Simulated as a Hospital Reception Desk) The dog/handler teams are lined up to be checked in (simulating a visit). The evaluator ("volunteer coordinator") will go down the line of registrants and greet each new arrival including each dog. At the same time the collars will be checked, as well as nails, ears and grooming and lifting of all 4 paws and tail, which must be lifted if applicable. If the dog has a short cropped tail it should be touched.
- TEST 2: CHECK-IN AND OUT OF SIGHT (time: One Minute) The handler will be asked to check in. After the check-in has been completed the handler will be escorted by a helper to where the handler is

supposed to sit. All dogs will be placed in a down position on the handler's left side keeping teams at least 8 feet apart. Now the handler will start completing the paperwork. Once all teams have been placed, the helper(s) will ask the handler(s) if they can hold their dogs. Now the handler(s) will leave for "one minute". The handler(s) can give the "stay" command verbally or by hand signal or both. The helper(s) can talk to and pet the dog(s). The dog(s) can sit, lie down, stand or walk around within the confines of the leash.

- TEST 3: GETTING AROUND PEOPLE As the dog/handler team walks toward the patients' rooms, there will be various people standing around. Some of the people will try visiting with the dog. The dog/handler team must demonstrate that the dog can withstand the approach and touching by several people from all sides at the same time and is willing to visit and walk around a group of people.
- TEST 4: GROUP SIT/STAY The evaluator will ask all the participants to line up with their dogs in a heel position (w/dog on left or right), with 8 ft. between each team. Now the handlers will put their dogs in a sit/stay position. The handlers will give the sit command to the dogs. The evaluator will tell the handlers to leave their *If the dog is on a longer leash, a knot must be made in the leash to mark 6 ft. The handler must drop the extra leash. dogs. The handlers will step out to the end of their 6 ft. leash, turn around and face the dog(s) and wait for the evaluator's command to return to their dog(s). (The evaluator will give the return command immediately).
- TEST 5: GROUP DOWN/STAY Same as test number 4, except dogs will now be in a down/ stay.
- TEST 6: RECALL ON A 20 FT. LEASH All handlers will be seated. Three dogs at a time will be fitted with a long line. The reason we fit more than one dog with a long line at the same time is to save time. The handler will continue to hold the 6 ft leash while the long line is fitted by a helper. To avoid any kind of incident, the evaluator will make sure that the handler is holding the 6 ft leash until the dog has been placed and is ready to be tested for the recall. One handler at a time will take the dog to a designated area which is out of reach of the other dogs even with a 20 ft. line. The evaluator will then give the command: Down your dog!. The handler can down the dog either by voice and or by hand signal. The evaluator will give the command: Leave your dog!. The handler will tell the dog to stay either by voice and or by hand signal. The handler now will turn away from the dog and walk in a straight line to the end of the 20 ft. lead. The handler will turn and face the dog. The evaluator immediately will tell the handler to call the dog. The handler will call the dog, either by voice, hand signal or both.
- TEST 7: VISITING WITH A PATIENT The dog should show willingness to visit a person and demonstrate that it can be made readily accessible for petting (i.e. small dogs will be placed on a person's lap or held; medium dogs will sit on a chair or stand close to the patient to be easily reached, and larger dogs will be standing).

Phase II

- TEST 8: TESTING OF REACTIONS TO UNUSUAL SITUATIONS The dog handler team will be walking in a straight line. The dog can be on either side, or slightly behind the handler; the leash must not be tight. The evaluator will ask the handler to have the dog sit (the handler may say sit or use a hand signal or both). Next the evaluator will ask the handler to down the dog (the handler may say down or use a hand signal or both). Next continuing walking in a straight line, the handler will be asked to make a right, left and an about turn at the evaluator's discretion. The following distractions will be added to the heel on a loose leash. a. The team will be passing a person on crutches. b. Someone running by calling "excuse me, excuse me" waving hands (this person is running up from behind the dog. It could also be a person on a bicycle, roller blades, or a skateboard etc). c. Another person will be walking by and drop something making a loud startling noise (a tin can filled with pebbles or a clipboard). At an indoor test there may be a running vacuum cleaner (realistic in a facility). d. Next the team will be requested to make an about turn. e. And then a left turn. f. Then the team should be requested to make a right turn, going back parallel toward the starting point in a straight line.
- TEST 9: LEAVE-IT; PART ONE The dog handler/team meets a person in a wheelchair. The dog should approach the person and visit. The person in the wheelchair, after briefly interacting with the dog, will offer the dog a treat by holding the treat steady in the hand while enticing the dog. The handler must instruct the dog to leave it. It is up to the handler as to what kind of verbal command they use to keep

the dog from licking or taking the food. The handler should explain to the patient why the dog cannot eat a treat while visiting (i.e. dog has food allergies).

- TEST 10: LEAVE-IT; PART TWO The dog handler will be walking in a straight line with the dog at heel. There will be a piece of food in the path of the dog. The dog is not allowed to lick or eat the food. There should also be a bowl of water in the path of the dog. The dog is not allowed to drink.
- TEST 11: MEETING ANOTHER DOG A volunteer with a demo dog will walk past the dog handler/team, turn around and ask the handler a question. After a brief conversation, the two handlers part.
- TEST 12: ENTERING THROUGH A DOOR TO VISIT AT THE FACILITY A person should be able to go through the entrance ahead of the dog/handler team. The dog handler team is ready to enter through a door to a facility. The handler first has to put the dog in a sit, stand, or down stay, whatever is most comfortable for the dog.
- TEST 13: REACTION TO CHILDREN The children will be running and yelling, playing ball, dropping objects, and doing what children usually do while playing. 1. The handler will walk with the dog past playing children (distance from the children must be at least 20 feet). 2. a. The dog must lie down beside the handler. b. The handler will simulate reading a book while the dog is lying down. c. The dog MUST have his back to the children.”

In May, 2018, Jackson tested with Therapy Dog International and passed the therapy dog test of the skills listed above. He is officially a certified and registered therapy dog through Therapy Dog International, and is ID number is 181863.

To introduce Jackson into the classroom, this case study will utilize pre-post design. In the pre-test phase (one-month) students will be observed as they participate in their normal daily routine. In the post-test phase (one-month), the therapy dog will be incorporated into the classroom. The therapy dog will be introduced as another student in the classroom, and his role will be to interact and engage with the students throughout the day. The students will have the option of working with the therapy dog if they choose, just like any other student in the class. The teachers and paraprofessionals will be responsible for using behavior charts to document behaviors of the students they serve per block, the students will be responsible for filling out the survey documenting who they interacted with per block, and what their experiences of those interactions were. More specifically:

- Days 1-3 of post-test: Bring therapy dog to the classroom to meet the students
- therapy dog will remain on his leash in a sit or down position, allow willing students to approach him for proper greetings as according to his training and certifications (no jumping, no excessive licking, no barking)
- The students will have an opportunity to meet and pet him as they want, but will proceed with their normal daily routines. The therapy dog will be kept in a designated area next to my desk and will remain in the “park it/stay command” as the students get accustomed to his presence, and also allowing for myself to monitor both his behaviors as well as the students’.
 - According to Therapy Dog International, it is important to monitor signs of distress in therapy dogs. Signs I will be looking out for in the therapy dog are excessive panting, downward tail, change in temperament, ears pushed back, and skittishness
 - It is also important to monitor signs of distress in the students. Each student has the potential of displaying different signs of distress depending on their personalities. Some of these potential signs of distress in the students are changes in voice volume, nervousness, distractibility, and distancing oneself from the dog
- Days 4-5 of post-test: After the three days of the post-test once the therapy dog is situated and accustomed to the classroom environment and when the students have accepted the therapy dog’s presence in the classroom, I will allow the therapy dog to move around the room next to me as I move around the room while continuing my normal teaching routine. As part of his training, the therapy dog will walk on my right side in a heel position.

- After a week of acclimation and observing both the therapy dog's disposition as well as the students', I will assess if the therapy dog is ready to freely interact with students. Any student at this time that is showing fear or apprehension will not interact with the therapy dog. If neither the students nor the animal have shown signs of distress during the first week, then the dog will be allowed to interact freely. If the animal has shown signs of distress, he will be removed from the classroom. If a student has shown signs of distress, the safety plan will be enacted (see Appendix A).
- If the therapy dog is successfully integrated into the classroom, for weeks 2-4 of the post-test, I will continue to monitor both the students and the therapy dog for signs of distress, nerves, or fear. Students who continue to not show any signs of distress will continue to be allowed to approach and interact with the therapy dog as they navigate through their normal daily school routine (i.e. sit next to the therapy dog during teacher lectures, do worksheets with the therapy dog, read to the therapy dog, or help to provide care for the dog (water, outside bathroom breaks, etc.))
- As the students chose to interact or not interact with the therapy dog, their behaviors and interactions will be documented and monitored through field notes, behavior charts, and student surveys.

Procedures for a hypothetical scenario:

Describe how you will manage excessive interactions with Jackson by students.

I will manage excessive interactions with Jackson by students by pre-training the students and my co-workers in how to safely interact with a dog. The students and co-workers will be trained not to run up to Jackson when he is sleeping or from behind as to startle him. It is always best to slowly approach a dog so that one can check the temperament of the dog. If Jackson is wagging his tail and/or his ears are relaxed, it is safe to slowly approach him and interact with him. Students will be taught to gently pet Jackson's back and appropriate versus inappropriate petting (i.e. no pulling on his tail).

Students will be taught that if Jackson is backing away from them, his ears are pointed low/behind, his tail is down, or if he is growling or showing teeth, he is in distress and it would be best not to approach him at that time. One of the therapy dog tests analyzes how the dog does when people run up and crowd them. During this section of the test, Jackson did well and loved all of the attention. The sudden rush of random people did not seem to bother Jackson as he enjoyed being pet and showed no signs of distress. However, I will warn the students not to rush Jackson and that they need to take turns interacting with him, no more than two at a time with my supervision.

Let's say that the students are very excited to see Jackson, and five of them rush towards him unexpectedly. Jackson becomes very nervous and starts showing signs of distress by unexpectedly growling and showing his teeth. At that moment, I will loudly state the signal "therapy dog time out" as I jump in and take control of Jackson by moving him into his safe place under my desk, and immediately send ALL students to the connecting classroom next door where a paraprofessional or my co-teacher will be present to watch those students. I will then monitor and assess the temperament of Jackson and provide any calming strategies necessary. This is outlined in the safety plan as well. (See attached).

Need for a Safety Plan

What the existing school policies-procedures if a student is bitten or scratched. (Are you required to contact the parents, authorities, etc.)

There are no existing school policies in the school's safety handbook that regard students being bitten or scratched by animals of any kind. The safety plan (See Appendix A) I created addresses what to do in case that

happens. However, it is school policy to contact a parent if the student has gotten hurt or gets sick. In the case that a student may get bit or scratched by the therapy dog, both the nurse and myself will contact the parent. As outlined in the safety plan, in case a student gets bitten or scratched, the nurse will look at the student and address any medical needs the student may have. Once that has taken place, the nurse will make contact home, and I will follow-up with parent contact.

TDI: Therapy Dog International. (n.d.). Retrieved from <https://www.tdi-dog.org/MemberInformation.aspx>

Therapy Dog International: Testing Requirements. (n.d.). Retrieved from <http://www.tdi-dog.org/images/testingbrochure.pdf>

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CHARACTERISTICS OF ANIMALS AND CATEGORY OF RESEARCH

9. List and describe the animals to be studied. Indicate the anticipated number of animals to be used in each Category of Research and the total number of animals involved during the 3-year approval period of this protocol. Indicate strain or line designation if rodents are requested. Indicate the number of each species/strains that will be involved in planned procedures. For wild catch, list anticipated species and complete appendix F. (Note: Refer to USDA pain category definitions in appendix G. The same number of animals requested here must be justified in response to item #11, below.) Animals should be listed only once in the highest applicable pain category.

	Species, Strain, or Line	Characteristics (age, sex, weight)	Year	Category B #used (holding or breeding colony)	Category C #used (No or minimal pain or distress).	Category D #used (Pain or distress alleviated).	Category E #used (Pain or distress Not alleviated).	Total # per year
1	N/A		1					
			2					
			3					
2			1					
			2					
			3					
3			1					
			2					
			3					

4	1					
	2					
	3					

(Note: If additional rows are required, you may copy and paste additional rows.)

10 a. If category E animals are requested, describe the criteria that will be used to monitor the pain, distress, health, and well-being of your animal. Your response must include 1. monitoring methods, 2. frequency, 3. animal removal criteria you will use to remove an animal from the study, 4. disposition of animals removed, and 5. responsible individuals.

10 b. For category E procedures only, a search for alternatives and alternative methods is required. Use the following table to indicate the relevant database(s) searched, the searched years (at least the last 10 yrs.), and using the search term(s). If alternates were located, describe how you included them in your project or why you were unable to use them. If no alternatives were located, indicate that the search did not locate suitable alternatives to the procedures that may cause pain or discomfort to animals or did not locate alternate models for animal use that could serve this research.

Database(s):	Years:	Search Terms:

Results

11. Briefly describe the rationale using statistical analysis, the prior experience, or other methods used to determine the total number of each species of animals declared above in response to item #9 that will be needed for use during the 3-year approval period of this protocol. (Note: For complicated experimental designs, it may be helpful to the IACUC if this explanation indicates the # of animals needed for each experimental group and the # of groups required. Alternatively, it may be helpful to the IACUC if a flow chart depicting the sequence of events and the number of animals required for each step is shown.)

<input type="checkbox"/>	Power analysis indicates that the proposed number of experiments is the lowest required for statistically valid tests of the hypothesis. (You are strongly encouraged to utilize power analysis if submitting for NIH funded.)
<input type="checkbox"/>	The experiments will compare the effects of several independent variables and therefore require many groups or cohorts.

<input type="checkbox"/>	The outcomes, measures or phenomena being measured are variable and large sample sizes are necessary for statistically valid sampling.
<input type="checkbox"/>	Differences from controls are expected to be small, and large sample sizes are necessary to distinguish differences reliably.
<input type="checkbox"/>	The experiments are difficult technically and multiple attempts will be needed to obtain satisfactory data from each experiment.
<input type="checkbox"/>	Other: Explain:

12. Briefly describe the species of animals and their use.

A Border Collie therapy dog is the animal for this study. This therapy dog will be incorporated into the exceptional student classroom (formerly known as special education) as another "student." The therapy dog will be present to interact and relate to the students in the classroom as these relations naturally and organically occur.

13. Why is the animal species you have chosen most appropriate for your study?

Therapy dogs and animal-assisted therapy are becoming more and more popular in school and clinical settings, and according to literature (see 7b), there are many beneficial impacts of therapy dogs on humans. Therapy dogs are becoming more and more of a fixture in the school setting based on positive and successful outcomes. The therapy dog I will use for this study is a Border Collie, one of the most intelligent dog breeds. According to PetWave, Border Collies can be trained to do most any task and are problem solvers, making them good candidates for therapy work as training commands are crucial for certification work. In addition, Border Collies are a herding breed, able to sense the slightest changes in body language (Service Dog Certifications, 2018). With the ability to sense changes and an intelligent demeanor, Border Collies are easily trainable to provide supports needed.

Since I aim to study the relational ecology of the exceptional student classroom, or the nature of interactions and relations between species within the context of the environment that they share, a therapy dog is the most appropriate choice to determine whether or not his presence can make the relational ecology of the classroom into one that is positive and empowering, promoting prosocial behaviors such as care, empathy, and a decrease in distractibility and aggression.

Border Collie-Temperament and Personality. (2016, May 23). Retrieved from <https://www.petwave.com/Dogs/Breeds/Border-Collie/Personality.aspx>

Do Border Collies Make Good Service Dogs? (2018, July 21). Retrieved from <https://www.servicedogcertifications.org/border-collies-service-dogs/>

LABORATORY POLICY CONSIDERATIONS

14. Is animal death (excluding death from euthanasia) an endpoint in this protocol (e.g., survival analysis, radiation, toxicity, or carcinogenesis testing)?

No: Proceed to Item #15. Yes: Within the space, explain why an earlier endpoint is not possible.

15. Will any animal research/procedural/testing areas outside of the animal facility be used for this protocol?

No: Proceed to Item #16. Yes: Within the space, provide a scientific or logistical justification for why animals must be removed from the facility, indicate the location, the approximate number of hours animals will be held at this site, and whether the animals will need to be returned to housing after the procedure, or that the procedure will be terminal.

16. Describe Personnel Protection Measures required for this study:

Personnel Protective Equipment	N/A
Waste Disposal Plan	N/A
Sharps Containment	N/A

17. Will scheduled substances controlled by the Drug Enforcement Administration be used in the protocol?

No: Proceed to item #18. Yes: Within the space, list the controlled substances to be used.

Identify the Drug Enforcement Administration license you will use.

License holder:	DE A #
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18. Will any non-pharmaceutical grade chemicals be used?

No: Proceed to item #19. Yes: Within the space, list and justify their use.

EXPERIMENTAL PROCEDURES

19. Are other than standard and routine husbandry and handling practices required for this protocol (e.g., unique diets or nutritional supplements, specialized caging or environments, or non-standard health monitoring, animal will be maintained outside of the normal caging for more than 12 hours.)?

No: Proceed to Item #20. Yes: Attach "**Appendix A: Special Husbandry.**"

20. Are test substances administered to animals as part of this protocol (e.g., radioisotopes, toxic, immunogenic, pharmacologic, infectious, toxic or carcinogenic agents, biomaterials, recombinant DNA, cells), or will animal tissue or body fluids be collected?

No: Proceed to Item #21. Yes: Attach "**Appendix B: Hazardous Substances.**"

21. Are specimens collected from animals prior to euthanasia as part of this protocol (e.g., tissues, blood, lymph, or other body fluids.)? (If collecting live parasites from live animals that will not be euthanized, select no.)

No: Proceed to Item #22. Yes: Attach "**Appendix C: Specimen Collection, Ante Mortem.**"

22. Will surgery (use of any cutting instrument on the animal) be performed on animals as part of this protocol?

No: Proceed to Item #23. Yes: Attach "**Appendix D: Surgery.**"

Note descriptive instruction below:

Minor surgery - (Any invasive operative procedure which does not enter a body cavity; only skin, mucous membrane and/or connective tissue is incised and causes little or no physical impairment., Examples include: simple vascular cutdown for catheter placement, implanting radio tags or pumps in subcutaneous tissues.

Major surgery - (If any cavity (cranial, thoracic, or abdominal) is entered or if substantial impairment of physical or physiological function occurs, the surgery is considered major. Examples include extensive resection, removal of organs, significantly altering anatomy, orthopedic procedures.)

23. Will animals be subject to experimental procedures other than those described above (e.g., behavioral manipulations, noxious stimuli, forced exercise, or physical restraint)?

No: Proceed to Item #24. Yes: Attach "**Appendix E: Other Experimental Procedures.**"

24. Will animals be collected from or manipulated in the field?

No: Proceed to Item #25. Yes: Attach "**Appendix F: Field Study – Wild Catch.**"

Final Disposition of Animals

25. Euthanasia: No

25. a. Select an option below:

Animals will only be euthanized in the event of untreatable injury or illness.

Animals are euthanized for postmortem tissue collection or at the completion of study.

25. b. Does the method of euthanasia and means of assuring death following euthanasia comply with the most current Report of the AVMA Panel on Euthanasia which describes acceptable methods of animal euthanasia?

Yes: In the box below describe the method of euthanasia used for each species requested, indicating dose and route if a chemical agent, or provide a justification if a physical method. Add additional lines if more than one method is used in the study.

No: In the box below indicate why a deviation from policy is necessary.

Method/Drug	Dose (mg/kg) if applicable	Route (e.g., IV, IP, etc.)
No method; Care will be managed by the pet animal's personal vet.		

Justification for physical method or deviation from AVMA guideline:

Describe the euthanasia plan:

Who will perform the procedure and what training do they have in the procedure?

--

What method will be used to dispose of carcasses?

--

<input type="checkbox"/>	Are the euthanized animals available to the Wildlife Center as food?
	<i>Wildlife Center use only:</i> <input type="checkbox"/> accept <input type="checkbox"/> reject <input type="checkbox"/> contact Wildlife Center before euthanizing
	Alternate method of euthanasia for food:

26. Animals not euthanized (check all that apply)

<input type="checkbox"/>	Release	Permit or Explanation:
<input type="checkbox"/>	Return to holding colony	
<input type="checkbox"/>	Adoption (internal GS only)	
<input type="checkbox"/>	Other	Border Collie is my personal dog

An IACUC Attending Veterinarian is available for consultation during project design: contact the Office of Research Integrity for more information at 478-5465

27. CERTIFICATION (Please check all that apply to your study.)

The methods described will be used and the researcher will amend this protocol as needed to when new techniques are identified so as to reduce animal discomfort and use.
Y
es

Conduct will be in accordance with the *PHS policy, AWR, Guide for the Care and Use of Laboratory Animals (NRC), DEA regulations, and IACUC Policies*. (Contact ORSSP compliance office for more information at IRB@georgiasouthern.edu).
Y
es

The IACUC Attending Veterinarian will be available as needed during the life of this protocol. Animal care will be under the guidance of the animal care facility manager.
Y
es

The described animal use does not duplicate previous or existing studies or is intended to verify previous research.
Y
es

This description of the research as provided in this application is complete and accurate.
Y
es

I will submit any changes to this description to the IACUC for written IACUC approval prior to implementing any changes.
Y
es

In date (non-expired) drugs and biomedical supplies will be used.
Y
es

Complete animal husbandry and procedural/surgical/testing records will be maintained.
Y
es

Personnel are certified as adequately trained and experienced.

Y
es

All activities undertaken as part of this proposal have been fully described in this application. Only activities listed on approved IACUC protocols will be conducted by the investigator, co-investigator or staff. Research will be suspended at any time the work fails to comply with PHS, AWA or IACUC policy. The institution is required to report instances of noncompliance to funding agencies, the public health service and USDA. These reports become a matter of public record through the agency websites.

I will notify the IACUC immediately in the event of adverse events (See Adverse Events Form for details).

es

Absolutely no research may begin until final IACUC approval is granted.

Y
es

[]
[SEP]

Signature of Principal Investigator

Date

Signature of Co-investigator

Date

10/

19/18

Signature of Co-investigator or Faculty Advisor

Date

(To assure your complete application is included in committee review, please check all appendices that will be attached. Appendices are located on the web links below the application link in alpha order. Attach appendices to hard copy applications in alpha order or send attached to the same email as the application if electronic submission.)

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Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

_____ Total Pages

Training receipt(s)

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STOP here. Complete and attach any required appendixes as indicated above. This application is complete.

APPENDIX I

IRB APPLICATION

IRB Application**Institutional Review Board (IRB)**

Application for Research Approval – Expedited/Full Board

Please submit this protocol to IRB@georgiasouthern.edu in a single email; scanned signatures and official Adobe electronic signatures are accepted. Applications may also be submitted via mail to the Georgia Southern University Office of Research Integrity, PO Box 8005.

Principal Investigator	
PI's Name: <input type="text" value="Kristin Blanton"/>	Phone: <input type="text" value="(305)807-1581"/>
Email: <input type="text" value="ka03729@georgiasouthern.edu"/> (Note: Georgia Southern email addresses will be used for all correspondence.)	Department: <input type="text" value="Curriculum Studies: College of Education"/>
PI's Primary Campus Location: <input checked="" type="checkbox"/> Statesboro Campus <input type="checkbox"/> Armstrong Campus <input type="checkbox"/> Liberty Campus - Hinesville	
<input type="checkbox"/> Faculty <input checked="" type="checkbox"/> Doctoral <input type="checkbox"/> Specialist <input type="checkbox"/> Masters <input type="checkbox"/> Undergraduate <input type="checkbox"/> Other:	
Georgia Southern Co-Investigator(s)	
Co-I's Name(s): (By each name indicate: F(Faculty), D(Doctoral), S(Specialist), M(Masters), U(Undergraduate), O(Other))	Email: (Note: Georgia Southern email addresses will be used for all correspondence.)
Personnel and/or Institutions Outside of Georgia Southern University involved in this research:	

	<input type="checkbox"/> Training Attached <input type="checkbox"/> IRB Approval Attached <input type="checkbox"/> intent to rely on GSU
	<input type="checkbox"/> Training Attached <input type="checkbox"/> IRB Approval Attached <input type="checkbox"/> intent to rely on GSU

Project Information

Title: Actor-Network Theory and Animal Therapy: Uncovering the Relational Ecology of the Exceptional Student Classroom

Number of Subjects (Maximum) 200

Will you be using monetary incentives (cash and/or gift cards)? Yes No

Funding Source: Federal State Private Internal GSU (enter source below) Self-funded/non-funded

Funding Agency/ GS Source: _____ Grant Number: _____

Grant Title: Same as above Enter here: _____

Compliance Information

Do you or any investigator on this project have a financial interest in the subjects, study outcome, or project sponsor? (A disclosed conflict of interest will not preclude approval. An undisclosed conflict of interest will result in disciplinary action.).

Yes No

Certifications

I certify that the statements made in this request are accurate and complete, and if I receive IRB approval for this project, I agree to inform the IRB in writing of any emergent problems or proposed procedural changes. I agree not to proceed with the project until the problems have been resolved or the IRB has reviewed and approved the changes. It is the explicit responsibility of the researchers and supervising faculty/staff to ensure the well-being of human participants. At the conclusion of the project I will submit a termination report. I will comply with annual project update requests to maintain approval.

I have read and agree to the certifications of investigator responsibilities located on the last page of this form.

Signature of Primary Investigator	Date
Signature of Co-Investigator(s)	Date
<p>By signing this cover page I acknowledge that I have reviewed and approved this protocol for scientific merit, rational and significance. I further acknowledge that I approve the ethical basis for the study. I have read and agree to the certifications of investigator responsibilities located on the last page of this form.</p> <p>If <u>faculty</u> project, enter department chair's name; if <u>student</u> project, enter research advisor's name:</p>	
Signature of Department Chair or Research Advisor	Date
Compliance Information	
Please indicate which of the following will be used in your research: (applications may be submitted simultaneously)	
<input checked="" type="checkbox"/> Human Subjects <input checked="" type="checkbox"/> Care and Use of Vertebrate Animals (Submit IACUC Application) <input type="checkbox"/> Biohazards (Submit IBC Application)	
Please indicate if the following are included in the study (Check all that apply):	
<input type="checkbox"/> Survey delivered by email to .georgiasouthern.edu addresses <input type="checkbox"/> Deception Prisoners Children Individuals with impaired decision making capacity, or economically or educationally disadvantaged persons	<input type="checkbox"/> Video or Audio Recordings <input type="checkbox"/> Human Subjects Incentives Medical Procedures, including exercise, administering drugs/dietary supplements, and other procedures, or ingestion of any substance

Is your project a research study in which one or more human subjects are prospectively assigned to one or more interventions (which may include placebo or other control) to evaluate the effects of those interventions on health-related biomedical or behavioral outcomes. See the [IRB FAQ for help with the definition](#) above.

Yes No If yes, attach Good Clinical Practice (GCP) CITI training appropriate to the project.

Instructions: Please respond to the following as clearly as possible. The application should include a step by step plan of how you will obtain your subjects, conduct the research, and analyze the data. Make sure the application clearly explains aspects of the methodology that provide protections for your human subjects. Your application should be written to be read and understood by a general audience who does not have prior knowledge of your research and by committee members who may not be expert in your specific field of research. Your reviewers will only have the information you provide in your application. Explain any technical terms, jargon or acronyms.

1. Personnel

Please list any individuals who will be conducting research on this study. Also, please detail the experience, level of involvement in the process, and the access to information that each may have.

1. Kristin Arnold Blanton: I am a 5th year special education teacher (now called exceptional student educator) and will be conducting research on my own students (approximately 18). I am also a licensed therapy dog handler, and I have been training with my Border Collie, Jackson, to work with special education students. As the teacher of record in the classroom I aim to study, I have access to all personal, behavioral, and academic information for each student. For the context of this study, it is behavior records and their networks of interactions (who they work with on a daily basis) that I will be most interested in. As per normal classroom progress monitoring, I will collect daily behavioral charts on the students. I also plan to administer a daily student surveys as a new part of my classroom routine for the study. The observational data will allow me to analyze patterns of behaviors throughout the day as influenced by whom they are working with at the given time (either other classmates or the therapy dog).

2. Purpose

A. *Briefly describe in one or two sentences the purpose of your research.*

I plan to use Actor-Network Theory to study the relational ecology of my special education classroom before and after the incorporation of a therapy dog. I want to uncover patterns of relations and networks and their implications on student behavior in the class with the goal of determining whether or not the therapy dog has a positive influence on shifting the relational ecology of the special education classroom into one that contributes to empowerment and prosocial behaviors such as care, empathy, on-task behaviors, etc.

B. What questions are you trying to answer in this project? Please include your research question in this section. The jurisdiction of the IRB requires that we ensure the appropriateness of research. It is unethical to put participants at risk without the possibility of sound scientific result. For this reason, you should be very clear about how participants and others will benefit from knowledge gained in this project.

In general, my research question is how does the introduction and interaction of a therapy dog affect the ecological relationships of students in a special education classroom? More specifically, in what ways does the therapy dog disrupt oppressive patterns of relating and interacting for special needs students? In other words, how does the therapy dog disrupt aggression, defiance, power struggles, meltdowns, estrangement, and other adverse classroom behaviors? Additionally, in what ways does the therapy dog facilitate empowering patterns of relating and interacting in the classroom? More specifically, how does the therapy dog facilitate motivation, calmness, cooperation, caring, empathy, and other positive behaviors of relating and interacting?

C. Provide a brief description of how this study fits into the current literature. Have the research procedures been used before? How were similar risks controlled for and documented in the literature? Have your instruments been validated with this audience? Include citations in the description. Do not include dissertation or thesis chapters.

A review of forty-two literature articles on animal studies demonstrated instrumental positive impacts that animals have on human behavior and health, as evidenced through animal-assisted therapy and therapy dogs in schools. Themes that emerged from the review of literature on the impact of animal and human interactions were positive physiological effects such as reduced blood pressure (Allen et al., 2002; Anderson et al., 1992; Baun et al., 1984; Breslford et al., 2017; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Vormbrock & Grossberg, 1988), reduced heart rate (Allen et al., 2002; DeMello, 1999; Friesen, 2009; Nagengast et al., 1997; Somervill et al., 2009; Vormbrock & Grossberg, 1988; & Walsh et al., 1995), decrease in cortisol (Breslford et al., 2017; Handlin et al., 2011; & Viau et al., 2010), increase in oxytocin (Breslford et al., 2017), and a decrease in stress and anxiety (Allen et al., 2002; Barker & Dawson, 1998; Beck, 2015; Breslford et al., 2017; Chandler, 2001; Friesen, 2009; Geist, 2011; Hansen et al., 1999; & Nagengast et al., 1997).

In addition to positive physiological benefits, positive impacts were also found on on-task behaviors such as attentiveness and concentration (Bass et al., 2009; Bassette & Taber-Doughty, 2013; Chandler, 2001; Friesen, 2009; Gee et al., 2010; Geist, 2011; Heimlich, 2001; Kotrschal & Ortbauer, 2003; Martin & Farnum, 2002; & Schuck et al., 2015), improvement in prosocial behaviors such as empathy (Anderson & Olson, 2006; Daly & Suggs, 2010; Hergovich et al., 2002; Tissen et al., 2007; & Vidovic et al., 1999), socioemotional development such as improvement in mood and well-being (Anderson & Olson, 2006; Bass et al., 2009; Beck, 2015; Chandler, 2001; Daly & Suggs, 2010; Geist, 2011; Grandgeorge et al., 2012; Haughie et al., 1992; Kelly & Cozzolino, 2014; Kotrschal & Ortbauer, 2003; Putney, 2013; Sanford, 2014; Schuck et al., 2015; Stevenson et al., 2015; Tissen et al., 2007; & Wodder, 2014), decrease in aggression (Anderson & Olson, 2006; Chandler, 2001; Hergovich et al., 2002; Kotrschal & Ortbauer, 2003; & Tissen et al., 2007), an improvement in academics or confidence in the classroom (Bassette & Taber-Doughty, 2013; Beck, 2015; DeNisco, 2016; Kirman et al., 2015;

& Scheckler, 2017), and an increase in positive attitudes towards school (Beetz et al., 2013; Chandler, 2001; DeNisco, 2016; Friesen, 2009; & Geist, 2011).

According to Bush, C., Talarovicova, A., Fuermaier, A., Lewis-Evans, B., & Tucha, O. (2016), the mechanism for the positive influence therapy animals have on humans in that, "Humans have an innate predisposition to be attracted by and attend to other living organisms such as animals... Friendly and calm animals were considered to have calming effects on humans," (p. 306). Bush et al. (2016) also noted that, "In addition, biophilia suggests that animals increase alertness and attention in humans, which might promote enhanced concentration and task persistence in the presence of an animal," (p. 306).

A therapy dog can potentially have more of an impact on student behavior than humans can in that, "Animals have been found to often function as important attachment figures... Attachment behavior aims at obtaining social support and protection from the relationships with specified attachment figures... Moreover, the attachment figure is a source of comfort and safety, and can alleviate stress" (Bush et al., 2016, p. 306). Therapy dogs are trained to be friendly, social, and calm, and to provide comfort and support for human companions that it comes into contact with. With this in mind, a therapy dog can have many positive implications when incorporated into the natural environment of a special education classroom.

With a student population of Autism in particular, social comforts are difficult to find with other humans, where students gravitate more towards nonhuman entities such as animals or technology to alleviate stress when frustrated as a sense of comfort, as according to my observations and experiences teaching this population the last five years. With students who suffer from behavioral and cognitive disorders such as ADHD, Autism, Emotional Behavioral Disorder, and Mild-Moderate Intellectual Disabilities, inattentiveness and distractions are frequent occurrences. If a therapy dog can reverse the frequency of distraction and increase on task behaviors, it will greatly impact the relational ecology of the special education classroom.

In current research, the therapy dog interacted with the people in a variety of ways, from engagement through reading or touch, or just by being present in the same room as the person. Within the context of my case study, the therapy dog will be incorporated into the classroom as another student. There will be no specific role for the therapy dog other than to be present, and allow for natural interactions to happen organically. Additionally, important to note is that within these forty-two studies, not one reported harm on the animal or the person. There were no reported safety concerns and it was not mentioned in any of the literature that the therapy animal had to be removed due to conflict, distress, or danger. However, much of the literature did describe a safety plan or had a safety plan in case of an emergency in which a plan was in place to remove the animal and/or the students in case of a threat or danger. These safety plans have been used as models for this proposal.

With regard to instrumentation, there are two instruments that will be used in this study. The first instrument is my social network survey which will help to determine which students interact with the animal and each other (see Appendix C). At the conclusion of each class block that I teach (two, 90-minute blocks a day), the students will fill out a survey documenting which student(s) (including the animal) they worked with and whether they had a positive or negative experience with that interaction. The student surveys will be uploaded and analyzed through statnet, a software program for network analysis. The statnet software will create visuals of the networks and also document the number of interactions that each student has with another student. By uploading results from the student surveys into the statnet program, it will create the networks of relationships and interactions visually. In

addition to bringing the networks to life in a visual form, statnet also provides descriptive statistics which will demonstrate validity. The social network instrument has been modeled after best practices, and has been shown to be a safe and useful methodology to answer questions about learning and relationships (Sweet, 2016; Grunspan et al., 2014). According to Grunspan, Wiggins, and Goodreau (2014), “The classroom is a principal domain wherein working relationships form between students. These relationships, and the larger networks they create, have effects on student behavior. Network analysis can inform our understanding of student network formation in classrooms and the types of impacts these networks have on students,” (p. 167).

The second instrument that will be used in this study is a behavior chart (see Appendix D), that I have created for my own purposes as a classroom teacher to monitor classroom behaviors. The behavior data collection charts will be analyzed using SPSS software where Descriptive Statistics will be used to demonstrate overall data for each of the listed behaviors in the behavior charts for each student. Data from the pre-test, without the presence of the therapy dog, will be compared to data from the post-test where the therapy dog was present and incorporated into the classroom pedagogy. Validity will be demonstrated for this measure through content validity, where each behavior (domain) will be specifically defined and explained, and then compared to recent literature demonstrating how these behaviors may adversely impact the relational ecology of the classroom by making accessibility to the curriculum a challenge.

These instruments have been used in similar populations (students with special needs, teenagers, adults, as well as students of similar cognitive ages) safely and effectively without adverse events.

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3. Outcome

Please state what results you expect to achieve. Who will benefit from this study? How will the participants benefit (if at all)? Remember that the participants do not necessarily have to benefit directly. The results of your study may have broadly stated outcomes for a large number of people or society in general.

Given the review of extant literature, students may experience positive physiological effects such as reduced blood pressure, reduced heart rate, decrease in cortisol, increase in oxytocin, and a decrease in stress and anxiety. They may also experience increases in on-task behaviors such as attentiveness and concentration, improvement in prosocial behaviors such as empathy, socioemotional development such as improvement in mood and well-being, decrease in aggression, an improvement in academics or confidence in the classroom, and an increase in positive attitudes towards school. If successful, this study could benefit the field of special education in that it could provide a curriculum in which prosocial behaviors manifest through the incorporation of a therapy dog into the critical pedagogy of the special education classroom.

4. Describe Your Subjects

A. *Maximum number of participants: 200*

B. *Briefly describe the study population.*

The study population consists of 14-21 year old high school students with cognitive deficits. Specifically, I serve approximately twenty-two students with special needs that warrant specialized instruction on a modified curriculum outside of the general education setting (self-contained). The twenty-two students have diagnoses of the one of more of the following: Autism, Other Health Impairment, Mild Intellectual Disability, Moderate Intellectual Disability, Emotional and Behavioral Disorder, Speech and Language Deficit, Maple Syrup Urine Disease, Down Syndrome, Reactive Attachment Disorder, Oppositional Defiance Disorder, Attention Deficit Disorder, Attention Deficit Hyperactive Disorder, Fragile X Syndrome, and Post Traumatic Stress Disorder.

While all students have at least one of these (Autism, Other Health Impairment, Mild Intellectual Disability, Moderate Intellectual Disability), the majority of them at 95% additionally have one or more of the other disorders listed above, which does adversely impact their behavior. These students receive academic, social, and behavioral supports outside of the general education setting in a special education classroom. The intention of my study is to invite every student I serve, which will be approximately twenty-two students. The students that I serve are considered vulnerable due to their diagnoses/disorders that warrant instruction as per their least restrictive environment in a small-group, special education classroom with modifications.

C. Applicable inclusion or exclusion requirements (ages, gender requirements, allergies, etc.)

Students must be served in the self-contained special education setting at Richmond Hill High School. Qualifying students must be served by myself or my co-teacher, have a mild intellectual disability, moderate intellectual disability, Autism, an Other Health Impairment, or a combination of any of those as their primary and/or secondary disabilities. Students must be between the ages of 14-22 years old, and both males and females are welcome. The qualifying students are limited to those who myself and my co-teacher currently serve for special education services so that the therapy dog can be contained to two, connecting classrooms, eliminating having other, nonconsenting students come into interaction with him. In addition, since I am the therapy dog's partner as according to therapy dog international, the therapy dog needs to be in my presence and therefore must have the same schedule as I do, excluding other students in the high school from participating. Students with allergies will be permitted to participate in the study with parental and student consent, and a mutual understanding of any potential adverse side effects that may come into play between student with allergy and dog interaction. Any students with severe allergies in which the student and parents do not consent will not be permitted to participate in the study. If such a case exists, the student's academic schedule will stay the same, however, any classes with me will be instead be taught in the connecting classroom next door by my co-teacher as to avoid any student-dog interaction. Parents/guardians will be notified of the change of teacher of record for any class in which we need to switch the student for the 4-week post-test period. Since my co-teacher and I collaborate on lesson plans and team teach, this will not adversely impact the student from accessing any academic content during the post-test period.

D. How long will each subject be involved in the project? (Number of occasions and duration)

This study will utilize a pre post design and will last two months. During the pretest phase (one month) observations will be made without the therapy dog in the classroom. During the post-test phase (one month) observations will be made with the therapy dog incorporated into the classroom. It is important to note that the 4-week period phases will be from Monday-Friday from 7:30am-2:30pm (duration of the school day). The duration will be 90 minutes (which is the length of each school block), and the occurrences will be two throughout the day.

Pre-design: Weeks 1-4: 7:30am-2:30pm (*continuation of their normal school routine)

All Weeks Monday-Friday: each student will be involved for two of these time blocks: 7:30am-9:00am; 9:15am-10:45am; 11:15am-12:45pm, 1:00pm-2:30pm.

Post-Design: Weeks 5-8: 7:30am-2:30pm (*incorporation of therapy dog into their normal school routine)

Week 5: Monday-Friday: each student will be involved for two of these time blocks: 7:30am-9:00am; 9:15am-10:45am; 11:15am-12:45pm, 1:00pm-2:30pm.

Days 1-3 (Monday-Wednesday) of post-test: *Introduce Therapy Dog* (See procedures for details).

Days 4-5 (Thursday-Friday) of post-test: *Limited Integration of Therapy Dog* (See procedures for details)

Weeks 6-8 Monday-Friday: each student will be involved for two of these time blocks: 7:30am-9:00am; 9:15am-10:45am; 11:15am-12:45pm, 1:00pm-2:30pm

All days: Full Integration of Therapy Dog (See procedures for details)

5. Recruitment

Describe how subjects will be recruited. (Attach a copy of recruitment emails, flyers, social media posts, etc.) DO NOT state that subjects will not be recruited.

All students that I serve (approximately 20), will be invited to participate in the study. Students will be recruited by sending a letter home to their parents. The parents will receive a recruitment form (see Appendix A) that briefly describes the project purpose and what the therapy dog's role will be in the classroom, as well as an informed consent form (see Appendix B). The letters will be sent out 9/27/18 both via hard copy in their take-home folders and through email to the parents. The forms will be accepted until 10/15/18 and reminders will be sent through the class remind to return the forms back to school in the students' take-home folders. I will collect the forms, document the students who will and will not participate and then store them in my locked filing cabinet in a section dedicated to this research project. 10/15/18 is the anticipated start day for the pre-test.

6. Incentives

A. *Are you compensating your subjects with money, course credit, extra credit, or other incentives?*

Yes No

B. *If yes, indicate how much and how they will be distributed.*

C. *Describe if and how you will compensate subjects who withdraw from the project before it ends and any exclusion criteria from compensation.*

There will be no compensation given for participation in this study.

7. Research Procedures and Timeline

A. *Outline step-by-step what will happen to participants in this study (including what kind of experimental manipulations you will use, what kinds of questions or recording of behavior you will use, the location of these interactions). Focus on the interactions you will have with the human subjects. Specify tasks given as attachments to this document.*

This study utilizes a pre post case study design. The pre test phase of data collection will take place during the fall of 2018 (10/15/18-11/9/18) and will document behaviors and networks formed without the presence of the therapy dog. The post test phase of data collection will take place during the winter of 2018 (11/26/18-12/21/18) and will document behaviors and networks formed without the presence of the therapy dog. The research contains four elements that require consent 1) the introduction of a therapy dog, 2) student social network surveys (Appendix C), 3) use of behavioral observation data (Appendix D), and 4) field notes. Since the behavioral observations protocols are regularly used in the classroom, I will only be asking for consent to use that data for publication purposes.

During the pre test phase, the therapy dog will not be in the classroom. Data collection will involve the social network analysis through student surveys and the behavior charts. Data will be collected on a daily basis, which will consist of two, 90-minute school blocks Monday-Friday (see timeline below). Students will be prompted to complete surveys the last few minutes of the block (two of the following times: 7:30am-9:00am; 9:15am-10:45am; 11:15am-12:45pm, 1:00pm-2:30pm). The students will be responsible for documenting which students they worked with each block, and how they best can describe their interaction with them. Appendix C shows what the student survey consists of. For each block, the student will put a check next to the student(s) they interacted with, and document either a happy or sad face to illustrate whether they enjoyed the interaction or did not enjoy the interaction with them. This data will be collected by the teacher and students will not be allowed to see other student's responses. The students will fill out this survey every block with assistance as needed. I will upload the data collected daily into excel. As the students complete the student surveys, I will fill out the daily behavior charts. Field notes will also be taken throughout the class. Built into my normal daily teaching routine is to walk around and observe the students as they are working either independently or in groups. During this time, I will take field notes. This will add as supplemental data to help interpret the behavior charts and social network analysis.

During the post test phase, the therapy dog will be in the classroom. I have spent the past year and a half training my Border Collie for therapy work with the hope that I can use him in special education classrooms. Jackson, the Border Collie, took three training classes through a trainer at PetSmart in Savannah, Ga who is a retired dog

trainer for the Chatham County police force. Two of the classes were obedience training while the third class was therapy work training. Once his final therapy training class concluded this April, 2017, Jackson took and passed the Canine Good Citizen exam, a requirement for therapy work. This exam consisted of ten tests that ranged from obedience skills, to grooming, to demeanor when greeting a stranger and another dog. In order to make sure that Jackson is sufficiently prepared for therapy work, and to fully legitimize his role in this study, we decided to have him test through a certified therapy group that is established in the United States, Therapy Dog International. According to Therapy Dog International, "All dogs must be tested and evaluated by a Certified TDI Evaluator. A dog must be a minimum of one (1) year of age and have a sound temperament. Each dog must pass a TDI temperament evaluation for suitability to become a Therapy Dog. The test will also include the evaluation of the dog's behavior around people with the use of some type of service equipment (wheelchairs, crutches, etc.)," (About TDI). In addition, TDI requires an annual update of the therapy dog's health records signed by their veterinarian. The testing requirements are strict, however ensure that the dog testing is of appropriate temperament (calm and friendly) and obedient. Testing requirements for therapy dog certification through Therapy Dog International are as follows, according to the Therapy Dog International Testing Requirements Brochure:

"Phase I

- **TEST 1: TDI ENTRY TABLE (Simulated as a Hospital Reception Desk)** The dog/handler teams are lined up to be checked in (simulating a visit). The evaluator ("volunteer coordinator") will go down the line of registrants and greet each new arrival including each dog. At the same time the collars will be checked, as well as nails, ears and grooming and lifting of all 4 paws and tail, which must be lifted if applicable. If the dog has a short cropped tail it should be touched.
- **TEST 2: CHECK-IN AND OUT OF SIGHT (time: One Minute)** The handler will be asked to check in. After the check-in has been completed the handler will be escorted by a helper to where the handler is supposed to sit. All dogs will be placed in a down position on the handler's left side keeping teams at least 8 feet apart. Now the handler will start completing the paperwork. Once all teams have been placed, the helper(s) will ask the handler(s) if they can hold their dogs. Now the handler(s) will leave for "one minute". The handler(s) can give the "stay" command verbally or by hand signal or both. The helper(s) can talk to and pet the dog(s). The dog(s) can sit, lie down, stand or walk around within the confines of the leash.
- **TEST 3: GETTING AROUND PEOPLE** As the dog/handler team walks toward the patients' rooms, there will be various people standing around. Some of the people will try visiting with the dog. The dog/handler team must demonstrate that the dog can withstand the approach and touching by several people from all sides at the same time and is willing to visit and walk around a group of people.
- **TEST 4: GROUP SIT/STAY** The evaluator will ask all the participants to line up with their dogs in a heel position (w/dog on left or right), with 8 ft. between each team. Now the handlers will put their dogs in a sit/stay position. The handlers will give the sit command to the dogs. The evaluator will tell the handlers to leave their *If the dog is on a longer leash, a knot must be made in the leash to mark 6 ft. The handler must drop the extra leash. dogs. The handlers will step out to the end of their 6 ft. leash, turn around and face the dog(s) and wait for the evaluator's command to return to their dog(s). (The evaluator will give the return command immediately).
- **TEST 5: GROUP DOWN/STAY** Same as test number 4, except dogs will now be in a down/ stay.
- **TEST 6: RECALL ON A 20 FT. LEASH** All handlers will be seated. Three dogs at a time will be fitted with a long line. The reason we fit more than one dog with a long line at the same time is to save time. The handler will continue to hold the 6 ft leash while the long line is fitted by a helper. To avoid any kind of incident, the evaluator will make sure that the handler is holding the 6 ft leash until the dog has been placed and is ready to be tested for the recall. One handler at a time will take the dog to a designated area which is out of reach of the other dogs even with a 20 ft. line. The evaluator will then give the command: Down your dog!. The handler can down the dog either by voice and or by hand signal. The evaluator will give the command: Leave your dog!. The handler will tell the dog to stay either by voice and or by hand signal. The handler now will turn away from the dog and walk in a

straight line to the end of the 20 ft. lead. The handler will turn and face the dog. The evaluator immediately will tell the handler to call the dog. The handler will call the dog, either by voice, hand signal or both.

- **TEST 7: VISITING WITH A PATIENT** The dog should show willingness to visit a person and demonstrate that it can be made readily accessible for petting (i.e. small dogs will be placed on a person's lap or held; medium dogs will sit on a chair or stand close to the patient to be easily reached, and larger dogs will be standing).

Phase II

- **TEST 8: TESTING OF REACTIONS TO UNUSUAL SITUATIONS** The dog handler team will be walking in a straight line. The dog can be on either side, or slightly behind the handler; the leash must not be tight. The evaluator will ask the handler to have the dog sit (the handler may say sit or use a hand signal or both). Next the evaluator will ask the handler to down the dog (the handler may say down or use a hand signal or both). Next continuing walking in a straight line, the handler will be asked to make a right, left and an about turn at the evaluator's discretion. The following distractions will be added to the heel on a loose leash. a. The team will be passing a person on crutches. b. Someone running by calling "excuse me, excuse me" waving hands (this person is running up from behind the dog. It could also be a person on a bicycle, roller blades, or a skateboard etc). c. Another person will be walking by and drop something making a loud startling noise (a tin can filled with pebbles or a clipboard). At an indoor test there may be a running vacuum cleaner (realistic in a facility). d. Next the team will be requested to make an about turn. e. And then a left turn. f. Then the team should be requested to make a right turn, going back parallel toward the starting point in a straight line.
- **TEST 9: LEAVE-IT; PART ONE** The dog handler/team meets a person in a wheelchair. The dog should approach the person and visit. The person in the wheelchair, after briefly interacting with the dog, will offer the dog a treat by holding the treat steady in the hand while enticing the dog. The handler must instruct the dog to leave it. It is up to the handler as to what kind of verbal command they use to keep the dog from licking or taking the food. The handler should explain to the patient why the dog cannot eat a treat while visiting (i.e. dog has food allergies).
- **TEST 10: LEAVE-IT; PART TWO** The dog handler will be walking in a straight line with the dog at heel. There will be a piece of food in the path of the dog. The dog is not allowed to lick or eat the food. There should also be a bowl of water in the path of the dog. The dog is not allowed to drink.
- **TEST 11: MEETING ANOTHER DOG** A volunteer with a demo dog will walk past the dog handler/team, turn around and ask the handler a question. After a brief conversation, the two handlers part.
- **TEST 12: ENTERING THROUGH A DOOR TO VISIT AT THE FACILITY** A person should be able to go through the entrance ahead of the dog/handler team. The dog handler team is ready to enter through a door to a facility. The handler first has to put the dog in a sit, stand, or down stay, whatever is most comfortable for the dog.
- **TEST 13: REACTION TO CHILDREN** The children will be running and yelling, playing ball, dropping objects, and doing what children usually do while playing. 1. The handler will walk with the dog past playing children (distance from the children must be at least 20 feet). 2. a. The dog must lie down beside the handler. b. The handler will simulate reading a book while the dog is lying down. c. The dog **MUST** have his back to the children."

In May, 2018, Jackson tested with Therapy Dog International and passed the therapy dog test of the skills listed above. He is officially a certified and registered therapy dog through Therapy Dog International, and is ID number is 181863.

To introduce Jackson into the classroom, this case study will utilize pre-post design. In the pre-test phase (one-month) students will be observed as they participate in their normal daily routine. In the post-test phase (one-

month), the therapy dog will be incorporated into the classroom. The therapy dog will be introduced as another student in the classroom, and his role will be to interact and engage with the students throughout the day. The students will have the option of working with the therapy dog if they choose, just like any other student in the class. The teachers and paraprofessionals will be responsible for using behavior charts to document behaviors of the students they serve per block, the students will be responsible for filling out the survey documenting who they interacted with per block, and what their experiences of those interactions were. More specifically:

- Days 1-3 of post-test: Bring therapy dog to the classroom to meet the students
 - therapy dog will remain on his leash in a sit or down position, allow willing students to approach him for proper greetings as according to his training and certifications (no jumping, no excessive licking, no barking)
 - The students will have an opportunity to meet and pet him as they want, but will proceed with their normal daily routines. The therapy dog will be kept in a designated area next to my desk and will remain in the “park it/stay command” as the students get accustomed to his presence, and also allowing for myself to monitor both his behaviors as well as the students’.
 - According to Therapy Dog International, it is important to monitor signs of distress in therapy dogs. Signs I will be looking out for in the therapy dog are excessive panting, downward tail, change in temperament, ears pushed back, and skittishness
 - It is also important to monitor signs of distress in the students. Each student has the potential of displaying different signs of distress depending on their personalities. Some of these potential signs of distress in the students are changes in voice volume, nervousness, distractibility, and distancing oneself from the dog
- Days 4-5 of post-test: After the three days of the post-test once the therapy dog is situated and accustomed to the classroom environment and when the students have accepted the therapy dog’s presence in the classroom, I will allow the therapy dog to move around the room next to me as I move around the room while continuing my normal teaching routine. As part of his training, the therapy dog will walk on my right side in a heel position.
- After a week of acclimation and observing both the therapy dog’s disposition as well as the students’, I will assess if the therapy dog is ready to freely interact with students. Any student at this time that is showing fear or apprehension will not interact with the therapy dog. If neither the students nor the animal have shown signs of distress during the first week, then the dog will be allowed to interact freely. If the animal has shown signs of distress, he will be removed from the classroom. If a student has shown signs of distress, the safety plan will be enacted (see Appendix E).
- If the therapy dog is successfully integrated into the classroom, for weeks 2-4 of the post-test, I will continue to monitor both the students and the therapy dog for signs of distress, nerves, or fear. Students who continue to not show any signs of distress will continue to be allowed to approach and interact with the therapy dog as they navigate through their normal daily school routine (i.e. sit next to the therapy dog during teacher lectures, do worksheets with the therapy dog, read to the therapy dog, or help to provide care for the dog (water, outside bathroom breaks, etc.))
- As the students chose to interact or not interact with the therapy dog, their behaviors and interactions will be documented and monitored through field notes, behavior charts, and student surveys.

Data for both the pre-post tests will be collected on a daily basis, at the conclusion of the two blocks they are with me each day (two of the following: 7:30am-9:00am; 9:15am-10:45am; 11:15am-12:45pm, 1:00pm-2:30pm). Students will be prompted to complete surveys at the conclusion of class each day while the teacher completes field notes and the behavior charts. In addition to the surveys and behavior charts, I will be taking field notes based on my observations of interacting and relating. These will be taken throughout my lesson when the students are working independently or in groups. As part of my normal classroom routine, I walk around and monitor the students during this time. Since this time is available and I am observing the students, it is when I will be jotting down my field notes. This is already built into my daily routine and would therefore not take away from instructional time. This qualitative portion will be used to help document and describe the classroom environment

as well as the interactions between the students and themselves, the students and their peers, the students and their teachers, and the students and the therapy dog.

Sources

TDI: Therapy Dog International. (n.d.). Retrieved from <https://www.tdi-dog.org/MemberInformation.aspx>

Therapy Dog International: Testing Requirements. (n.d.). Retrieved from <http://www.tdi-dog.org/images/testingbrochure.pdf>

B. Describe how legally effective informed consent will be obtained. Attach a copy of the consent form(s).

Legally effective informed consent will be obtained through parent signatures on consent forms (see Appendix B) that outline the study and the role of the students within the study. Since there are no manipulatives and the research will be conducted as a part of the students' normal curriculum, informed consent is needed for 1) the introduction of a therapy dog, 2) student social network surveys 3) use of behavioral observation data, and 4) field notes.

The letters will be sent out 9/27/18 both via hard copy in their take-home folders and through email to the parents. The forms will be accepted until 10/15/18 and reminders will be sent through the class remind to return the forms back to school in the students' take-home folders. The reminders will read "Please return consent forms by 10/15/18" and will not be coercive. I will collect the forms, document the students who will and will not participate and then store them in my locked filing cabinet in a section dedicated to this research project.

C. If minors are to be used describe procedures used to gain consent of their parent (s), guardian (s), or legal representative (s), and gain assent of the minor.

Some of the students invited to participate will be minors. Due to the nature of the participants and their cognitive deficits, I am requiring parental consent for all willing participants as well as student assent. Parental and student informed consent/assent can be found in Appendix B.

or Explain:

D. Describe all study instruments and whether they are validated. Attach copies of questionnaires, surveys, and/or interview questions used, labeled accordingly.

There are two instruments that will be used in this study. The first instrument is my social network instrument which will help to determine the structure and implications of relationships. The student survey (see Appendix C). At the conclusion of each class block that they are instructed by myself (two, 90-minute blocks a day), the students will fill out a survey documenting which student(s) they worked with and whether they had a positive or negative experience with that interaction. The design of the instrument represents best practices for SNA in the classroom (Sweet, 2016; Grunspan, et al, 2014).

The second instrument that will be used in this study is a behavior chart (see Appendix D), that I have created for my own purposes as a classroom teacher to progress monitor classroom behaviors. Validity will be demonstrated for this measure through content validity, where each behavior (domain) will be specifically defined and explained, and then compared to recent literature demonstrating how these behaviors may adversely impact the relational ecology of the classroom by making accessibility to the curriculum a challenge.

Source

Grunspan, D., Wiggins, B., & Goodreau, S. (2014). Understanding Classrooms through Social Network Analysis: A Primer for Social Network Analysis in Education Research. *Life Science Education*, 13, 167-178. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4041496/>.

E. Describe how you will protect the privacy of study participants.

The participants, school, and county will all be protected by using information that will not identify the students, school, or county directly. The students will be identified by number (i.e. Student 1 interacted with Students 5 and 12), and the school and county will be given new names as to protect identity. The students will be numbered alphabetically, and those numbers and names are already posted on the classroom wall as that is how students identify which chromebook to use. When students are to fill out the surveys, they will have access to their classmates and their corresponding numbers which are posted on the wall in the classroom. To further protect the privacy of the students, the data from the surveys will be uploaded into excel daily on my laptop which is secured with a password. The survey sheets will then be placed in the shred bin in the main office daily. Since the behavior observations are a part of the normal daily routine, those will remain confidential as they are placed weekly in the students' T4D folders which contain their confidential information. These are kept locked in a filing cabinet in my room in which only I have access to via a key. In regards to my field notes, I will also identify the students based on their numbers rather than their names. At this point in time, I have most if not all students' numbers memorized as they have been utilizing these for chromebook checkouts since the beginning of the 2018-2019 school year. By maintaining consistency by using student numbers and locking up my field notes in my filing cabinet daily, it will help to protect the privacy of my participants.

8. Data Analysis

A. *Briefly describe how you will analyze and report the collected data.*

The behavior data collection charts will be analyzed using SPSS software where Descriptive Statistics will be used to demonstrate overall data for each of the listed behaviors in the behavior charts for each student. Data from the first time-series without the presence of the therapy dog will be compared to data from the second time-series where the therapy dog was present and incorporated into the classroom pedagogy. Validity will be demonstrated for this measure through content validity, where each behavior (domain) will be specifically defined and explained, and then compared to recent literature demonstrating how these behaviors may adversely impact the relational ecology of the classroom by making accessibility to the curriculum a challenge.

The student surveys will be uploaded and analyzed through statnet, a software program in R for network analysis. The statnet software will create visuals of the networks and also document the number of interactions that each student has with another student. By uploading results from the student surveys into the statnet program, it will create the networks of relationships and interactions visually. In addition to bringing the networks to life in a visual form, statnet also provides descriptive statistics which will demonstrate validity.

B. *What will you do with the results of your study (e.g. contributing to generalizable knowledge, publishing sharing at a conference, etc.)?*

I plan to use the results of my study for my dissertation, as well as for national/regional conference presentation and publication in a special education journal.

C. *Include an explanation of how will the data be maintained after the study is complete. Specify where and how it will be stored (room number, password protected file, etc.)*

The paper and pencil survey, field notes, and observational data will be maintained in a locked filing cabinet in my classroom (same classroom in which the study is to be conducted, which is portable 905 at Richmond Hill High School). The behavioral data taken as a part of our daily teaching routine for each student is secured and kept confidential as part of our county's policy.

D. *Student researchers must specify which faculty or staff member will be responsible for records after you have left the university*

Jonathan Hilpert, my dissertation chair, will be responsible for the records after I have left the university.

E. Anticipated destruction date or method used to render data anonymous for future use.
 destroyed 3 Years after conclusion of research (minimum required for all PIs)

er timeframe (min 3 years):

ntained for future use in a de-identified fashion. Method used to render it anonymous for future use: The paper
 and pencil data will be stored for three years and then destroyed. Electronic, deidentified copies of the data will be
 kept indefinitely for future publication.

Note: Your data may be subject to other retention regulations (i.e. American Psychology Association, etc.)

Special Conditions

9. Risk
Even minor discomfort in answering questions on a survey may pose some risk to subjects. Carefully consider how the subjects will react and address ANY potential risks.
A. <i>Is there greater than minimal risk from physical, mental, or social discomfort?</i>
<i>Do not simply state that no risk exists. If risk is no greater than risk associated with daily life experiences, state risk in these terms.</i>
<i>Describe the risks and the steps taken to minimize them. Justify the risk undertaken by outlining any benefits that might result from the study, both on a participant and societal level.</i>
With research conducted using any animal, there is always a risk. Potential risks include: <ul style="list-style-type: none"> • <u>Therapy Dog in Distress/Danger</u> <ul style="list-style-type: none"> ○ <u>Definition:</u> The therapy dog is in possible or immediate danger and/or showing signs of distress (ears pinned back, growling, tail tucked under, crouching position) • <u>Student in Distress/Danger</u> <ul style="list-style-type: none"> ○ <u>Definition:</u> Student is in possible or immediate danger and/or showing signs of distress, nerves, aggression (signs vary per student; Kristin Blanton, co-teacher, and paraprofessionals are able to determine how these behaviors manifest in the students) • <u>Therapy Dog Harms Student</u> <ul style="list-style-type: none"> ○ <u>Definition:</u> The therapy dog has inflicted harm to a student (i.e. scratch, bite) • <u>Allergic Reaction</u>

- Definition: A student has an allergic reaction to the therapy dog
- Hazardous Wastes
 - Definition: The therapy dog has an accident in the classroom

The risks defined above are clearly outlined in the safety plan (see Appendix E) with detailed instructions as how to handle each risk, including the personnel's roles.

To mitigate these risks, Jackson, the therapy dog that will be used in this study has undergone extensive training through Petsmart in Savannah under Robert Olsen, former police canine trainer. Jackson has undergone three training classes including a therapy dog training course under Robert Olsen, earning training class completions and the Canine Good Citizen certification. In addition, Jackson tested with Therapy Dog International and passed, officially becoming a certified therapy dog in May, 2018. This allows for Jackson to go to schools as he has passed the medical, behavioral, temperament, and training requirements of the Therapy Dog International organization. The training and certification that Jackson has undergone minimizes the risk associated with working with animals. However, in case of an emergency, a safety plan will be in place that will remove the dog and/or student(s) from the environment as quickly and safely as possible. See (Appendix E) for the safety plan.

While there are potential risks, research demonstrates that the benefits clearly outweigh the risks. Not only may the students enjoy the interaction with Jackson, the therapy dog, they may also see positive changes academically, socio-emotionally, and physiologically.

- B. Will you be carrying out procedures or asking questions that might disturb your subjects emotionally or produce stress or anxiety? If yes, describe your plans for providing appropriate resources for subjects.

Some of the procedures might disturb my subjects emotionally or produce stress, which is why there is a safety plan in place. See (Appendix E) for the safety plan. The safety plan address how to support students and the therapy dog in times of stress/emergencies.

10. Research Involving Minors

- A. Will minors be involved in your research?

No

- B. If yes, describe how the details of your study will be communicated to parents/guardians. Please provide both parental consent letters and child assent letters (or processes for children too young to read).

Some of the students that I teach that will be invited to participate are minors. As mentioned above under the informed consent section, I am requiring that all students I teach receive consent from their parents or guardians due to the nature of my class where I serve students with cognitive deficits that warrant specialized instruction outside of the general education environment. The recruitment letter (see Appendix A) is a brief overview of the

study along with a description of what the parents and students can expect from the therapy dog. I will explain the study, roles of the students, and the roles of the therapy dog to the class in case they are unable to comprehend the recruitment notice. I will address any questions they may have. I will also send an email home to the parents with the recruitment plan attached as well as send a hard copy home. In addition, I will send home the informed consent (see Appendix B) which outlines the study in more detail. This too I will go over the contents of the email with the students in person to address any questions they may have. In the email with the recruitment letter and informed consent, I will explain how I need both guardian and student. The letters will be sent out 9/27/18 both via hard copy in their take-home folders and through email to the parents. The forms will be accepted until 10/15/18 and reminders will be sent through the class remind to return the forms back to school in the students' take-home folders.

C. *Will the research take part in a school (elementary, middle, or high school)?*

No

D. *If yes, describe how permission will be obtained from school officials/teachers, and indicate whether the study will be a part of the normal curriculum/school process.*

Permission has been obtained (pending IRB approval) of this study by both the high school administrator and county superintendent. The study will go beyond the normal curriculum/school process as the intent is to organically incorporate a therapy dog into the classroom as another being, or student. Myself, the principal, and the superintendent of the county met on 8/7/18 to discuss the study and address any logistical questions. I have received full support as long as the study is IRB approved. A letter of support from the county's superintendent will be given out to the participants once I have IRB approval (see Appendix F).

of the normal curriculum/school process

part of the normal curriculum/school process

11. Deception

A. *Will you use deception in your research?*

Deception

ive Deception

ve Deception

B. *If yes, describe the deception and how the subject will be debriefed. Include a copy of any debriefing materials. Make sure the debriefing process is listed in your timeline in the Procedures section.*

C. *Address the rationale for using deception.*

Be sure to review the deception disclaimer language required in the informed consent. Note: All research in which active deception will be used is required to be reviewed by the full Institutional Review Board. Passive deception may receive expedited review.

12. Medical Procedures

A. Does your research procedures involve any of the following procedures:
expenditures of physical effort unlikely to lead to physical injury

expenditures of physical effort that could lead to physical injury

sting, injecting, or absorbing any substances into the body or through the skin

ting any objects into bodies through orifices or otherwise

lling of blood or other bodily fluids

r Medical Procedures

Medical Procedures Involved

B. *Describe your procedures, including safeguards. If appropriate, briefly describe the necessity for employing a medical procedure in this study. Be sure to review the medical disclaimer language required in the informed consent.*

C. *Describe a medical emergency plan if the research involves any physical risk beyond the most minimal kind. The medical research plan should include, but not necessarily be limited to: emergency equipment appropriate for the risks involved, first rescuer actions to address the most likely physical risk of the protocol, further actions necessary for the likely risks.*

Reminder: No research can be undertaken until your proposal has been approved by the IRB.

CERTIFICATION OF INVESTIGATOR RESPONSIBILITIES

By signing the cover page, I agree/certify that:

1. I have reviewed this protocol submission in its entirety and I state that I am fully cognizant of, and in agreement with, all submitted statements and that all statements are truthful.

2. This application, if funded by an extramural source, accurately reflects all procedures involving human participants described in the proposal to the funding agency previously noted.
3. I will conduct this research study in strict accordance with all submitted statements except where a change may be necessary to eliminate an apparent immediate hazard to a given research subject.
 - a. I will notify the IRB promptly of any change in the research procedures necessitated in the interest of the safety of a given research subject.
 - b. I will request and obtain IRB approval of any proposed modification to the research protocol or informed consent document(s) prior to implementing such modifications.
4. I will ensure that all co-investigators, and other personnel assisting in the conduct of this research study have been provided a copy of the entire current version of the research protocol and are fully informed of the current (a) study procedures (including procedure modifications); (b) informed consent requirements and process; (c) anonymity and/or confidentiality assurances promised when securing informed consent (d) potential risks associated with the study participation and the steps to be taken to prevent or minimize these potential risks; (e) adverse event reporting requirements; (f) data and record-keeping requirements; and (g) the current IRB approval status of the research study.
5. I will not enroll any individual into this research study: (a) until such time that the conduct of the study has been approved in writing by the IRB; (b) during any period wherein IRB renewal approval of this research study has lapsed; (c) during any period wherein IRB approval of the research study or research study enrollment has been suspended, or wherein the sponsor has suspended research study enrollment; or (d) following termination of IRB approval of the research study or following sponsor/principal investigator termination of research study enrollment.
6. I will respond promptly to all requests for information or materials solicited by the IRB or IRB Office.
7. I will submit the research study in a timely manner for IRB renewal approval.
8. I will not enroll any individual into this research study until such time that I obtain his/her written informed consent, or, if applicable, the written informed consent of his/her authorized representative (i.e., unless the IRB has granted a waiver of the requirement to obtain written informed consent).
9. I will employ and oversee an informed consent process that ensures that potential research subjects understand fully the purpose of the research study, the nature of the research procedures they are being asked to undergo, the potential risks of these research procedures, and their rights as a research study volunteer.
10. I will ensure that research subjects are kept fully informed of any new information that may affect their willingness to continue to participate in the research study.
11. I will maintain adequate, current, and accurate records of research data, outcomes, and adverse events to permit an ongoing assessment of the risks/benefit ratio of research study participation.
12. I am cognizant of, and will comply with, current federal regulations and IRB requirements governing human subject research including adverse event reporting requirements.
13. I will notify the IRB within 24 hours regarding any unexpected study results or adverse events that injure or cause harm to human participants.
14. I will make a reasonable effort to ensure that subjects who have suffered an adverse event associated with research participation receive adequate care to correct or alleviate the consequences of the adverse event to the extent possible.

15. I will notify the IRB prior to any change made to this protocol or consent form (if applicable).

16. I will notify the IRB office within 30 days of a change in the PI or the closure of the study.

***Faculty signature indicates that he/she has reviewed the application and attests to its completeness and accuracy**

APPENDIX J

STUDENT ARTIFACTS DAY 1 OF POST-TEST

1. Day 1 of Post Test: How do you feel about having Jackson in the classroom?

Student Responses

① I don't know how I feel about Jason. I don't mind him, I wouldn't mind petting him, but I don't feel like it. The dog is about two in an half year old. It's a Border Collie dog. He likes crickets, trains, tug a war and frisbes, and his Mom and his kids and ice cream shop. He likes to watch TV.

student 6

How do you feel about having Jackson in the room?

- ② 1. "I petted the dog named Jackson and he is a boy."
2. "We meet Jackson the dog."
3. "Jackson is staying here in the room."
4. "Jackson will not jump out the window, never, ever scare the chickens, hens, and rooster."
5. "I would keep in eye on Jackson the dog that he needs to be quiet as a mouse."

31517011

3 he is a very good dog
Student 20

4 he has a dog that I never had and I love him he's a good dog and I love him so much he has good he's a good dog and I love him
Student 19

5 How do you feel about having Jackson in the room
I like Jackson because he is kind and playful and nice I like playing with him because he is really nice and sweet
Student 13

6 How do you feel about having Jackson in the room
he is excited to play with me
he is excited to play together
he is excited to play Jackson's money
he is excited to see him
he is excited to see me
Student 11

① 1 How do you feel about the
 2 JACKSONIA FIRE ROOM
 3 AWOME THE ROOM
 4 A GOOD HOOPY
 5 AND DOGS

THE ROOM

GO DADS!

Student 12

1. Day 1 of Post Test: How do you feel about having Jackson in the classroom?
Translated

1. I don't know how I feel about Jackson. I don't mind him. I wouldn't mind petting him, but I don't feel like it. The dog is about two and a half years old. He likes crickets, trains, tug-of-war, and frisbees, and his mom and loves kids and ice cream shop. He likes to watch tv.
2. I pet the dog named Jackson and he is a boy. We met Jackson the dog. Jackson is staying here in the room. Jackson will not jump out the window, never ever scare the chickens, hens, and rooster. I would keep an eye on Jackson the dog that he needs to be quiet as a mouse.
3. He is a very good dog.
4. He is the dog that I have never had and I love him. He is a good dog and I love him so much. He looks good and I love him.
5. I like Jackson because he is kind and playful and nice. I like playing with him because he is really nice and sweet.
6. He is excited to play with the toys. He is excited to play tug-of-war. He is excited around his mommy. He is excited to be pet. He is excited to see me.
7. He is awesome, good, and happy.

APPENDIX K

STUDENT ARTIFACTS DAY 20 OF POST-TEST

2. Last day of Post Test: What was your favorite part of having Jackson with us? Tell us about your experience with having Jackson in our classroom. Will you miss him?

Student Responses:

- ① What was your favorite part of having Jackson with us? Tell us about your experience with having Jackson in our class in our room? Will you miss him? My favorite about Jackson when he kiss me and I feel sad because him is leaving us because I wish he could staying forever.

Student 2

- ② I like Jackson if in the room he makes us happy when we walk in the he runs at us gives us lots of hugs we don't want Jackson to leave us we going to miss him.

Student 3

- ③ My favorite part for Jackson is say goodbye to him. I'm gonna miss him. He's going to miss us. He's going back home. He's going to give me a handshake. His last day is today. This is the last day of Jackson.

Student 5

- ④ I ~~is~~ kinda liked Jackson. Jackson is a dog. Jackson is a therapy dog. The dog helps people with anxiety. The dog has a mop tail. The reason with I say that Jackson has a mop tail is because it looks like a mop and how it looks. Jackson is a nice dog. People like playing with him.

Student 6

- ⑤ I love becus he give me kiss and he help me wame pm sad and mad. I will miss him wame i

Student 9

- ⑥ Jackson he is great time with us in class room and also walkin round class room and I miss you so much he loves.

I like to had a Toys for Jackson to play with me anyway he lock the crush chne

I want to be freind's with Jackson I love to kiss him

Student 10

⑦ JARVIS
 is a cool
 dog and go
 dog's best
 I may miss
 him but he's
 fine. JJ

Student 12

⑧ I will miss him Jackson because he's a sweet and nice
 dog and loves to play too and he's really faithful and
 he's a good dog and like him a lot and he's
 a really cool dog and he's a loving dog because
 he gives kisses and jumps on people and he's
 really funny and he loves to play tag and
 and he loves to play catch

Student 13

9

MY FAVORITE PART IS HAVING JACKSON
 A TREAT LIKE TO PLAY WITH JACKSON
 WITH A DODDY JACKSON AND I
 ALSO PLAYING THE BUT, I WOULD MISS
 PLAYING NEW JACKSON JACKSON IS
 A KID AND PLAYING AND GENTLE.
 I'M GOING TO MISS JACKSON SO MUCH.

Student 14

10

MY FAVORITE PART ABOUT HAVING JACKSON WITH US
 WAS IN THE CLASSROOM AND HE DID MORE PEOPLE
 QUESTIONS OF HIS OWN FACTS.

Student 15

11

WHAT WAS YOUR FAVORITE PART
 OF HAVING JACKSON WITH US?
 TELL US ABOUT YOUR EXPERIENCE
 WITH HAVING JACKSON IN OUR ROOM
 WILL YOU MISS HIM? THE JACKSON
 LOOKS FURRY!
 THE DOG IS VERY BIG!
 WE MISS MS WICKY AND MY DOG
 JACKSON!

⑫

What was your favorite part of having Jackson with us?

Tell us about your experience with having Jackson in our room?

Will you miss him?

1. "Jackson will stay inside the classroom with students and teachers."

2. "I love to pet the dog Jackson because he is so kind, he's a pet, and he's happy."

3. "I pet Jackson the dog gently."

4. "We played with Jackson, feed dog food, water and a toy."

5. "Jackson will not be allow to scare hens and chickens, never jump out the window and never mess up the room."

6. "Jackson needs to be quiet in homeroom."

student 17

⑬

JASON IS LOVE IN THIS
 CLASS HE BROWN AND WHITE
 AND SOM TIME HIS MY CHINA
 SOMETIME WE NEED TO
 WORK AND WE DO AND SO
 TIME WE CAN PLAY WITH
 HIM AND JASON CAN
 ONE THAT COME IN THE
 ROOM HE NEED LOVE
 AND HE GIVE ALL OF HIS
 LOVE

I LOVE THAT LOS FEELS IN
 MY LIFE WHEN I IN THE
 ROOM HE NOT IN THE ROOM
 I IN AND LIZ HIS MY
 CHINA ALL THE TIME

AND HE LOVE ME TO

HE IS THE BOSS I DO NOT
 HAVE WHEN I IN SOON
 HIM MAKE ME SMILE

Student 19

(14)

What I like about JACKSON is that he is always happy. JACKSON is a Australian Shepherd, a breed that is known for its playful dog instinct like the Labrador retriever. I always like JACKSON right from the start whenever first met. I like it when JACKSON licks your face, and that means he likes you. I always like to read to JACKSON and show him the pictures on the book. I like it when he plays tug and always pull the toy to pull me back. I love JACKSON so much that he reminds me of my old dog with is a mini ter snorter tamarin.

Student 19

(15)

2 friends + a dog
he love me to tick to me and he
is my favorite Favorite Dog ever
in United States and loved to played together
we will do a fetch and catch Me we want
For Jacase, we loved to play catch and More
with swim in the pool too for JACKSON.

Student 20

2. Last day of Post Test: What was your favorite part of having Jackson with us? Tell us about your experience with having Jackson in our classroom. Will you miss him?

Translated:

1. My favorite part about Jackson is when he kisses me and I feel sad because he is leaving us because I wish he could stay forever.
2. I like Jackson in the room because he makes us happy. When we walk in he runs at us and gives us lots of licks. We don't want Jackson to leave us. We are going to miss him.
3. I'm going to miss him. He is going to miss us. He's going back home. He's going to give me a handshake. His last day is today. This is the last day with Jackson.
4. I kind of liked Jackson. Jackson is a therapy dog. The dog helps people with anxiety. The dog has a mop tail. The reason I say that Jackson has a mop tail is because it looks like a mop and how it loos. Jackson is a nice dog. People like playing with him.
5. I love him because he gives me kisses and he helps me when I am sad and mad. I will miss him.
6. Jackson had a great time with us in the classroom and when he walks around the classroom. I will miss him so much when he leaves. I like to hold toys for Jackson to play with me. I want to be friends with Jackson and I love to kiss him.
7. Jackson is awesome, fun, and cool. I'll miss him man, he's awesome and my friend.
8. I will miss Jackson because he's a sweet dog and loves to play too. He's really playful and he's a good dog and I like him a lot. He's a really cool dog and he's a loving dog because he gives kisses and jumps on people and he's really furry. He loves to play tug of war and he loves to play catch.
9. My favorite part is giving Jackson a treat. I like to play with Jackson with dog toys. Jackson and I are playing tag. But I would like Mrs. Blanton's new Jackson. Jackson is nice, and playful, and gentle. I'm going to miss him so much.

10. My favorite part about having Jackson with us is that the classroom has been a lot more peaceful and less arguing.
11. Jackson looks furry! The dog is very big! We will miss Ms. Hickey and my dog Jackson.
12. Jackson will stay inside the classroom with the students and the teachers. I love to pet the dog Jackson because he is so kind, he's a pet, and he's happy. I pet Jackson the dog gently. We played with Jackson, fed him dog food, water, and gave him toys. Jackson was not allowed to scare the hens, never jump out of the window, and never mess up the room. Jackson needs to be quiet in homeroom.
13. Jackson is my love in this classroom and sometimes we he is my cheer. Sometimes we need to work and we do, and sometimes we can play with him. He needs love and he loves all of us. I love that dog being in my life. When I'm in the room and he's not in the room I'm mad because he is my cheer all of the time. He loves me to. He's the dog I do not have and when I see him it makes me smile.
14. What I like about Jackson is that he is always happy. Jackson is an Australian Shepherd, a breed that is known for its therapy dog instinct like the Labrador Retriever. I always liked Jackson right from the start when we first met. I like it when Jackson licks your face and that means he likes you. I always like to read to Jackson and show him the pictures in the book. I like it when he plays tough and always pulls the toy to pull me back. I love Jackson so much that he reminds me of my old dog which is a Miniature Schnauzer Terrier.
15. He loves me and licks me. Jackson is my favorite dog ever in the United States. I loved to play together and would fetch and catch with me. We loved to play catch and more with swim in the pool for Jackson.