Animals as intervention: How schools are making use of animals as part of their educational provision.

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Contents

List of Tables

List of Figures

Abstract

<u>Background:</u> The benefits of the human-animal bond have been documented across time and disciplines. More recently, international scientific research has provided promising results showing benefits to children and young people (CYP) of a range of ages, across a range of areas of impact; with no known study demonstrating a detrimental impact. However, no research to date has investigated current practice of including animals within educational settings in the UK.

<u>Aims:</u> The aims of the current project were: 1) to explore whether, and how, animals are being included in UK based educational settings, 2) to consider what works and why to establish and incorporate animals in a school-based setting, 3) to consider what barriers exist in including animals in school-based settings and how have school staff/systems overcome them.

<u>Design:</u> The research used a mixed methods design. Electronic surveys were sent to each statutory-aged school setting within a UK based Local Authority. From the survey respondents, 4 participants who were including animals in their setting completed semi-structured interviews.

<u>Analysis:</u> Survey data was analysed using descriptive statistics. Interview data was analysed using thematic analysis.

<u>Findings:</u> Results showed that approximately half of educational settings are including animals; mostly to support CYP's general development and emotional wellbeing and mental health. All participants currently including animals intended to continue, and would recommend the practice to other settings. 5 broad themes and 10 broad subthemes were present across participants' qualitative data. Further specific subthemes were identified for some participants; and each participant's data was reported individually.

Conclusions: The study shows UK school settings are including animals and supports previous research studies highlighting the perceived benefits of this practice. It also highlights the need and considerations required for schools to engage safely and effectively with the practice; from the perspective and experience of those currently including animals.

CHAPTER 1: Introduction

1.1. Background

1.1.1. Introduction to Human-Animal Interaction (HAI) and human-animal bond (HAB)

Across human history, humans and animals have interacted in a variety of ways including as companions, providers of food/clothing, carriers of food/ water/messages, detectors of danger and hunters. Wolves were the first animal to be domesticated[1] between 11,000-33,000 years ago, shortly followed by livestock animals. Genetic evidence suggests that naturally occurring traits such as friendliness were present in early domesticated animals, which may have triggered a 'mutual-domestication' process; and a symbiotic relationship was created between humans and dogs and cats (Ottoni et al. 2017). Domestic and wild animals remain genetically and physically distinct from each other; though some species e.g. rabbits and birds, span and thrive evolutionarily both in the wild and domestically.

HAI and the associated HAB are well-documented phenomena that can be found across diverse sources including ancient literature, colloquial tales and more recently, research literature; though clear universal definitions of these terms have not yet been agreed (Fine, 2015). Commonalities across definitions for HAI/ HAB include a voluntary bi-directional relationship which benefits both parties (Russow, 2002). Early references to HAB include relationships between spiritual 'shamans' and their animal 'familiars' and Christian 'saints' and their healing animal companions (Serpell, 2015), and later to more degenerate practitioners of magic, 'witches'. The 'Age of Enlightenment' led to further changes in attitudes towards HAB; as sympathy towards animals increased and practices such as pet-keeping

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[1] Domesticated animals are animals that have been selectively bred and genetically adapted over generations to live alongside humans. Animal species have been domesticated for three reasons: companionship (e.g. dogs and cats), food (e.g. sheep and cows) and as working animals (e.g. horses and donkeys; National Geographic, 2019).

became more common (Serpell, 2015). Despite changes in societal views towards those involved in HAI/HABs, a curiosity and interest in HAI and the HAB has remained popular and persistent over time.

A more well known and established "working" relationship built on HAI and the HAB are animals in assistance roles e.g. guide dogs (Assistance Dogs UK, n.d.). Guide Dogs for the Blind began in 1931and currently provide assistance animals to 200,000 individuals with sight loss in the United Kingdom (UK; Guide Dogs for The Blind, n.d). Over time and practice, animal assistance roles have and continue to develop, with animals now supporting individuals: who are deaf/hearing impaired (Hearing Dogs), who have physical disabilities (Canine Partners, Dog Assistance in Disability), who have learning disabilities and/or Autism Spectrum Disorder (ASD) (Dogs for Good) or other medical conditions (Support Dogs, Assistance Dogs and Medical Alert Assistance Dogs; Assistance Dogs, 2020). Assistance animals are an important and legally recognised HAI/HAB relationship in the UK. Assistance dogs and their owners are incorporated under UK Legislation (Equality Act, 2019), which requires services to make "reasonable adjustments" to ensure the individual can access public places/services safely with their assistance animal.

1.1.2. Impact of Pet-Ownership

Societal focus to explain and reason the benefits of the HAB have changed over time, moving from spiritual ideas to more scientifically robust explanations. A significant, ground-breaking study prompted the shift to more scientific support for the benefits of animal companionship (Friedmann, Katcher, Lynch & Thomas, 1980) who found that pet owners live longer than non-pet owners. Following these findings, a considerable number of studies have also highlighted the soothing effects of the presence of animals, namely participants' pets, on human physical health and physiological states e.g. reduced heart rate and blood pressure (Friedman,Thomas, & Eddy; 2000). Researchers have examined the effect of pets/animals on

neurotransmitter levels to explain the physiological benefits of HAI. Odendaal & Meintjes (2003) measured levels of oxytocin (which doubled), blood pressure and cortisol levels (which both reduced) when participants gently stroked and petted their own dogs, in both the human and canine participants.

As well as creating physiological and biological changes in pet-owning humans, Friedmann, Locker & Lockwood (1990) postulate that pet-ownership improves health by reducing loneliness through providing companionship and positive social relationships. Recently, a growing body of research has confirmed a strong positive link between social support and health. Though the underlying mechanisms remain the subject of debate, the research appears to demonstrate the capacity of positive social support to ameliorate illness or stress (Fine, 2015). However, the majority of this research only considers human social relationships. A small range of studies have evidenced the benefit of animals as social support. Socially isolated elderly people grieving the loss of their spouses with pets, were found to be less likely to report depression than those without animals (Garrity & Stallones, 1989) and elderly women living with a pet were found to be less lonely and in better psychological health than those living alone (Goldmeier, 1986). Studies have also highlighted pets can play an important role in recovery for individuals with significant mental illness (Wisdom, Saedi & Green, 2009).

Pets may also play a part in motivating their owners to maintain their own and their pet's health; which is particularly relevant to dogs and dog owners. Heady, Na & Zheng (2008) compared health outcomes of young female dog owners compared to females without dogs in several countries including China, Australia and Germany. Those with dogs exercised more, slept better, felt fitter and had fewer sick days/doctors visits. They found that Californian dog owners walked 18.9 minutes more per week than non-owners. Animals may also play a motivational role in

recovery and rehabilitation following both physical (Wu, Niedra, Pendergast & McCrindle, 2002) and mental illness (Kovacs, Kis, Rozsa & Rozsa, 2004).

The effects of cat ownership are not as well researched as other species of pets; yet some initial studies have found positive benefits. Studies have found higher scores on psychological health for cat owners compared to non-cat owners (Straede & Gates, 1993); particularly for women who rated their cats high in providing affection and unconditional love (Zasloff & Kidd, 1994). Other studies have evidenced a beneficial impact of cat companionship, detailing benefits for individuals with physical health conditions, including men with Acquired Immune Deficiency Syndrome (AIDS), and women caring for family members with Alzheimer's (Castelli, Hart & Zasloff, 2001; Fritz, Farver, Hart & Kass, 1996).

1.1.3. Animal-assisted interventions (AAIs)

Following the growing evidence of the benefits of pet ownership / HAI has led to the development of AAIs. A commonly used definition for AAIs within current literature is "any intervention that intentionally includes or incorporates animals as part of a therapeutic or ameliorative process or milieu" (Kruger & Serpell, 2006). The variety of uses and opportunities for AAIs, and the different characteristics of the vast amounts of different species of animals, can explain why HAI and AAIs have been adopted across multiple disciplines and contexts and led to the development of a range of specific programmes within a range of professional disciplines (see Table 1 for summary of disciplines currently utilising AAIs).

Animal Assisted Interventions		
Animal-assisted activities	Animal-assisted therapy	Animal-assisted education
Animal-assisted crisis response	Animal-assisted psychotherapy	Animal-assisted reading programmes
Therapy animal hospital visits	Animal-assisted social work	Humane education
Therapy animal nursing	Animal-assisted physical	Presence of animals in

home visit	therapy	educational settings to support a range of outcomes.
Animal-assisted activities for at-risk or delinquent youth	Animal-assisted speech therapy	
Animal-assisted activities for convicted offenders e.g. Prison Animal Programmes	Professional-paraprofessional animal-assisted therapy service model	

Table 1: Adaption of spectrum of animal-assisted interventions (Fine & Mackintosh, 2015)

The UK was innovative in the utilisation of HAI and HAB for the treatment of the ill as early as the late 18th Century (Serpell, 2015). Prominent practitioners across disciplines, including Florence Nightingale, acknowledged the impact of an animal companion in recovery of both mental and physical health. Despite these early initiatives and successes, the advance of scientific medicine largely eliminated animals from health care in the UK (Allderidge, 1991).

Initial studies across the spectrum of AAIs have demonstrated a positive impact on individuals across the lifespan. Studies have shown that animals visiting elderly people in long-term elderly residential homes can significantly reduce loneliness (Banks & Banks, 2002); with lonelier individuals benefitting more from animal visits (Banks & Banks, 2005). AAIs have also been linked to increased levels of social interactions from populations including adults with Alzheimer's disease or schizophrenia (Barak, Savorai, Mavashev & Beni, 2001; Bernstein, Friedmann & Malaspina, 2000). Reduction in anxiety levels following AAIs have also been documented in other clinical populations e.g. hospitalised patients with psychiatric and mood disorders (Barker & Dawson, 1998).

A range of animal species have been evidenced in AAI research to improve the quality of life of individuals with physical health conditions. Participants with dementia showed improved orientation to the present place and time in the presence of a dog (Katsinas, 2001) and improved nutritional intake and less aggressive

behaviour in the presence of fish (Edwards & Beck, 2002; Edwards, Beck & Lim, 2014). Nimer and Lundhal's (2007) meta-analysis of 49 AAI studies showed the approach was associated with improved outcomes for medical difficulties, behavioural problems, emotional wellbeing and other difficulties associated with ASD. A randomised control trial of AAI with farm animals found positive influences on self-efficacy and coping ability amongst individuals with long lasting psychiatric symptoms (Berget & Braastad, 2011).

1.1.4. AAIs utilising dogs

Certain animal species, such as dogs, have been more commonly focussed upon within AAIs and the associated research. AAIs focussing on literacy or reading skills e.g. reading dog programmes, involving CYPs reading to a dog, have become increasingly popular in the United States of America (USA) and Europe in the last 20 years (Gee, Fine & McCardle, 2017). Experimental studies, which include control groups, have evidenced improvements in reading skill, fluency, comprehension and duration, in CYP, compared to peers reading without dogs (Smith, 2010; Le Roux, Swartz & Swartz, 2014). Dogs have also been a species focussed upon within more "therapeutic" roles; for both physical and emotional recovery and wellbeing, including as visitors to healthcare and hospital settings. The Royal College of Nursing (2019) have developed guidance specifically for working with dogs in health care settings and allied health environments. Dogs are the most commonly selected species of animal incorporated into programmes providing psychiatric service animals or emotional support animals for individuals with psychiatric disorders including Post-Traumatic Stress Disorder (PTSD) following experiencing war or sexual assault (Tedeschi, Pearson, Bayley & Fine, 2017).

The inclusion of dogs in AAIs may be a particularly distinct variable to consider. Recent advances in understanding dog-human interactions highlight that naturally occurring differences in dog behaviour compared to other domesticated animal

species e.g. higher levels of sensitivity to human communication and behaviour including non-verbal communication e.g. pointing, gaze direction (MacLean & Hare, 2015), have benefitted the development of human-dog relationships. A comparative study of hormone levels, pre and post dog-human interaction, demonstrated significant increases in oxytocin, endorphins, dopamine and prolactin, in both species, post-interaction (Odendaal & Meintjes, 2003). These findings may indicate the possibility of a relational feedback loop linked to mutual gaze; similar to when a parent bonds with their infant. Interestingly, these results were not replicated in a similar experiment with other hand-reared but undomesticated canine species (wolves). These findings could highlight a unique argument for utilising dogs in AAIs over other species of animals.

1.1.5. AAIs utilising horses

Equine-assisted therapy (EAT), a subtype of animal-assisted therapy, is the integration of the horse into goal-directed treatment and is provided by licensed therapists (Delta Society, 2002). Hippotherapy is a further specialisation of EAT; meaning treatment with the help of a horse. The American Hippotherapy Association (n.d.) defines hippotherapy as a physical, occupational, or speech therapy treatment strategy utilising equine movement. The therapy involves the individual sitting on the horse's back and accommodates the movements of the horse's walk (Klimas, 2001). Activities are incorporated by the therapist to compliment the horse's movement and help the individual participating in the treatment.

A growing body of research evidence has demonstrated benefits of EATs for a range of individuals across a range of outcomes. A systematic literature review and meta-analysis (Tseng, Chen & Tam, 2013) reported short-term hippotherapy (total riding time 8–10 min) significantly reduced asymmetrical activity of the hip adductor muscles and improved postural control in children with Cerebral Palsy (CP). Another systematic literature review (Cantin & Marshall-Lucette, 2011) expressed promising

results in the use of EAT in increasing positive and reducing negative behaviours for those experiencing general mental health problems, in both adults and children. Systematic literature reviews have also identified EATs as effective interventions for children with ASD (Trzmiel, Purandare, Michalak, Zasadzka & Pawlaczyk, 2018).

1.1.6. AAIs and CYP

The relevance of the HAB and its associated benefits, applicable specifically to CYP and their development, is not a new idea. Locke (1699) advocated giving children animals to care for, to develop their feelings and sense of responsibility to others. Younger children have been a particular area of research interest considering the impact of the presence of animals on a range of skills and areas of development. Studies have shown preschool children demonstrate better skills when following instructions (Gee, Christ & Carr, 2010; Gee, Sherlock, Bennet & Harris, 2009), make fewer errors on categorisation tasks (Gee, Church & Altobelli, 2010), and perform motor skills faster without sacrificing accuracy (Gee, Harris & Johnson, 2007), in the presence of dogs compared to a human or stuffed animal. One study used a direct measure of cognition (object recognition) and reported that pre-school children recognised the objects significantly faster and more accurately in the presence of a dog (Gee, Belcher, Garbski, DeJesus & Riley, 2012). All these studies were experimental in nature, involved trained therapy dogs and familiarisation time between the dog and children. Additionally, a literature review by Jalongo, Astorino & Bomboy (2004) concluded that canine visitors in hospitals and classrooms are beneficial to young children's (aged 5-8 years) physical and psychological wellbeing and development.

Research has also indicated that AAIs are beneficial for CYP with additional needs and/or diagnoses. Charry-Sanchez, Padilla & Talero-Gutierrez (2018) conducted a meta-analysis of 26 controlled studies of children with ASD, CP, Down Syndrome, experiencing pain and/or other conditions, and reported a small but significant

improvement in the management of these conditions. Other studies have evidenced reduction in stress responses and anxiety (Tsai et al. 2010; Barker, Knisely, Schubert & Green, 2015) and pain (Ichitani & Cunha, 2016) following AAI with hospitalised CYP.

1.1.7. Interventions, including AAIs, in educational settings

Educational settings are essential for supporting the development and wellbeing of CYP in the UK and beyond; and a key role of education and educational settings is to provide interventions. It is also important that interventions implemented in educational settings have a research evidence base to know "what works", as well as "how" and "why" it works (Humphry et al., 2016). However, implementation is a complex and multi-dimensional construct, which is difficult to measure, especially when applied to educational settings and interventions; where variance in practice e.g. in fidelity (the extent the implementer adheres to the structure and sequence outlined by the developer) or dosage (the amount of an intervention that has been implemented) can impact significantly on the response to intervention (Humphry et al., 2016).

The research literature base surrounding the impact of AAIs in educational settings has and continues to grow; though it is currently in its infancy compared to other school-based interventions with more established evidence bases e.g. metacognitive and self-regulation intervention programmes (EEF, 2020). Several literature reviews and meta-analyses have explored AAI programmes in schools on CYPs' emotional and psychological wellbeing (Frieson, 2009; Jalongo et al., 2004), learning outcomes (Hummel & Randler, 2012) and literacy skills (Hall, Gee & Mills, 2016); with findings suggesting AAIs can have positive impact on the previously stated outcomes in educational settings. Some research has also suggested that animals can have an impact with older CYP e.g. those in higher educational settings. Animal Visitation Programmes (AVPs) are becoming an increasingly popular intervention for students

in colleges and universities, particularly in the USA, to reduce students' stress levels
and other difficulties (Haggerty & Mueller, 2017). Initial studies have demonstrated
positive accounts of the programmes effectiveness from descriptive and perspective
measures (Adamle, Riley & Carlson, 2009; Reynolds & Rabschutz, 2011).

However, the research base supporting AAIs in educational settings remains limited;
with literature reviews determining reviewed research studies as 'low quality' for
determining impact of the intervention e.g. due to a lack of control group (Hall, Gee &
Mills, 2016). The need for further and more rigorous research studies to evidence
comparative impact of AAIs when applied in educational settings remains pertinent.

1.1.8. Animals in Educational Settings

Beyond structured AAIs, having animals in classroom settings is a relatively common
practice in the USA and UK, and is seemingly popular with students of all ages;
though the scientific exploration of the impact of involving animals in educational
settings is still relatively new (Gee, Fine & Schuck, 2015). MacNamara, Moga &
Pachel (2015) categorise the delivery approach for the inclusion of animals in
educational settings to promote development into: implicit, explicit or instrumental
use (See Table 2 for summary).

Delivery Approach	Definition	Example	Degree of specificity in animal characteristic	Risk to animal and child
Implicit	Enhances development indirectly	Fish in an aquarium in a classroom	None/limited	None/limited
Explicit	Involve basic contact between animal and child e.g. to redirect attention/ meet sensory needs	Guinea pigs utilised in a group for CYP with additional needs	Some specificity e.g. calm temperament, 'touchable' animal	Some e.g. risk of allergies, injury to animal/child.
Instrumental	Animals play a direct role in	Dog involved in a literacy	Highest need	Highest risk e.g. risk of

	sculpting development by providing novel opportunities for interaction	programme for poor readers	for specificity	injury to animal/child, considering of animal resilience and wellbeing

Table 2: Summary table of implicit, explicit and instrument delivery approaches MacNamara, Moga &

Pachel (2015)

1.2. Context

1.2.1. International Context

The HAI relationship is a relationship documented across the world. Animals continue to be included in aspects of religion, clothing, food, fuel, transport, hunting etc. in all geographic areas of the world where humans currently inhabit. Service animals are less commonly referenced in third world countries; though there are exceptions. APOPO, a Belgian non-profit organisation has enlisted giant African pouched rats, to identify unexploded buried landmines (so far 13,200) from Tanzania, Mozambique, Angola and Cambodia (National Geographic, 2015). The rats are light enough to walk over the mines without setting them off, and can search over 2000 square feet in 20 minutes (which would take a human equivalent up to 4 days, at an increased risk of detonation). APOPO are also working towards training rats to detect Tuberculosis in developing countries; at a much quicker, more cost effective and more accurate rate than other current techniques (National Geographic, 2014). Less is known about the utilisation of AAIs and inclusion of animals in educational settings in developing countries, but there are some anecdotal examples of practice in African primary schools (Samodelov, 2017) and incorporating animals within lessons is recommended as inclusive practice in developing countries educational guidance (Mariga, McConkey & Myezwa, 2014).

The inclusion of animals in service roles and beyond is more commonly associated internationally through first world countries. The USA commonly includes animals within a variety of public settings ranging from prisons to schools to hospitals. One of

the most famous cases and advocates for the benefits of the HAB, particularly with individuals with ASD, is Temple Grandin. Grandin has built a prosperous career as a world-renowned animal behaviourist; revolutionising and redesigning cattle handling facilities to be more humane and efficient (Grandin & Johnson, 2005). Grandin suggests that for many individuals with ASD, animals provide safe, positive and supportive social interactions. In most developed nations, the inclusion of animals in educational settings is common practice, with educators including animals in classroom curricula in many ways e.g. resident classroom animals, pet visits, professional animal handler visits, and external trips to animal settings (Gee, Griffin, McCardle, 2017).

Beyond the expanding research base, AAIs are also being represented within international popular media. Orange is the New Black, a fictional TV show based on a real-life experience of a woman's prison in the USA, introduces a chicken enrichment programme for female inmates (Kohan et al., 2019). Though the show highlights some of the important debates around appropriate care and safety for the welfare of animals particularly in higher risk settings, the show also emphasises the clear benefits for the characters in supporting routine, calmness and empathy, even in the most hostile and challenging of environments. This public fictional platform reflects real-life practice, in the USA and beyond, where multiple programmes pairing prisoners with domesticated animals e.g. dogs and cats (e.g. Prison Pet Partnership, Camp Canine, Larch Cat Adoption Program, DAWGS in Prison; Cellania, 2016), who have had difficulties being re-homed or wildlife e.g. racoons, foxes, birds, (e.g. New England Wildlife Program, Cellania, 2016) requiring nursing and rehabilitation.

1.2.2. National Context

Little is currently known about HAI/HAB provision in educational settings in the UK, with initial surveys (Moorcroft, 2015) suggesting only a mere 22% of UK schools currently have animals present. Only 1 in 35 parents reported dogs being present in

their children's schools, with small rodents (constituting 60% of all school pets) such as gerbils, hamsters, rabbits and guinea pigs being the most commonly found species of animals in UK schools. Fish were also relatively common, making up 28% of all school-based animals. 73% of parents would like animal care to be included in the school curriculum, and 55% of parents reported that they would like their child's school to have animals present.

Recent government legislation has emphasised the role of schools in promoting all CYPs emotional wellbeing and mental health (Department for Education, DfE, 2003; DfE, 2017) as well as educational achievement. Additionally, Morrison-Gutman & Vorhaus' (2012) DfE funded literature review linked increased levels of emotional, behavioural, social and school wellbeing with educational achievement; emphasising the need to support CYPs wellbeing in schools. The recent drive to support emotional wellbeing and mental health in school highlights the importance of early intervention and prevention (Transforming CYP Mental Health Provision, 2017), so positive whole school approaches which foster wellbeing and positive mental health for both therapeutic value and for those "at-risk", are appealing for schools when implementing this drive. Additionally, the current socio-political context of austerity (Edmiston, 2017) has resulted in public services like education "being asked to do more with less"; meaning the cost-effectiveness of interventions is an important consideration for schools. Amongst all CYP, groups of vulnerable CYP are at an increased risk of experiencing low emotional, social and behavioural wellbeing and of developing mental health issues including CYP with: ASD, Attention Deficit Hyperactivity Disorder (ADHD), Special Educational Needs and Disabilities (SEND), emotional and behavioural disorders and those experiencing or at-risk of experiencing academic failure/exclusion (World Health Organisation, 2012). It would be especially important that these vulnerable CYP benefit from interventions to promote emotional wellbeing and positive mental health in schools.

As previously stated, initial research indicates AAIs/the presence of animals in educational settings can benefit the emotional, social and behavioural wellbeing, as well as fostering positive mental health, of/for CYP in general; including the vulnerable groups of CYP described previously (the relevance of which in education will be discussed more fully in Chapter 2). The scope of impact of AAIs/animals in educational settings, for a wide range of CYP to promote and develop a variety of skills including those currently in national and local focus, make AAIs/the inclusion of animals a cost-effective positive-focussed whole school intervention/approach for UK schools to consider.

Moorcroft (2015) identifies some reasons for school staff and parents not wanting to include animals in school-based settings including concerns for animal wellbeing in noisy school environments and around legal responsibility for providing care for animals year-round e.g. summer holidays. Other reasons for not including animals in school settings included: worries about the legality of working with animals e.g. injury/accidents (including toileting accidents), practical considerations e.g. space for larger animals, considerations of students e.g. allergies, cultural (some cultures view specific species as dirty or unclean e.g. some South Asian cultures view dogs as dirty and unclean and do not encourage interaction), negative perceptions (both innate and learnt) of disgust/fear towards specific animals e.g. rats/snakes/insects and adults' worries that the presence of animals may be a distraction in the classroom (Gee, Fine & McCardle, 2017).

Additionally, keeping animals in schools has been a current topic of debate beyond research and education; appearing as a debate topic on UK National Television on 'This Morning' (This Morning, 2019). A primary school currently including animals (chickens and llamas) within their setting highlight their priority around teaching children to care and respect animals.

1.2.3. Ethical Considerations

In line with current international and national debate, animal safety, welfare and wellbeing are core ethical considerations within the practice of AAIs/ including animals in educational settings. Some international organisations (such as People for the Ethical Treatment of Animals, PETA) and UK institutions including the Royal Society for the Prevention of Cruelty to Animals (RSPCA, n.d.) have raised their concerns for animal welfare and have taken a rigid standpoint; entirely opposing the inclusion of animals in education. These organisations argue 'distress or suffering is likely to be caused'; as schools can be noisy and frightening places for animals. PETA (2019) highlight difficulties when keeping animals in the classroom such as being unmonitored and therefore at risk when alone at school during nights and weekends, and share tragic incidents of animals being killed either at school or when being taken home by students (in the USA and Australia). The RSPCA highlights that UK based school staff responsible for caring for animal(s) on school premises are subject to the Animal Welfare Act (2006); the legal obligation to ensure that the animals' needs are met, which continues beyond the school day, as long as the animal remains at school (including evenings and holidays).

In line with PETA and RPSCA views, proper care and advocacy for animals involved in AAIs or otherwise residing or visiting in educational settings, are critical to the ethical and moral imperatives for this emerging field. Many authors, including the current author, in the field of AAIs/animals in education, recognise and share the concerns of patrons of PETA and the RSPCA around animal welfare and safety when being residents or visitors of educational settings. However, a blanket opposition to the inclusion of all animals in all educational settings appears overly generalised and potentially unhelpful.

Currently, a significant amount of animals both internationally and nationally, are domesticated animals; and they require care from humans to survive. Recent

estimates through a global biomass census indicate that of the current total of terrestrial mammals, 60% are domesticated and 36% are humans; leaving only 4% as wild mammals (Bar-On, Phillips & Milo, 2018). UK specific data estimates that 250,000 domesticated animals require rescuing and rehoming per year; with over half (approximately 130,000) being dogs (Parliament, 2019; Dogs Trust, n.d.). A recent parliamentary debate highlights that currently animal rescue centres are not nationally regulated and there are no known statistics for the amount of rescue centres operating in the UK. Of the known rescue centres operating nationwide, only 18% were regulated voluntarily through their alignment with the Association of Dogs and Cats Homes (Parliament, 2019). Supporting school settings to rehome domesticated animals safely and effectively could provide appropriate homes for many domesticated animals in need.

Additionally, multiple authors note the consideration of the animal's species/ temperament etc. when considering the practice including animals as part of an educational setting. Most authors in the field of AAI research and practice are careful not to describe animals as 'tools' to benefit humans, but as primary partners of equal importance in the therapeutic alliance, who can also benefit from the relationship and interaction (Russow, 2002). Initial studies have reported benefits to animals through interaction with humans e.g. increase in oxytocin levels (Odendaal & Meintjes, 2003), reduction in cortisol levels (Hennessy et al. 2002) and through the animals' behaviour (Ng, Albright, Fine & Peralta, 2015); though this is an area clearly requiring further investigation.

Clear, ethical and accountable legislation and policy is critical when maintaining ethical practice with animals in educational settings. However, existing school policies related to the inclusion of animals in education vary widely; with some schools having no policy in place, some having lenient policies which lack oversights, and some schools adopting a simple no-animals allowed policy thus

potentially excluding the possible benefits associated with including animals (Gee,

Fine & Schuck, 2014). As American authors, Gee et al. (2014) note a glaring

absence of state or federal laws in the USA at the time of writing regulating the use

of animals in education, and suggest policy recommendations (see Table 3 for

summary of recommendations). Though at a later stage in time, at the time of this

writing, there also remains a glaring absence in law in the UK around the inclusion of

animals in education. Therefore, priority attention must be given to developing a

conscientious framework of ethical practice when working with animals in

educational settings in the UK.

Key Elements		
The Student	The Animal(s)	The Teacher
Health and Safety • Information forms to prevent animal related illness or injury from CDC. • Species-specific parental consent form.	Health and Safety • Appropriate species selection. • Plan for care and safety of animal 24/7. • Screening of any 'temporary' caring families.	Health and Safety • Adult responsible should be trained on the needs of the animal(s). • Adult responsible should be trained in hygiene requirements.
Educational Needs • Species-specific instruction for care, typical behaviours and handling. • Student-animal interaction should be supervised by an adult.		Educational Needs • Species-specific instruction for care, typical behaviours and handling.
Emotional State • Adults should provide children with support managing their emotions around animals.	Emotional State • All humans should be aware of typical species-specific animal behaviours. • All humans should be aware of and avoid situations that may alarm or distress the	Emotional State • Adults should have a plan for death of animal.

	animal.	

Table 3: A summary of policy recommendations for animals in the classroom (Gee, Fine & Schuck, 2015)

1.2.4. Reflections on the position of the researcher

I have always had a love of animals and an interest in interacting with animals, since I was a young child. I have had the privilege of having pets throughout my childhood which has continued into my adult life; and I have valued my relationships with my pets as much as the other important relationships in my life. I have experienced my own benefits of the unconditional companionship and love from the bonds that I have established with my pets; as well as the life and care skills that I have developed, as they have been required of me.

In my early professional life, I worked as an unqualified teacher in a specialist school setting for students with social, emotional and mental health (SEMH) needs. The school had a garden which included chickens and a rabbit; and I taught ASDAN and managed the garden area (including the animals) as part of my role. It was in this role, I noticed the impact that the presence of animals had on the CYP attending the setting; on a professional as well as a personal level. As well as providing engaging and motivating learning opportunities e.g. as part of the ASDAN qualification, and embedding routine and developing care skills for the CYP e.g. collecting eggs/cleaning the animals out, I was amazed when I saw how stroking a rabbit could support a very emotionally dysregulated child to regulate himself in front of my eyes. These experiences led me to consider that the presence of animals, as well as being "nice" experiences, may have many more benefits; especially for CYP who may not have access to animals/pets otherwise.

As a researcher, my personal and professional experience and interest in animals has been a clear motivator for my choice of research topic. I acknowledge that my interest and passion around working with animals, will likely create a 'bias' influencing my research project e.g. as I believe interactions with animals benefit

humans, I'm more likely to report results confirming my pre-held beliefs. I have selected tools and processes within the design/methodology of my study to minimise the impact of my own 'bias' (see Chapter 2 for more information); but I also recognise that this impact cannot be excluded entirely. Other authors (e.g. Gee et al. 2014), have also highlighted that an interest in working with animals is commonly reported by research authors in this emerging topic area; suggesting the 'bias' may span much further than the current project.

CHAPTER 2: Systematic Literature Review

2.1. Introduction

A literature review was undertaken to identify what was already known about including animals in educational settings and to highlight gaps/limitations within existing literature. This chapter describes the literature review question posed, details of the search strategy undertaken and presents the findings of the review.

2.1.1. Literature Review Question

The question addressed in this review is:

"How, and with what impact, are animals being utilised within educational settings?"

2.1.2. Search Strategy

An online search using PsychINFO, ERIC and Education Source databases was undertaken in July 2019, and re-run in May 2020, using the following words: ("animal" OR "canine" OR "dog" OR "mammal" OR "fish" OR "reptile" OR "amphibian" OR "bird") AND ("education" OR "school" OR "class" OR "classroom"). These databases were selected to cover research from psychological disciplines as well as education. Terms were selected to include "animal" and commonly used animals within AAIs/educational settings (dogs) as well as the most common 'classes'[2] of animals. An initial search for the terms across all text produced 136,010 results so terms were limited to key words in titles (see Appendix A for full search strategy).

This search produced 1411 results. These results were then limited by language (English), age of participants (0-18 years), academic journals and publication date

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[2] * 'Class' refers to the taxonomic rank system (domain, kingdom, phylum, class, order, family, genus, and species).

(2000-2018) to ensure that research reviewed was relatively recent, in the language of the reviewer, relevant to CYP and published in peer-reviewed academic journals.

These limits produced 61 studies. These titles (and abstract/full texts where required) were hand searched to exclude studies that were not relevant to the topic e.g. that referred to animals as metaphors, food etc. (see Appendix B for full list of excluded studies and reasons for exclusion). A resulting 18 studies were included in the current literature review.

2.1.3. Inclusion and Exclusion Criteria

Studies were included if:

1. The AAI/inclusion of animal(s) was delivered/facilitated by a professional (e.g. occupational therapist, psychologist, or teacher), not a parent (in line with usual school practice i.e. professionals working with CYP in educational settings).
2. The AAI/inclusion of animal(s) was delivered/facilitated in a school/educational setting.
3. The education provision was for young people aged between 5 and 18 years.
4. The AAI/inclusion of animal(s) involved the physical presence of (an) animal(s) in the school/educational setting.
5. They were empirical studies, published in peer-reviewed journals.

Studies were excluded if:

- They investigated AAIs/animals outside of an educational setting e.g. equine-therapy, school visits/trips to farm/zoos etc.
- Participants were outside of mandatory school-age (including pre-school and university).
- They investigated educational programmes about animals but with no animals physically present.

- They took place outside of mandatory educational times e.g. summer holiday programmes.

- They measured the impact of participants' pets.

- They were not empirical studies collecting novel data e.g. literature reviews.

- They were not published in peer-reviewed journals e.g. theses and book chapters.

2.1.4. Critical Appraisal

Each study was critically appraised using the Support Unit for Research Evidence (SURE, 2018) (see Appendix C for examples of SURE checklists). SURE (2018) was selected as it provides versions suitable to analyse RCTs/experimental design studies, cohort, cross-sectional and qualitative studies which formed the majority of the research designs of the identified studies from the literature search. Because the Support Unit for Research Evidence at Cardiff University has not produced an appraisal checklist for mixed methods designs, a separate critical appraisal tool, The Mixed-Method Appraisal Tool (MMAT; Long, Godfrey, Randall, Brettle & Grant, 2015), was used with the two included studies that used a mixed methods design (see Appendix D for examples of checklist). This was selected as it aligned well with the focus areas of the SURE checklists and was deemed to be equally robust.

Strengths and limitations of the studies highlighted through the critique tools will be reflected through the discussion later in this chapter (see Appendix E for list of key strengths and limitations of the reviewed studies with the support of the critique tools). However, there are some limitations to the utilisation of the critique tools (SURE, 2018; Long et al., 2005). It is not possible to directly 'compare' studies to each other. The value of 'not stated' is also a challenging variable to consider, especially within research articles which are limited to fewer word counts. If a point is 'not stated' within the article, it may, but does not necessarily mean, that the point has or has not been considered within the research design or by the researchers.

2.1.5. Design/Methodology

The reviewed studies spanned a range of methodologies and study designs; of which all have their strengths and limitations. Most of the studies reviewed used a quantitative design (72% of total studies), with 33% of studies being experimental or quasi-experimental in their design (see Table 4 for summary).

Design	Studies	Frequency	% of studies
Randomised Control Trials (RCTs)/experimental design/quasi experimental	O'Haire (2013); Randler (2013); Wilson (2011), Nicoll (2008); Tissen (2007); Hergovich (2002)	6	33
Cohort	White (2018); Fujisawa (2016); O'Haire (2014);); Randler (2005); Kotrschal (2003)	5	28
Cross-sectional	Jenkins (2014); Rud & Beck (2003)	2	11
Mixed methods	Zents et al. (2017); Daly (2010)	2	11
Qualitative	Nobel & Holt (2019); Bruce (2015); Anderson (2006)	3	17

Table 4: Summary of reviewed studies' designs and methodologies.

2.2. Discussion

Of the 18 papers included in the review, all studies provided information about how animals were utilised within educational settings (Nobel & Holt, 2018; White, Eberstein & Scott, 2018; Zents, Fisk, & Lauback, 2017; Fujisawa, Kumasaka, Masu & Kataoka, 2016; Bruce, Feinstein, Kennedy & Ming, 2015; Jenkins, Laux, Ritchie, & Tucker-Gail, 2014; O'Haire, McKenzie, McCune & Slaughter, 2014; O'Haire, McKenzie, McCune & Slaughter, 2013; Randler, Hummel & Prokop, 2012; Wilson, Trainin, Laughridge, Brooks & Wickless, 2011; Daly & Suggs, 2010; Nicoll, Samuels & Trifone, 2008; Tissen, Hergovich & Spiel, 2007; Anderson & Olsen, 2006; Randler, Ilg & Kern, 2005; Kotrschal & Ortbauer, 2003; Rud & Beck, 2003; Hergovich, Monshi, Semmler & Zieglmayer, 2002). These papers described how animals were included, the species used and the training levels of the animals involved.

10 papers provided direct measures of the impact of AAIs/the inclusion of animals (White et al., 2018; Fujisawa et al., 2016; O'Haire et al. 2013; O'Haire et al., 2014; Wilson et al., 2011; Tissen et al., 2007; Randler et al., 2012; Nicoll, 2008; Randler et al., 2005; Kotrschal et al., 2003). 8 papers provided descriptive and/or perceptual measures of the impact of AAIs/the inclusion of animals (Nobel & Holt, 2018; Zents et al., 2017; Bruce et al., 2015; Jenkins et al., 2014; Anderson & Olson, 2006; Daly & Suggs, 2010; Rud & Beck, 2003; Kotrschal & Ortbauer, 2003). All papers detailed the 'effectiveness' of the interventions, the nature of the impact, and who had received the interventions (both in relation to age and specific groups of CYP; see Appendix F for summary table of key information of the 18 reviewed studies).

<u>LRQ Part 1: How are animals being utilised within educational settings?</u>

2.2.1. Delivery Approach

As outlined in chapter one, there currently does not appear to be a universally accepted definition of AAIs and the way in which animals are utilised in educational settings can differ significantly. In order to help provide a structure to reporting the AAIs/the inclusion of animals in the included studies, MacNamara, Moga & Pachel's (2015) definitions have been used. Table 5 shows how included studies fit within this model, alongside a brief description of the AAI studied. All delivery approaches described by MacNamara, Moga & Pachel (2015) were utilised within at least one of the reviewed research studies.

Delivery Approach	Definition	Study	Intervention
Implicit	Enhances development indirectly.	White et al., 2018	Wild local birds and bird watching programme.
Explicit	Involves basic contact between animal and child e.g. to redirect attention/ meet	O'Haire et al., 2013	Social skills group including guinea pigs for children with ASD and typically developing children.
		O'Haire et al.,	Social skills group including

	sensory needs.	2014.	guinea pigs, focusing on children with ASD.
		Fujisawa et al., 2016.	Unstructured time interacting with a dog.
		Bruce et al., 2015	Dog involved in aspects (relaxation time) of a humane educational programme
		Randler & Prokop, 2012.	Inclusion of animals (mice, woodlice, snails) in science lessons.
		Wilson et al., 2011	Inclusion of zoo animals in literacy lessons/writing tasks.
		Nicoll et al., 2008	Animals (guinea pigs, birds, rabbits, dogs) included as part of humane animal care education sessions.
		Anderson & Olsen, 2006	Dogs included in classroom for 8 weeks with children with emotional disorders.
		Randler et al., 2005	Amphibians included as part of an amphibian conservation educational programme.
		Kotrschal et al., 2003	Dog included in a classroom.
		Hergovich et al., 2002	Dogs included in a classroom.
Instrumental	Animals play a direct role in sculpting development by providing novel opportunities for interaction.	Nobel & Holt (2018).	Dog involved in a literacy programme (Reading Education Assistance Dogs, READ) for poor readers.
Multiple delivery approaches	Instrumental, explicit and implicit (as previously defined).	Zents et al. (2017).	Dogs involved as part of therapeutic anxiety related sessions (instrumental) with students with anxiety. Dogs also working explicitly and implicitly with other students and staff outside of therapeutic sessions.

	Instrumental, explicit and implicit.	Jenkins et al. (2014).	Dogs involved as part of counselling sessions (instrumental). Dogs also working explicitly and implicitly with other students and staff outside of therapeutic sessions.
	Instrumental and explicit	Tissen et al. (2008)	Dog involved as part of a social skills intervention programme (instrumental) and explicitly in classrooms.
	Explicit and implicit	Daly & Suggs, 2010;	Reported anecdotes and examples of explicit and implicit inclusion of animals, of a range of species, in classrooms
	Explicit and implicit	Rud & Beck, 2003	Reported anecdotes and examples of explicit and implicit inclusion of animals, of a range of species, in classrooms

Table 5: A table showing the type of delivery approaches in papers included in the current literature review.

2.2.1.a) Explicit

The most common delivery approach identified within the reviewed literature was an 'explicit' approach (61% of reviewed studies). 11 studies, (O'Haire et al., 2014; 2013, Fujisawa et al. 2016, Bruce et al., 2015; Randler et al., 2012; Wilson et al. 2011, Nicoll et al., 2008, Anderson & Olsen 2006, Randler et al. 2005, Kotrschal et al. 2003; Hergovich et al., 2002) conducted research studies investigating interventions where animals were present and interacting with children in an educational setting; but indirectly i.e. the animals were not required to respond in a particular way. However, even within an 'explicit' delivery approach, there remained some differences in the delivery approaches researched. Some studies reviewed the use of animals for structured periods of time or lessons (e.g. O'Haire et al., 2013; 2014; Bruce et al., 2015), while some did not provide any additional 'lessons' or 'sessions' but the animal was present in the classroom 'living' or involved in an unstructured style (e.g. Kotrschal et al., 2003), and some combined both approaches, making conclusive comparisons difficult to draw.

2.2.1.b) Instrumental

Nobel & Holt (2018) explored an exclusively 'instrumental' delivery approach, where animals were directly involved and played a specific role in the intervention programmes. The study investigated naturally-occurring instrumental delivery, through a Reading Education Assistance Dogs (READ) scheme; in which 6 children who school had selected to participate in a weekly READ intervention, where observed and interviewed over a 4-week period, with a focus on their engagement and confidence in their reading skills. As instrumental delivery approaches are usually more structured programmes, they provide clear descriptions of intervention programmes which can be more easily replicated. This, along with clear design and description of processes were identified as strengths of Nobel & Holt's (2018) study.

2.2.1.c) Implicit

White et al., (2018) was the only reviewed research study to investigate implicit use of animals in an educational setting. The study reviewed a 'bird buddies' programme; a 6-week bird feeding and monitoring initiative within school grounds. Though this result may indicate that implicit use of animals is one of the least prevalent delivery methods for utilising animals in educational settings, it could also highlight a lack of agreement as to what constitutes use of animals in education and/or a publication bias focussing on more explicit and/or instrumental programmes.

2.2.1.d) Multiple Delivery Approaches

Several studies utilised the animals across two or more methods of delivery within their studies. Zents et al. (2017) interviewed 30 students who had or were working instrumentally with dogs therapeutically; and 196 students and 105 faculty members completed questionnaires (who were utilising animals explicitly and/or implicitly). Jenkins et al. (2014) reviewed the use of an animal alongside 2 registered counsellors; who were utilising the dogs both instrumentally (in therapeutic sessions), explicitly (e.g. during lessons on animal care/handling) and implicitly e.g.

walking around the educational setting. Tissen et al. (2008) investigated a social

skills training intervention: with a dog (explicit delivery approach), without a dog (no

animal inclusion), and another group which included a dog being present, but without

a social skills training programme (implicit delivery approach).

2 studies (Daly & Suggs, 2010; Rud & Beck, 2003) reviewed the presence of animals

in elementary schools in sample countries; Ontario (Canada) and Indiana (USA),

both using a survey methodology (and questionnaire tools). Though the study did not

collect specific data on whether animals were utilised instrumentally, implicitly or

explicitly in the classrooms, Rud & Beck (2003) describe 'teachable moments' which

occurred both implicitly and explicitly in the classroom e.g. births, deaths, and natural

behaviours (feeding, excreting, play etc.), while Daly & Suggs (2010) report a range

of anecdotes of animals being utilised implicitly and explicitly in Canadian

classrooms. These 5 studies demonstrate the range and ease of flexibility to move

between the different delivery approaches within school settings.

2.2.2. Species

Table 6 provides a summary of the range of species studied in included papers

alongside information as to whether studies focussed on one or more species.

	Species studied	Study	No. of studies	% of studies
Single species	Dogs	Nobel & Holt (2018); Zents (2017); Bruce et al., (2015); Fujisawa (2016); Jenkins (2014); Tissen (2007); Anderson (2006); Kotrschal (2003); Hergovich (2002)	9	50
	Guinea pigs	O'Haire (2014); O'Haire (2013)	2	11
	Amphibians	Randler (2005)	1	5.5
	Birds	White (2018)	1	5.5
Multiple	Zoo	Wilson (2011)	1	5.5

species	animals			
	Small animals	Randler (2012 – woodlice, snails and mice)	1	5.5
	Varied	Nicoll (2008 – guinea pigs, birds, rabbits and dogs)	3	17
		Daly & Suggs (2010 - fish, frogs, geckos, crabs, guinea pigs, hedgehogs, hamsters, rabbits, cats and dogs.)		
		Rud & Beck (2003 - fish, chinchillas, gerbils, guinea pigs, hamsters, mice, white rats, hedge hogs, rabbits, anoles, iguanas, legless lizards, snakes, turtles, salamanders, frogs, toads, insects, spiders, cockroaches, crickets, worms, hermit crabs, crawdads, sea anemones, snails and birds.		

Table 6: A table showing the species of animals included within the reviewed studies.

Most authors (O'Haire et al. 2013; 2014; White et al., 2018; Fujisawa et al. 2017; Bruce et al., 2015; Randler et al., 2012; Nicoll et al. 2008; Nobel & Holt, 2018; Zents et al. 2017; Jenkins et al., 2014) included justifications for the species they had selected for inclusion in their studies. O'Haire et al. (2013; 2014) who included guinea pigs in both studies mentioned that they deliberately selected guinea pigs as a species to include in their intervention due to guinea pigs being diurnal, relatively easy to handle, while they generally like to be held and seldom bite. White et al., (2018) justified the selection of birds as a species within their study due to birds being easily seen, identified and responsive to resource enhancement, which aligned well with the goals of their programme for CYP (to experience nature first-hand, learn about and value local biodiversity, undertake wildlife monitoring, and show how they can make positive changes to their environment and attract wildlife). Randler et al. (2012) chose mice, woodlice and snails as they are generally considered as 'unpopular' species of animals, and amphibians as they are an under-researched species (Randler et al., 2005). Nicoll et al. (2008) selected guinea pigs, birds, rabbits

and dogs as they were the focus of the educational programme which concentrated on "companion" animals. Studies selecting dogs justified their species choices due to dogs: helping children feel safe (Nobel & Holt, 2018), being commonly incorporated as 'assistance' animals for visually impaired (VI) individuals (Bruce et al., 2015), being familiar to people (Fujisawa et al. 2017), being able to provide tactile stimulation and a non-judgemental listening ear (Zents et al. 2017;Jenkins et al., 2014) and being particularly inclined to develop strong mutual relationships with humans (Kotrschal et al., 2003).

Wilson et al. (2011) did not provide their reasoning for the selection of zoo species or the specific zoo species included in the programme, other than the explanation that the "Our Zoo to You" programme was created to be administered during the winter months when the zoo would otherwise be closed. Tissen et al. (2011) and Anderson & Olson (2006) also did not provide their reasoning for the selection of dogs as their species of focus.

2.2.3. Training level of the Animals

Of the reviewed studies, the only studies that mention training levels or qualifications were studies involving dogs. Of the 9 studies which focussed on dogs, all studies mention training or qualifications or 'qualities' that the dog has e.g. being 'well-trained', 'gentle' or 'friendly'. In nearly all dog focused studies (8/9), at least 1 dog had recognised qualifications; though these qualifications ranged from READ training to more 'general' therapy dog training (see Table 7 for summary). Anderson & Olsen (2006) were the only authors to report the inclusion of a dog that did not have any recognised qualifications, though the authors comment on the dogs experience with children in his (the dog's) own home. All of the 4 studies (Zents et al.. 2017; Jenkins et al., 2014; Tissen et al., 2008; Nobel & Holt, 2018) incorporating an instrumental delivery approach as at least one of their delivery approaches, included trained dogs. This could suggest that training, qualifications or 'qualities' achieved by an animal

may be particularly relevant to utilising an instrumental delivery approach and/or for the inclusion of dogs.

Lead Author	No. of dogs	Training/qualification
Nobel	1	READ training.
Zents	4	3 of whom had received Therapy Dog International certification and one who had received a Canine Good Citizen certification and Guiding Eyes for the Blind.
Fujisawa	Not stated but refer to dogs	Therapy dog training and periodic health exams.
Bruce	1	Certified Therapy Dog.
Jenkins	1	Assistance Dogs of America Incorporated (ADAI) and veterinary examination.
Tissen	10	Therapy dogs.
Anderson	1	No recognised training.
Kotrscal	3	2 were therapy dogs. 1 had no recognised training.
Hergovich	3	2 were therapy dogs. 1 had no recognised training.

Table 7: Summary of the training/qualifications held by animals in the reviewed studies.

No others of the reviewed studies, mention any specific training, qualification or 'qualities' of the individual animals involved in the study.

LRQ Part 2: With what impact are animals being utilised in educational settings?

2.2.4. Participant groups

There was significant variance between the participant groups focussed upon within the reviewed studies. 13 studies focussed on typically developing CYP (Nobel & Holt, 2018; White et al., 2018; Fujisawa et al., 2017; Jenkins et al., 2014; Wilson et al., 2011; O'Haire et al., 2013; Daly & Suggs, 2010; Nicoll et al., 2008; Tissen et al., 2007; Randler et al., 2005; Kotrschal et al., 2003; Rud & Beck, 2003; Hergovich et al. 2002). 5 studies focussed on CYP with SEND: i) those with ASD (O'Haire et al., 2014), ii) those with emotional needs/disorders (Jekins et al., 2014; Anderson &

Olson, 2006), iii) those with VI (Bruce et al. 2015) and iv) those with a mixture of needs (Zents et al. 2017). Zents et al. (2016) explored the experience of both typically developing students and students with a mixture of SEND.

The age range of participants/focus within the reviewed studies was also vast, ranging from 4-18 years old (see Figure 1 for illustration of the age of participants). This large range of ages demonstrates that animals can be utilised, with benefit, with a wide age-range of students. However, it does create difficulty when drawing comparisons between which age group of students may benefit 'more' from the presence of animals. It could be argued that younger children are more likely to benefit from the presence of an animal in the classroom, though this could also be a research/publication bias. Most of the reviewed studies include primary/elementary aged children (5-11 year old), which could indicate that animals are more commonly utilised within primary or elementary age educational settings. This could be linked to pragmatics of the school settings e.g. students remaining in one classroom for all their learning, or perceptions linked with the age of the children e.g. younger children may benefit more from the presence of animals.

4	Nobel & Holt (2018)	Nicoll (2008)			Daly (2010); Rud (2003)		
5				O'Haire (2013; 2014)			
6			Kotrscal			Anderson (2006)	
7	White (2018); Tissen (2014)	Wilson; Hergovich					
8							
9		Fujisawa (2017)	Jenkins (2014)				Randler (2005)
10							
11	Zents (2017)	Randler (2012)					
12							
13							
14							
15							

16							
17							
18							

Figure 1: Summary of age of participants focussed on in the reviewed studies.

2.2.5. Variables explored/measured

Within the reviewed studies, a variety of variables were explored/measured (see Table 8 for a summary of variables explored and measure(s) used). Of the 13 studies focussing on typically developing CYP (Nobel & Holt, 2018; White et al., 2018; Fujisawa et al., 2017; Jenkins et al., 2014; Wilson et al., 2011; O'Haire et al., 2013; Daly & Suggs, 2010; Nicoll et al., 2008; Tissen et al., 2007; Randler et al., 2005; Kotrschal et al., 2003; Rud & Beck, 2003; Hergovich et al. 2002), variables explored covered multiple areas of impact including academic skills, social skills and emotional/psychological wellbeing. Several studies selected multiple measures (e.g. Nobel & Holt, 2018) to collect their data and measures varied from measures of facial expression (Fujisawa et al., 2017) to structured feedback tools (O'Haire et al., 2013; 2014) to coded observations (Kotrschal et al., 2003).

Study	Participant focus	Variable(s) explored	Measure(s) used
Fujisawa (2016)	Typically developing children (9-10Y).	• Student mood.	• Face scale evaluation (pre and post interaction with dog).
Jenkins (2014)	SEN students receiving support from school counsellor for academic, emotional and social needs (9-14Y).	• Student perception of their relationship with a therapy dog.	• Barrett-Lennard relationship inventory (completed by students).
Tissen (2007)	Typically developing children (7-10Y).	• Children's social behaviour, empathy and aggression.	• Social behaviour scale. • Inventory for the Assessment of Impulsivity.
Anderson & Olson (2006)	SEND students (emotional needs).	• Children's emotional stability and empathy/respect towards animals.	• Coded observations. • Behavioural data from emotional crises. • Interviews with

			parents/CYP.
O'Haire (2014)	SEND students (ASD) aged 5-12Y.	• Social approach and withdrawal behaviours associated with ASD. • Student' social skills.	• The Pervasive Developmental Disorder Behavior Inventory (PDDBI). • The Social Skills Rating System (SSRS).
O'Haire (2013)	Typical developing children (4-12Y).	• Student social skills.	• The Social Skills Rating System (SSRS). • Teacher evaluation of the programme.
Kotrschal (2003)	Typically developing children.	• Student social skills.	• 2 hours videoed observation before and during the inclusion of a dog.
Nobel & Holt (2018)	Typically developing children (4-5Y) who are poor readers/ lacking confidence/ willingness to read.	• Student perceptions of reading willingness, confidence and skill.	• Observations (while participating in READ activities). • Semi-structured interviews. • Questionnaires.
Wilson (2011)	Typically developing students (7-8Y).	• Student writing skills (including volume).	• Analysis of writing samples compared to a control group.
Zents et al. (2017)	Typically developing students and students with SEND (academic, social and emotional needs) aged 11-18Y.	• Adult and child perceptions of having therapy dogs in a school setting – with a focus on psychological wellbeing.	• Surveys to students and staff. • Semi-structured interviews for students (currently accessing counselling sessions) and staff.
White (2018)	Typically developing children (7-10Y).	• Children's experience, knowledge and attitude of/towards birds.	• Student questionnaire (pre and post programme). • Teacher questionnaire (immediately post programme and after a year).
Randler & Prokop (2012)	Typically developing children (11-13Y).	• Student fear and disgust levels pre and post humane educational sessions with unpopular animals.	• Fear and disgust scale (developed for the study).
Daly &	Elementary school	• Descriptive	• Survey.

Suggs (2010	children in Ontario, Canada.	information about the inclusion of animals in educational settings.	
Nicoll (2008)	Typically developing first grade children (5-6Y).	• Children's attitudes towards animals following human education programmes.	• Primary Attitude Scale (PAS). • Companion Animal Bonding Scale (CABS). • Adapted bully-victim questionnaire.
Randler et al. (2005)	Typically developing children (9-11Y).	• Knowledge about animals. • Interest in animals.	• Student questionnaire (pre and post – immediately and 5W after programme).
Rud & Beck (2003)	Elementary school children in USA.	• Descriptive information about the inclusion of animals in educational settings.	• Survey.
Hergovich (2002)	Typically developing first grade children (5-6Y).	• Children's empathy levels with animals. • Children's levels of independence. • Teacher views of children's social skills and integration.	• Gestalt Perception Test (GPT). • Vienna Development Test. • Self-assessment of empathy with animals test. • Teacher assessment of children's social skills.
Bruce (2015)	VI secondary aged students (14-20Y).	• Student learning development. • Student knowledge and skills about animal care.	• Videoed observations. • Interviews.

Table 8: A table summarising the variables explored and measures selected within the reviewed studies

Of the 5 studies focussing on students with SEND (O'Haire et al., 2014; Jekins et al., 2014; Anderson & Olson, 2006; Zents et al. 2017; Bruce et al. 2015) variables explored covered multiple areas of impact, often in line with students' areas of needs linked to their SEND including: knowledge and skill in animal care, social skills, therapeutic relationships and emotional/psychological wellbeing/behaviour. O'Haire et al. (2014) investigated the impact of the inclusion of animals on unhelpful social

behaviours associated with ASD e.g. avoiding social interaction, and general social skills, for children with ASD attending a mainstream educational setting. Jenkins et al. (2014) focussed on the role of a dog in developing therapeutic relationships while Anderson & Olson (2006) conducted a qualitative case study approach with 6 students with emotional and behavioural difficulties, through coded observations.

2.2.6. Studies demonstrating impact of the inclusion of animals
10 of the reviewed studies (White et al., 2018; Fujisawa et al., 2016; O'Haire et al. 2013; O'Haire et al., 2014; Wilson et al., 2011; Tissen et al., 2007; Randler & Propkop, 2012; Nicoll, 2008; Randler et al., 2005; Kotrschal et al., 2003) included measures of impact on CYP following the inclusion of animals.

Of these studies, 9 studies directly measured impact on typically developing CYP (White et al., 2018; Fujisawa et al., 2016; O'Haire et al. 2013; Wilson et al., 2011; Nicoll et al., 2008; Randler & Propkop, 2012; Nicoll, 2008; Randler et al., 2005; Kotrschal et al., 2003) with 6 studies evidencing improvements in all their focussed areas. White et al., (2018) found that children's knowledge and identification skills (of birds) were significantly improved following a bird-buddies programme, while Fujisawa et al. (2016) found that dogs had a 'mood improving' effect on children, particularly for children who were favourable towards dogs. Weight can be offered to these findings as both studies had good sample size and nature (particularly White et al., 2018 who included participants from multiple primary schools), and included objective measures, with White et al. (2018) also including multiple perspectives. However, for both studies, the lack of controls or a comparison group is a clear limitation.

Wilson et al. (2011) reviewed 1,119 texts from students involved within the zoo programme and an additional 497 control texts. Results showed students' writing increased to a greater degree and scientific quality when compared to the control group; with students in the experimental group writing longer and more coherent

texts than control group students. Wilson et al. (2011) noted a very small, but significant relationship between when including unique zoo animals e.g. legless lizard, compared to more common species of animals e.g. rabbit. Elements of robust research practice incorporated in Wilson et al. (2011)'s study included: a quasi-experimental design, large sample size, objective measures and inclusion of controls, which can offer weight to the findings of the study. However, as a quasi-experimental design was used, it was not possible to randomly or blindly allocate participants to the experimental or control conditions.

Nicoll et al., (2008) demonstrated significant improvements in children's self-reported attitudes and empathy towards animals following humane education including animals, compared to humane education without animals present and Randler et al. (2012) found statistically significant reductions in levels of fear and disgust towards 'unpopular' species of animals, in students exposed to the 'unpopular' species during humane educational sessions compared to a control group (who experienced humane educational sessions with no animals present). Both studies included control groups and good sized samples, however, both utilised convenience samples and lacked blinding, so could be prone to potential biases.

Three studies focussing on typically developing children, reported mixed findings; with significant improvements in some areas/variables/time frames, but not others. O'Haire et al. (2013) presented significant improvements in behaviour and social skills, but not academic attainment. Interestingly, Hergovich et al. (2002) presented opposite findings; with significant improvements in learning independence in the classroom and empathy (benefits which remained significant 3 months after the intervention), but no significant improvements in social skills or social integration. A range of differences between these studies could be linked to these opposite results including: choice of species of animal (guinea pig vs. dog), age of children (5-12 years vs. 7-8 years) and delivery approach (explicit vs. implicit), highlighting how

'effectiveness' can be nuanced and emphasising the need for further, more comparative research. Tissen et al. (2007) reported significant improvements in empathy and social behaviour immediately after the intervention; however this effect was not sustained over time (5 weeks post intervention). Additionally, significant reductions in levels of aggression were found at both time intervals (immediate and delayed post intervention).

Of the 10 studies aiming to demonstrate the impact of including animals, 1 study focussed on CYP with SEND. O'Haire et al. (2014) reported statistically significant improvements in students with ASD in their social skills and difficulties commonly associated with ASD, following social skills intervention with guinea pigs compared to students on a waitlist. These positive findings hold weight as the study incorporated a good sample size with participants being randomly allocated, valid and reliable measures and a control group; though it is important to note that the control group were not involved in an "active" intervention and there was no blinding.

2.2.7. Descriptive and perceptual measures of impact
8 of the reviewed studies (Nobel & Holt, 2018; Zents et al., 2017; Bruce et al. 2015; Jenkins et al., 2014; Anderson & Olson, 2006; Daly & Suggs, 2010; Rud & Beck, 2003; Kotrschal & Ortbauer, 2003) utilised indirect measures e.g. interviews/ questionnaires capturing adults'/CYPs' perceptions of the impact of including animals within educational settings, across various areas of impact including academic skills, relationships and emotional/psychological wellbeing.

2 of these studies focussed entirely on typically developing students (Nobel & Holt, 2018; Kotrschal & Ortbauer, 2003). Nobel & Holt (2018) reported findings noting perceived success in promoting engagement, increased motivation and improved attainment in reading, as well as enjoyment and promoting a love of reading. Kotrschal & Ortbauer (2003) reported a perceived decrease in behavioural extremes

(including aggressiveness and hyperactivity) and improved social integration in elementary aged students.

4 studies considered both typically developing students and those with SEND. Zents et al. (2017) asked typically developing students and staff members their views on the inclusion of therapy dogs in their setting and perceptions were vastly positive with 77% and 61% of students and staff respectively reporting the dogs as being 'effective' while noting perceived effects on school climate and internal states. Students and staff reported perceived improvements in difficulties associated with a variety of needs including selective mutism, ASD, attendance issues, emotional support, at-risk of exclusion, behavioural outbursts and where students had refused to engage in other interventions.

2 studies (Daly & Suggs; 2010; Rud & Beck, 2003) completed surveys of teachers' opinions and did not 'measure' a specific outcome, benefit or participant 'group', but provided descriptive findings of a "snapshot" of practice in educational settings, in the USA and Canada, at those points in time. Findings evidenced that approximately 17-25% of educational settings were including a variety of species of animals (mostly small vertebrates). Teachers' reasons given for including animals in their classroom were for "enjoyment" (37.4%), " hands on teaching" (22.8%) and "psychological wellbeing" (22.1%). Sample sizes in these studies were of a good size (particularly Rud & Beck with responses from 2149 teachers from 115 schools), however, as voluntary and convenience samples, both studies are prone to associated biases.

 4 studies focussed exclusively on students with additional needs. Jenkins et al., (2014) concluded that Rogerian traits (level of regard, empathy and congruence) were perceived as present in the human-dog relationship, by students participating in an instrumental delivery of AAI. The authors suggest that this may be a mechanism to explain the benefit of incorporating animals into therapeutic relationships. Tissen et al. (2011) reported positive impact on children's social behaviour and empathy

when combining animals and social skills. Anderson & Olson's (2006) results indicated that the presence of a dog improved student: overall emotional stability, attitudes towards school, learning and social skills in class. Bruce et al. (2015) reported that participants with VI gained knowledge and skill in animal care following an educational programme including a dog. The authors argue CYP with VI require direct instruction (with verbal descriptions paired with tactual exploration) for learning and development, which the inclusion of animals can facilitate. The findings of this study were clearly described in depth, but the small sample size limits the generalisability of the findings significantly.

Some studies (White et al., 2018; O'Haire et al., 2014) included perceptual measures alongside direct measures of impact. White et al. (2018) collected student and teacher evaluations of the programme through questionnaires which captured positive views and also highlighted perceived potential health, wellbeing and biodiversity benefits. Alongside significant improvements in social skills in students with ASD, parents reported a perceived increase in interest in attending school during the residency of the guinea pigs. These additional measures can offer triangulation, alongside evidence of impact previously described, offering more weight to the confidence that can be placed in their findings.

2.3. Conclusions

The literature review question for this review was:

"How, and with what impact, are animals being utilised within educational settings?"

The literature review showed that animals are currently being used implicitly, explicitly and instrumentally in educational settings, in multiple countries internationally (including USA, UK, Germany, Japan etc.). A range of species of animals have been included in some global educational settings. The inclusion of animals has been shown to have a positive impact on: knowledge/identification skills,

writing skills, attitudes and empathy towards animals, social skills, mood and levels of disgust/fear towards 'unpopular' species of animals. They have also been reported positively for perceived improvements in: reading skills and enjoyment, social skills, and for students with SEND in: animal care knowledge/skills, and a reduction in difficulties associated with students' specific needs e.g. relationships and social interaction difficulties and emotional/psychological difficulties. Arguably, the most critical finding of the review is that no reviewed study found a negative or detrimental impact or perceived impact, for CYP, following the inclusion of animals in their educational setting.

Most studies took place in schools in the USA, Germany, Austria, Japan and Australia; with only two reviewed studies taking place in the UK, limiting the generalisability of findings to the UK due to the systemic differences in school/school systems, as well as cultural differences which may impact findings. Both of the UK based studies (White et al., 2017; Nobel & Holt, 2018) evaluated specific interventions in a sample of primary schools. Further exploration and description into wider UK practice would extend existing knowledge.

2.4. Rationale for Current Project

As previously described, the current educational climate prioritises CYP's mental health and emotional wellbeing alongside educational outcomes. HAI and AAIs can provide cost-effective positive whole school approaches which support the development of a wide range of skills to a wide range of CYP; including vulnerable groups of students.

Gee, Fine, Espositio & McCune (2017) summarise that initial research indicates that the benefits of incorporating animals in educational contexts is promising, but that more animals need to be incorporated into education to overcome some of the methodological limitations highlighted. The current research aims to fill an earlier gap in this process, establishing the current context of how animals are/are not being

utilised in schools (see figure 2 for overview, step 2 is the focus of current research), as there are currently no known UK school-based surveys establishing how many UK schools keep animals and/or how these animals are used within the educational settings. The project also aims to identify what helps and hinders (and why) in introducing and maintaining animals within schools; which will aid the introduction of more animals in schools (step 3 in the process).

Figure 2: An overview of the research process for incorporating animals in educational settings; adapted from Gee, Fine, Espositio & McCune (2017)

CHAPTER 3: Methodology

3.1. Introduction

This chapter describes the rationale for the selection of the methodology and how this methodology is used in the current study. The chapter continues to outline the practical approaches of the current research; including descriptions of both quantitative and qualitative phases, samples, measures and processes. Key ethical considerations are discussed, and validity and reliability of tools and measures are outlined. The chapter ends with a summary and conclusion.

3.2. Aims of the Research

The aims for the current research cover multiple levels:

School level: to explore and explain what works and what hinders (and why) to establish and maintain animals in a school setting, to inform current and future practice in that school.

Local Authority (LA) level: to explore and describe current practice across an LA of utilisation of animals in school settings, and what works and what hinders (and why) to inform practice and training to other local schools.

National level: to explore and describe a LA sample of current practice in the utilisation of animals in school settings in the UK, and what works and what hinders (and why) to inform practice and training to other (similar) schools in other (similar) LAs nationally.

3.3. Research Purpose

Stebbins (2001) specifically described 'exploratory' research within social sciences, which Swedberg (2018) builds on in his historical outline and review of the development of exploratory studies. Swedberg (2018) highlights some of the benefits of exploratory studies; emphasising exploratory research as the 'soul' of good

research by attempting to discover something new and interesting. 'Descriptive' research aims to describe situations or phenomena; though it does not aim to make predictions or determine cause and effects (Shields & Rangarajan, 2013). Descriptive research is commonly used in the beginning of a topic or area; and forms foundations to the next steps.

The current research project is 'exploratory' and 'descriptive' in its research purpose. As outlined previously, the HAB and associated AAIs are broad phenomena and are not yet clearly defined or described, particularly within an educational context. As stated in the rationale and aims for the current project, the current study aims to fill identified gaps in existing knowledge describing current practice of the inclusion of animals in educational settings, and explore aspects that helped/hindered the establishment and maintenance of the practice, in an UK based LA.

3.4. Orientation

3.4.1. Ontology
'Ontology' is the study of 'being' and seeks to explain 'what is' i.e. the nature and structure of reality (Crotty, 1998). Common ontological questions include what is reality and what can be known about reality? Two dominant ontologies referred to within the literature are 'relativism' and 'realism'. Realists believe that there is a single, knowable and objective reality (Gray 2009) while relativists believe that an individual's perceptions of reality will differ according to their own experiences (Denzin & Lincoln, 2005). Other positions have developed between 'realism' and 'relativism'; 'leaning' more towards a real or relative ontological position while not fixed in a 'pure' position. Heaviside (2017) suggests that individuals place themselves on a continuum between opposing ontologies to determine their views of reality (see Figure 3).

Realism ———————————————————— Relativism

Single, knowable
objective reality

Individual's
perceptions of reality
differ dependent on
their interpretations
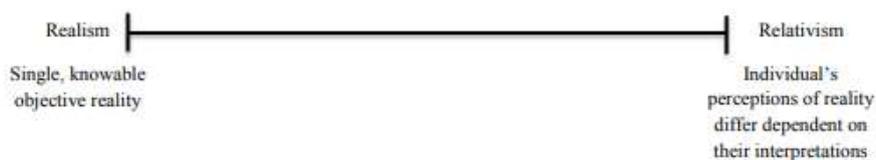
Figure 3: A continuum between the opposing ontologies of relativism and realism (Heaviside, 2017).

The current project adopts a 'critical realist' position, which stems from a 'realist' ontology; asserting that there is reality which operates independently of human awareness or knowledge of it (Archer, 2016), but also acknowledges that reality may not be entirely captured through empirical or hermeneutical examination. If considering Heaviside (2017)'s ontological continuum, the 'critical realist' position and the position of the current project is on the continuum between the realist and relativist ontologies; closer to the 'realist' end of the continuum.

3.4.2. Epistemology

Epistemology is the study and justification of knowledge (Denzin & Lincoln, 2005). It is a way of explaining how individuals formulate knowledge about the world (Denzin & Lincoln, 2005), as well as informing which 'types' of knowledge are legitimate. Additionally within research, epistemology considers the relationship between the researcher and the subject being researched (Cresswell, 2007). Constructivism, subjectivism and objectivism are prevalent epistemological positions considered within the literature (Gray, 2009). Objectivism assumes that the researcher and subject being researched are independent of each other and do not influence each other (Sparkes & Smith, 2014). Contrastingly, constructivism and subjectivism align to a relativist ontological assumption; and assume that meaning is imposed on objects by the individual (Crotty, 1998).

Within the current project, multiple epistemological positions are adopted. Within the 'critical realist' paradigm, both 'objectivist' and 'subjectivist' epistemological positions are held. In line with a 'realist' ontology and 'objectivist' epistemology, the current project assumes that aspects of a 'shared truth' can be captured, with the researcher and subject being researched being independent of each other; through selected 'objective' tools and measures. However, the 'critical' aspect included in a 'critical realist' approach considers that aspects of a 'shared truth' may not be captured in its entirety. Additionally, the current project does not reject either empirical or hermeneutic examination (it includes both approaches within its methodology), and also recognises aspects of a more 'subjective' epistemology e.g. the impact of the researcher on the research subject (such as acknowledging the impact of the 'bias' of the researcher). The methodology, design, process and tools (see further in the current chapter for more information) have been selected to most accurately capture the shared 'truth/reality', while also recognising aspects of the 'shared reality' may not be possible to collect within the scope the project, and that the impact of the researcher can only be minimised and not entirely excluded.

3.4.3. Methodology and Research Paradigm
Methodology is the process of gaining knowledge about the world through systematic research (Harding, 1987). Heaviside (2017) illustrates how ontological, epistemological and methodological assumptions have influence on research paradigms and methods selected (see Figure 4).
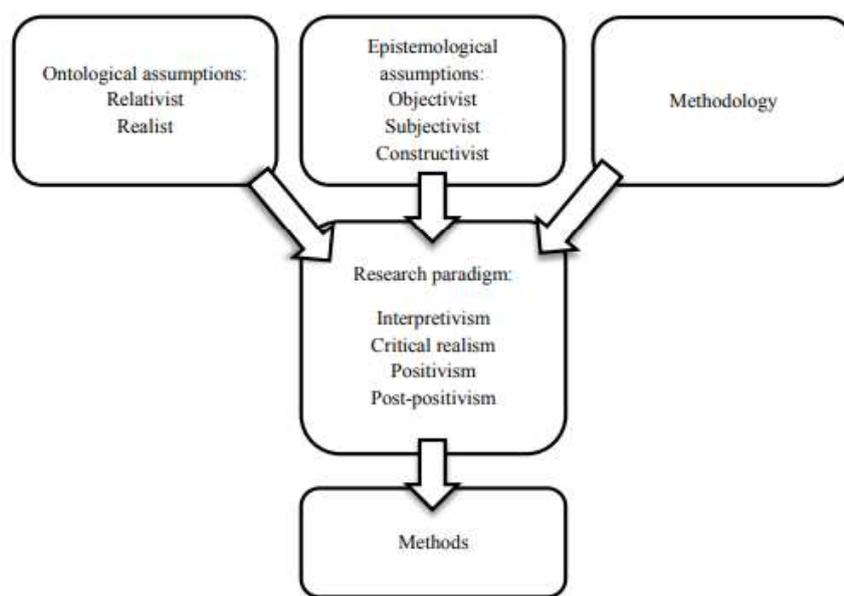
Figure 4: An illustration of how ontological, epistemological and methodological assumptions impact on research paradigms and methods (Heaviside, 2017).

As previously stated, 'critical realism' has been developed as a merging of a realist ontology and both 'objectivist' and 'subjectivist' epistemology; creating a "middle ground." "Realism" and "objectivism" frequently receive criticism for their naivety around the existence of "a knowable, stable and objective reality" and strong views that researcher and research subject are "completely" independent of each other (Zachariadis, Scott & Barrett, 2013). These assumptions are often limited when studying common phenomenon in social sciences like psychology. Therefore, a key assumption of "critical realism" is that a world or reality exists independently of what humans think about it, while also recognising the fallibility of human knowledge, as it assumes that is not always possible for a researcher to access or observe it, but that some objective methods do exist (Zachariadis, Scott & Barrett, 2013). 'Critical realism' identifies the existence of both transitive and intransitive objects of knowledge (Bhaskar, 1998). Intransitive objects of knowledge don't depend on human activity to create them e.g. gravity, while transitive phenomena are artificial objects created of knowledge of the time e.g. facts, models and methods. This assumption is a middle ground for both 'objectivism' and 'subjectivism' epistemological stances; recognising the researcher and subject are independent of each other and can be observed objectively, while also recognising this gained knowledge is in the context of its time and social context.

For this project, a 'critical realist' research paradigm was adopted, assuming that animals and humans and the associated interaction in schools exist as intransitive objects in a reality independent of human interpretation. The research aims to create a transitive object (the research findings and interpretations), which will be reflective

of the current time and context. The methods and measures selected will aim to gather objective data, while recognising there may be aspects of data that will not be accessible. Efforts will be made and tools will be selected to achieve the greatest validity and reliability, to achieve the greatest likelihood of observing what can be measured in the reality in existence.

3.5. Design

The current study used a sequential mixed methods design (Cresswell, 2009). Equal weight will be given to both data types.

3.5.1. Rationale for Selecting Mixed Methods

Mixed method designs include both quantitative and qualitative methods to produce complementary evidence; which can be helpful for exploratory and descriptive research (Creswell, 2009). Some argue that qualitative and quantitative methods should not be combined due to being incompatible on an epistemological level e.g. around what constitutes 'legitimate' knowledge (Howe, 1988). However, others (Onwuegbuzie & Leech, 2005) have argued against the idea of an 'incompatibility' model; instead highlighting similarities between the methodologies e.g. using frameworks to minimise biases and gathering data to address research questions. A mixed method approach was deemed appropriate for the current study for two reasons described by Halcomb & Hickman (2015): 'complementarity' and 'development'. The qualitative method aims to elaborate and enhance the results from the quantitative phase (complementarity), and the quantitative phase facilitates the sampling for the qualitative phase (development).

Cresswell & Plano Clark (2011) describe 4 characteristics of mixed methods designs which need to be considered to ensure rigorous research:

1. The degree of interaction or independence between the qualitative and quantitative data.

2. The implementation of sequence.

3. The weighting of priority given to each data set.

4. The timing of integration.

In the current study, the selected tools (interview schedule and questionnaire) for the quantitative and qualitative phases were developed and submitted for ethical approval prior to the collection of data. The quantitative data set was collected first and analysed, followed sequentially by the qualitative data set. The quantitative data set provided the sample for the qualitative phase, but did not inform the development of the interview schedule tool. Equal weighting was given to both data sets, as the data sets were not selected as comparative data sets. The data is presented as Phase 1 and Phase 2 findings and is integrated within the discussion chapter.

Creswell and Plano Clark (2011) highlight challenges associated with the implementation of a mixed methods research approach including: the skill of the researcher, time and resources, and the education of others' of the value of mixed method approaches. The current researcher had previous experience working with both quantitative and qualitative methods and tools; and applied understanding of rigour, reliability and validity to manage bias in quantitative aspects, and credibility and trustworthiness in qualitative aspects. The current project was also supervised by a research supervisor with experience in a mixed methods approach to further support rigour and quality of the design, data collection and analysis. The timing of the project was carefully planned to ensure that there was enough time to collect and analyse the data adequately.

3.6. Research Questions (RQs)

3.6.1. RQ 1

1. Are animals being included within UK based educational settings? How are animals being included within UK based educational settings?

3.6.2. RQ 2

2. What works and why to establish and include animals in a school-based setting?

3.6.3. RQ 3

3. What barriers exist in including animals in school-based settings and how have school staff/systems overcome them?

<u>3.7. Participants</u>

3.7.1. Phase 1 (Quantitative Phase)

The current research was conducted with statutory school age settings within the researcher's placement LA because the research project was commissioned within the LA where there was an interest in understanding more about how schools in the locality use animals. Educational settings were included if they were:

- An educational setting residing within the researcher's placement LA.

- Including mandatory school aged children (5-18Y).

Educational settings were excluded if they were:

- Exclusively including students outside of mandatory school age e.g. Nurseries or Universities.

A named contact (the Special Educational Needs and Disabilities Co-ordinator; SENDCO) was identified at each of the 45 educational settings included in the scope of the current study, and an email information pack (including an information sheet, see Appendix G) was sent inviting them to participate in the current project. SENDCOs were selected as points of contact for the current study as all mandatory school-aged settings are required by UK legislation (SEND Code of Practice, 2015) to have an allocated SENDCO, and they are generally well placed professionals in educational settings with an overview of the educational settings needs and interventions (especially for students with SEND).

3.7.2. Phase 2 (Qualitative Phase)

Samples within qualitative studies are more often smaller than quantitative samples, and frequently purposive (Patton, 2015). Sampling is more often 'non-probability sampling', selected to identify information rich cases to support insight and more in-depth understanding from a sample focusing on the RQs (Patton, 2015). The criteria for selecting participants for the Phase 2 (qualitative phase) were participants:

- From educational settings who consented to participate in the quantitative and qualitative phases (including indicating permission from the educational setting's Head teacher).

- Currently working in an educational setting that was utilising animals within the setting, at the time of the data collection phases.

Participants were excluded from the Phase 2 sample if they were:

- From educational settings who did not consent to participate in the quantitative phase (including not gaining permission from the educational setting's Head teacher).

- From educational settings who did consent to participate in Phase 1 but did not indicate consent to participate in Phase 2.

- Not currently working in an educational setting that was utilising animals within the setting, at the time of the data collection phases.

Potential interviewees who consented to participate in the Phase 2 were initially identified through the Phase 1 questionnaire. 8 participants indicated an interest in participating in the qualitative phase and 4 participants provided their contact details. Unsuccessful efforts were made by the researcher to inform respondents of this mistake and to encourage respondents to contact the researcher.

As the research approach utilised a mixed methods design, the researcher intended to interview between 4-6 participants as part of designed study. In the current study, it was planned that if more than 6 participants had met the inclusion criteria for

Phase 2, and had been contactable, a decision would have been made to choose a cross-sectional sample to reflect a range of experiences for exploration within Phase 2, based on information provided in Phase 1. Following unsuccessful efforts to make contact with the 4 participants who had not provided contact details, only 4 participants from Phase 1 met the inclusion criteria for Phase 2 and were contactable.

Of these 4 potential participants, all 4 participants were selected to participate in the Phase 2 interviews. All potential interviewees that provided contact details were contacted via email/telephone to thank them for their interest in the research study, and to inform them that they had been selected for Phase 2.

3.8. Data collection

3.8.1. Phase 1 (Quantitative Phase)

A self-administered questionnaire was chosen as the method of data collection for Phase 1. This method was selected as the majority of data to be gathered was factually and numerically descriptive e.g. frequencies, which lent itself to a survey tool, like a questionnaire. Additionally, the target participants in Phase 1 were the entire population of mandatory school age settings within the LA, and questionnaires are well placed to reach larger populations, within a smaller time frame, in line with the scope of the current study. The selection of participants (adult professionals) also lent itself to a written questionnaire, in line with a generally assumed level of literacy and understanding of written English in adult professionals. An online medium was selected to transport the survey to and from the participants to reduce the demand on participants and to allow participants to complete their surveys at a convenient time, and provide respondent anonymity. Questionnaires are also not prone to some biases e.g. interviewer biases.

The consent form (see Appendix H) was included at the beginning of the questionnaire. Participants were not able to progress to the questions without

indicating consent from themselves and the Head Teacher of the educational setting. The questionnaire (see Appendix I for full questionnaire) was devised based on the research aims and questions, in line with guidance for developing questionnaires (Gillham, 2009; Marshall, 2004). The design, layout and organisation of the questionnaire were chosen to make the questionnaire accessible and 'uncluttered'. The questionnaire included 'skip logic' (Google, n.d.) within the online programme, which creates custom paths through the questionnaire based on the respondent's answers, so participants were only required to answer questions relevant to their current practice. The questionnaire included a variety of question types including open questions and closed questions including lists (where the respondent can select more than one response as they are not mutually exclusive), and category (where the respondent can select an appropriate group or cluster that they fall into) etc. (Gillham, 2009). All closed questions were provided with an 'other' option which would allow an open answer if the other closed answers were not appropriate.

The questionnaire consisted of 6 sections:

1. Indication of consent (from participant and Head teacher of the educational setting).

2. Demographic information about the educational setting.

3. Description of current practice of inclusion of animals within the educational setting.

4. Consideration of future utilisation of animals within the educational setting.

5. Participant contact details.

6. Indication of willingness to participate in Phase 2.

The questionnaire was piloted with a convenience sample of professional adults, who were not participants in the current study. Feedback around the clarity and

wording of the instructions and questions, the appropriateness of the questions, the layout/structure of the questionnaire and the time taken to complete the questionnaire (in line with guidance for developing robust questionnaires; Gillham, 2007; Marshall, 2004), and data from the pilot was checked to ensure that it produced usable results.

3.8.2. Phase 2 (Qualitative Phase)

Semi-structured interviews were selected as a data collection method for Phase 2 as richer information about experience and reasoning of participants was sought. Interviews are a common tool selected for qualitative research (Gill, Steward, Treasure & Chadwick, 2008) and have been highlighted as a helpful tool in gathering richer information as they offer benefits including that the interviewer can put interviewees at ease, encourage responses, honour silences etc. Interviews are a way of listening to and gaining an understanding of peoples' stories and experiences (Bolderston, 2012).

There are several kinds of interviews including face-to-face interviews (both individual and group) and remote interviews e.g. telephone, Skype or email interviews (Bolderston, 2012). Individual face-to-face interviews were selected for the current project, to best support participants to share their experiences, in a private space and allow the interviewer to be best placed to put interviewees at ease, encourage responses etc.

Research interviews require skill from the interviewer, with the main skill involving being a good listener (Bolderston, 2012). Bolderston (2012) identify several pitfalls for interviewers including: correcting/educating participants, not paying attention, being afraid of silence and turning the interview into a 'counselling' session. The researcher piloted her interview technique, along with the interview schedule, with 6 adults who were not participants in the current study; to enhance her skill and technique in her interviews. The interviewer was mindful during the interviews to

allow where appropriate silence and space for interviewees to express themselves, listen carefully to interviewees responses and check informally for understanding and avoiding correcting language e.g. by repeating language that the interviewee had used earlier, when questioning further. The selection of semi-structured interviews and an interview schedule also helped the interviewer provide adequate interview skill during the interview; by providing some scaffolding and guidance, but not being too rigid or prescriptive.

Semi-structured interviews consist of several key questions that help to define the areas to be explored, while also allowing the interviewer/interviewee to diverge to pursue a response/area in more detail (Britten, 1999). Semi-structured interviews were selected for the current study due to their flexibility, which further suits to answering 'why' or more complex research questions (Fylan, 2005). The flexibility of adding questions within appropriate areas during the interview allows areas of focus and importance to individual participants to be captured and a better understanding of the research question to be gained (Fylan, 2005). Additionally, the use of an interview schedule, which covered the main areas of the researcher's interest and RQs (linked to aspects of the quantitative questionnaire) supported the triangulation of information, ensured the specific topic of interest was incorporated and supported a less time-consuming analysis (Silverman, 2016). Open questions were selected to collect different insights and experiences from participants, who may have had different experiences utilising animals within their educational setting, depending on the sample produced from Phase 1.

The interview schedule was developed in line with a framework for the development of a semi-structured interview schedule (Kallio, Pietila, Johnson & Kangasiemi, 2016). Kallio et al. (2016) outline 5 steps in their framework, which were adopted in the current study:

1. Identify the prerequisites to use a semi-structured interview.

2. Retrieving and utilising the previous knowledge.

3. Formulating a preliminary interview guide.

4. Pilot test.

5. Present the interview schedule.

The decision and perquisites for the selection of a semi-structured interview tool have been discussed previously. Previous knowledge was gained by the researcher in the areas of AAIs and the inclusion of animals in educational settings prior to the development of the interview schedule (to inform the research proposal and later application for ethical approval). The relevance of questions was assured by piloting the questions, in a 'mock' interview style with 6 professional adults who were not participants in the research study. Each question was reviewed to check that it did not employ bias, leading language and was clear and accurate English. Researcher bias was minimised through the development of the schedule by considering how the expectations of the researcher could impact on the questions and interview schedule e.g. ensuring questions were formulated to address difficulties and possible negative views on the utilisation of animals within the participant's school setting.

The interview schedule for the current project consisted of three main topic areas (see Appendix J for full interview schedule):

1. The interviewee's experience of introducing and maintaining animals in an educational setting.

2. What the interviewee would have done differently if they had the chance.

3. What advice the interviewee would give to other professionals considering utilising animals in their educational setting.

The researcher contacted participants by email or phone, depending on the contact details provided by each participant, to arrange a date/time for the interview. Face to face interviews were conducted at a convenient time for both the researcher and

participants between November – December 2019. Interviews were typically completed at the participant's school in an office/meeting room to try and allow for an uninterrupted experience.

The researcher asked the questions stated in the schedule and in the same order to support the reliability of the interviews and minimise researcher bias, and to support analysis (Silverman 2016). Interviewees were also allowed to talk more freely about topics or areas that were interesting or important to them, and additional questions were included in these areas where appropriate to the flow of the conversation.

All interviews were recorded so they could be transcribed verbatim and an accurate record of what participants had said and could be analysed.

3.9. Data Analysis

3.9.1. Phase 1 (Quantitative Phase)
Survey responses produced nominal and ordinal data that was analysed using descriptive statistics based on the frequency of responses. Data was coded and transformed into different types of variables: nominal (binary), nominal (categorical), ordinal and scale. Descriptive statistics were generated for each variable by using frequency distribution. For categorical data, frequencies and percentages (%) were used to describe each variable for the population.

3.9.2. Phase 2 (Qualitative Phase)
Interviews were transcribed, excluding non-meaningful utterances such as "uhhhhh", "mmmmm" etc. by the researcher and interviewee. Interviews were transcribed into Word files (Microsoft, 2010). Each interviewee (and animal(s) discussed by the interviewee) was provided with (a) pseudonym(s) during transcription to protect the anonymity of the participants and their educational settings. The recordings were destroyed after the transcriptions were completed.

The data was then analysed using Thematic Analysis (Braun & Clarke, 2006). Firstly, the researcher familiarised herself with the data (through the previously described transcription process) and organised the transcript data into a matrix and preliminary codes were assigned. Patterns/themes in preliminary codes were identified. Themes were reviewed, defined and named. The process of data coding and analysis was repeated until the researcher felt satisfied that the data gathered could build up a logical explanatory story (Corbin & Strauss, 2008) and the findings were produced.

Thematic analysis was selected to analyse interview data due to its accessibility and theoretical-flexibility which supports rich and detailed analysis of qualitative data (Braun & Clarke, 2006). Thematic analysis is a technique which is not bound to a specific framework (unlike other analysis techniques e.g. Interpretative Phenomenological Analysis (IPA) which is linked to the framework of phenomenology; Braun, Clarke & Rance, 2014). The following general principles when utilising thematic analysis to analyse interview data are given as an overview:

1. The researcher familiarised herself with the data (through previously described transcription).

2. Preliminary codes were assigned.

3. Patterns/themes in preliminary codes were identified.

4. Themes reviewed.

5. Themes defined and named.

3.10. Validity, Reliability and Trustworthiness

Core measures of rigour and quality in quantitative research are 'validity' and 'reliability'. 'Validity' refers to the extent to which a research concept is accurately measured, while 'reliability' refers to the extent which a research instrument consistently provides the same results (if used repeatedly in the same situation;

Heale & Twycross, 2015). There are broadly 3 types of validity: content (the extent the instrument accurately measures all aspects of the construct), construct (the extent the tool measures the intended construct) and criterion validity (the relatedness of the instrument to other instruments which measure the same variable; Heale & Twycross, 2015). The quantitative tool in the current study (questionnaire) was developed as previously described to enhance the validity and reliability of the tool. It was piloted on a sample of non-participants to enhance content and construct validity. To date, there have been no known tools identified which are able to describe the practice of the inclusion of animals within educational settings in the UK; thus the decision to develop a questionnaire tool to utilise in the current project. Similar questionnaires have been developed to describe similar practices in other countries (Rud & Beck, 2003; Daly & Suggs, 2010), which have been reviewed prior to the development of the current questionnaire. There are some overlaps within questions included in these tools and the current questionnaire, but they are different to reflect national and local differences in practice and educational settings. This supports the criterion validity of the current tool.

For qualitative data and methodology, concepts of validity can be considered through trustworthiness, rigour and quality (Golaffhan, 2000). Trustworthiness considers the data credibility, transferability, dependability and confirmability. As part of the current study, multiple methods to promote the trustworthiness of the data and analysis were undertaken, including the previously mentioned considerations to reduce researcher bias and pilot interview questions prior to data collection to ensure clarity and credibility of questions. The mixed methods design also lends itself to the 'triangulation' of data, collecting multiple sets and types of data to 'complement' and 'triangulate' with each other.

McMillan & Schumacher (2010) identify several strategies to enhance validity in a qualitative study. Multiple strategies were included in the current study to enhance

trustworthiness (McMillan & Schumacher, 2010). The data was mechanically recorded through a digital voice recorder, and the interviewer checked informally with participants for accuracy during the interview data collection. An audit trail (through recordings, typed transcriptions and tabulated analysis) provide documentation of the interview data and processing involved in analysing and reporting the results. Verbatim transcripts will be kept within the agreed ethical timeframe (5 -10 years). Analysis will be at a content level, rather than an interpretative level and themes are correlated with direct verbatim from interviews. Literal statements and quotations from verbatim accounts are reported within the Findings Chapter. However, the researcher acknowledges that she continues to pose the greatest influence on the data as she collects and analyses the data, which cannot be alleviated in its entirety (Merriam, 1995).

3.11. Ethical Considerations

The current study, as with all psychological research conducted within the UK, is informed by ethical guidance and principles (BPS, 2014). Ethical permission was sought from the Tavistock and Portman Trust Research Ethics Committee (TREC; see Appendix K for submission form and copy of letter of ethical permission).

3.11.1. Informed Consent

Informed consent is an important way of ensuring that prospective participants are well-informed about the project in which they are being invited to participate (Wiles et al, 2007). In the current study, informed consent of the participants was obtained using information sheets and consent forms. The information sheet was included to inform potential respondents about the aims of the research and relevant ethical information e.g. the anonymity of their answers. The information sheet also informed potential respondents that agreeing to participate in the research study was voluntary; and that there would be no detrimental consequences should they choose not to participate e.g. from their LA Educational Psychology Service.

3.11.2. Participant protection from physical and psychological harm

A core feature of research ethical guidance (BPS, 2014) is for the researcher to take steps to ensure that participants are protected from physical and psychological harm, when participating in the research study. The subject of investigation for the current study is not considered a particularly sensitive or difficult topic, so it was not anticipated that participants would experience discomfort or distress when participating in the study. However, in the unlikely event of (a) participant(s) experiencing negative reactions during the completion of the research study, steps were in place to minimise harm caused. The researcher had skill and experience in providing appropriate support to individuals in distress as part of her training (with contact details for the researcher being provided in the information sheet) and the information sheet providing signposting to alternative contacts (with contact details where possible e.g. for Quality Assurance representatives), for participants to use should they experience adversity in relation to the research project (see Appendix K, TREC application, for more detailed information).

The selection of interviews as a tool provided a more ethical methodology; as they provided the researcher with an opportunity to monitor participants' responses and cease further questions if required, as well as provided the participant with a more 'human' data gathering experience and face to face opportunities for asking questions about the research. The selection of interviews also allowed the researcher to remind participants of the material in the information sheet and verbally signpost participants to appropriate support if/where required.

3.11.3: Participants' right to withdraw and debrief

The following measures were included in the current study to ensure that participants' were aware of, and had the right to, withdraw themselves and their data (should they decide to) and to debrief:

- Participants were informed of their rights to withdraw in the information sheet.

- Participants were reminded of their rights to withdraw verbally during the interview.

- Participants were offered time and opportunity to debrief with the researcher at the end of the interview.

- The interviewer utilised time allowed when scheduling the interviews to run a debriefing session after the interview, if/when required.

- The results of the research will be shared with participants at an agreed time (July 2020) after the analysis has been completed. Participants will be able to share their views on the results with the researcher.

3.11.4: Participants' right to confidentiality and anonymity

The selection of an online questionnaire supported the anonymity of participants and the educational settings that they were representing, both to the researcher, and the reader(s) of the findings of the current study. Participants and the educational settings which did provide contact information to the researcher were anonymised within the analyses of the data sets e.g. direct and indirect identifiers have been removed and replaced by a code/pseudonym. As stated in the information sheet and consent form, participants were able to withdraw their data up until the analysis stage, when their data became anonymised. Only anonymised data is reported and discussed in later chapters. No participants chose to withdraw their data prior to the analysis stage.

<u>CHAPTER 4: Findings</u>

<u>4.1. Introduction</u>

This chapter discusses findings for each of the study aims: 1) to explore whether, and how, animals are being included in UK based educational settings, 2) to consider what works and why to establish and incorporate animals in a school-based setting, 3) to consider what barriers exist in including animals in school-based settings and how have school staff/systems overcome them. Initial data processing for each type of data (quantitative and qualitative) will be discussed in detail.

<u>4.2. Data Preparation</u>

4.2.1. Surveys

Surveys were sent to all mandatory school-age settings within a UK-based LA (n = 45). 23 responses were received (response rate = 51%) within the time-frame of the project. 2 responses were excluded due to the participants not indicating that consent to participate had been granted from the Head teacher. A total of 21 responses were analysed.

4.2.2. Interviews

4 interviews were conducted with 4 participants who were all school-based staff members currently including animals in the educational setting in which they worked. These interviews averaged as 24.5 minutes in length and ranged from 13.1 minutes to 32.21 minutes. Demographic information about the participants and the educational settings that they were working in is presented in Table 9:

No.	Pseudonym	Job Role of Participant	Educational Setting	Species
1	Sandra	SENDCo	Mainstream primary school	Fish and snails
2	Mary	Head of resource base	Mainstream primary school (with speech and language resource base)	Birds of prey and reindeer

| 3 | Gemma | Deputy Head | Mainstream primary school | Dogs, rabbit. |
| 4 | Tony | Deputy Head | PRU and specialist secondary school | Dog |

Table 9: Demographic information from interview participants and their current educational settings.

4.3. Phase 1 Findings

The survey aimed to address research aim 1: to explore whether, and how, animals are being included in UK based educational settings.

4.2.1. RQ1 part 1 – Are animals being included in UK based educational settings?
The survey findings showed that animals are being including within a range of UK based educational settings. 10 respondents, approximately half (48%) of total respondents, indicated that they were including animals within their settings. The types of educational settings that respondents represented varied (see Figure 5 for summary of types of educational settings included). 90% of respondents currently including animals within their setting were state funded mainstream (nursery and) primary schools and 10% represented state funded alternative secondary provision (see Figure 6). All other types of educational settings (state funded mainstream secondary school, state funded all age specialist school and primary academy) were not incorporating animals within their setting.
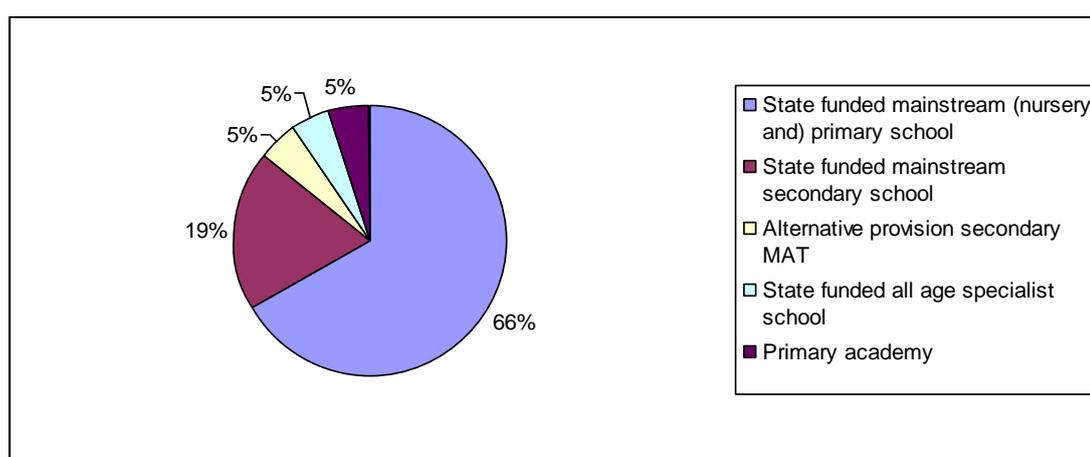
Figure 5: Summary of types of educational settings respondents represented
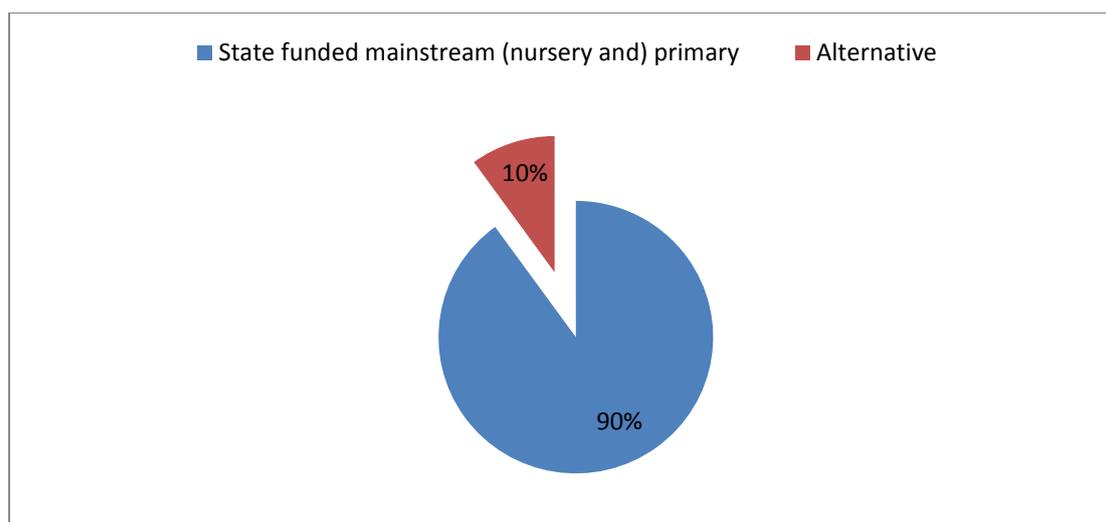
Figure 6: Distribution of types of educational settings currently including animals.

4.2.2. RQ1 part 2 – How are animal being included in UK based educational settings?

4.2.2a. Species:

Most respondents (90%) reported including more than one species of animals within their setting. A range of species were included within the respondents' educational settings (see Table 10 for summary of species of animals included in educational settings). One setting did not state what species they included in their setting. Fish were the most commonly reported animals included within educational settings (present in 40% of educational settings).

Species of animal	No of settings including
Dog	2
Fish	4
Chick	2
Guinea pigs	2
Bird (owls/ birds of prey)	2
Invertebrate (insects/ snail)	2
Turtle	1
Not specified	1

Table 10: Summary of species included within educational settings

4.2.2. b. Delivery Approach:

Most respondents (60%) reported a single delivery approach (see Table 2 for definitions of delivery approaches by MacNamara, Moga & Pachel, 2015). 40% of respondents reported using two or more styles of delivery (see Table 11for summary of delivery approaches utilised within respondents' educational settings).

Setting	Delivery Approach			Species included
	Implicit	Explicit	Instrumental	
Primary 1		X		Not stated
Primary 2	X			2 x fish tanks, 2 x turtles, several African land snails and 2x guinea pigs.
Primary 3		X		4-6 chicks each year.
Primary 4	X			4 fish.
Primary 5		X		5 birds of prey, 2-3 reindeers.
Primary 6		X	X	1 x therapy dog.
Primary 7	X	X		Fish, chicks.
Primary 8	X		X	1 x fish, visiting owls, birds and insects, dog.
Primary 9		X		2 X guinea pigs.
Alternative Secondary	X	X	X	2 dogs, rabbit, fish tank.
TOTAL	5	7	3	

Table 11: Summary of delivery approaches utilised within respondents' educational settings.

Explicit use was the most common delivery approach (47%) followed by implicit use (33.3%). Instrumental use was reported in 3 educational settings and all of these settings included dogs as one of the species present. All settings incorporating fish/fish tanks in their settings listed an implicit delivery approach as at least one of their styles of approach.

4.2.2. c. Access

Results showed that there was variance in practice between settings as to whether specific groups of students or all students attending the setting could access the animals. 20% of respondents indicated that only specific groups of students (Reception classes) had access to the animals present in those settings. 1 respondent stated that some species of animals (rabbit and fish) were based at one site within their educational setting, so only students at that site had access to those animals; while other species (dogs) moved between sites with their staff member, so all students had access to these animals. All other respondents (70%) indicated that animals were available for all students to access within their educational setting.

There was also variance in practice between the times that students could access animals within their educational settings. Half of the settings (50%) reported that students had access to animals at all times while half (50%) reported that students had access at specific times. Of those with access at specific times, the specific times listed were: during group sessions with their teacher, during break and lunch times, during times of stress in the work day, during half termly visits and during 2 organised events. 20% of respondents shared that some animals were accessible at all times and some during specific times. For these respondents, fish were accessible to students at all times and other species (turtles, snails, guinea pigs and visiting owls/birds/insects) were accessible at specific times (break and lunch times/ during animal visits).

4.2.2. d. Purpose

 Most respondents (60%) reported multiple reasons for including animals within their educational settings (see Figure 7 for summary of reasons). A total of 23 reasons for including animals in educational settings were provided.
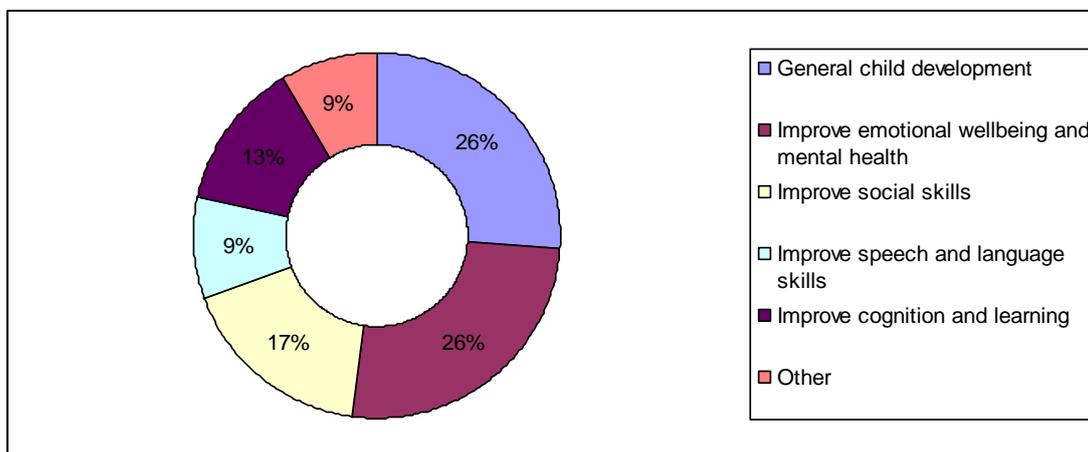
Figure 7: Summary of reasons for including animals with an educational setting.

The most common reasons for including animals within an educational setting were for 'general child development' and 'improving emotional wellbeing and mental health'. 'Improving social skills' were the next most frequently reported reason (17%) followed by 'improving cognition and learning' (13%) and 'improving speech and language skills (including attention)' (9%). 13% of reasons provided were 'other'; with respondents sharing that animals were included for 'specific topics on life cycles' and 'rewards for positive behaviour/staff wellbeing'.

4.2.2. e. Inclusion of animals within the Setting
The range of time that animals had been included within the educational settings ranged from a term to 15 years. Most commonly, animals had been included in the settings for between 1-5 years (60%), 20% had included them for over 10 years, 10% for less than a year and 10% were unsure how long the animals had been included in their setting. Most respondents (90%) reported that animals were cared for by school staff. 1 respondent, who indicated that animals included in their setting

were not cared for by staff, shared that the animals were cared for by an external
company.

Findings demonstrated a clear continued intention for including animals within the
educational settings. 100% of those currently incorporating animals within their
setting reported intending to continue the practice in the future. Most reasons for
continued inclusion of animals were based around the perceived benefits, to children
and staff (see Table 12).

Setting	Reason
Primary 1	Some of our children want pets but can't have them at home.
Primary 2	We intend to have a therapy dog to assist children with anxiety and be a reading buddy.
Primary 3	Because children (and staff) enjoy watching chicks hatch and grow.
Primary 4	Shown to be very beneficial.
Alternative Secondary	Lifts young people and staff; supports many learners who are scared of animals, offers distraction/relief from emotional turmoil.
Primary 5	Benefits to the children and excitement/experience for them.
Primary 6	For improvements previously stated, huge benefits and if well managed very few drawbacks.
Primary 7	Children enjoy looking and talking about the fish.
Primary 8	Not many of our children have pets and they love to care for the animals.
Primary 9	It helps us to settle the children and acts as a good way to de-escalate children who are distressed. It is also a good way to engage parents as they join together to look after the guinea pigs on weekends and holidays.

Table 12 Reasons for continued inclusion of animals in their setting.

All respondents reported that they would recommend including animals in
educational settings to staff in other educational settings. The reasons given for
doing so focussed on perceived benefits for children and staff, including benefits to
emotional wellbeing, increased engagement, opportunities for taking responsibility/
caring for others and learning opportunities (see Table 13). 1 respondent did not
provide a reason and 1 respondent emphasised the importance of a well chosen,
trained and appropriate animal for the setting.

Setting	Reason
Primary 1	Calming effect and learning opportunities.
Primary 2	Not stated.
Primary 3	They offer a diverse range of learning opportunities.
Primary 4	Positive impact on children's mental health.
Alternative Secondary	Lifts young people and staff; supports many learners who are scared of animals, offers distraction/relief from emotional turmoil. Makes a school feel more like a home. Allows learners to show their caring side.
Primary 5	Increases engagement from children.
Primary 6	If the animal is well chosen, well trained and appropriate for the setting. Very important to think it through first.
Primary 7	Children enjoy it and it gives them a talking point.
Primary 8	It can calm children down and gives them some responsibility.
Primary 9	It is a lovely tool to help keep children calm, get them talking and de-escalate children.

Table 13: Reasons for recommending the inclusion of animals to other educational settings.

4.2.2.f. Settings not including animals

Of the 45 settings in the UK based LA invited to participate in the current study, just

over half of educational settings (51%) responded. The comparative percentages

between different types of educational settings in the LA, and respondents in the

current study, is summarised in Table 14.

	Type of Educational Setting										TOTAL
	State funded mainstream (nursery and) primary school		State funded mainstream secondary school		State funded all age specialist school		Colleges		Independent schools		
	No.	%	No.	%	No.	%	No.	%	No.	%	
Questionnaires sent to	24	53	13	29	3	7	1	2	4	9	45
Respondents included in analysis	17	74	4	17	2	9	0	0	0	0	23
Respondents including animals	9	90	0	0	1	10	0	0	0	0	10
Respondents not including animas	8	61	4	31	1	8	0	0	0	0	13

Table 14: The comparative percentages between different types of educational settings in the LA, and respondents.

Just over half (52%) of total respondents indicated that they were not including animals within their setting. Of these respondents, 61% were primary settings, 31% were secondary settings and 8% were specialist settings.

4.2.3. Recruitment for Phase 2

8 respondents indicated willingness to participate in Phase 2 of the study; however 4 respondents did not provide details about how to contact them. Unsuccessful efforts were made by the researcher to inform respondents of this mistake and to encourage respondents to contact the researcher. The 4 respondents who indicated a willingness to participate in Phase 2 and had provided contact details were interviewed.

4.2.4. Summary of Phase 1 Findings

Phase 1 findings show that almost half of the educational settings that responded are currently including animals in their provision. Settings are most commonly

including fish, though a range of species were included. Access to animals varied between settings; with some settings allowing specific groups of students' access, some allowing all students access and some allowing a mixture of students access. The most common delivery approach reported was explicit, followed by implicit use. Only settings including dogs indicated using an instrumental delivery approach. The most common reasons provided for including animals within educational settings were 'general child development' and 'improving emotional wellbeing and mental health'. Most settings had been including animals for 1-5 years and all respondents indicated clear intentions for continuing to include animals in their settings for a range of reasons. All respondents including animals in their settings indicated that they would recommend the practice to colleagues.

4.3. Phase 2 Findings

To identify themes and subthemes, the data was coded (see Appendix L for an example table of codes and data vignettes) and codes were grouped to form subthemes and themes (see Appendix M for a table of example codes, subthemes and themes). On analysing the participant responses, five broad themes and ten broad subthemes emerged, which were present in all participant datasets (see Table 15 for summary of the 5 broad themes and descriptions). However, due to the significant variance in practice and experience between participants, the findings from each participant's interview data has been considered, analysed and presented individually to generate more meaningful and nuanced findings, including participant specific subthemes. The relationship between each broad theme, broad subtheme and specific subtheme is outlined in Table 16. Pertinent subthemes (both broad and specific) for each participant are discussed and cross-case commentary is included in the discussion where noted.

No.	Theme	Description of Theme
1	Beliefs and attitudes about including animals	This theme captures participants' reflections on their own beliefs and attitudes about including animals, and their ideas around the beliefs and attitudes of other adults.
2	Response to animal inclusion and explanations	This theme highlights participants' descriptions and observations of others (both children and adults) following the introduction of animals in their setting. This also includes models participants' drew upon to explain others' responses.
3	Pragmatics of animal care and maintenance	This theme includes participants' descriptions of pragmatic aspects of the practice of including animals within their setting, including maintaining physical care and safety (of both humans and animals).
4	Development of practice over time	This theme captures participants' thoughts around considerations pre-inclusion of animals, observations of the development of practice to date and their intentions for future development.
5	Emotional experience and explanations	This theme encompasses participants' reflections (and expression) of emotional experiences linked with the inclusion of animals within their setting. This theme also includes models participants' drew upon to explain these emotional experiences.

Table 15: A summary of broad themes and their descriptions

Theme	Broad subtheme	Specific subtheme	Sandra	Mary	Gemma	Tony
1	Participants' own beliefs and attitudes about including animals	Previous professional experience of including animals	X	X	X	X
		Previous student experience of including animals		X		
		Supporting distressed CYP	X		X	
		Positive experience of the process	X	X	X	X
		Knowledge of research base		X		X
		Multilayered intentions		X		
		Create a family "feel"				X

		Others should consider the practice	X	X	X	X
	Participants' views of other adults beliefs and attitudes about including animals	Lack of resistance	X			
		Managing resistance		X	X	X
		Positive/supportive attitudes/beliefs	X	X	X	X
2	CYP's responses to the inclusion of animals	Engagement/interest	X	X		X
		Develop literacy/learning skills		X	X	X
	Relational responses to the inclusion of animals	Peer interaction	X		X	X
		Child-adult interaction	X	X		
		Adult interactions			X	X
		Positive feedback from staff	X			X
		Explanations for observed benefits		X		X
3	Managing human and animal safety	Managing CYP behaviour	X	X	X	X
		External risk assessment		X		
		Internal risk assessment			X	X
		Adult supervision			X	
	Aspects of animal care	Maintenance of care when not present	X			
		Internal support with care (adult)				X
		CYP involvement in care	X		X	X
		Managing reproduction	X			
		External care provision		X	X	X
		Support from animal professionals			X	
4	Changes that have	"Trial" style experience	X	X	X	X
		Additional species	X		X	

	happened	Loss of aspects of practice		X		
		Animal life cycle			X	X
		Preparation for practice				X
	Future intentions for practice	Alternative species	X	X	X	X
		Alternative methods of funding		X		
		Preparation for development of practice		X		
5	Expression	Positive emotional experience	X	X	X	X
	Regulation	Calming/soothing	X	X	X	X
		Fear/anxiety		X	X	X
		Explanations	X	X	X	X

Table 16: A summary of broad themes and subthemes, and specific subthemes with indication of relevant participant(s).

4.3.1. Sandra (fish and snails)

A thematic map is provided in Figure 8 to illustrate the relationship between Sandra's specific subthemes and the broader subthemes and themes.
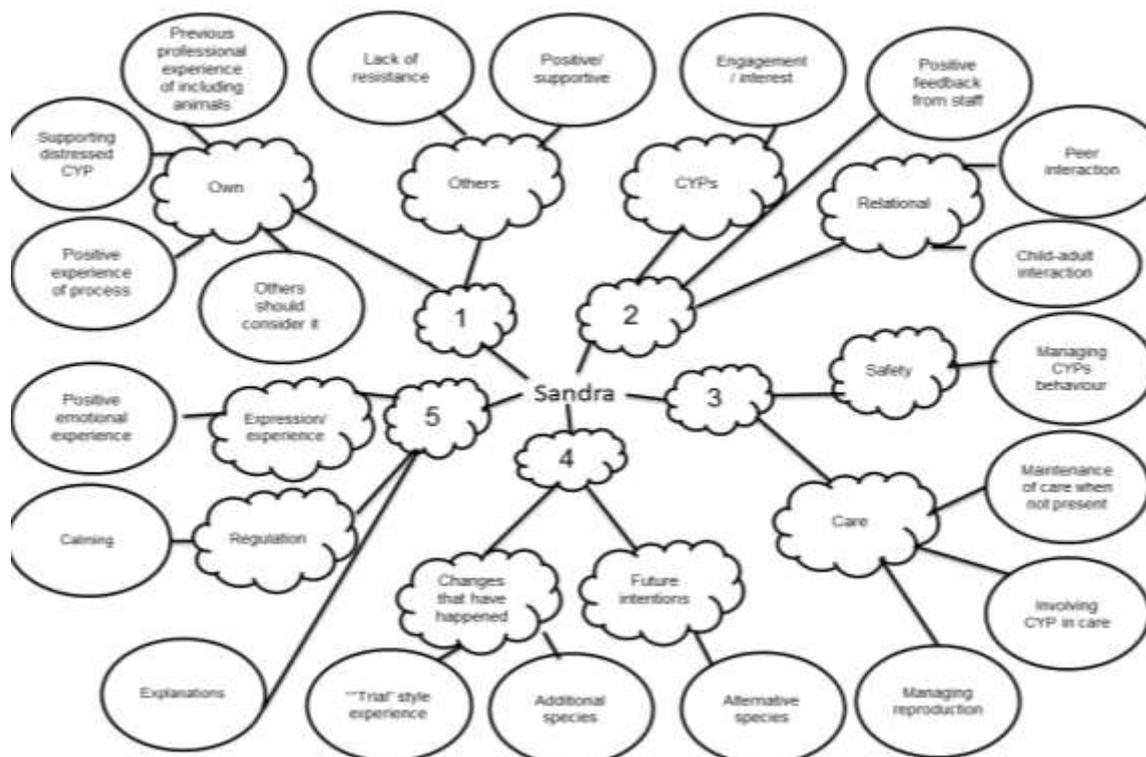
Figure 8: A thematic map of Sandra's specific subthemes in relation to broad subthemes and themes.

4.3.1a. Beliefs and Attitudes about including animals

Sandra shared that her previous experience of including animals in her previous role/setting (which was positive) impacted her decision to introduce animals in her current setting.

> *"I had a fish tank in a classroom that I was in years ago…"* (Sandra)

> *"I've done the chicks in another setting…and I've done little ducks as well…which was cute".* (Sandra)

Sandra's experiences in her previous and current role (working with students in distress) informed Sandra's intentions for including animals in her settings (to help distressed students to emotionally regulate themselves) which Sandra described as being met, and more.

> *"Because of the children I have in here [in Sandra's office], to allow them the chance to kind of de-stress if they're in a bit of a crisis".* (Sandra)

> *"Yes definitely, they've [Sandra's intentions] been met and then some. I've got all sorts of children, all times of day, coming in!"* (Sandra)

Sandra described a positive and easy experience of the process of introducing and maintaining animals in her current setting, and encouraged other adults in other educational settings to consider the practice, perhaps through easing themselves in with a small species.

> *"[Did you find anything particularly difficult?] Nothing at all. Only positives…it's been really good".* Sandra

> *"Just to give it a try, just give it a go. There is nothing that hasn't worked really. Start small, just get a couple of little fish and get the children invested from the beginning"* (Sandra)

Sandra discussed her perceptions of attitudes and beliefs held by other adults (school staff) on the inclusion of animals in their educational setting. Sandra was the

only participant to report an entire lack of resistance from other members of school staff towards the introduction of the fish.

> *"Everyone was happy to give it a go; no one had any problems with it. Though I don't think anyone was thinking of doing it themselves… A couple of people were kind of like I don't see what the point of that is, that kind of thing, but no one was actually stopping me from doing it."* (Sandra)

When considering her practice and future practice, Sandra identified her Head teacher as an important adult to hold positive/supportive beliefs and attitudes about the inclusion of animals. Sandra shared that she believed her Head teacher's beliefs and attitudes were influenced by research/observations of the impact of the practice.

> *"We're going to see if we can convince my Head [teacher] to get a tortoise. She doesn't know about it yet though! (laughs) [What do you think you need to overcome to convince the Head to get a tortoise?] I think probably just showing her the positives, she has seen the positives and she's not anti-it. I just think a tortoise is a bit of a bigger animal. So it's just trying to, with some research, showing her what the benefits could be".* (Sandra)

4.3.1b. Response to animal inclusion and explanations

Sandra discussed her observations of the response from children in her setting following the inclusion of animals. Sandra described a breadth and range of children who had regularly engaged with the fish, which had surprised even Sandra.

> *"Definitely the interest was unanticipated. I knew there would be a couple [of students interested], but the amount of interest – and the amount of children coming daily – is amazing."* (Sandra)

Sandra spoke about responses she had noticed with several students in particular, with the animals being perceived as motivators and encouraging peer conversations/interactions in students, particularly students with ASD.

"We had a little boy yesterday who, he has ASD, and was really getting into a bit of a dispute with his one-to-one about whether or not he was doing his work. So, they came and saw me, talked about the fish and we said that he needed to go and do his counting and come back and see the fish. And that was that - he did that." (Sandra)

"He's really interested in it. And actually for him – he has ASD – and we're really working on his social skills. But it's allowed him to – he is soooo passionate – he has so much information about snails and frogs and fish and everything. So he has actually been talking to the other children that have been in here about the fish, which has been really lovely. And we haven't always seen that in him. That has been really special actually. And we weren't expecting that. He is one of the more challenging children here - and we've seen a different side to him which is really nice." (Sandra)

Sandra also reported other school based adults sharing positive feedback from their observations of students following the inclusion of animals in the school setting.

"I've had quite a few comments from people [school staff' seeing the benefits of it. From people I probably wouldn't have expected comments [from] perhaps. So that was good." (Sandra)

4.3.1c. Pragmatics of animal care and maintenance

As the only participant including fish and snails, and the only participant utilising an exclusively implicit delivery approach, the care required to introduce and maintain her animals was low level requiring only 3 main aspects: establishing an adequate tank environment, regular feeding and cleaning of the fish tank. Sandra shared that she had bought/owned the fish/equipment, but placed a significant emphasis on including and collaborating with her students in the process of establishing and maintaining the fish care/environment.

"We've done everything together. The children and I have ordered the stones, we've got the filter. Some of them [children] have gone away and researched filters, they found the right plants; they've done the whole lot." (Sandra)

"Today alone I've had 2 or 3 children come and feed the fish". (Sandra)

"And they love cleaning it out with me!" (Sandra)

Sandra discussed a unique aspect of fish/snail care/maintenance that she has been required to provide to manage the snail reproduction cycle.

> *[The snails] have now bred so that's not idea, but, that's what all the brown bits are. So then he [the boy] brought me in an assassin snail, it's called, - which gets rid of some of the little snails.* (Sandra)

As the only participant with animals mostly residing in their school setting, Sandra discussed how she ensured care provision was continued when she was not in school, which she did not perceive as a problem or difficulty.

> *"So in the half term we have cleaners in…so the cleaners were in the school, people were around…so people just fed the fish for me. Things like the summer holidays, I'll just take them, take the tank home with the fish…it won't be a big problem really."* (Sandra)

As Sandra's delivery approach was implicit, with students not directly interacting with the animals, concerns and considerations around safety were not really emphasised in Sandra's reflections; apart from managing children's behaviour to ensure they did not try to physically interact directly with the fish/snails, which was a requirement Sandra expected.

> *"I've had a couple of close calls with fingers going near the water (giggles) – and a hand going in – but I was expecting something like that."* (Sandra)

4.3.1d. Development of practice over time

As previously mentioned, Sandra identified her positive beliefs and attitudes towards the inclusion of animals in educational settings, and aspects of her current practice (moving office and working with distressed children) leading to her decision to "trial" including animals in her setting.

> *"I was finding my old office was getting lots of children coming in when they were distressed, and they were doing things like hiding under the desk. And I had a fish tank in a classroom that I was in years ago, and I actually thought, I wonder if this will work?"* (Sandra)

Sandra also discussed how her practice had developed over time through the introduction of an additional species to her tank; the snails.

> *"So I had the four fish and one of the boys loved it so much he bought me snails…so that was [un]expected - I got a present!...So they're [the children] really, really invested in it!"* (Sandra)

Sandra had clear intentions to continue her practice, and develop her practice further by introducing alternative species with more 'complex' needs/that can be utilised through different delivery approaches.

> *"We are seriously talking about a bigger fish tank. My colleague wants me to get a little tortoise (laugh) - so we'll see if we can do a tortoise. It has made me think - because I'm the early years lead as well- about getting chicks in for in springtime. Yeah - I'm willing to try any animal really"* (Sandra)

4.3.1e. Emotional experience and explanations

Sandra reflected on her emotional experience of the process of introducing/ maintaining animals in her setting positively.

> *"I've enjoyed the whole process really…I've just been so surprised with how much positive feedback I've had.* (Sandra)

Sandra expressed positive emotions through her behaviour during the interview; there were 9 incidences of laughter shared when discussing her experiences.

> *"(Giggles) I'm going to need a bigger tank soon!" (*Sandra)

Sandra discussed a specific occasion when a student had been emotionally dysregulated following an incident in class, and how the presence of the fish/snails had supported him to soothe himself emotionally. Sandra's reasoning for how the presence of the fish/snails supported the child was through distraction.

> *"Last week I had a little boy come in quite angry. And then I kind of just distracted [him] from what he was upset about – [what] had happened in*

class. I've also got a couple of snails in there, so I told him I'd lost a snail, and then that kind of - he'd forgotten about what he was cross about. We talked a lot about looking for the snails (giggles) and then we were looking for fish…blah, blah, blah…and then once he was calmer, then we could talk about what was upsetting him. So we just used it as a sort of a distraction, until he was calm, and then we could go back to it [the problem]" (Sandra)

4.3.2. Mary (visiting birds of prey and reindeer)

A thematic map is provided in Figure 9 to illustrate the relationship between Mary's

specific subthemes and the broader subthemes and themes.
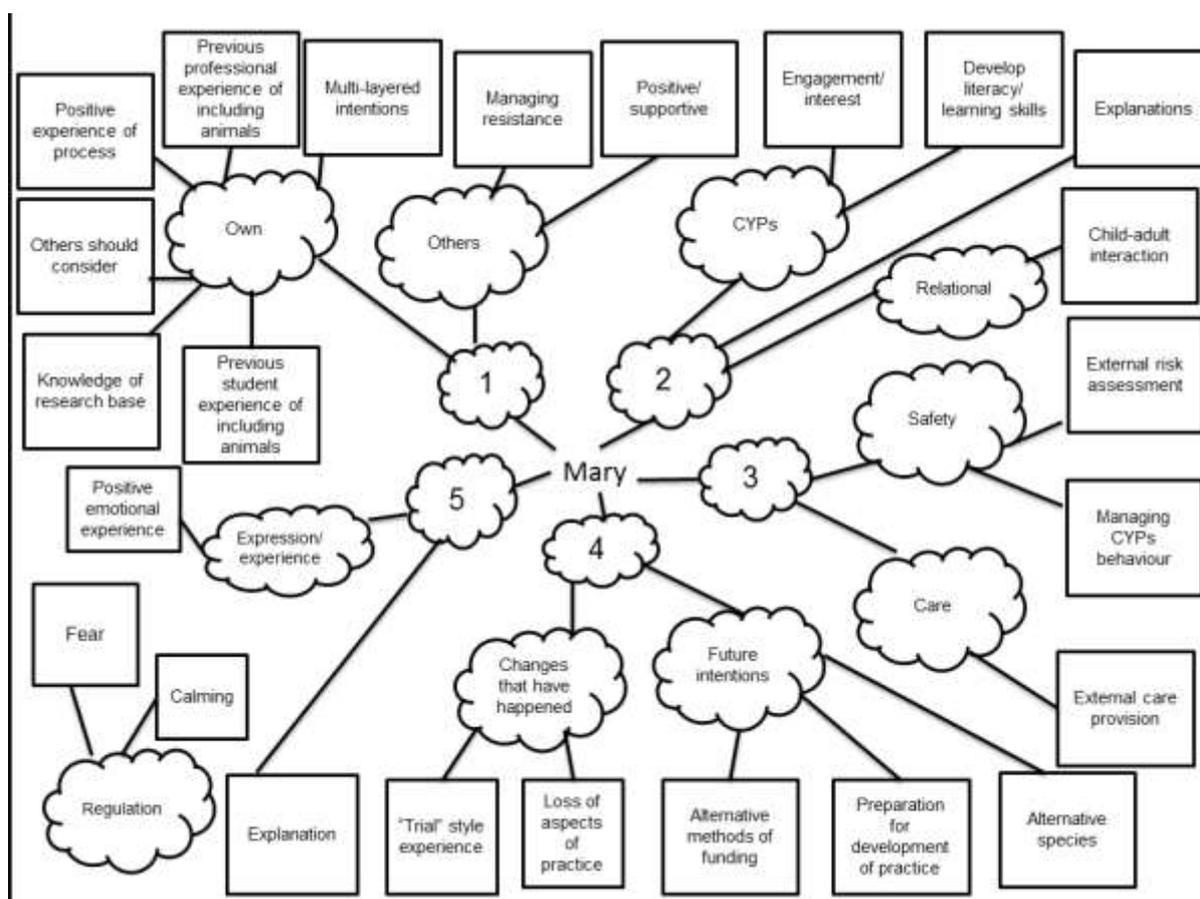
Figure 9: Thematic map of Mary's specific subthemes in relation to broad subthemes and themes.

4.3.2a. Beliefs and Attitudes about including animals

Mary was the only participant to reflect on her previous experience of working with

animals when she was a student in school, as well as in her previous professional

role, which had influenced her beliefs/attitudes towards including animals in

educational settings.

> *"If I think back to when I was at school – when I was a lass – it wasn't unusual to have animals within school. So we had the school rabbit, the school cat, the school guinea pig. And I remember you having the opportunity to take the animal home at the weekend – it wasn't unusual back then. And actually the benefits that children had back then – I remember with fondness the animals that we had – the fish in the pond".* (Mary)

> *"I know in my previous school we used to hatch eggs each year so that [children could experience] that learning of them [the chicks] hatching and the wonder of seeing them come out of their shell."* (Mary)

Mary also identified her knowledge of the current research base indicating potential benefits of including animals in schools.

> *"Using reading dogs - I've done research about reading dogs and how it really supports with the confidence children have [when reading]."* (Mary)

Mary had clear intentions for the purpose of including animals in her setting, and was the only participant to describe "three-folded" intentions: 1. providing children with opportunities for unique positive experiences with animals (including learning opportunities e.g. developing animal-specific vocabulary and knowledge), 2. modelling and developing care and empathy towards animals and 3. supporting children's emotional development and regulation.

Mary's experience of introducing animals was slightly different to other participants, as she was not currently maintaining animals regularly in her setting; but had included animals on two occasions through an external company. Despite this difference, Mary shared that she had also found this experience easy.

> *"…they [the external company] had everything so organised so you could introduce that quite easily. We were quite impressed at how easy that was."* (Mary)

Mary also held the belief that other professionals should consider including animals, and perhaps different/unusual species of animals, in their settings.

"I think definitely go for it. I think it really benefits the children. I think sometimes be a bit brave. I think be open minded to what the children can get from it as well. But definitely think outside the box with animals." (Mary)

"And there's more and more companies that are offering this [animal visits], not just in schools but in hospitals and hospices and things like that, and actually we need to tag along to that [practice] within schools and get involved. (Mary)

Mary shared that she believed that other adults at school were generally positive/supportive of Mary's idea of including animals in their setting. It was also important to Mary to have other members of staff "on board" with the inclusion of animals in their setting.

"Within school, yeah. Everyone seemed to like the idea of it". (Mary)

"To have everyone along on the journey with us; we don't just want to do it and there be people that are negative towards it [the introduction of a dog]. (Mary)

Mary thought that the resistance that she believed other adults held around the inclusion of animals in their setting were particularly pertinent to the species that she had selected (birds of prey). These concerns were managed and overcome, in Mary's opinion, following the provision of risk assessments (provided by the external company managing the animal visit).

"I think there were some people with the birds of prey - obviously risk assessments and things like that. We had all of that – the company had it covered. (Mary)

Mary identified beliefs/attitudes of school governors as being particularly impactful on the practice of including animals, and resistance around potential risks/repercussions being associated with difficulties establishing the practice.

"I know previous to me being here they had talked about a school dog, about 18 months ago, and it was a no because the governors were concerned

about risk assessments and allergies. So it kind of came to a stop then, but it's something that we want to push for again" (Mary)

As far as resistance from others it's more to do with what the repercussions [of including animals] could be." (Mary)

4.3.2b. Response to animal inclusion and explanations

Mary's reflections focussed heavily on the responses she had noticed displayed by

children in response to the visiting animals. Interest/engagement, attention and

experiential learning (including memory) and stimulating/developing

speech/conversation and vocabulary for literacy were areas within student skills that

Mary noticed an impact on.

> *"Excitement is absolutely the key – engagement - and when we have animals within school, the children love the experience and they talk about the experience and it gives them opportunities to talk."* (Mary)

> *"I think you've then also got the learning, so having experiences to write about or to talk about. To develop vocabulary; to develop knowledge. And things that perhaps some people might naturally do with their children, a lot of our parents don't. So they [the children] might not know the names of owls and eagles; they're just birds"* (Mary)

> *"And they'll talk sometimes about, you know, certainly in the weeks after the birds of prey came they were like "oh yes - and we did this and we did that". And we're having reindeer coming for the Christmas fayre and children are already beginning to talk about it and think about what they can do and what they're looking forward to.."* (Mary)

Mary spoke particularly of a particular child with ASD, whose response to the birds of

prey was a surprise even to Mary.

> *"One child in our unit who [has] ASD, who went to watch the birds of prey - doesn't really like assemblies. So actually just being in there was important. We have pictures of him with the kookaburra on his arm and his face was amazing! And then he came back and he told us and he was excited and he could tell me that the wings were blue and what its [the bird's] name was. So it just created a reason for him to talk and communicate, where as often he's in his own little world".* (Mary)

> *"He's very sensory driven. So when he's learning he's constantly on the move, he'll run around the back of the class, and he needs that movement all the time. Yet he managed to stand at the front of the assembly hall with everybody looking; holding a bird still on his arm."* (Mary)

> *"The little lad that I talked about - I really didn't think that he would engage at all. Because he doesn't often engage. But he did, he was so excited about it. So a child that we didn't expect to respond like that - did.* (Mary)

Students in Reception were also identified by Mary as a 'group' that were particularly interested/engaged with the visiting animals.

> *"When the early years were involved - again it really did just light them up. "* (Mary)

Mary also shared her thoughts on explanations for the responses that she had observed in children in her setting. Mary theorised that working with/experiencing living organisms/process supports children's learning/memory.

> *"How do you teach that chickens come out of eggs? There's a picture of it, but here's it actually happening. And because the children have seen the chicken hatch from the egg, they will know forever that the chicken comes from the egg, whereas if they just look at a picture they're not [necessarily] going to get that."* (Mary)

4.3.2c. Pragmatics of animal care and maintenance

Mary was the only participant discussing visiting animals; that did not reside or receive any aspects of their care in the school setting or by school staff externally. Though Mary did not directly provide the care for the animals, ensuring that care and consideration of animal welfare was still noted in Mary's discussion.

> *"They [external company] talked to the children about keeping voices down and quiet. But they also thought about - they didn't stress the birds too much. So although some children went up and held the birds, not every child did, because you can't possibly. But they didn't stress the birds, they made sure the birds were calm and relaxed and things like that which I think is really important - like [maintaining] the welfare of the animals. Because if you're teaching children to respect the animals then you need to [show them] that as well."* (Mary)

Mary described how the external company bringing the birds of prey to the educational setting had considered and managed the risk associated with the

species of animals (birds of prey) through their risk assessments and safety

equipment.

> *"The company were really good and they had everything that they needed.*
> *And that was something that we obviously checked before hand. They*
> *provided all the risk assessments and they were really thorough. So that was*
> *really positive. They had everything [safety equipment e.g. gloves]."* (Mary)

4.3.2d. Development of practice over time

Mary spoke about her understanding of previous animals (fish) which had been

included in the setting before she worked at her current setting, and how staff

changes had resulted in the cessation of the inclusion of fish.

> *"We used to have fish here just in a fish tank. But they have been gone a*
> *year now; we don't have any at the moment. [And that was because the staff*
> *member that cared for them left?]. Yes".*

Mary also discussed how the school had previously had visits from farm animals,

and were now "trialling" different species of animals to keep their practice exciting

and engaging, and ensuring new vocabulary/knowledge could be offered to students.

> *"We decided because it [birds of prey visit] was something different we hadn't*
> *experienced, therefore it was the right way to go. We were thinking about*
> *developing knowledge and awareness and vocabulary, and we didn't just*
> *want the same thing…it was something that they wouldn't see - the children*
> *that go to the farm wouldn't necessarily see birds of prey so it was going to*
> *be more exciting for them."* (Mary)

Mary spoke a lot about her intention to introduce a school dog to her educational

setting. Mary described this as her "long term goal" and that she was in the process

of gathering information on how to complete this goal. Her reasoning behind this

decision, and particularly the selection of a dog, was: to impact more children, to

benefit children than have already benefitted further, to have a more "therapeutic

benefit" e.g. supporting children's wellbeing and calming children, for older children

lacking confidence in reading, and for children lacking social understanding.

> *"And you just sort of therefore think, if you have more of that, what [else] would it help? How many more children would it help? How much more would it help him [the specific child with ASD Mary discussed]?"* (Mary)

> *"The reading dog idea I think is really good. Particularly for older children who perhaps are not reading so well – so they could be reading with a reading dog."* (Mary)

> *"To have a dogs involved with the social side would be really, really key. Really, really good; because it would then be recognising when is the dog happy? When is the dog not happy?"* (Mary)

Mary shared her preparation (thoughts and considerations around providing and maintaining care for a dog) for her future development of her practice.

> *"I have offered to look after the dog because – [it's] something in my family we've thought about anyway – we don't have animals but we would be able to. We have the facilities and obviously because I'm the Head of the unit here – it [the dog] would probably be based around here".* (Mary)

> *"I've been thinking very much about the welfare of the dog as well – because I know there's talk about – talking about school dogs and not just having a dog in – [because then] their [the dog's] wellbeing isn't being thought about. I think it's really important that their [the dog's] wellbeing is thought about."* (Mary)

Mary also mentioned openness to trialling and adapting her practice further if required following the introduction of a dog.

> *"That's where we would want to focus the dog. And see how it worked and what was most effective and, it may be that we adjust things…but that would be where would initially want to do it."* (Mary)

Mary also expressed her intentions to continue including animal visits to her educational setting and had considered the impact of the financial cost. She shared her thoughts about adapting her practice to cover the cost of future animal visits.

> *"Obviously cost is a big issue because to do that [visiting animals] there is a cost involved. And it's whether school pay for that or we fund raise. [How did you manage the cost previously?] I think school did fund it out of – potentially – raising standards kind of fund…but obviously as budgets are tightening and tightening it becomes harder to warrant that spending on a one day event*

where's other things that perhaps need funding. We do a lot of fund raising for charities – being a Church school with that ethos of giving – which is really important to us and we want to keep doing that, but we're also trying to increase the fundraising for school a little bit, so that we can keep doing things like that [animal visits] for children".

4.3.2e. Emotional experience and explanations

Mary shared her experience of observing others' (mostly children's) emotional experiences following the inclusion of animals in their setting. Mary spoke about observing emotions in students e.g. excitement and enthusiasm as previously discussed, and also calmer emotional responses.

> *"One of the things that he did was at the end of the sessions, he had a little puppy which the children – I've just remembered this – the children had a chance to stroke at the end, which calmed them all."* (Mary)

The calming response to interaction with animals was explained by Mary as being linked to the physiological soothing response to stroking/petting the animal.

> *"There's the idea that stroking animals is calming. You know, it calms the heart – meditating – and we encourage the children to do elements of meditation and relaxation and think about their wellbeing and themselves.* (Mary)

Mary also spoke briefly about some staff members being fearful towards the visiting species (birds of prey), and Mary felt that this was a further reason to incorporate the practice.

> *"There were a couple of members of staff who were a bit nervous of birds so didn't want to go in, but actually, that increases the reason to have these sorts of events."* (Mary)

4.3.3. Gemma (dogs and rabbit)

A thematic map is provided in Figure 10 to illustrate the relationship between Gemma's specific subthemes and the broader subthemes and themes.
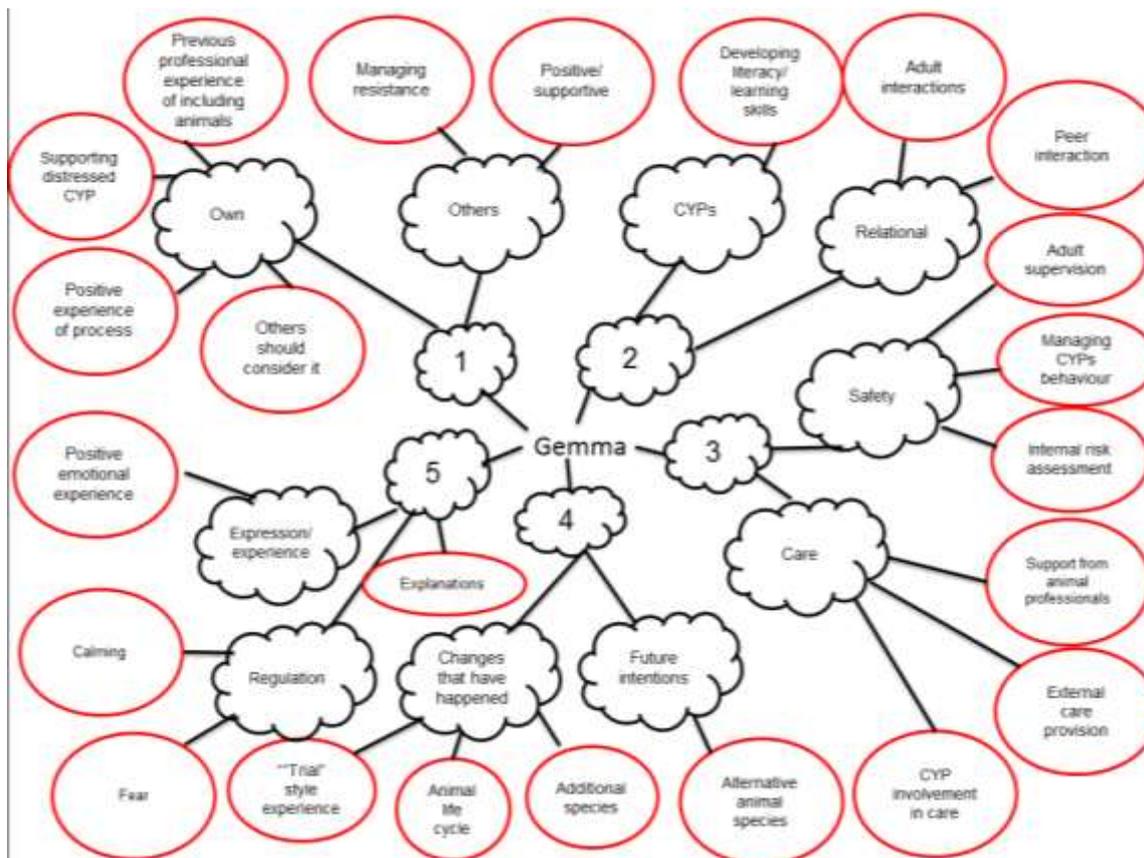
Figure 10: A thematic map illustrating Gemma's specific subthemes in relation to broad subthemes and themes.

4.3.3a. Beliefs and Attitudes about including animals

Similarly to Sandra and Mary, Gemma shared her previous experience of working

with animals in her previous setting, and how working with distressed students

(which was also the experience of Sandra) in both her previous and current settings

had influenced her decision to introduce animals to her current setting.

> *"They started in my old setting which was another alternative provision. And we just had some young people who were really distressed and were coming in and things were happening; and they just didn't have a way of managing how they were feeling. And I just thought one day, you know what, I'll bring the dog in and just see if it helps because they're [distressed young people] in our office anyway. So I brought the dog in... and it just, you could just feel the difference.* (Gemma)

In line with other participants' discussion, Gemma also reported a positive experience of the process of introducing animals and would recommend the practice to other educational professionals.

> *"It's been (laughs), it's been really easy actually".* (Gemma)

> *"But definitely do it [consider introducing an animal into an educational setting]".* (Gemma)

Gemma shared her thoughts around her experience of the root of some resistance from staff members which she was required to manage, and Gemma believed this resistance stemmed from fear.

> *"Resistance from some staff here in that they are frightened of animals. I was quite surprised. More staff than students actually have a fear of dogs."* (Gemma)

Gemma identified the Head teacher and Chair of Governors as key adults whose positive/supportive attitudes/beliefs around including animals in the setting impacted significantly on her practice.

> *"The Head in my old school was very supportive; she really was an animal lover. Here, I didn't bring her [Bubble] in when I first started here because our old Head I wasn't really a pet lover, so I didn't even think of it. It was only when our current Head took over, I don't know who mentioned it, somebody did, something came up and we thought you know what? Why don't we try bringing the dogs in?"* (Gemma)

> *The Chair of Governors here was very supportive which is why we also have a school bunny now."* (Gemma)

4.3.3b. Response to animal inclusion and explanations

Gemma described responses from young people in her setting, and her observations of the impact of the presence of animals in supporting a range of students in a variety of ways, including student relationships and reducing conflicts.

> *"Initially I didn't realise the kind of power that an animal would have with these young people. Not all of them - some of them don't really respond so well - but an awful lot of them do. Just having them, just knowing they're*

around actually is enough. I thought it would just be for a few [young people], but they meet different needs for different young people." (Gemma)

"He's [a student from the PRU] 6ft stupid but he was frightened to go into [specialist school setting]...even to see the bunny. So they [students from the specialist school setting] brought the bunny into the kind of vestal bit. So the little boy who looks after him [sat] with the big boy stroking [the rabbit]...and he's telling him all about the bunny...so that was really nice as well...working across [the] centres. He led on how you stroke the bunny...so that was really nice too" (Gemma)

"They [the dogs] often stop fights as well, because you shouldn't really shout in front of the dog; it upsets them, they don't like it. And nine times out of 10 - 7 1/2 times out of 10 - they [students] will then try to moderate themselves because they don't want to upset the dogs." (Gemma)

Gemma, the only participant based in a secondary provision setting, also shared how the presence of animals had allowed students to demonstrate skills/learning, which were informally linked to qualifications:

*"Some of them [students] have done a little bit of dog walking as part of the preparation for their Duke of Edinburgh - they have to do some voluntary work". (*Gemma)

Additionally, Gemma also reported noticing a benefit for school staff following the inclusion of, in particular, her dogs; supporting adult-adult relationships/interactions.

"But what I do see with them [the dogs] when I'm here is the impact it has on the staff. Everyone's getting a bit tired, it's nearly Christmas, but just knowing the dogs are in…So I get staff that will come for a cuddle as well [as students]. And that's okay...It's just nice, and it means I can touch base with them And check that they're okay in a way that's not having to say what's your welfare like? You just have a talk while you're with the dogs." (Gemma)

4.3.3c. Pragmatics of animal care and maintenance

Gemma spoke about multiple species of animals: dogs, rabbits, a tortoise and a snake, in her interview. The variance in practice and care required between was particularly highlighted in Gemma's reflections, as she spoke about such a range of species of animals. Most of the species (rabbit, tortoise and snake) were visiting

animals to the school setting, so most aspects of care were provided externally by individuals external to the school setting.

> *"So Venus (the previous visiting rabbit), the now Head of [specialist school setting name] – it's her bunny. So she would bring it in and take it home. And they same with the tortoise and the snake – they belong to some of the students actually. So the parents would take them in for part of the day and take them home."* (Gemma)

Gemma spoke about her dogs, Bubble and Squeak, which are the animal species she works with herself in her setting, and who are mostly cared for externally by Gemma. For Bubble, Squeak and Maisie (school residential rabbit), some aspects of care (mostly social interaction/play/grooming) were provided internally in the school setting and students were involved in providing these aspects of care. Gemma also mentioned the importance of incorporating rest/breaks for the animals (particularly dogs) during the day.

> *"So the kids go out at break and lunch, under supervision, and stroke her [Millie the rabbit] and hold her in their lap or they do a bit of grooming as well."* (Gemma)

> *"Just knowing that you've got to give them [the dogs] a break. I suppose its easier now because of being here [and] with having my office which the kids don't really tend to come in as much as in my old work; they [the dogs] can have a rest as well. So it's building in that sort of rest time for them."* (Gemma)

Managing students' behaviour when in the presence/interacting of/with animals in the educational setting, particularly through using adult supervision, was highlighted as important by Gemma, to maintain both human and animal safety.

> *"The young people, we encourage them to be involved, but, they need to be supervised. Yeah, absolutely. [And is that around the safety of the animals?] It works both ways really. I mean our young people are particularly vulnerable and they don't always make the right choices, so we wouldn't want to put them in a position that they might later regret. So, especially when there's a few of them because that can lead to group dynamics [which] brings unknown issues with it."* (Gemma)

Uniquely to Gemma, she shared that she had involved other professionals (Pets as Therapy and a dog trainer) to assess the temperament of her dogs, to also help manage the safety of the dogs and humans in their interactions in their educational setting. Additionally, Gemma thought the temperament of the animal was important to consider as an aspect of maintaining adequate care provision to the animal; that they (the animal) would also benefit from the experiences.

> *"And we got her pets as therapy tested because they did it then; they don't do it anymore. You can go and just check that they are a bit bombproof. She was a rescue dog so we didn't fully know her background so we wanted to make sure that we were - that she was safe. And that kids will be safe around her [Bubble]"* (Gemma)

> *"First thing is to consider the animal, I think. And make sure that they are the kind of animal or pet who will enjoy - they'll enjoy it. Otherwise it's just not fair."* (Gemma)

4.3.3d. Development of practice over time

Gemma reflected aspects of a "trial" style learning approach to her own and other colleagues' practice, as they had gained experience over time. Gemma shared how she had spent a lot less time preparing for the introduction of Bubble (dog) in her previous setting, compared to her current setting.

> *"At my old place, we just rocked up with the dog! (laughs)"* (Gemma)

> *"Here we made sure that all the kids had had a letter home, all the staff were all aware so they could let us know if anyone wasn't happy to be around a dog."* (Gemma)

Gemma also shared her experience of how other members of staff in her setting had developed their practice by building on visits from a rabbit, and had progressed to introducing a resident rabbit, Maisie.

> *"Because we'd had Venus [previous visiting rabbit] coming in the best part of a year I think they'd worked through a lot of the issues and that's why they felt*

it was going to work to have their own, and then this opportunity came up for a bunny. And it just seemed like the right thing to do actually - so no [it wasn't challenging to set up] - because they [had] worked through it. So she's got a cage in one of the classrooms at the minute and we're her moving into the main area. And then they've got a hutch outside in the central court yard." (Gemma)

The existence of animal life cycles were noted in Gemma's discussion. Gemma shared how her dog had aged throughout her practice, and how new animal members have been introduced and were "in training".

"So we've got a new dog [Squeak] that we got in the summer; she's coming in, the old one [Bubble] is getting a bit old now - she is 12 – so the younger one is kind of the dog in training. And I'm told that she [Squeak] is the only Pomeranian therapy dog anyone's ever heard of (laughs) because they're bonkers." (Gemma)

Gemma had ideas about how she would like to develop her practice further; being open to the possibility of including alternative species of animal.

"Well I want a pony - I think we've got space for a pony but apparently that's too much (laughs). No, no, no, it's kind of grown and I think if there were other opportunities we would definitely look into it because we've seen the benefits." (Gemma)

4.3.3e. Emotional experience and explanations

In addition to the previously described responses to the inclusion of animals, Gemma described her observations of emotional responses in students; which mostly focused around a calming/soothing effect.

"I had a young girl who was sobbing and then she laid on the dog and she actually fell asleep on the dogs belly and it was probably the only sleep she'd had in quite a long [time] - in a couple of days." (Gemma)

Gemma also shared that she felt the presence of animals supported school staff to regulate their own emotional wellbeing and energy levels.

"…Is the impact it has on the staff. Everyone's getting a bit tired; it's nearly Christmas, but just know[ing] the dogs are in [helps]. So I get staff that will come for a cuddle as well." (Gemma)

Another emotion Gemma noted that was quite prevalent in other staff members was fear/anxiety. Gemma described an example of how a staff member, who had a fear of dogs, utilised the presence of her dogs to make progress in overcoming their fear. Gemma further linked this example to emotional learning experiences and opportunities of modelling to students.

> *"That's something else I haven't thought of [before]; the kids watching the staff work over their fear. One of the key staff over there [other provision within alternative provision setting], would get the sweats at the thought [of the dogs]. He would lock himself behind doors. Obviously I would have to let him know if I was coming over with the dog on the lead and he'd still double lock himself behind two doors. But now he will walk her on a lead and he will touch her head. He still sweats a bit and he has [had] to work, but the kids know that, and so they can see. That for me is brilliant learning for them."* (Gemma)

> *"To start with they [students] were a bit aww let me run around and chase you [the frightened staff member], but they're not allowed to hold the dog – that's my job. But after, we'd talk about why would you do that [to the staff member]? Because actually, this member of staff is really scared…when you're scared…you see – it's a talking point".*(Gemma)

Gemma had multiple hypotheses for explaining the emotional responses that she reported observing. Gemma shared her ideas around animals providing 'unconditional positive regard' and helping to create positive and nurturing relationships that her students were able to access, as well as 'predictable' distraction and sensory explanations.

> *"That kind of emotional side of allowing young people just to be, because dogs just are; they don't ask any questions and they don't actually care who you are. They just want someone to tickle their belly."* (Gemma)

> *"I think it's because they're a distraction. My old dog - she's getting a bit old now, but she'll chase a ball and she'll bring it back to you. So those young people who have had something happened and they're trying to recover from, chucking a ball for a dog who you know will bring it back to you, drop it, and then they can throw it again….just sort of helps them re-regulate their emotions"* (Gemma)

> *"That tactile [response] ...because their fur is so very soft…that kind of texture...I don't know if it's something about holding [an animal]."* (Gemma)

Gemma shared her reflections of how caring for animals involves young people providing emotional care; which can be difficult for young people in her setting to show towards other humans.

> *"It also allows them [dogs] to be someone they [young people] can care for. Because a lot of our young people like to give the persona that they don't care because they build up this hard shell, to protect themselves from all the rubbish that's going on. But it seems to be okay to care for an animal. So they can take out all of their love and their needs to show love with an animal in the way that they find hard - especially with teachers. We often, [in] education, represent something that they've not been successful at."*
> (Gemma)

Gemma expressed her own emotional experience of working with animals positively, making jokes and laughing throughout her interview.

> *"Unless we take on a zoo keeper (laughs) [(laughs) new job role?] (laughs) new job role (laughs). I think plenty of staff would want that one! (laughs)*
> (Gemma)

4.3.4. Tony (dog)

A thematic map is provided in Figure 11 to illustrate the relationship between Tony's specific subthemes and the broader subthemes and themes.
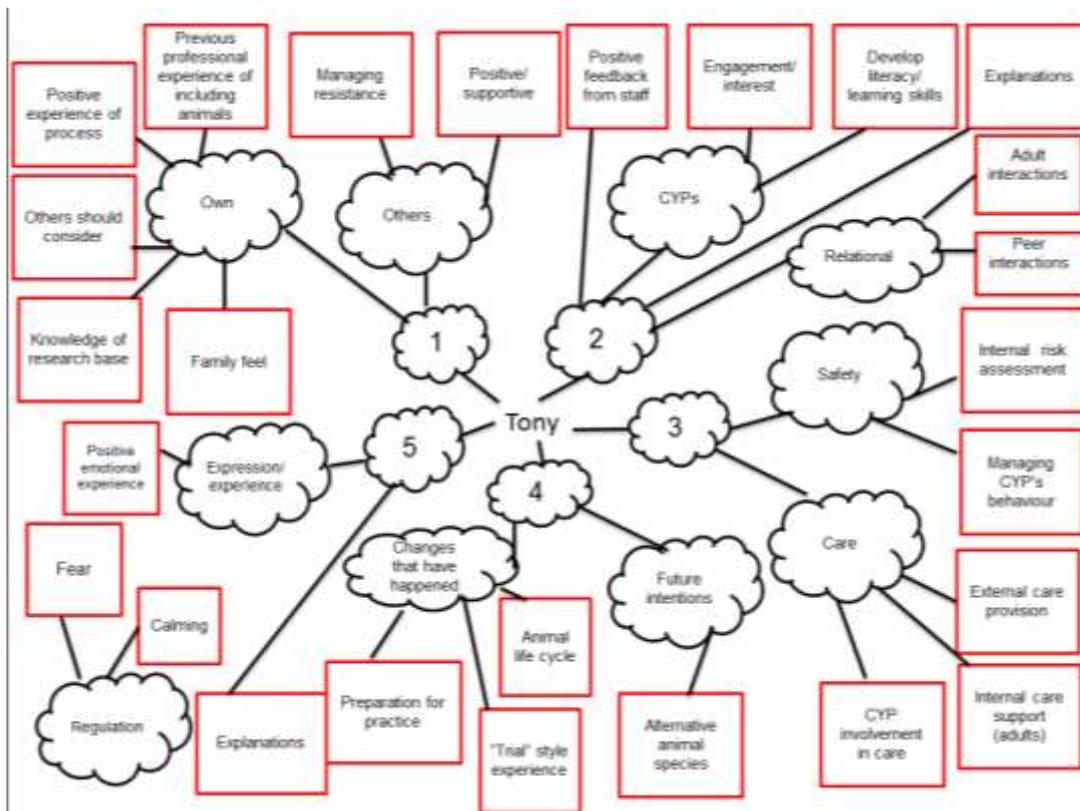
Figure 11: A thematic map illustrating Tony's specific subthemes in relation to broad subthemes and themes.

4.3.4a. Beliefs and Attitudes about including animals

Similarly to other participants, Tony also spoke about his own previous experience of including animals in his previous settings/roles, and how this experience had impacted on his decision to introduce Reggie to his current setting.

> *"Reggie's been with me for 11 years…....so many, many years ago when I was working as a secondary Head...we had a pastoral unit that was an ex-caretakers house. So, it was called 'The House'. And from that we developed a philosophy of creating a family setting. And all families have the opportunity to have a pet. So that was where it [introducing animals] came from."* (Tony)

Tony had clear intentions for outcomes following the introduction of an animal to his current setting; which was based around developing a "family" feeling at the setting.

> *"But then when I came here, it was something that I felt was missing - particularly in a primary context. Again, the concept of the [School] family was very important for us to be building. And there wasn't perhaps as much parental involvement in school as I had hoped for."* (Tony)

Similarly to Mary, Tony shared his knowledge of the current research literature base to support his decision to introduce Reggie in his setting.

> *"And again that's pretty well cited now in all sorts of research [on reading dog programmes] that it's - youngsters who struggle particularly with fluency - feel that they need an audience."* (Tony)

Tony described his own experience of introducing and working with Reggie, which was positive.

> *"It's the ordinary and the extraordinary actually; that's the double thing. The key is to make it as ordinary and as natural as it possibly can be, but then the outcomes can be extraordinary. And that's what makes it fab."* (Tony)

> *"And absolutely selfishly, it means I can have a dog, because I wouldn't be able to have a dog left at home, I do occasional late hours – you know – just occasionally (chuckles). It's quite a long working week – so it means that I can have my best chum [with me].* (Tony)

In line with other participants, Tony also shared that he would encourage other educational professionals to consider introducing animals into their setting; but Tony added that professionals should ensure that they are clear of their intention(s) and then select an appropriate species to meet that (those) intention(s) prior to the introduction of animals.

> *"The school should be really quite clear about what it is that you [they] are trying to do. It's too easy to say I have a dog at home; I'll bring the dog in. I've got two children at home; I wouldn't bring them in (laughs). I haven't, but you know what I mean? It's going to be for a purpose, a clear purpose. And fitting the right thing [species of animal] for the right purpose, is what it's about."* (Tony)

4.3.4b. Response to animal inclusion and explanations

Tony described his observations of the response to the presence of animals by students, which spanned individual skills/knowledge and peer interactions, for a variety of children including non-verbal students and children with ASD.

"And the Autistic children - he [Reggie] just has so many different senses (laughs) and is rather a sensory ball of interest to them!" (Tony)

"A number of our non-verbal youngsters - we've managed the trick I was showing you earlier where you put a piece of food on his paw and literally say 1, 2, 3, go and he won't eat it until you've gone 1, 2, 3, go. So one of our Downs children, for instance, can now almost articulate 1, 2, 3, go; because it started off with non-verbal sort of sounds but now it's built into 1, 2, 3." (Tony)

"When you get a new child in, you can see the other kids explaining what the rules are to them. You know, and that he doesn't bite (laughs) ahhh no, he doesn't bite! But it's nice to see them, and they gradually encourage that particular child, to come and have a stroke and things." (Tony)

As previously mentioned by Gemma (who also included dogs), Tony also described his observations of positive responses on adult relationships and interactions in his settings.

"I think it's less surprise, more sort of pleasantly fulfilled what I had hoped, which is the amount of staff actually who come and say hello to him [Reggie]; [and school staff] who feel that he is a bonus in terms of staff well-being. The site controller has him as his saver on his computer; a picture of him [Reggie]! And as I say, joking aside, with the fact that he's on the pictures at the front [board], that the office staff having put him as the number one [staff member]. And they're only little things but symbolically they are quite clearly showing that staff are very much in favour of him." (Tony)

"It also gives staff I think the opportunity to come into the Head teacher's office and chat in an informal way which I think is a - however much you try not to be a hierarchy…there is. But having the door open and Reggie being here gives people an excuse to come in and have a little chat... so that's a nice touch too." (Tony)

Uniquely to Tony, he also reflected on his observations of the impact on school staff/parent relationships following the presence of Reggie (dog) in their school.

"We've now set up a parents tea and coffee morning on a Friday morning and so we invite any parents who want to just come in and have a cup of coffee with us and again, Reggie's there wandering around saying hello - in Reggie world he's just picking up the crumbs (laughs). But from their [parent] point of view - it takes away from the formality. And again there's a little bit of me being White, middle class, intellectual - and I need to break that down. And I physically can't do much about myself but I can be a much lighter, friendlier, happier chap. The bloke with the dog is a much more approachable person than the Executive Head Master. So that breaks it [social hierarchy] too." (Tony)

Tony referenced research studies and psychological theories in his thoughts around explaining how Reggie's presence had created the responses he had noted in the CYP in his setting.

> *"And then there's a whole series of rewards that we've systematically put in place so that at the end of any week there are two children from each tutor group that come down and have that[play/interact with Reggie] as a reward. So if it's year 3 there will be 6 year 3's that come down and just play with him for a break time."* (Tony)

> *"So a number of the youngsters would read to him. And again that's pretty well cited now in all sorts of research that it's - youngsters who struggle particularly with fluency - feel that they need an audience. But it's a very difficult thing for an audience not to interrupt a child, where as Reg just sits there and will listen to whatever".* (Tony)

Tony also spoke a lot about Reggie's 'role' in school as a member of the staff team and a part of daily school life, which he linked to creating a familial atmosphere and the positive responses that he had noticed, in both CYP and adults.

> *"He's [Reggie's] on the staff picture board. He's actually number 1!"* (Tony)

> *"So every morning and every afternoon, he and I are there together, welcoming people in and saying have a good evening when they're on the way out."* (Tony)

> *"Making him [Reggie] a sort of totem of us as a family, of a community, of an openness and a friendliness. "* (Tony)

4.3.4c. Pragmatics of animal care and maintenance

Tony discussed how at times during school hours, he relies on other school staff to ensure Reggie's (dog) care needs are met in their educational setting; which were focussed around toileting.

> *"I think you have to have a school that is committed to looking after the dog…and not unreasonably that means at break time and lunchtime that someone – if not me – will take him out to have a wee and a poo. You know, and I know that that sounds simple but, he's mine [but] I am not always [available]; there are times when I'm in a meeting or on the phone or doing or not even in school. And so you have to have other people who can then do [care tasks]".* (Tony)

Other aspects of care provided in the school setting that Tony discussed (similarly to Gemma) were focussed around social interactions including play, petting/stroking/ cuddles and tricks; and the involvement of students in these aspects of care. Tony also discussed the importance of incorporating rest/space/down time, so that Reggie does not become overwhelmed or exhausted by interactions/frequency of interactions. Tony described a strategy that Reggie had developed himself to use at times to avoid being 'mobbed' by children.

> *"And he shakes hands and does rolls over and all those sort of things. [I did see - he lays down – fantastic!] (laughs) He'll do anything for food - a lot like his owner! (laughs)"* (Tony)

> *"When he's [Reggie's] out on the playground - you know when I'm on duty or whatever – he can get sort of mobbed. And so he just wanders onto the field where the kids aren't allowed. And so he just finds his own space in which the kids are not allowed. I remember when he was a bit younger he used to stand in the middle of a puddle so they couldn't get to him either!"* (Tony)

Tony spoke about tools he had utilised to better maintain safety during the inclusion of animals in his settings, similarly to Mary and Gemma; risk assessments. Tony also shared his practice around insurance policies.

> *"We do a risk assessment. If you buy/ if you become a member of the dogs trust for £25 per year, you get a million quid indemnity third party insurance. So that's a very good deal. So your £25 goes to a charity - a dog charity – so that's a good thing. And as I say, you're then indemnified against third-party [claims]. So if something did happen, like a kid tripped over or something like that, or if – obviously he wouldn't bite - but if any accidental damage [occurred] or whatever, he's insured. So that's an important one."* (Tony)

Tony explained how he had made decisions around Reggie's breed to reduce the risk to humans e.g. through bites or allergies.

> *"Again, choice of dog - he's [Reggie's] got his soft palate and therefore his bite is [low risk]- [but] he doesn't bite. And they're the second least allergenic of the main breeds. Poodles apparently are the least [allergenic], but poodles are high stressy/they get very stressed, so they're not an appropriate one for a school.* (Tony)

Tony heavily emphasised a unique aspect of external care that he provided; training

when Reggie was young. Tony emphasised teaching and maintaining key

boundaries e.g. not jumping, waiting for humans to approach him, as critical in

managing Reggie's behaviour to be better able to maintain safety (of both humans

and Reggie) in their educational setting.

> *"That's the training bit early on. The key - I don't know whether you saw outside when one of the kids was holding some food high and I said don't do that, keep it low… Because he will jump up and then obviously if there is a little child and he's up, he could accidentally bump into them. Again so he's trained not to jump."* (Tony)

Tony also discussed the important of "training" humans to ensure that children

manage their own behaviour so that they are able to interact appropriately with the

animal.

> *"You've also got to train your staff and your children, you know. There's got to be clear boundaries and rules, and what you are and aren't allowed to do. So we go over to the nursery and they sort of poke and prod him a bit too much. And we have to explain, really things that you wouldn't think about really... like stroke from head to tail rather than tail to head. And patting doesn't mean smacking (laugh) and things like that."* (Tony)

4.3.4d. Development of practice over time

Tony provided a summary of his thoughts around some considerations and

interactions that he believed were important to consider prior to the introduction of an

animal.

> *"Be very clear about what it is that you're trying to achieve. We just talked about that big list of things [that Reggie has done]. And depending on your order of those things, it might be different; a budgie might work or a goldfish might work just as well. Reggie is a more significant commitment than a stick insect (chuckles). But you get different benefits from it [different species]. So, make sure you are very clear about what it is you are trying to achieve and then fit the right animal for that"* (Tony)

As other participants also reported, Tony discussed how his practice had changed and developed over time, in a "trial" style impacted by their environment and experience.

> *"In my last school we had pushbutton open doors that slid open and he would jump up, push the button and let himself out, and have a wee and come back in. But in a primary school you have to be a bit more secure then that and we haven't taught him the numbers to get in and out yet (laughs)."* (Tony)

> *"And he made a few mistakes in his first couple of terms. And you know, I still carry poo bags around with me (laughs)."* (Tony)

As present in Gemma's discussion, the existence of the animal life cycle was also noted in Tony's discussion. Tony spoke about Reggie as a puppy, an adult and now as an older adult.

> *"So I had him as a puppy from 8 weeks and had the summer holidays to train him. And he came in as a – whatever that would be? – as a 14/15 week old little puppy that was adorable - absolutely adorable. And then he's just grown up."* (Tony)

> *"Now he's older anyway, he's 11 now, so he's on the last third of his life. So he's more chilled than he was."* (Tony)

4.3.4e. Emotional experience and explanations

Tony spoke positively about his experience of working with Reggie, and expressed positive emotions more than any other participant; expressing 38 incidences of laughter during his interview.

Similarly to all other participants, Tony also mentioned the calming/soothing aspects of working with animals/having pets.

> *"I mean in my background I've got a lot of pastoral work- and we fostered teenagers, and dogs were always helpful in those circumstances. Take the dog for a long walk and they were then so tired they were slightly less irritating (laughs)."* (Tony)

> *"And if a child is upset then he'll just go and sit next to them. And again, won't intrude, but will just sit near, and if they feel the urge to stroke him, they can do that."* (Tony)

Fear/anxiety, particularly from adults, was also noticed by Tony in line with discussion points from both Gemma and Mary. As Gemma did previously, Tony also provided an example of a staff member who had made progress in overcoming their fear of dogs through the presence of Reggie.

> *"But the door stays open all the time and even those who were slightly worried started coming in to say hello to him - more and more. And once they saw he was very well trained that took away their trepidation. And obviously when they saw the effect he was having on the children, then he became a win. And as far as I'm aware, there's one member of staff who actively now says 'I'm still scared of him' but comes in regularly to try and overcome her fear of him and says 'it's not him, it's me'; so is getting ever closer to stroking him."* (Tony)

4.3.5. Summary of Phase 2 Findings

Five broad themes across participants were identified: attitudes and beliefs about including animals in educational settings, response to the inclusion of animals, pragmatics of animal care, development of practice over time and emotional experience and explanations. Ten broad subthemes present across all participants were identified and additional specific subthemes were identified by some participants. Phase 2 findings demonstrated that the potential barriers and solutions involved in the practice are linked, and that participants' practice has and continues to develop over time. The consideration of participants' data sets as individuals and specific subthemes suggest that some specific subthemes were linked to particular animal species e.g. benefits to adult interactions and wellbeing were only described by participants including dogs.

4.4. Summary of Main Findings

4.4.1. RQ1: Are, and how are, animals being included in UK based educational settings?

- Animals are being included currently in UK based educational settings. 48% of educational settings indicated that they are including animals in their setting.

- There was significant variance in practice in how educational settings are including animals in their setting including: access arrangements, delivery approach, animal species selected and time span of practice.

- Some variance in practice appeared linked to species selected included e.g. only settings including dogs indicated using an instrumental delivery approach.

- All respondents including animals in their settings indicated that they intend to continue the practice and would recommend the practice to colleagues.

4.4.2. RQs 2 and 3: What works and why, including potential barriers and solutions, to establish and incorporate animals in a school based setting?

- Five broad themes and ten broad subthemes were present across all participants.

- However, the individual practice and experience of participants establishing and incorporating animals in different school based settings varied significantly.

- Additional specific subthemes were identified in some participants' experiences, and the identification of specific subthemes allowed a more nuanced discussion of each participant's individual experience and practice.

- Findings demonstrated that the potential barriers and solutions involved in the practice of including animals in educational settings are linked, and therefore RQs 2 & 3 are also linked.

- Some specific subthemes appeared linked to particular animal species e.g. benefits to adult interactions/wellbeing were only described by participants including dogs.

<u>CHAPTER 5: Discussion</u>

This chapter links findings from the current study to what is already known in psychological literature and implications for these findings. The study aims: 1) to explore whether, and how, animals are being included in UK based educational settings, 2) to consider what works and why to establish and incorporate animals in a school-based setting, 3) to consider what barriers exist in including animals in school-based settings and how school staff/systems have overcome them, are linked with the findings from the quantitative and qualitative analyses. Implications of findings and how findings will be disseminated are discussed. Strengths and limitations of the current study and suggestions for further study are proposed.

<u>5.1. Key Findings Linked with Research Questions, Implications and Research/Psychological Theory</u>

5.1.1. Are, and how are, animals being included in UK based educational settings?
A key finding highlighted in this study is that the practice of including animals in school-age settings in the UK does exist; with almost half (48%) of respondents indicating that they are currently incorporating animals in their setting. This result is slightly higher than results from similar research studies describing the practice in other countries e.g. USA, Canada, (Suggs & Daly, 2010; Rudd & Beck, 2003), where only 17-25% of teachers reported including animals in their educational settings. This could suggest that the practice of incorporating animals in educational settings is more prevalent in the UK than other countries e.g. USA, Canada, at this point in time, or could be due to a positively skewed sample.

 The current data suggested that this practice may be more common with younger students e.g. in primary school settings, as 90% of settings including animals from the current data were primary school settings. Other research studies that have described the practice of including animals in educational settings in other countries e.g. Canada, USA have focussed exclusively on younger students (elementary aged

children aged up to 14 years; Suggs & Daly, 2010; Rudd & Beck, 2003). As previously discussed, in the current literature base, many studies focus on the impact of animals specifically on young CYP e.g. pre-school children (Gee, Christ & Carr, 2010; Gee, Sherlock, Bennet & Harris, 2009) or primary aged students (e.g. Nobel & Holt, 2018; White et al., 2017). However, the presence of animals has been described in some research focussed on older students e.g. in University settings (Haggerty & Mueller, 2017), and has reported perceived improvements in students wellbeing and stress levels, and studies focussing on older mandatory school aged students (secondary aged 11-18 years) have reported perceived improvements in school atmosphere and students wellbeing, following the inclusion of a dog in the setting (Zents et al. 2017). However there are no known studies to date that have demonstrated a positive impact for young people in educational settings beyond mandatory school age or exploring age-related effects comparatively e.g. whether a specific age of CYP benefit more in the presence of animals than any other age group of CYP. These are areas which could be explored through further research.

Current findings also demonstrated that there was variance between how animals were included in the educational settings, even within similar educational settings; a result which aligns with findings from other countries (Suggs & Daly, 2010; Rudd & Beck, 2003). The current data demonstrated variation in practice between species selection, delivery approaches and student access, within educational settings. The reasons for including animals were also varied. This variation demonstrates the flexibility and adaptability of the practice, and the broadness of the potential scope of impact. Tentative differences were noted e.g. between species and delivery approach (implicit delivery approach and fish/instrumental delivery approach and dogs); but this was not explored further within the scope of the current project. Therefore, further research is needed to explore whether there are any differences in

impact between practice (e.g. species/delivery approach/student access) and area/level of impact.

The staff in educational settings participating in the current study reported that they were able to include animals in their settings successfully, reporting perceived benefits for CYP in response to the inclusion of animals. This finding aligns with other research studies that have also reported perceived benefits for CYP following the inclusion of animals in educational settings (Nobel & Holt, 2018; Zents et al., 2017; Bruce et al. 2015; Jenkins et al., 2014; Anderson & Olson, 2006; Daly & Suggs, 2010; Rud & Beck, 2003; Kotrschal & Ortbauer, 2003) and with studies which have demonstrated a positive impact on CYP following the inclusion of animals in their educational settings (White et al., 2018; Fujisawa et al., 2016; O'Haire et al. 2013; O'Haire et al., 2014; Wilson et al., 2011; Tissen et al., 2007; Randler & Propkop, 2012; Nicoll, 2008; Randler et al., 2005; Kotrschal et al., 2003).

5.1.2. RQs 2 and 3: What works and why, including potential barriers and solutions, to establish and incorporate animals in a school-based setting?
The current study highlighted that challenges or considerations, and the associated solutions, were involved in the establishment and maintenance of including animals within the educational settings; and therefore that the findings of RQ2 and RQ3 are linked. The data has suggested contributing factors that support the introduction and inclusion of animals in educational settings, are multifaceted. Participants reported factors that were internal to themselves e.g. their own previous experience/knowledge/beliefs/ attitudes and factors that they perceived were external to them e.g. beliefs/attitudes from other school-related adults (staff members and parents of CYP attending the setting). Temporal elements were also noted in the data in a spiral-like fashion; with factors/considerations from before animals being included in the setting (pre-inclusion) feeding into factors following the inclusion of animals in the setting (post-inclusion), both external to the participant e.g. perceived responses of others (CYP, staff, parents of CYP attending the setting)

and internal (participants' own experience of the practice). These factors then fed

back into factors/considerations/challenges and solutions linked with further

development of the practice (See Figure 12 for a summary of factors linked with

successful introduction and inclusion of animals). The steps of the model will be

discussed in more detail in the next sections.
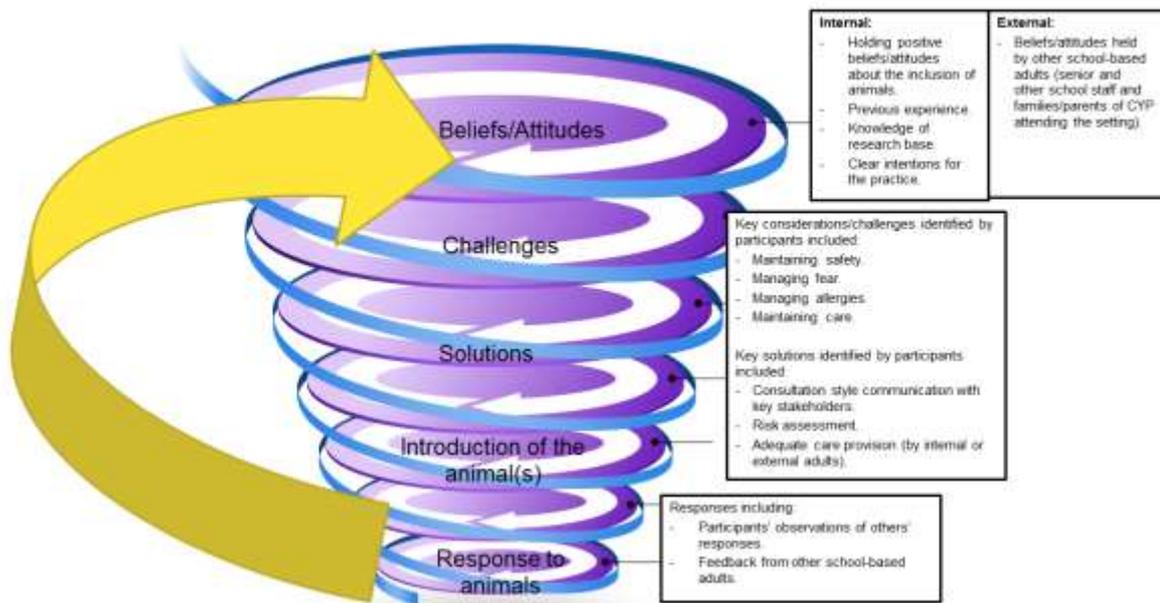
Figure 12: Looping spiral model of perceived factors linked with the success introduction and inclusion of animals in educational settings.

5.1.2a) Beliefs and Attitudes

Participants emphasised that holding positive beliefs and attitudes towards the

benefits of including animals in school settings themselves helped the introduction

and maintenance of animals in their setting. An awareness of the research base

demonstrating the impact and perceived impact/benefits of the practice were

highlighted and holding clear intentions for the inclusion of animals (sometimes multi-

levelled) were identified as key aspects internal to the adult initiating the introduction

of animals to the educational setting. Interestingly, all participants in Phase 2 of the

current study reported having previous experience utilising animals successfully in

other educational settings. This could suggest that having previous experience in the practice and/or a personal interest/predisposition in the area/practice may be important in making the decision to introduce animals in an educational setting, and the successful establishment/maintenance of the practice.

Participants also identified external factors to themselves, which they acknowledged as being present in other adults; factors which they perceived as being important to the establishment of the practice, prior to the introduction of animals. The beliefs and attitudes held by other adults associated with the educational setting including staff, parents of CYP attending the setting, with a particular focus on senior members of staff e.g. Head teacher and Governors, were identified by participants as important factors which could support or challenge the inclusion of animals in the setting. The beliefs and attitudes of adults in the enabling of the inclusion of animals in educational settings were also identified by Gallard (2015), as one of two core factors.

5.1.2b) Challenges and Solutions

Participants identified challenges/considerations that they thought were important in their experience of including animals in their setting, and the solutions that they had implemented to manage/solve the challenges. These challenges and solutions spanned across 4 areas: maintaining safety, managing fear/anxiety, managing allergies and maintaining adequate care.

5.1.2bi) Preparing to maintain safety

Factors identified within the current study that were important for consideration, planning and preparation before the inclusion of animals, were linked with maintaining safety (both for humans and animals) and providing appropriate care for the animal (see Table 17 for summary of perceived considerations and proposed solutions to be considered prior to the inclusion of animals, highlighted by participants in the current study). The animal species selected by the setting

impacted on elements of risk and care. Most participants highlighted that in their view, it is supportive for schools to have well-researched and informative risk assessments to draw upon when introducing the inclusion of animals in educational settings. Data from the current study indicated that risk assessments were perceived as key processes, that were completed in most participants' educational settings; but an agreed or advised risk assessment across participants was not identified. To date, there is no known UK government legislation, recommended advice or guidance on developing risk assessments for visiting or residing animals in educational settings. There are generic and school specific risk assessments that are accessible for schools to utilise or adapt for their setting (e.g. Omlet, n.d.; Limetree School, 2019); though there is no data to support the evaluation of the efficacy of these risk assessments. Other research studies have identified that planning for emergency situations, including evacuations, in advance are the most important step animal owners can take to protect life (both human and animals) in emergency situations (Travis, 2014) and evacuation plans should be incorporated into risk assessments, which were not noted in the current participants' perceptions. These findings, and gaps in current findings, highlight the further need for research and consensus around developing adequate risk assessments to maintain safety for both animals and humans, when including animals in educational settings. This research and agreed adequate risk assessments could be developed in collaboration with animal rights activist organisations, educational settings considering and or currently including animals in their setting and educational psychology professionals.

Considerations identified by participants	Solutions identified by participants
Maintaining the safety of humans	• Complete a risk assessment prior to the introduction of the animal(s). • Ensure appropriate training is in place for adults and children interacting with animals (an element included in the risk assessment). • Parents/staff to inform the school of any known allergies to the specific species of animal(s). Children/staff who should not interact with the animal(s) should be known. • Ensure child-animal interactions are ALWAYS supervised by an adult. • Manage adults/children with fear of animals/specific species of animals.
Maintaining the safety of the animals	• Complete a risk assessment prior to the introduction of the animal(s). • Ensure the risk assessment is reviewed regularly. • Ensure appropriate training is in place for adults and children interacting with animals (an element included in the risk assessment). • Ensure child-animal interactions are ALWAYS supervised by an adult.
Maintaining the care of the animals	• Ensure the animal(s) have a species appropriate care provided by adult(s) (with the support of CYP if and when appropriate).

Table 17: A summary of perceived considerations and solutions highlighted by participants prior to the inclusion of animals.

5.1.2bii) Preparing to manage fear/anxiety

Plans for identifying and managing fear of animals/specific species of animals which

individuals/groups may be experiencing was also a pertinent consideration identified

by participants within the current study. Specific strategies for overcoming this

challenge varied; though communication and engagement with key stakeholders e.g.

senior members of staff/ other members of staff/parents were identified by

participants as key factors that could support this challenge. Aspects of sharing

information about plans for the inclusion of animals (including specific information

about the species, residence, risk and safety plans etc. and assurances e.g.

ensuring that the animal(s) will be contained to specific areas/supervised by adults at

all times and that any interaction with the animal(s) is entirely voluntary/at the person

level/pace, including children) were thought to be helpful, and to identify

individuals/groups who may be fearful/nervous of the introduction of an animals/species of animal prior to the introduction of the animals.

Gaining feedback from key stakeholders (as above) was also identified by participants as a factor to support the management of fear of animals from individuals/groups, using a 'consultation' style. The idea of organisations consulting and engaging with key stakeholders has been identified as good practice, across professional disciplines (Jeffrey, 2009) including educational organisations (Thought Exchange, 2018). Schools consulting and engaging with parents has been identified at the forefront of historical UK Government policy (DCSF, 2007), particularly in mandatory school-age settings; highlighting the important role that parents play in influencing and shaping educational services and CYP's education and development. In line with these models and the findings from the current study, educational settings considering introducing animals into their setting might want to consider a consultation style communication channel between key stakeholders including the person introducing the animals, senior and other school staff members and parents/families of CYP attending the setting.

5.1.2biii) Preparing to manage allergies

Participants placed an emphasis on the importance of identifying and managing animal allergies in adults and CYP attending the setting, as a consideration prior to the inclusion of animals in their setting. This finding is in line with other literature (e.g. literature review by Frieson, 2010) that identified adult concerns about cleanliness and managing animal related allergies as the primary deterrent for including animals/AAIs in school based settings. Statistics report that approximately 1 in 8 children in the world have allergies and 1 in 8 children have asthma (Pols et al., 2015); with UK self-reported estimates reporting a slightly higher prevalence (CYP with asthma reported as 1 in 3, and allergies as 1 in 5; Pols et al. 2016). Allergic rhinitis (hay fever) and food allergies are the most common types of allergies, and animal related allergies are more commonly found in individuals who also have

asthma and/or hay fever (Custovic et al. 2003). However, there are no known published statistics for the number of individuals experiencing animal related allergies; globally or nationally.

With the prevalence of allergies/asthma found in the UK, the effective management of allergies is an important consideration that all services and settings are required to implement. Schools and educational settings already have legislative guidance in place to support the management of students' allergies in their settings (DfE, 2019) including practical measures and advice for dealing with severe allergic reactions. Most common allergens e.g. food, pollen, can not be entirely eradicated within any educational setting, thus the need for the above guidance and measures. Though consideration and management of animal related allergies is important; it does not have to entirely ostracise the practice of including animals/AAIs in educational settings. Additionally, there is current debate and conflicting evidence, about exposure/contact with animals in childhood, being a risk (Ahlborm et al., 1998) or a protective (Hesselmar, Berg, Berg, Eriksson & Bjorksten, 2001) factor towards the development of allergies and asthma in later life. Though this clearly needs further research and clarification, it highlights that the exposure to animals for CYP could have the potential to reduce further development of allergies/asthma in later life.

In a similar fashion to identifying and managing fear of animals/species of animals, participants identified consultation between themselves (the person initiating the interaction of animals to the setting) and key stakeholders (previously described) as helpful in the management of allergies. Some participants also identified strategies that they had incorporated in their own practice to manage animal related allergies. Good hygiene practice e.g. handwashing pre and post-interaction with the animal(s) and selection of animals/species/breeds that do not shed excessively, were identified by some participants in the current study. Other studies have suggested additional

strategies for managing animal related allergies including: bathing and grooming the animal regularly (if it sheds dander), ensure that the animals is vaccinated/treated with flea treatments as appropriate, pre-treating the animal with anti-allergen powder, utilisation of a specific pillow/blanket for the animal (which is regularly washed), interacting with the animals outdoors and/or pre-arranging that the animal and handler enter/exit through a designated entrance to decrease any potential contact with CYP/adults with animal related allergies (Frieson, 2010). There is no known national or international guidance that has been developed to support educational settings specifically with managing animal related allergies. A clear, agreed guidance around effective measures that schools should implement to manage students and staff with animal related allergies would be beneficial in providing clear solutions that school staff can feel confident about enforcing and to support their practice of including animals in their setting.

5.1.2biv) Preparing to maintain adequate care

The perceived importance of planning for the provision of adequate care for the animal(s) in the educational setting was another key finding of the current research project. There was variance in how the practicalities of the care were planned for and provided, demonstrating that there are potentially multiple methods for planning, providing and maintaining animal care within educational settings. Participants' views emphasised that the care requirements for the animals vary depending on the species being cared for, but that participants viewed that adequate animal care was able to be provided for animals residing in an educational setting. This finding is in contrast to animal welfare organisations' e.g. RSPCA (n.d) and PETA (2019) views entirely opposing the inclusion of animals in educational settings, due to them not being able to care for animals adequately. The Animal Welfare Act (2006) identified 5 aspects of adequate animal care provision: 1) a suitable environment, 2) a suitable diet, 3) to be able to exhibit normal behavioural patterns, 4) to be housed

appropriately with or apart from other animals and 5) to be protected from pain, suffering, injury and disease. There are no known specific guidelines or advice for operationalising adequate levels of care provision for animals within educational settings in the UK. A way forward would be to conduct further study of adequate animal care provision, and the development of an agreed 'level' of adequate care, which can be delivered, monitored and enforced in educational settings.

5.1.2.c) Response to animals

All participants perceived positive experiences/observations following the introduction of animals to their settings, which were identified as being important in the successful establishment and maintenance of animals in their setting. Participants having 'special' or 'positive' experiences, and seeing their hopes and intentions being met (or even surpassed) following the inclusion of animals appeared important in the continuance of the practice. Participants also reported their positive observations of others and the positive feedback received from other adults, following the introduction of animals to their settings; which were identified by participants as being core factors impacting on the successful inclusion of animals in their educational setting. These findings align with findings from Gallard (2015) around practitioners having a positive affective response to the inclusion of animals being a supportive factor in the continuance of the practice.

Participants evidenced perceived positive responses following the inclusion of animals in their educational setting: relevant to both CYP and some to adults (see Figure 13 for summary of areas of perceived responses/impact), which further supported the successful inclusion of animals in their educational settings. Perceived positive responses were reported across 3 domains: within CYP, within adults, and across relationships (which included child-child, child-adult, adult-adult and human-animal).Within the CYP domain, some participants' identified 'key' groups of CYP who responded particularly positively to the inclusion of animals (CYP with speech

and language needs, ASD, and SEMH needs). Each domain will be discussed in more detail in the next sections.

WITHIN CYP:

- Increased engagement/motivation/attention.
- Improved behaviour.
- Improved cognitive and learning knowledge and skills (including reading).
- Improved emotional wellbeing and mental health.
- Improved emotional regulation skills.

S&L needs

ASD

SEMH needs

WITHIN ADULT:

- Emotional wellbeing and mental health

RELATIONAL

Child-child

Child-adult

Adult-adult

Human-animal
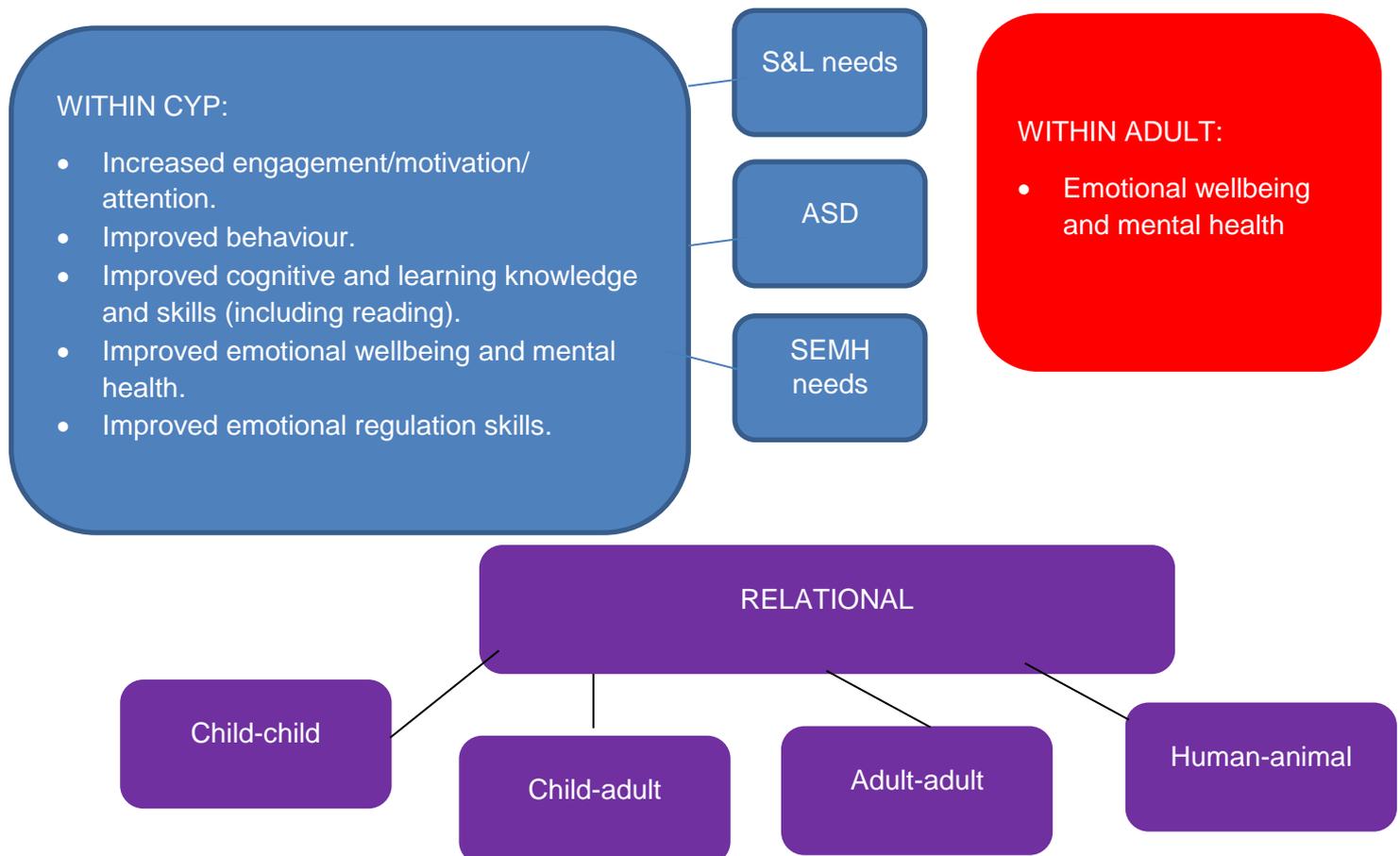
Figure 13: Overview of areas of perceived impact.

5.1.2.ci) Within-child response/impact

All participants perceived within-child responses following the inclusion of animals in their setting, though specific areas of impact varied between participants including: increased engagement/motivation, improved behaviour, improved cognitive and learning knowledge and skills (including reading skills), improved emotional wellbeing and mental health and improved emotional regulation skills. As previously discussed, current participants' perceptions are in line with the literature base, which has demonstrated perceived and measured improvements in CYPs development, skills and wellbeing following the inclusion of animals in educational settings (Nobel

& Holt, 2018; Zents et al., 2017; Bruce et al. 2015; Jenkins et al., 2014; Anderson & Olson, 2006; Daly & Suggs, 2010; Rud & Beck, 2003; Kotrschal & Ortbauer, 2003; White et al., 2018; Fujisawa et al., 2016; O'Haire et al. 2013; O'Haire et al., 2014; Wilson et al., 2011; Tissen et al., 2007; Randler & Propkop, 2012; Nicoll, 2008; Randler et al., 2005; Kotrschal et al., 2003). Uniquely to the findings from the current study, some participants identified their perceived observations of these improvements, by themselves and other adults in their educational settings, as being influential on the establishment and continued practice of including animals in their setting (see Figure 13 for participants' views of factors linked with successful introduction and inclusion of animals in educational settings).

When considering explanations for the perceived improvements in cognitive and learning skills, participants in the current study suggested that children are more likely to recall experiences associated with living things compared to inanimate objects. This finding is in line with other research studies that have shown that human cognition across the lifespan is sensitive to the distinction of living vs. non-living things; including impacting on memory processes (Nairne, Vanarsdall & Cogdill, 2017).

Reading skills were also highlighted in the current study; with perceptual data aligning with experimental study findings that have shown that the presence of animals as part of AAI/reading programmes (specifically dogs) can improve CYP's reading performance and confidence (Hall, Gee & Mills, 2016). This finding as been replicated in multiple studies including a systematic review of literature investigating children reading to dogs, which concluded that reading to a dog has a beneficial effect on several behavioural processes which contribute to reading performance (Hall, Gee & Mills, 2016).

Some of the current participants identified increased lower-level cognitive processes e.g. attention and motivation, as perceived responses in relation to the inclusion of

animals in their educational setting and a possible explanation for improvements in other areas of CYP's development. The current literature base has focussed less on these processes; however some studies have demonstrated that the presence of a dog can improve children's ability to attend to adults, learning tasks and the animal, in typically developing children and CYP with additional needs (Kotrschal & Ortbauer, 2003; Limond, Bradshaw & Cormack, 1997; Prothmann, Bienert & Ettrich, 2006). Additionally, Hediger & Turner (2014) demonstrated a significantly improved performance in a cancellation task in the presence of a real dog versus a robotic dog; and have linked these improvements with significantly higher brain activity in the frontal lobe brain areas.

Some participants also noted perceived improvements in CYPs' behaviour following the inclusion of animals in their settings. Those participants linked these perceived improvements to school based behavioural models/systems e.g. interaction with the animal as a reward for positive behaviour. These school based behavioural models are based on psychological behavioural theories e.g. 'operant conditioning'; a method of learning that occurs when an individual (a child) makes an association between a particular behaviour and a consequence (Skinner, 1938). The current study suggested that interaction with an animal can act as a reward/incentive for demonstrating desired behaviours, in line with behavioural theories of learning and behaviour modification.

5.1.2.cii) Groups of students:
Some participants in the current study perceived some specific groups of CYP being particularly impacted by the inclusion of animals in their educational settings. Students with SEND including ASD and SEMH (including difficulties with emotional regulation and behaviour; O'Haire et al., 2014; Jekins et al., 2014; Anderson & Olson, Zents et al. 2017; Bruce et al. 2015) have been specifically focussed on within the current literature base and perceived and direct improvements in

difficulties have been found within these samples. However, further research is required to more rigorously compare whether these 'groups' of children benefit significantly more than typically developing CYP, and/or more than each other.

A unique finding was identified in the current study linking the presence of animals with opportunities for older students to demonstrate skills/learning relevant to formal qualifications. Research with older students and animals is much scarcer than pre-school or primary school aged children. This could be linked with practice e.g. the inclusion of animals is more common in practice with younger children, which may be linked to attitudes/beliefs that animals are 'only' beneficial to younger children. However, in line with the current findings, other research has demonstrated improvements in learning skills and emotional wellbeing in secondary aged students, including students with emotional difficulties (Zents, 2017; Randler, 2012; Jenkins, 2014; Nicoll, 2008; Bassette, 2016). Other private organisations e.g. London Zoo, have begun to develop educational programmes including animals for older students, linked with AS/A Level Psychology qualifications (ZSL London Zoo, 2020a). This additional benefit that is specifically relevant to older students, is an applicable consideration to current practice, and could provide challenge to pre-held attitudes/beliefs around limitations of the scope of the practice.

5.1.2ciii) CYP's emotional experience:
A core finding of the current study was the impact the inclusion of animals in the educational setting on the experience, expression and regulation of emotions; including for CYP. The current data demonstrated that the presence of animals could be both stimulating e.g. excitement/ enthusiasm, and regulating e.g. soothing, to CYP; depending on the circumstances/context. The current literature base on affect has focused mostly on the soothing affect and physiological responses of the

presence of animals including a reduction in cortisol levels (Beetz et al., 2011) and an increase of serotonin and dopamine levels (Odendaal & Meintjes, 2003).

The role of excitement and enthusiasm stimulated by the presence of animals identified in the current study is a relatively novel finding; with little attention or consideration so far in the current literature base being given to the underlying motivational aspects associated of HAI. Implicit motives (networks connecting situational cues with basic affective reactions and implicit behavioural tendencies i.e. the presence of an animal is a natural incentive or fun/ enjoyable; Schultheiss et al.,2012) in particular, have been linked with the HAB and benefits observed in the presence of animals. Schultheiss, et al. (2012) separate motivations into 'implicit' and 'explicit' motives; where implicit motives are subconsciously aroused mainly responding to non-verbal stimuli and can impact on non-declarative measures such as task performance, attention orienting and physiological changes. The authors go on to suggest that goals associated with implicit motives represent a "hot" mode of goal-striving. Wohlfarth and colleagues (2013) propose 3 reasons that implicit motives may be relevant to HAI: 1. as implicit motives are processed mainly by the experiential system to experiential stimuli e.g. sensory information, which are coded by positive emotional-motivational states. 2. as implicit motives are usually unconscious and non-verbal, so the body language of animals may trigger a positive affect and impact on further "hot" goals. 3. as animals can elicit implicit motives in humans because all mammalian species share motivational systems that propel them towards the formation of attachments to ensure safety and protection.

The perceptive findings also demonstrated improved emotional regulation levels for children. This finding aligns with large volumes of research that has documented

both physiological and behavioural responses associated with calmness including reduced heart rate in children in the presence of animals (Nagensgast et al. 1997). Participants in the current study reported distraction as a possible explanation for the emotional regulatory effect they had observed. Distraction is a cognitive strategy involved in models of emotional regulation e.g. Gross (1998), and has been evidenced as an effective emotional regulation strategy in multiple studies (McRae et al. 2009; Sheppes et al. 2011). The current data linked the observed responses to the inclusion of animals noticed by participants with some psychological theories, which could potentially explain the responses.

This study also suggested some children experienced fear or nervousness of animals and a lack of knowledge regarding how to interact appropriately and safely with animals. Numerous studies have documented mild and short-lived fear patterns, included fears of animals, occurring as part of typical child development (King, Hamilton & Ollendick, 1988). However, prolonged or severe fear of animals can be problematic for both children and parents. Epidemiological studies of CYP experiencing clinical levels of animal phobia report ranges between 2.3-9.2% (King et al., 2000). Parent surveys have indicated that children are often fearful of snakes, wasps, bees and spiders, with 37% of UK parents believing that their children are fearful of dogs (The Dogs Trust, n.d). In response to these findings, The Dogs Trust has launched a project teaching children how to stay safe and calm around dogs (The Dogs Trust, n.d). Other organisations e.g. London Zoo, have also developed programmes e.g. The Friendly Spider Programme; aiming to educate and gradually expose, both adults and children, to spiders to overcome/reduce fears (London Zoo, 2020b). Staff at educational settings aiming to support children to develop coping skills to help manage fear of animals/ species of animals might want to consider including animals in their setting to facilitate this process.

5.1.2civ) Within-adult responses

Another key finding from the current study was the reported perceived benefits to adults associated with the educational setting (staff and parents/families of CYP attending the setting), specifically with participants including dogs. There are some anecdotal reports of animals being included within other types of "workplaces" such as offices, garages, cafes, animal clinics, B&Bs and book shops across the Netherlands, Japan and the USA (Boerop & Moynihan, 2018; Bender, 2017; Bard-Hall, 2015); with reported increases in inter-office communication, companionship and business, and reduced levels of stress in their human workforce and customers. However, there are no known studies within educational practice that have focussed on the impact of a residential animal(s) (of any species of animals) on the adults in the educational setting; an area which the current findings indicate could be an additional so far unexplored benefit of the practice, and consideration of species selection.

Additionally, most participants perceived emotional responses in adults following the inclusion of animals in their settings. These responses varied significantly between individuals and contexts; with adults varying from appearing excited/ calm, to neutral, to fearful following the inclusion of animals. Similar to responses noted in children, the presence of the animal was perceived as being both calming and anxiety-provoking; depending on the context and individual. Findings suggested that some adults would seek out specific animal species (dogs) for interaction, for relaxation, and for an "energy boost" during lethargic time periods e.g. nearing the end of term. Adults reporting emotional responses and experiences in the presence of animals outside of educational settings have been demonstrated, including with pets and unfamiliar adults. Archer (1997) found adults experience loving and pleasant feelings with their pets during interactions, while looking at animals, and being in the presence of animals, in clinical settings (commonly associated with anxiety e.g.

Doctor's waiting rooms). The presence of animals has been shown to reduce physiological and psychological indicators of anxiety (Freidman, 1995; Freidman et al., 1983). Several studies have reported reduction in anxiety in adults, including older adults, in a task possibly more associated with an educational context (when reading aloud) in the presence of unknown animals, for several species (dogs and fish; Wilson, 1991; Katcher et al. 1983; DeSchriver & Riddick, 1990).

The impact of the inclusion of animals in educational settings on adults, including positive affect and emotional responses, has not been considered within any other known research studies to date, or the variance in impact for adults between species. Further research investigation would help investigate the potential benefits for adults in the educational settings, and compare variance of impact between species, directly. However, these initial findings suggest that staff in educational settings hoping to improve staff wellbeing may wish to consider introducing animals, specifically dogs, to their settings.

Adults experiencing nervousness/fear of animals were raised by some participants in the current findings. The emotional experience of fear is a vast spectrum which can range from nervousness to irrational and overwhelming levels of fear also known as phobias. Animal phobias are categorised as specific or simple phobias (NHS, n.d.) and are the most common type of anxiety disorder, with an estimated 10 million people in the UK experiencing a phobia. A national survey (YouGov, 2014) of British adults indicated that 52% report ophidiophobia (fear of snakes), 18% report arachnophobia (fear of spiders) and 9% report musophobia (fear of mice and rats) and 3% report cynohobia (fear of dogs); making snakes, spiders, mice/rats and dogs the UK's third, fifth, ninth and thirteenth most common phobias in the UK.

Exposure therapy, or a gradual introduction of the trigger to the fearful individual, is the most effective and empirically based treatment for specific phobias, with *in vivo* i.e. real life exposure, being more effective than in virtual reality (Wolitzky-Taylor et al., 2008). Some private organisations e.g. London Zoo, have developed programmes to support individuals (both adults and children) in overcoming specific animal phobias through education and gradual exposure, as previously described (London Zoo, 2020b). Several current participants described their experience of case examples of school-based adults progressing through self-managed exposure processes, within the educational settings that they work, to overcome low level anxieties to phobias of some species of animals (namely birds of prey and dogs). This finding could suggest that educational settings could be well placed to support the management and possible intervention to support specific animal phobias; with an emphasis remaining on the safe containment of the animal(s) and consent of the individual with the fear.

5.1.2cv) Relational responses

Another key finding of the current study was the impact of the inclusion of animals on relationships; spanning child-child, child-adult, adult-adult and human-animal relationships. The data demonstrated perceived increase in initiating and developing communication and interaction, improved speech, language and social interaction skills, improved quality of social interactions and improved relationships across human relationships, through the inclusion of an animal in the setting. The current literature base has focussed heavily on within-child development; and the impact of relational aspects has been less focussed upon, and adult-adult relationships do not appear to have been considered within educational settings at all. The current findings highlighted how animals (specifically a dog) facilitated interactions between staff members, and between parents and school staff.

 In some circumstances, the creation of an additional relationship or bond i.e. between the animal and the human, during interactions, was also noted; particularly with children with additional needs who have otherwise struggled to develop and maintain relationships with human peers/adults. As previously discussed, the HAB between pets and their owners has been the most explored relationship within research literature and the benefits of the HAB have led to the development of AAIs and the inclusion of animals to support child development in education and beyond. Tipper (2011) argues that attending to children's views on their own relationships with animals is often overlooked in both research and practice. Through interviews with children aged 7-12 years in England, 49 children were asked "who mattered" to them, and the children spoke about their own/family member's pets, local animals and animals encountered on holiday. Tipper (2011) described the animals 'permeating' the interviews, with 90% of children speaking about their relationships with animals which were shown to be subtle, sophisticated, multi-faceted and important. Tipper (2011) goes on to suggest that there may be something distinctive about children's engagement and relationships with animals, compared to adults' relationship with animals, as they may be more able to speak "un-self-consciously' about their connection and affection towards animals.

When considering an emotional response to the presence of animals, several psychological theories align with the findings from the current study. There were indications that the inclusion of animals could help to create an atmosphere of belonging, openness and friendliness which is a foundational aspect of multiple psychological theories including attachment theory (Bowlby, 1988). Healthy and positive connections between children and animals may also be easier to develop than between children and other humans, as some argue that animals are comparatively more forgiving, expressive and non-judgemental than people (Fawcett & Gullone, 2001). The biophilia hypothesis proposes that humans have an innate

drive to attend to other animals and living things; linked with evolution and increased chances of survival; as other animal behaviour, and the animal themselves, can indicate/create environments of safety or danger (Wilson, 1984)

5.1.2d) Looping back to beliefs, attitudes, considerations and solutions

The current study highlighted that responses following the inclusion of animals in the educational setting impacted on the held beliefs and attitudes of the participants, and participants perceived an impact on the beliefs and attitudes of other school based adults. Additional, aspects of considerations that participants identified as being important around maintaining safety (for both humans and animals) and care for animals (see Table 17 for a summary of participants' considerations of practice which required for the maintenance of animals within the school setting).

Considerations identified by participants	Solutions identified by participants
Maintaining the safety of humans	• Ensure the risk assessment is reviewed regularly. • Ensure ongoing training is in place for adults and children interacting with animals (an element included in the risk assessment). • New parents/staff to inform the school of any known allergies to the specific species of animals. Children/staff who should not interact with the animal(s) should be known. • Continue to ensure child-animal interactions are ALWAYS supervised by an adult. • Continue to manage adults/children with fear of animals/specific species of animals.
Maintaining the safety of the animals	• Ensure the risk assessment is reviewed regularly. • Ensure ongoing training is in place for adults and children interacting with animals (an element included in the risk assessment). • Continue to ensure child-animal interactions are ALWAYS supervised by an adult.
Maintaining the care of the animals	• Continue to ensure the animal(s) have a species appropriate care provided by adult(s) (with the support of CYP if and when appropriate). Review care is adequate and adapt practice as required.

Table 17: Summary of considerations perceived as important for the maintenance of animals in the educational setting.

Perceived changes in practice were evidenced between settings and individuals, further supporting the flexibility within the approach and the embeddedness. An

assess-plan-do-review (APDR) model is a frequently embraced model of working in educational settings, and is recommended as a framework within the British SEND Code of Practice (2015). This APDR framework could be applied to the introduction and maintenance of animals in an educational setting in line with the findings of the current study, so that practice and impact of practice can be evidenced and reviewed over time. Additionally, the intention to continue the practice of including animals was evident, with all participants sharing their intentions to evolve the practice further through involving more/different children within animal maintenance, creating bigger animal environments, including more/different species of animal, linking more directly to formal qualifications and exploring alternative methods for funding animal visits.

Interestingly, the current participants did not report any actual experiences of accidents or harm being experienced by any CYP or animals, or any issues with the provision of care for the animals, through the inclusion of animals in the educational setting, in their views.

5.1.2e) Continued development of practice over time

Changes and developments of practice were highlighted within participants data, with participants' descriptions moving through an almost 'life cycle' of practice; with animals 'moving on' from settings with their owners, animals aging over time and younger animals 'training' with the intention of 'taking over' and continuing the practice in the future. The life cycle is a feature of life and taught as part of the National Curriculum in the UK. Though participants did not discuss the illness or death of animals within their educational settings directly, movements across the life transitions were highlighted. As other animals do not live as long as most humans, the death of an animal (usually a pet) is likely to be the first loss a child encounters (Ross, 2013).

The presence and inevitable separation from an animal in an educational setting could be another aspect that including animals in educational settings could provide. Rud & Beck (2003) reported teachers' views on their experiences of including

animals in their classrooms, and teachers shared that witnessing, discussing and managing natural life processes modelled by the animals in their classrooms e.g. excrement, reproduction, death, were valued as experiential learning experiences for the CYP in the classroom. However, there is no known literature to date that has explored the impact of illness/death of animals that have been included in educational settings. Though illness/death/separation is a painful experience for anyone, it is also an unavoidable and inevitable experience. The inclusion of animals in educational settings could provide opportunities to experience and process cycles of life and with sensitivity, support and a nurturing school environment, could be a well provisioned opportunity to tackle a difficult topic/experience.

5.2. Looping Spiral Model Animal Readiness Tool (LSMART)

From the findings of the current systematic literature review and study, and the previously described looping spiral model of participants' perceptions of perceived factors linked with the successful introduction and inclusion of animals in educational settings, the LSMART has been developed as a tool for educational professionals and settings to assess and support their readiness for introducing/including animals in their setting (see Appendix N for LSMART).

5.3. Strengths and Limitations of the Current Study

Strengths of the current study include the development and implementation of the study methodology and the aspects of support and development through the inclusion of supervision and feedback during the research study process. Aspects of validity, reliability, trustworthiness and rigour have been considered and implemented throughout the design, methodology and analyses stages of the project. The current author has acknowledged her own 'bias' and has made conscious efforts to limit the impact of this. The current study is the first piece of UK

based research to consider describing and exploring perceptions of current practice; and provides an initial starting point which can continue to be developed through further research. Some key findings are in line with other research findings and other novel findings have been identified; which can also continue to be developed through further research. The looping spiral model and LSMART tool are practical tools for supporting educational professionals considering including animals in their setting, and are based from the described findings of the current study.

Limitations of the current study include the limited size and nature of the sample; meaning caution should be taken in relation to generalising the findings. Additionally, the sample was recruited from one UK based LA, so may not be representative of other contexts or LAs. The response rate for Phase 1 was around half (51%), so there is a potential skew of those who chose to respond e.g. settings that were currently including animals may have been more likely to respond. It would be useful for further larger scale research to be conducted in order to a get a description of the broader practice in the UK. Additionally, the current sample may also be prone to being positively skewed. The data demonstrated overwhelming intentions to continue the practice of including animals within the setting, which could suggest that practitioners, who have included animals in the past and didn't find it beneficial/decided not to continue the practice, didn't participate within the current study.

5.4. Dissemination of Findings:

The findings of the current research project will be disseminated through the written thesis and VIVA process, at a local level (through a LA SENDCo Network meeting and an EP Team CPD) and with the intention of a national/international level through publication in a peer-reviewed journal.

5.5. Summary of Key Implications linked with Current Findings

The key findings of this inquiry provide a contribution to knowledge and practice, including the following:

- Animals are currently being included within some educational settings in areas of the UK.

- The presence of animals in educational settings creates responses, which appear beneficial in CYP and adults attending the setting.

- These responses can benefit child development, cognitive and learning skills, relational skills and interactions and emotional wellbeing, across CYP and adult relationships.

- Psychological theories can be applied to potentially explain some of these changes.

- Staff in educational settings aiming to improve CYP's development and wellbeing, relationships, and/or staff wellbeing, may want to consider including animals within their educational setting.

- Staff in educational settings considering including animals in their setting may want to consider applying an 'APDR' style model to their practice of including animals.

- Key aspects that staff in educational settings considering including animals in their setting may want to consider in their assessing/planning, practice and review stages are:
    - Maintaining safety (for animals and humans).
    - Managing fear (for both humans and animals).
    - Providing adequate care for animals.
    - Managing allergies.

- Solutions that staff in educational settings considering including animals in their setting may want to consider to support the previously identified considerations are:
  - Communication with key stake holders (including senior and other members of school staff and families/parents of CYP attending the setting).
  - Risk assessments.
- Staff in educational settings considering including animals in their settings may want to utilise the LSMART (see Appendix N) to assess and support their readiness for introducing animals into their setting.

5.6. Implications for EP Practice

Implications of the findings of the current study for EP practice include:

- Signposting educational professionals and settings to consider the practice of including animals, if they are aiming to improve CYP's development and wellbeing, relationships, and/or staff wellbeing in their setting.
- Maintaining and sharing a "critically aware" knowledge of the current literature base (and somewhat lack of) around the inclusion of animals in educational settings.
- Contributing to furthering the evidence base around the practice of the inclusion of animals in educational settings.
- Developing, publishing and reviewing potential tools e.g. LSMART, to support educational professionals/settings in their practice of including animals safely and effectively in their educational settings.
- Supporting wider collaborations between educational professionals/ settings and animal welfare organisations to consider re-evaluating "blanket" opposition of the inclusion of animals in school settings, and develop agreed

tools/policies/guidance/monitoring to maintain the safety and care of both humans and animals involved in the practice.

5.7. Concluding Comments

Research investigating the benefits of the HAB for both humans and animals, is expanding, and the implementation of AAIs across disciplines, including education, are growing. The research evidence for the practice of including animals in educational settings is promising; despite some methodological limitations. The current enquiry provided an opportunity to explore current practice relating to including animals in educational settings in an area of the UK, and identify key supports and challenges involved in the practice. Key findings include that animals are being included in educational settings in areas of the UK, and with perceived benefits. Implications of the current findings for professionals in educational settings who are aiming to improve CYP's development, wellbeing, relationships and/or staff wellbeing, may want to consider introducing animals into their setting. However, caution should be taken in relation to generalising the findings of the current study, due to size and nature of the samples.

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