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**Cross-sector collaboration: Enabling an integrated approach to schools'
use of outdoor environments**

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**A thesis submitted in partial fulfilment of the requirements of
Manchester Metropolitan University for the degree of Doctor of
Philosophy**

**Faculty of Science and Engineering
School of Science and the Environment**

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Abstract

Urbanisation exerts pressures on natural resources and creates barriers between people and outdoor environments. Connecting with outdoor environments is important for human development and well-being. However, many urban children do not have regular access to outdoor environments, which may lead to them missing important developmental opportunities. There are opportunities to include the use of outdoor environments throughout the primary curriculum and learning theories. Despite this, the use of outdoor environments is still lacking throughout primary education. The aim of this research is to develop a theoretical contribution addressing ways to improve opportunities for outdoor use in mainstream primary education. The objective is to undertake multiple best practice case studies incorporating a mixed-method and grounded theory approach. This will help to address a theoretical gap present in outdoor education research that identifies the barriers to facilitating schools outdoor use.

The case study research comprises a two-stage methodological process. Firstly, document analysis identifies factors effecting schools' use of outdoor environments. These findings develop the initial framework informing case study selection. Secondly, semi-structured interviews collate cross-sector perspectives of opportunities and barriers to schools' use urban green space. The sectors included comprise primary schools, local authorities, and outdoor education practitioners. The interview data is analysed using thematic classification and relationship analysis. The themes and inter-theme relationships that emerge during the analysis are synthesized to develop a theory that explains the use of outdoor environments by schools.

The theory developed by this research asserts that a cross-sector, collaborative approach determines schools' use of outdoor environments. Development of a conceptual framework illustrates the theoretical contribution. By implementing a cross-sector, collaborative approach, there is potential to overcome the barriers identified within each sector and deliver transdisciplinary objectives, e.g. improved developmental opportunities, community health and increased environmental awareness. By applying socio-ecological systems theory, addressing cross-sector issues as interrelated parts of the same system could present emergent concepts contributing to collective solutions.

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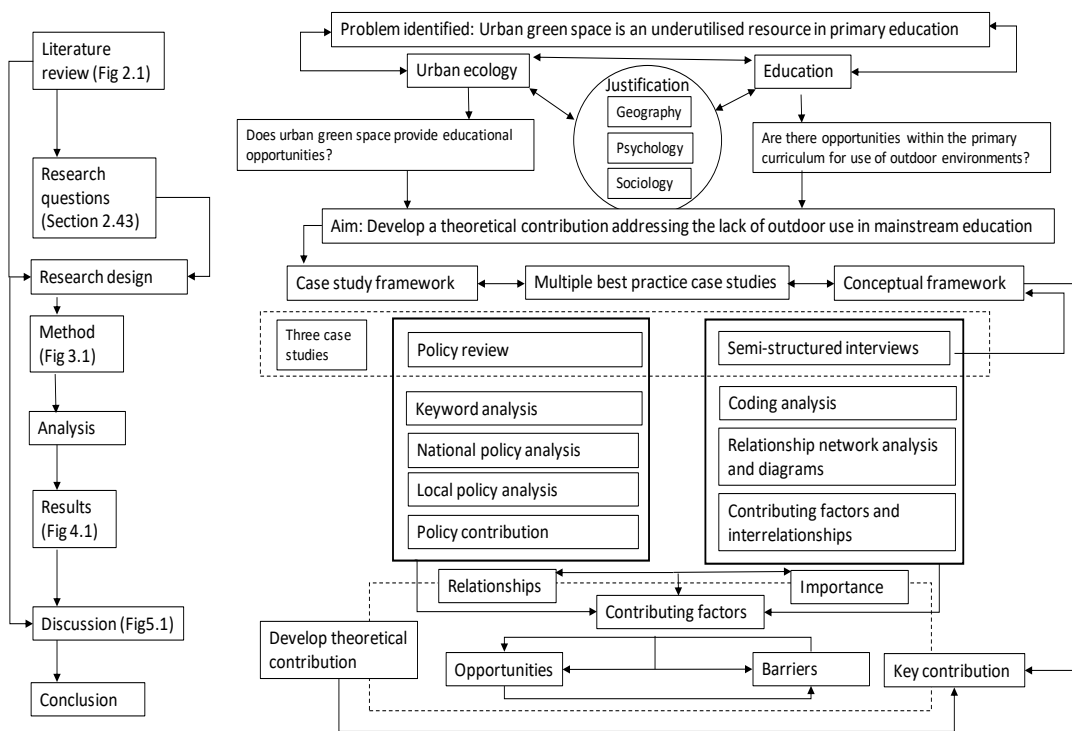
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Chapter 1: Introduction

1.1 Thesis overview

This chapter presents an overview of the thesis (Figure 1.1). This thesis reports on research that aimed to develop a grounded theory to address the lack of outdoor use in mainstream education, despite the known benefits. This research comprised six steps (Figure 1.1), comprising literature review (Figure 2.1), two-stage method (Figure 3.1, 3.4 & 3.5), two-stage analytical process (Figure 4.2 & 4.8) and finally the development of the grounded theory (Section 5.16D) and conceptual framework (Figure 5.2).

Figure 1.1 Overall thesis structure



1.2 Overview of the literature review

The first stage comprised an in-depth literature review, determining the multi-disciplinary contribution to schools' use of outdoor environments (Figure 2.1). Review of the literature revealed that urbanisation has caused human separation from nature (Sections 2.3-2.11; Capaldi et al, 2014; Mackerron & Mourato, 2013; Vining et al, 2008).

Connection with nature is fundamental to human development and well-being (Soga & Gaston, 2016; Voigt et al, 2014; Judkins et al, 2008; Kellert, 2002). In children, the need for engaging with natural environments as part of cognitive, evaluative and affective development is well researched (Wolsko & Lindberg, 2013; Bratman et al, 2012; Kellert, 2012; Cervinka et al, 2011; Hinds & Sparks, 2008). However, as urban populations continue to grow; many children do not have regular access to natural, outdoor environments (Bento & Dias, 2017; Rickinson et al, 2004; Clements, 2004). Additional barriers to accessing natural, outdoor environments have been identified for urban children from low socio-economic backgrounds (Natural England, 2016; Dorset, 1998). These additional barriers could put them at a disadvantage when it comes to improving their socio-economic prospects, e.g. health and social mobility (Gillborn & Mirza, 2000). Therefore, providing regular access to outdoor environments through schools could help to ensure all children received a standard level of engagement with natural environments (Section 2.14).

The literature review then explored opportunities for the potential use of outdoor environments within primary education in England (Sections 2.16-2.35). It was revealed that mainstream learning theories, e.g. behaviourism (Skinner, 1951), cognitivism (Bruner, 1956) and constructivism (Kolb, 1984) all provide potential for outdoor environment use (Wolsko & Lindberg, 2013; Bratman et al, 2012). Despite these opportunities and the known developmental benefits, there is a lack of outdoor environment use throughout English primary education (Sections 2.36-2.40; Bentsen et al, 2012; Waite, 2010). Therefore, this identified a need for research to address this gap between theory and practice (Section 2.41).

1.3 Proposed aim and objective

This research aimed to address this gap by developing a grounded theory addressing the lack of outdoor use in mainstream education (Section 2.42). The objective was to undertake multiple, best practice case study research incorporating a mixed-method and grounded theory approach (Section 2.44).

1.4 Overview of the method

This research used a multiple, best practice case study design (Section 3.2). Use of multiple case studies allowed for the exploration of patterns within and across different cases and enhanced the transferability of the conceptual framework (Smyth, 2004; Yin, 2013; Robson, 1993).

The case study research comprised a two-stage methodological process. The first stage comprised document analysis, including Ofsted good practice examples of schools outdoor use, and national and local policy. The Ofsted good practice review identified factors contributing to schools' use of outdoor environments, supplementing those already identified within the literature review (Section 3.4). These findings developed the initial case study framework (Figure 3.2), which was required to frame and inform the data collection (Helitzer et al, 2014; Eisenhardt, 1989). Policy analysis identified the policy contribution to schools' use of outdoor environments at national and local levels (Section 3.17). Key word analysis was used to summarise the findings of the policy analysis (Table 3.8). The policy analysis was designed to determine horizontal and vertical policy integration (Van Oosten et al, 2018; Bentsen et al, 2012; Bell et al, 2007).

The second stage of the case study research utilised semi-structured interviews to collate cross-sector perspectives of opportunities and barriers to schools implementation and facilitation of urban green space use (Section 3.8). Semi-structured interviews were appropriate for this research as they allowed for the collection of both factual and emergent data (Jensen & Laurie, 2016; Rabionet, 2011). The sectors comprised best practice schools, local authorities, and outdoor education practitioners. Best practice was defined as schools demonstrating best practice in the use of outdoor environments for curriculum delivery and overall academic achievement.

1.5 Overview of the analysis

Thematic classification of the semi-structured interviews determined the final themes contributing to schools' use of outdoor environments (Section 3.30). This grounded theory approach utilised an iterative process, uncovering patterns within the data and

leading to the development of the theoretical contribution (Charmaz & Belgrave, 2007; Saldaña, 2009). Relationship network analysis then determined inter-theme, cross sector relationships with the potential to contribute to opportunities for schools' use of outdoor environments (Section 3.1).

1.6 Overview of the results

Synthesis of the contributing factors identified within the literature and Ofsted good practice review determined the initial eight themes for the case study framework (Figure 3.2). Each theme was identified as having a dual positive, negative aspect. This meant each theme had the potential to present both opportunities and barriers to schools' use of outdoor environments. Therefore, indicating there was potential to manage contributing factors to reduce barriers to schools use of outdoor environments.

The policy analysis determined inconsistencies between policies at all levels. Inconsistency indicated a lack of vertical and horizontal policy integration (Sections 4.2-4.11). There was little direct guidance or support for schools' use of outdoor environments throughout the education policy. In spite of this lack of support, it was determined that if government were to support schools' use of outdoor environments by way of a standard minimum provision, it could help contribute to national policy objectives, e.g. educational equality (Section 5.15).

Thematic classification of the semi-structured interviews developed thirteen final themes found to contribute to schools' use of outdoor environments (Sections 4.12-4.25). The emergence of new themes, from those originally identified within the literature and Ofsted good practice review, indicated the complexity of factors contributing to schools' use of outdoor environments. Each sector identified different themes as presenting the key barriers and opportunities to facilitation of schools' use of outdoor environments. For example, school participants' identified time as the most prominent barrier, whilst practitioners' and local authority participants' identified funding. The relationship analysis identified inter-theme relationships that could affect another themes potential to present an opportunity or barrier (Section 4.26-4.29). These enabling relationships were identified as occurring within and across sectors

(Section 4.30). The synthesis of the findings developed the grounded theory that a cross-sector, collaborative approach determines schools' use of outdoor environments. The conceptual framework demonstrated the potential for cross-sector collaboration as identified within the multiple, best practice case studies (Figure 5.2).

1.7 Overview of discussion and key conclusions

This research found that there was a gap between the known benefits of engaging with outdoor environments, and the potential for schools' use of outdoor environments. There was a lack of policy support identified at both national and local levels, meaning that schools' not already engaging with outdoor environments are unlikely to do so. Providing a standard minimum provision for schools' use of outdoor environments could help ensure all children have the opportunity to connect with nature whilst contributing to national policy and local authority objectives. However, additional support would be required for teachers through initial teacher training programmes and continued professional development.

The findings of the case study research determined that even for schools identified as best practice for using outdoor environments, engagement levels were still low. This indicated the barriers to facilitation were varied and complex. The importance of contributing factors varied across sector perspectives. It was identified that the relationships between themes and across sectors could affect whether a theme presented a barrier or opportunity to schools' use of outdoor environments. Exploration of these findings developed the key contribution.

The key conclusion of this research is that a cross-sector, collaborative approach determines schools' use of outdoor environments. By implementing a cross-sector, collaborative approach, there is potential to overcome the barriers identified within each sector and deliver transdisciplinary objectives.

This research presents a unique approach to identifying opportunities to embed schools' use of outdoor environments. The conceptual framework provides a tool, which can be

used to identify opportunities for future cross-sector collaboration, facilitating schools' use of outdoor environments.

1.8 In the next chapter

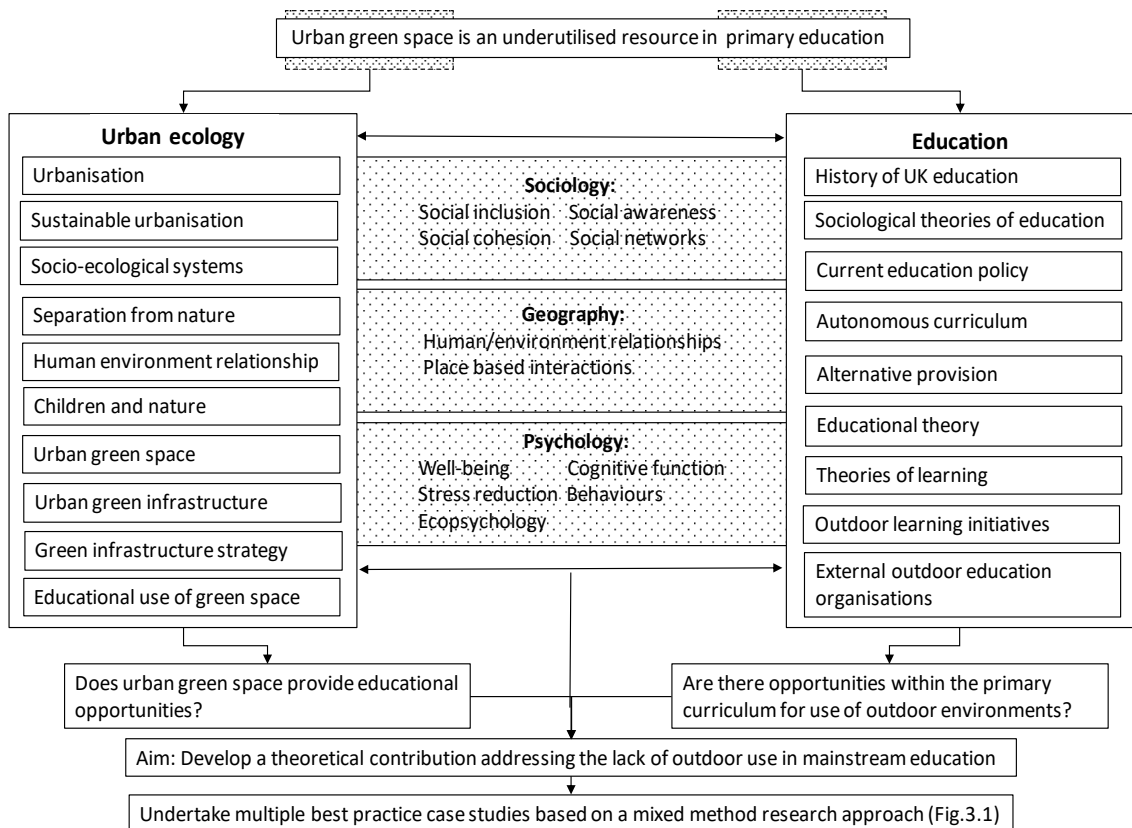
The literature review chapter justifies the need for this research based on the identified gaps between literature and practice. The literature review utilises the disciplines of urban ecology and education, whilst drawing on theories of sociology, psychology and geography.

Chapter 2. Literature review

2.1 Introduction

This chapter explores the factors that contribute to schools' use of outdoor environments, with particular focus on urban green space (Figure 2.1). Firstly, the literature review determines how urbanisation has contributed to the separation of Western culture from nature. Theories of sociology, psychology and geography are utilised to explain the detrimental effects that separation from nature is having on environmental and social health. Determining the need for engaging with the natural environment justifies the need for embedding outdoor use within primary education, upheld by the empirical evidence of the developmental benefits.

Figure 2.1 Literature review structure



Note: The purpose of the literature review was to provide justification for the research. The review comprised of literature from two main disciplines, i.e. urban ecology and education. In order to gain a deep understanding of these disciplines it was necessary to explore theories of sociology, psychology and geography. The synthesis of knowledge culminated in the development of the research aim (Section 2.42), research questions (Section 2.43) and research objective (Section 2.44).

The second part of this chapter explores the education system in England, including history, reform and underpinning theoretical frameworks. Exploration of the theories of learning identify opportunities for outdoor learning within primary education. Synthesis of the literature review chapter identified gaps between the known benefits of outdoor engagement and the limited use within mainstream teaching practice. Identification of opportunities for outdoor use throughout learning theory, suggests there are additional barriers to schools use. This justifies the aim of this research to develop a theoretical contribution addressing ways to improve opportunities for outdoor use in mainstream primary education.

2.2 The contribution of urban ecology to primary education

2.3 Urbanisation

Cities have been central to human, social and economic development for over 5000 years (Capello, 2001; Mumford, 1961). This is still the case, with cities often providing access to education, health services and employment (Tellnes, 2005). These factors attract people from rural and migrant communities looking for improved prospects (Dyson, 2011). This provides opportunity for social and cultural integration, which in turn can lead to innovation and enhanced productivity (Portney, 2013; Capello, 2001). The last 100 years has seen an unprecedented shift of global populations to urban environments (Cohen, 2006). In the UK, the industrial revolution saw a mass emigration of workers to industrial cities, e.g. Manchester, Sheffield, Glasgow (Seo, 2002). Rapid urban growth has associated social, economic and environmental impacts (Table 2.1). Environmentally, increased energy use exacerbates air pollution (Janhäll, 2015; Tallis et al, 2011). Intensive industrial action and change in land use can disrupt natural cycles, leading to water and soil degradation (Ceccarelli et al, 2014). Socially, hastily constructed housing developments can lead to loss of public space (DTLR, 2002). This can reduce social mobility and cause exclusion of vulnerable individuals within society, which can increase inequality and crime (Zhang et al, 2017; Cobbinah et al, 2014; Seo, 2002). Economically, urbanisation puts strain on resources, e.g. infrastructure and public

services (Cohen, 2006). This can lead to inflated living costs, reduced public services and degradation of local amenities (McPhearson et al., 2016). As cities grow, they become more reliant on external products and services, increasing their environmental footprint and economic instability (Portney, 2013). The cumulative effect of the risks of urbanisation can lead to severe deprivation and poor quality of life in urban areas (Cobbinah et al, 2014; Seo, 2002). Despite this, as the global population increases, living in high-density, well-planned urban conurbations will become the most sustainable way of living (McPhearson et al, 2016; Simon, 2016). Therefore, governments and urban planners need to account for environmental, social and economic issues in order to alleviate the pressures of urbanisation (Gómez-Baggethun & Barton, 2013).

Table 2.1. Selected potential pros and cons of urbanisation

Pros	Cons
Improved access to education	Increased inequality
Improved access to public services	Increased pollution (i.e. air, noise, light)
Improved access to commodities	Depletion of natural cycles
High-density living (i.e. less impact per capita)	Overcrowding
Increased productivity	Change in land use
Increased cultural integration	Water and soil degradation
Increased social integration	Fear of crime
Improved social mobility	Loss of public space
Increased innovation	Inflated living costs
Increased access to medical treatment	Separation of humans from nature
	Increased disease transmission

**(Janhäll, 2015; Cook & Swyngedouw, 2012; Lederbogen et al, 2011; Tallis et al, 2011; Tellnes, 2005)*

2.4 Sustainable urbanisation

The Brundtland report defined sustainable development as the necessity *“To make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs”* (Brundtland Commission, 1987, pg.16). This definition is now, in some ways obsolete, as some planetary boundaries have already been surpassed (Levin et al, 2012; Rockström et al, 2009). Moving forward, and in order to meet the broad United Nations (UN) sustainable development goals, the next stage must involve the mitigation of the environmental, social and economic impacts of urbanisation, (United Nations Department of Economic

and Social Affairs, 2018). The challenges faced in addressing the impacts of urbanisation can be described as wicked problems, i.e. dynamic and complex, and with continually emerging issues (Tietjen & Jørgensen, 2016). Cities have historically been places where inequality and poverty exist (Seo, 2002). To combat this within the continuing trend of global urbanisation, governments and urban planners face the challenge of innovating sustainable urban development (McPhearson et al, 2016; McLaren & Ageyman, 2015; Gómez-Baggethun & Barton, 2013). The United Nations (UN) envisage the sustainable city as one that integrates the economic, social and environmental impacts of development whilst fostering a collaborative governance system between authorities and institutions (United Nations Department of Economic and Social Affairs, 2013). Whilst the majority of predicted urbanisation will continue within developing countries, a global effort is required to meet the needs of a burgeoning urban population (Gómez-Baggethun & Barton, 2013). One aspect of this will be to develop advanced ecological engineering to create a resilient urban infrastructure (Pickett et al, 2013). Sustainable urban systems will be required to utilise, but also protect and enhance the natural environment within increasingly extreme climatic conditions (McPhearson et al, 2016). Tackling the wicked problems associated with developing sustainable urban systems spans disciplines (Tietjen & Jørgensen, 2016). Therefore, a collaborative, interdisciplinary approach is required to gain an understanding of the complex systems interacting within cities (Pandit et al, 2017).

2.5 Theories of geography

The relationship between humans and the environment is a widely researched and divergent field within geography (Judkins et al, 2008). There are three main geographical theories underpinning human-environment research comprising environmental determinism, cultural determinism and cultural ecology. In essence, these theories present opposing views of the perceived dominant element in the human-environment relationship (Judkins et al, 2008). Environmental determinism was the original attempt by researchers to explain global patterns in human population distribution (Briney, 2018). The theory retains the environment as having a fundamental and often

domineering effect on human existence, with environmental change directing the course of human development (Meyer & Guss, 2017; Peet, 1985). This is now considered a somewhat antiquated theory and has previously come under attack for associations with institutionalised racism and shirked responsibility for anthropological environmental degradation (Briney, 2018; Dalby, 2013; Sauer, 1925). The notion that the environment has ultimately shaped communities and global cultures has in some cases, been interpreted to encourage environmental apathy (Sprout & Sprout, 2015). Cultural determinism is the opposing view to environmental determinism, rejecting the idea of the environment as a controlling factor and instead attributing the entirety of cultural development to human actions (Anderson, 2015). Cultural ecology presents a more flexible theoretical approach, where the dominant influence in human-environment relationships fluctuates with both sides affecting the other in different ways and at different times (Zapf, 2016). This dynamic perspective on the complex human-environment relationship enables broad responses to modern economic, social and environmental issues (Zapf, 2016). Therefore, cultural ecology theory presents an appropriate framework for moving forward with further research on human-environment interactions.

2.6 Separation from nature

Scientific advance, industrialisation and urbanisation have been drivers in a shift away from a land-based economy, grounded in traditional ecological knowledge (Vining et al, 2008; Huntington, 2000). Sociological theories explore the concept of human-nature separation, and what causes the Western perception that humans are apart from nature (Pirages, 1996). Theories include, but are not limited to, eco-feminism, deep ecology, and social ecology (Bookchin, 1987). Eco-feminism is the belief that there is an intrinsic link between women and nature and consequentially, between patriarchal society's oppression of women and the domination of nature (Cheney, 1987). This theory is not limited to the repression of women, theorising that races and social classes perceived as close to nature also faced persecution for this reason (Warren, 1997). Use of ecofeminist theory can highlight some relationships between social inequality and environmental

degradation (Wolch et al, 2014). However, it has received criticism due to its association with biological determinism and focus on gender difference (Biehl, 1991).

Deep ecology comes from Naess' (1973) theory that all earth's organisms are of equal value. Advocates of deep ecology believe that anthropocentric values and over population have caused environmental problems (Bragg, 1996; Horwood, 1991). Deep ecologists believe that to tackle these issues, a holistic view of humans' role within nature is required (Drengson & Inoue, 1995). Whilst deep ecology recognises the intrinsic value of nature, it does not view the human benefits obtained from nature as part of this value (Duddy, 2013).

Social ecology theorises environmental degradation has arisen from the authoritarian mentality, rooted within Western social hierarchies (Bookchin, 1987). Social ecologists conceive that the relationship between ecological issues and social issues are intrinsic (Folke et al, 2002). The social-ecological approach recognises that societal change affects ecological processes and vice versa (Bookchin, 1987). Therefore, the transdisciplinary approach of social ecology is most appropriate for moving toward addressing the wicked problems of sustainable urbanisation (McPhearson et al, 2016; Pickett et al. 2004).

Paradigms arising from the theories of human-nature separation include the dominant social paradigm (DSP), human exceptionalism paradigm (HEP) and the new ecological paradigm (NEP). Dominant social paradigm only accounts for social factors in human development (Pirages, 1996). Science and technology sets humans apart from nature (Vining et al, 2008). This is the approach behind capitalist thinking and allows for unrestricted development (Sampson, 1978). Human exceptionalism paradigm suggests that nature has no intrinsic value, giving humans the right and obligation to control it (Srinivasan & Kasturirangan 2016). This is an extreme perception providing justification for environmental destruction (Arias-Maldonado, 2013). The new ecological paradigm values both social and ecological factors, consideration of which, limits human development by earth's natural boundaries (Dunlap & Van Liere, 1978). There is already evidence of the economic and social impacts that human disruption of ecological capacities is having (Everard, 2017; Rockström et al, 2009). Therefore, utilising the new ecological paradigm may help challenge the mentality of developers and planners when considering sustainable urban development (Pickett et al, 2004).

2.7 Socio-ecological systems

The concept of social-ecological systems refers to the intrinsic relationship between biophysical and social factors (Redman et al., 2004). The interactions between factors are complex, dynamic, and adaptive (Everard, 2017). A deep understanding of urban social-ecological systems is required before addressing the wicked problems associated with sustainable urbanisation (Tietjen & Jørgensen, 2016; Folke et al., 2002). To achieve this, a multi, transdisciplinary approach is required across sectors and stakeholders (Pauleit et al, 2017; Tietjen & Jørgensen, 2016). There are multi-disciplinary issues associated with education and outdoor use within education (Smyth, 1983). Therefore, using a social-ecological systems approach could help promote the benefits and justify the need for schools use of outdoor environments.

2.8 Human-environment relationship

The dynamics of the human-environment relationship has relevance across all fields, including ecology, psychology, health, education and environmental management (Steffen et al, 2015; Moran, 2010; Orr, 2004; Stern, 2000). Many researchers believe the connection between humans and nature is innate (Soga & Gaston, 2016; Judkins et al, 2008; Kellert, 2002; Wilson, 1984). From an evolutionary perspective, the human-environment connection has been integral to the survival and success of *Homo sapiens* (Capaldi et al, 2014; Kellert, 2012; Orr 2004). There may be an inherent affiliation between connectedness to nature and evolutionary advantage, where communities with deep-rooted ecological knowledge were more likely to prosper (Capaldi et al, 2014; Hernández-Morcillo et al, 2014; Schultz, 2002). Traditionally, indigenous people spent the majority of their lives in outdoor communities, where connection to nature was integral (Gray, 2009; Schultz, 2002). This is still true of a few traditional societies, but in urbanised Western culture, it has become extremely rare (Gladwell et al, 2013). The majority of human society moved away from the holistic understanding and systemic thinking of indigenous communities, instead focusing on exploiting the productivity of certain aspects (Everard, 2017). This has led to the disruption of earth's natural cycles and the ongoing damage to ecosystems, the extent of which is still unknown (Rockström

et al, 2009). Therefore, reconnecting communities with their local natural environments may help redevelop a holistic perception of nature within society.

2.9 Children and nature

The need for engaging with natural environments as part of cognitive, evaluative and affective development has been well researched (Wolsko & Lindberg, 2013; Bratman et al, 2012; Kellert, 2012; Cervinka et al, 2011; Hinds & Sparks, 2008). Cognitive development opportunities can emanate from the diverse conditions of natural environments, e.g. uneven surfaces and changing sensory elements (Bilton, 2014; Clements, 2004). These aspects can develop capacity for problem solving and risk analysis (Kellert, 2002). Children's evaluative development in natural environments comprises the development of self, i.e. awareness, confidence and regulation (Kellert, 2002; Korpela & Hartig, 1996). This is encouraged through the exploration of dynamic environments meaning children are continuously, and inadvertently assessing risk in situations and learning to trust in their decision-making processes (Waite, 2013; Mirrahimi et al, 2011). Children's (and adult's) emotional response to nature can encourage affective development with psychological benefits such as, decreased fatigue (Grahn & Stigsdotter, 2010; Kaplan, 1995), cognitive restoration (Grahn & Stigsdotter, 2010; Berman et al, 2008) and improved general well-being (Voigt et al, 2014; Fuller et al, 2007; Reser, 1995). Ulrich (1984; et al, 1991) hypothesised the Stress reduction theory, where patients with semi-natural views, experienced reduced stress and shorter recovery than those in artificial surroundings. The type, quality and experience of green space influenced the positive effects garnered (Ihlebaek et al, 2017; Reid et al, 2017). Kaplan & Kaplan's (1989) Attention restoration theory, posits that time spent in nature, or even viewing symbolic representation of the natural environment, can help restore attention. People who identified themselves as having a good level of connectedness to nature reported a higher life satisfaction (Capaldi et al, 2014). Even in individuals without a particular connection to nature, time spent in nature can have restorative benefits (Bratman et al, 2015).

These developmental benefits have implications within schools, where children are under increasing pressure to perform academically (Robinson, 2011). The Education Policy Institute (2018) reported a 26% increase in the number of referrals to Child And Mental Health Services (CAMHS) over the last five years, over a quarter of which went untreated (Crenna-Jennings & Hutchinson, 2018). With the advancement of technological gaming and social media, children are receiving incredibly high levels of mental stimulation throughout their everyday lives (Veitch et al, 2006; Burdette & Whitaker, 2005a). This can lead them to be easily distracted and unwilling to engage in classroom activities (Robinson, 2011). Psychological health problems such as Attention Deficit Hyperactive Disorder (ADHD) are commonly identified in children and evidence suggests that time spent in natural environments can reduce symptoms (Mustapa et al, 2015; Taylor & Kuo, 2009; Taylor et al, 2001). Therefore, mainstream use of outdoor environments within schools could have profound implications for children's psychological health and academic development.

There are also physical benefits associated with children's time spent in outdoor environments (Bento & Dias, 2017; Aarts et al, 2010; Burdette & Whitaker, 2005a). Prüss-Üstün & Corvalán (2007) researched the proportion of global health problems attributable to environmental factors based on data from a report by The World Health Organisation. The research proposed that 34% of the global, child population's disease burden ascribed to modifiable environmental factors, a large proportion of which could be prevented (Prüss-Üstün & Corvalán, 2007). Increased physical activities, through contact with nature, help maintain healthy bone tissue (Pretty et al, 2005), and cardiovascular (Tamosiunas et al, 2014), respiratory (Mitchell & Popham, 2006), and immunity systems (Pretty et al, 2005), and reduce the risks of some cancers (Beyer et al, 2018). Increased exercise through proximity to green space can help to improve overall levels of health and fitness and reduce obesity (Triguero-Mas et al, 2015; Wolch et al, 2014; Branas et al, 2011; Björk et al, 2008). Much of the research into children's physical health and green space revolves around the obesity epidemic (Wolch et al, 2014). In 2016, a government report found almost a third of children (2-15 years old) were overweight or obese (Department for Health and Social Care, 2016). The obesity epidemic has been attributed to a decrease in physical activity, increase in screen time

and reduced sleep duration (Wilkie et al, 2016). Child obesity can cause further health problems in adulthood and puts enormous strain on the public health service (Scarborough, 2011). Therefore, increasing access to outdoor environments in schools could help to improve children's physical and psychological health, whilst also helping to reduce the burden on health services (Wolch et al, 2014; Diez Roux et al, 2007).

Experiences within nature can range in quality depending on the characteristics of the natural habitat and the ability of individuals to interact within it (Hinds & Sparks, 2008). Facilitation of experiences in an educational setting can emulate different levels of connection with nature (Nicol, 2014). For example, free outdoor play, directed outdoor activities and use of nature in literature. Kellert (2002) suggested that there are three main levels of engaging with and experiencing nature, enabling different levels of child development. The three levels of engagement comprise direct experiences, i.e. those with unrestricted physical contact within a natural environment; indirect experiences, i.e. still incorporating actual physical contact but with restrictions of some kind, and symbolic experiences, i.e. those without actual contact, for example through media representations (Kellert, 2002). Some regard symbolic experiences of nature as inferior to direct or indirect experiences, suggesting they do not evoke the same personal emotions and recognition (Kellert, 2002). However, symbolic experiences of nature hold a profound place throughout human history, appearing across all cultures (Henderson, 1962). Thus, demonstrating the importance of all levels of human-environment connection (Kellert, 2002).

2.10 Human connection to nature theories

Theories relating to how individuals connect with nature comprise cultural, arousal and evolutionary viewpoints (Table 2.2). With increased urbanisation, obtaining direct or even indirect experiences within natural environments is becoming increasingly hard to facilitate (Soga & Gaston, 2016; Davis & Elliot, 2014). The spread of urbanisation has meant that many new and emergent communities have developed without a sense of connection to their surroundings (Forrest & Kearns, 2001; Tuan, 1974). This can lead to disconnected and isolated communities with little perception of ownership or belonging (Roe et al, 2013). Historically, the need to survive from the land would have created a

fundamental desire to understand the surroundings (Capaldi et al, 2014). Traditional ecological knowledge of environmental conditions and resources were imparted through generations (Hernández-Morcillo et al, 2014). This knowledge and understanding, which has now been recognised for its potential contribution to science, would have garnered a respect for the natural environment as provider (and depriver) of the basic resources needed to survive (Huntington, 2000). Tuan's (1974) theory of topophilia hypothesised that the connection between people and their environment even helps to develop cultural identity. The majority of society have moved away from a subsistence existence but the existential connection to the natural environment remains. Therefore, ensuring individuals can obtain some level of connection to nature is considered important for maintaining cultural identity and developing community cohesion in rapidly growing and emergent communities (Hernández-Morcillo et al, 2014; Korpela & Hartig, 1996; Tuan, 1974).

Cultural theories determine the perception of nature by an individual, with the belief positive associations are garnered through positive experience (Ulrich et al, 1991). Chawla (2002) suggested that experiences of nature, especially in early childhood, are key to developing an individual's empathy with nature. There is a strong relationship between an individual's emotional connection to natural environments and their actual pro-environmental behaviours (Hind & Sparks, 2008). Children, who miss the opportunity to experience nature in their early years, are more likely to maintain this detachment at a later age (Chawla, 2007). Therefore, ensuring children connect with nature, as part of their daily routine may help to encourage an empathetic relationship with nature, provoking the desire to conserve it (Mustapa et al, 2015).

Arousal theories suggest that the complexity of an environment effects an individual's state of arousal (Table 2.2), i.e. too complex and an individual may feel stressed, not complex enough and an individual may be bored (Ulrich et al, 1991). The Yerkes-Dodson law of optimal arousal suggests that humans are most productive when in a moderate state of arousal (Hanoch & Vitouch, 2004). As modern life becomes increasingly urbanised, it is increasingly hard for children to find solace from the continuous host of technological stimulants (Van den Berg et al, 2010; Burdette & Whitaker, 2005a). This can mean individuals are functioning day-to-day in a high state of arousal, leading to

increased stress and anxiety (Szreter & Woolcock, 2004; Ulrich, 1991). Therefore, restorative health benefits of urban green space are an important consideration within both education and urban planning (Van den Berg et al, 2010; Velarde et al, 2007).

Evolutionary theories suggest that humans have evolved to be adapted to their environment (Table 2.2). Wilson's (1984) biophilia hypothesis suggests that humans have an inherent urge to relate to nature, actively seeking out interactions. Reduced connection to nature can exacerbate potential biophobia, or fear of nature, which is theorised to have originated from early humans instinctual desire to survive (Bratman et al, 2015; Ulrich, 1993). Appleton's (1975) prospect refuge hypothesis suggests that people will actively engage with spaces perceived safe and that fulfil a desired need. The savannah hypothesis also theorises that during human evolution to bipedalism, the move from enclosed woodland habitats to open land may have instilled an instinctual predilection to natural sight lines (Bratman et al, 2015; Cerling et al, 2011). Therefore, considering Maslow's (1943) hierarchy of needs (Figure 2.4), outdoor environment use within schools requires children's basic needs to be met before learning can occur, e.g. perceived safety, warmth.

2.11 Summary of human relationship with nature

Governments and urban planners could use social-ecological systems thinking to address the wicked problems of sustainable urbanisation (Pickett et al. 2004; McPhearson et al, 2016). This approach could help develop collaborative, interdisciplinary solutions to sustainable urban development (Gómez-Baggethun & Barton, 2013; Pandit et al, 2017). Research, evidencing humans' inherent connection to nature determines the need for redefining society's perception and approach to development (Soga & Gaston, 2016; Judkins et al, 2008; Kellert, 2002). Implementation of schools' use of outdoor environments could contribute to this change (Bentsen et al, 2012). Theories exploring humans' connection to nature support the use of outdoor environments in mainstream curriculum delivery (Table 2.2). Incorporating outdoor environments into everyday teaching could help to improve children's psychological and physical health and well-being (Bento & Dias, 2017; Aarts et al, 2010; Prüss-Üstün & Corvalán, 2007). Therefore, if the government implemented the use of outdoor

environments in schools, they could help reduce the national health burden whilst helping to improve educational performance (Grahn & Stigsdotter, 2010; Ulrich et al, 1991).

Table 2.2. Theories relating to the individual connection with nature.

Group of theories	Main theories	Summary	Connection to outdoor learning	Reference
Cultural theories	Topophilia, human-affiliation to nature, Place Attachment Theory	Contemporary Western culture teaches that nature should be revered, generating a dislike of cities. Positive associations of nature can be learnt through positive experience.	Ensuring urban children obtain connection to nature is important for maintaining cultural identity and developing cohesive communities.	Schweitzer et al, 2018; Beery et al, 2015; Norton & Hannon, 1993; Tuan, 1974;
Arousal theories	Yerkes-Dodson law of optimal arousal, Attention Restoration Theory, Stress Reduction Theory.	Recuperation from stress, or arousal, occurs more quickly in low intensity environments. This implies that time spent in natural environments would have greater restorative benefits than an urban environment.	Mainstream use of outdoor environments within schools could help improve children's concentrate and reduce stress of academic pressure. This could be particularly useful for children with ADHD.	Taylor & Kuo, 2009; Ulrich et al, 1991; Kaplan & Kaplan, 1989;
Evolutionary theories	Prospect refuge hypothesis, Savannah hypothesis, biophilia, biophobia.	The majority of human evolution has occurred in the natural environment, meaning humans are adapted to these settings and have an inherent connection with nature that necessitates human well-being.	Ensuring children receive some connection with nature would improve well-being. Ensuring they are comfortable and secure in outdoor surroundings will help to maximise learning opportunities	Ulrich, 1993; Kaplan & Kaplan, 1989; Wilson, 1984; Maslow, 1943

**Summary and some references taken from Ulrich et al, 1991*

2.12 Urban green space

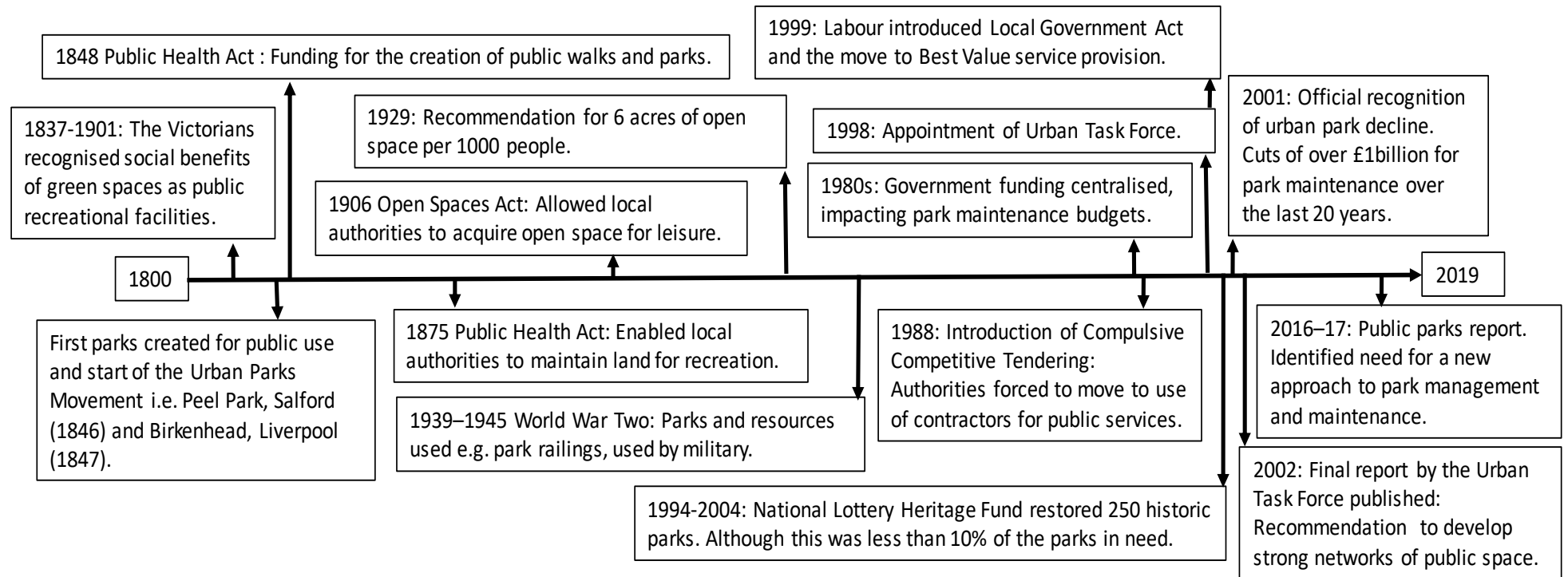
Just as urbanisation has shaped cities, societal change has shaped the green spaces and their functions within them (Burgess et al, 1988). The natural environment, referring to the naturally occurring physical world, has long held reverence in human societies, across cultures and religions (Piper, 2015; Ward Thompson, 2011). As urban systems developed, the desire to retain some of the features of the natural environment within the city prevailed (Ward Thompson, 2012). Green spaces within ancient cities were for

private use, reserved for the wealthy (Wheater et al, 2007b). Symbolised as a sanctuary, the rejuvenating qualities of the natural environment, as well as the bounties of nature are recurring themes throughout ancient texts (Ward Thompson, 2011).

The concept of public urban green space did not begin to develop until the 19th Century (Wheater et al, 2007a). The Urban Parks Movement was the result of concern over the state of public health in industrial cities and as a means to oppose outbreaks of violence caused, in part, by poor living conditions and alcohol abuse (Clark, 1973). Understanding of the benefits of accessible green space grew throughout the 1830's (Figure 2.2). The passing of the 1848 Public Health Act marked the start of a new era in public health provision, with local authorities encouraged to provide public walks and public space for exercise (Ward Thompson, 2011; Crompton, 2007; Hunt, 2004; Ward Thompson, 1998; Clark, 1973). In the 1840's, the North West of England led the way in opening the first purpose built public parks (Wheater et al. 2007a). Green spaces, such as Birkenhead Park in Liverpool, were created in an attempt to improve health in industrial cities, where overcrowding and poor sanitation were apparent (Ward Thompson, 2012; Pincetl, 2007; Jordan, 1994). The Public Health Act of 1875 gave local authorities further powers to purchase green space for recreational use, establishing the UK urban parks movement (Wheater et al, 2007a; 2007b).

The two World Wars in the 20th century changed conditions in urban societies. War concerns focused the functionality of green space on physical health to create a military ready society (Rickinson et al, 2004). In the 1930s, the former National Playing Field Association (now Fields in Trust) developed the six-acre standard, as a minimum area for sporting activity, appropriate per 1000 people (Wheater et al, 2007a). The appropriation of urban parks for military exercises and the subsequent removal of metalwork for weapons manufacture left urban parks in decline (Hebbert, 2008). The post war boom was the start of a new era in society, with the development of indoor entertainment, e.g. television and shopping centres (Srinivasan & Kasturirangan 2016). The unprecedented destruction caused by the war, had left the maintenance of public parks as low priority (Swanwick, 1978).

Figure 2.2. History of Urban Parks in the UK



A collapse in the manufacturing industries led to the deindustrialisation of many UK cities in the 1960s (Ortiz-Moya, 2015; Seo, 2002; Byrne, 1998). The subsequent population loss, left many cities dilapidated, with abandoned industrial sites and a population polarised by inequality (Reckien & Martinez-Fernandez, 2011; Byrne, 1998). A major reduction in local authority budgets during the 1980s meant that parks, as non-statutory services, lost funding and went into further decline (CABE, 2006). Urban park degradation led them to become hotspots for crime and anti-social behaviour, causing further reduction in use by urban communities (Maruthaveeran & Van den Bosch, 2014; Chiesura, 2004; Kuo & Sullivan, 2001).

During the late nineties councils across the UK implemented interventions to drive economic regeneration (Ortiz-Moya, 2015). It was not until efforts focused on encouraging businesses back to these former industrial cities that urban populations began to recover (Ortiz-Moya, 2015; MacKillop, 2012). Appointment of the Urban Task Force in 1998, aimed to assess the state of UK cities and determine potential solutions to cope with the predicted increase in urbanisation (Ward Thompson, 2012). The subsequent report officially recognised the decline of urban green space and the need to re-develop strong networks of public space as a means to enable social mobility and cohesion (DTLR, 2002). Drawing on Durkheim's social theory of solidarity (Section 2.20), the Urban Task Force utilised the concept that enabling social interaction and connection was necessary in developing cohesive urban communities (DTLR, 2002; Craib 1992; Pope & Johnson, 1983). Instead of allowing continuous urban sprawl into green belt land, the Urban Task Force recommended the use of brownfield sites to create higher density, urban communities (Curl et al, 2015; Vine et al, 2012; DTLR, 2002). In doing this, it necessitated the need for accessible, multi-faceted, shared public spaces (Belmeziti et al, 2018; Curl et al, 2015). The former Office of the Deputy Prime Minister (now Ministry of Housing, Communities and Local Government) provided funding, and 2000-2010 saw the improvement and promotion of many urban green spaces (Wheater et al, 2007a).

The economic recession during 2008-2009 and subsequent austerity measures, found local authorities again facing significant budget cuts (Communities and Local Government Committee, 2017). This resulted in the loss and reduction of many urban green space services, e.g. reduced maintenance, facilities and staff (Heritage Lottery Fund, 2016). Prior to the cuts, many councils employed outdoor education practitioners and park wardens offering outreach services. In 2015, 26% of council-run outdoor centres were facing closure, with a further 39% at risk (Goddard, 2015). Further reduction in services is inevitable, with 95% of park managers facing further budget cuts before 2020 (Communities and Local Government Committee, 2017). Therefore, a new collaborative approach to green space planning, management and maintenance is required to ensure parks remain accessible to all (Feltynowski et al, 2018).

2.13 Green space strategy

The Urban Task Force report marked the start of a new systemic approach in urban planning (Lees, 2003). The recognition of urban parks as part of a wide ecological network, e.g. rivers, street trees, provided a needed shift in policy (Pauliet et al, 2011). Traditionally, local authorities focused solely on the green spaces that provide recreation and leisure services, i.e. urban parks, neglecting the network of incidental green spaces that occur citywide (Feltynowski et al, 2018). The term green infrastructure consolidates all green space typologies, as set out by the Urban Task Force (2002) and the multifunctional, ecological systems that connect them (Belmeziti et al, 2018; McKinney, 2018; Niemelä, 2014; Pauliet et al, 2011; Tzoulas et al 2007). Green infrastructure provides an important resource for cities (Table 2.3) due to the contribution of ecosystem services, i.e. the human benefits gained from ecosystems, (Table 2.3; Tzoulas et al, 2007; Dailly, 1997). These services can provide mitigation for some of the effects of urbanisation (Anderson et al, 2014; Tzoulas et al, 2007). Following the Urban Task Force report, the multi-functionality of green infrastructure is increasingly being recognised within urban design and planning (Belmeziti et al, 2018; McKinney, 2018; Niemelä, 2014; Tzoulas et al 2007). Green infrastructure contribution is greatly dependant on planning strategies (Voigt et al, 2014). Therefore, further

implementation of green infrastructure strategy could help to maximise the multi functionality of green spaces and provide a step towards sustainable urbanisation.

2.14 Green space planning for educational use

A combination of innovative design and a change in society's perception of safety in green space is required to benefit from the contributions of green infrastructure strategy (Ritchie & Thomas, 2013; Turner et al, 2004). Rapid urbanisation and green space degradation have exacerbated parental anxieties about the safety of children playing outside (Burdette & Whitaker, 2005a; Carver et al, 2008; Clements, 2004). This is partly borne through the increased use of social media, which can quickly dissipate unverified stories and spread societal mistrust (Shin et al, 2018). For example, fears over child abduction have risen, whilst reports suggest that crime levels in this area have not (Maruthaveeran & Van den Bosch, 2014; Chiesura, 2004; Kuo & Sullivan, 2001). Ensuring urban conurbations have accessible, fit for purpose green spaces can help provide opportunities for schools use. Research has found that children who have visited a local green space during a school outing are more likely to visit with their parents (Wheater et al, 2007b). Therefore, enabling the use of urban green space within primary education could help to reconnect communities with their local area.

The Natural Economy North West Programme (2008) details eleven economic benefits of green infrastructure, including environmental mitigation processes, increased productivity and savings for health services (NENW, 2008). Whilst many of the avenues of green infrastructure research are included within the Natural Economy programme, education is absent as an objective. Education is included within three other benefits, i.e. land and biodiversity, health and well-being and recreation and leisure. Under land and biodiversity, there is one suggestion that land management projects with an educational focus can improve economic activity (NENW, 2008, pg.29). Within the annex for health and well-being benefit, there is one mention of how green infrastructure can increase productivity and attendance at work, or education (NENW, 2008, A13). Finally, within the annex for recreation and leisure benefit there is a suggestion of what good

quality green space should provide, one being educational resources (NENW, 2008, A32).

Table 2.3. Potential ecosystem services provided by green infrastructure

Ecosystem service		Example references	Green infrastructure contribution
Regulatory services	Temperature regulation	Chiabai et al, 2018; 2017 Estoque et al, 2017; Maimaitiyiming et al, 2014	Green infrastructure design can maximise regulation of temperature and air pollution, whilst acting as a natural buffer for urban noise. The porous materials of green infrastructure can also absorb urban noise and reduce surface water run-off.
	Noise reduction	Zhang et al, 2017; Wolch et al, 2014; De Ridder et al, 2004; Young, 2010	
	Air purification	Bolund & Hunhammar, 1999; Janhäll, 2015; Tallis et al, 2011; Nowak et al, 1998	
	Flood regulation	United Nations, 2012; Zhang et al, 2015; Chiesura, 2004; Bolund & Hunhammar, 1999	
Provisioning services	Food production	Barthel et al, 2015; Foley et al, 2005; Bolund & Hunhammar, 1999	Much of the food and water supply that urban populations rely on is imported, either from rural areas or abroad. Urban green infrastructure could be used to contribute to increased food and water security and reduce vulnerability of urban populations.
	Water supply	Zhang et al, 2015; Makropoulos & Butler, 2010; Gill et al, 2007; Foley et al, 2005	
Supporting services	Biodiversity	Bissonnette et al, 2018; Chenoweth et al, 2018; Garmendia et al, 2016; Benedict & McMahon, 2006	Green infrastructure can help to improve and conserve urban biodiversity, i.e. creating wildlife corridors, increasing awareness and creating structurally diverse habitats
	Pollination	Kabisch, 2015; Nabham and Buchmann, 1997	
Cultural services	Recreation	Wolch et al, 2014; Voigt et al, 2014; Wheeler et al, 2007a&b	Green infrastructure can provide respite from the stresses of urban life, i.e. improving health, improving social mobility, inclusion and cohesion, providing and important educational resource for urban populations.
	Health	Triguero-Mas et al, 2015; Tzoulas et al, 2007; Ulrich et al, 1991	
	Education	Bissonnette et al, 2018; Wolsink, 2016; Doick et al, 2009	
	Social cohesion	Wolch et al, 2014; Maas et al, 2006	

There is no mention of schools' use or potential use. Inclusion of the educational benefits and the potential implementation of increased schools use of green space could provide further evidential need for investment in green infrastructure. With appropriate green space strategy, mainstream use of outdoor curriculum delivery may be possible (Kaźmierczak, 2013). Many characteristics of urban green space design required for school's use correlate to those needed for community use, e.g. proximity, quality, safety, inclusivity, and basic facilities (McCormack et al, 2010). Therefore, including schools use in green infrastructure strategy could contribute to community objectives whilst improving educational opportunities (Feltynowski et al, 2018; Natural England, 2010).

2.15 Summary of green space contribution to schools outdoor use

Green spaces are at risk from local authority budget cuts (Communities and Local Government Committee, 2017). In order to address this, a new collaborative approach to green space planning, management and maintenance is required to ensure green space remains accessible to all (Feltynowski et al, 2018). Effective green infrastructure strategy can help to maximise the multi-functionality of green spaces and be a step towards sustainable urbanisation (Voigt et al, 2014). Some local authorities have begun implementing green space strategies, incorporating some of the transdisciplinary benefits of urban green space (e.g. Reading Borough Council, 2018; Manchester City Council, 2015). Currently, education is not specifically identified as a key benefit within the Natural Economy North West Programme (2008). The Greater Manchester Strategy has been developed on the eleven benefits set out within the Natural Economy North West Programme meaning that education is, for the most part, absent (2008; Manchester City Council, 2015, pg.14). Therefore, including education as an objective within green space strategy could help increase the multi-functional aspect of green space and improve opportunities for schools outdoor use (Feltynowski et al, 2018; Natural England, 2010).

2.16 Opportunities for outdoor use in primary education

2.17 History of primary and secondary education in England

Education, although a national issue, has a localised approach to policy making, with each country in the UK responsible for governing its own system (Wilkins, 2015). Government or state, funded education in England is relatively recent (1870) in political terms. The conception of compulsory education in England (Figure 2.3) was to meet the requirements of industrialisation by producing a skilled workforce (Lawson & Silver, 2007). Private education already existed but was only available to those who could afford it, excluding the majority of the population (Morrison, 1998). The initial design of state education was to provide the elementary basics in literacy and numeracy (Ball, 1994). As the needs of the economy progressed, so did the educational provision. However, the distinction between private and state funded education remained great (Lawson & Silver, 2007). The introduction of the National Curriculum in 1988 aimed to regulate the standard of compulsory education (Hughes, 1997). Private schools however, remained free from government control allowing freedom to elaborate on subjects of interest, using a child centred, humanistic approach (Kayler & Sullivan, 2011; Kirschenbaum & Henderson, 1989). In comparison, state funded schools were subject to a strict curriculum and generally employed a behaviourist approach of operational conditioning (Skinner, 2014). The National Curriculum has undergone four major reforms since being introduced (Quay & Seaman, 2013). Educational reform has often aimed to increase social mobility by tackling the causes of inequality (Gillborn & Mirza, 2000). However, with an educational paradigm based on the requirements of an ever-changing government (Machin & Vignoles, 2006), education policy has mostly comprised shifting control between schools, local authority and government (Sandford, 2018; Spicker, 2018). Therefore, the shifting approach to policy has meant there has been little progression in reducing educational inequality (Wilkins, 2015).

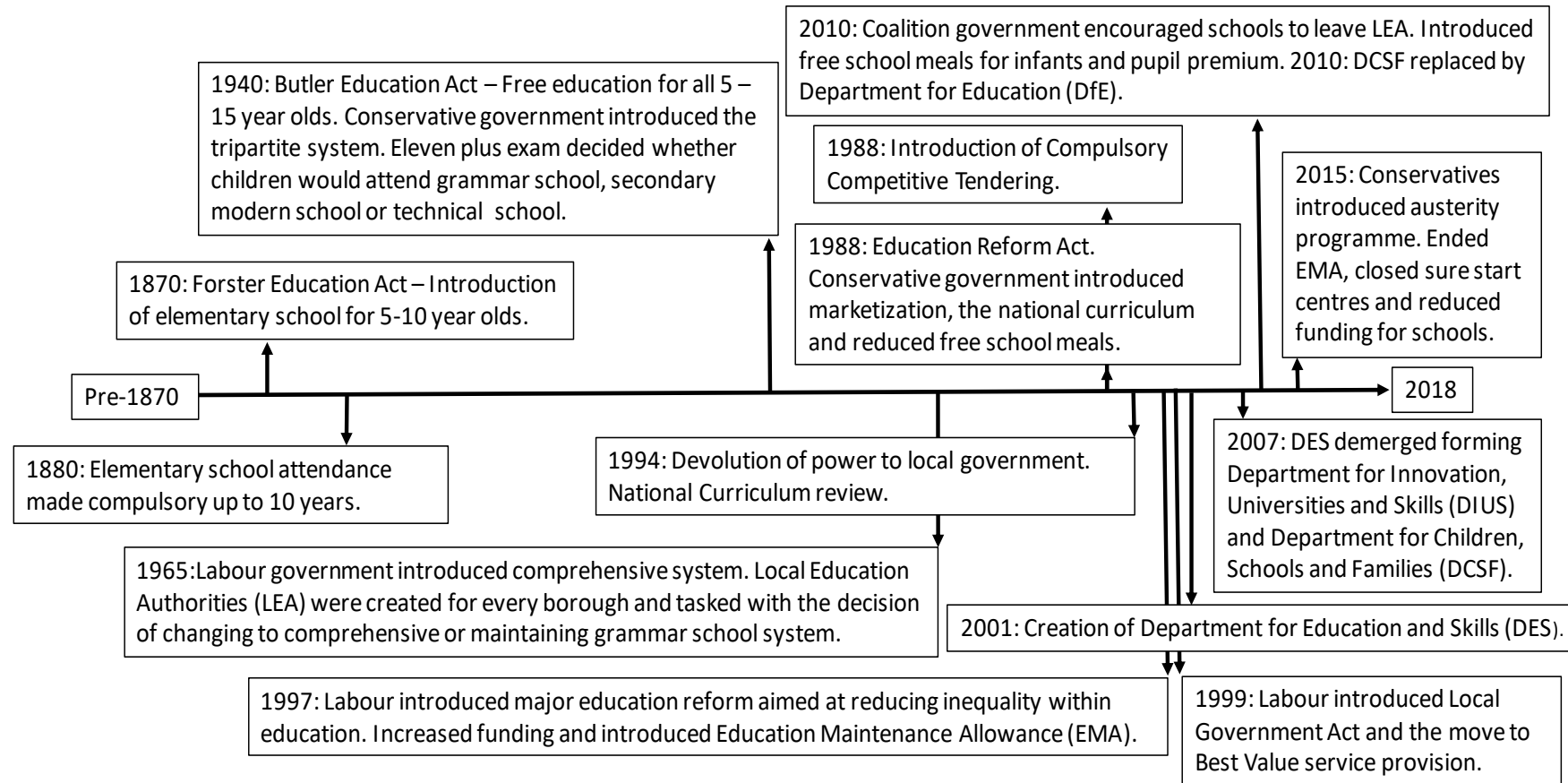
2.18 Sociological theories of education and reform

There are two major schools of thought currently used to discuss the modern day education system, Marxism and functionalism.

2.19 Marxism

The Marxist school of thought views state funded education as a tool for maintaining class inequality (Dimitriadis & Kamberelis, 2006). Althusser (1971) hypothesised that humans are in a constant struggle for power and that education, along with religion, media, and monopoly of violence from the state are used as tools within this struggle. Bowles & Gintis (1976) suggested that the design of the education system was to maintain a docile and willing workforce required for maintaining a capitalist state. This view of the education system suggested it not only reproduced inequality, but also made inequality appear acceptable (Brown, 1990). Certainly, the introduction of compulsory education in 1880 was in response to the need for a skilled workforce (Waite, 2010). The proposal of the tripartite system, introduced in 1940, aimed to reduce inequality and introduce meritocracy (Brown, 1990). Unfortunately, there was no acknowledgement given to the effect social inequality can have on educational prospects and the gap in educational attainment between social classes deepened (Ball, 1994; Kearney & Arnold, 1994). There were parallels drawn between the school and workplace structure (Deacon, 2006). Bowles & Gintis (1976) coined the phrase the hidden curriculum, referring to the introduction of concepts such as time keeping, uniformity and hierarchical structure as part of the school day. The basis of this utilitarian model, still present in the majority of modern schools, derived from Michel Foucault's theory of the relationship between power and knowledge (Deacon, 2006). An early critic of the Marxist educational view, Paul Willis (1977) identified an anti-school culture prevalent in working class boys. The longitudinal study identified a fatalistic view held by the boys that they would follow their fathers' profession and so refused to engage within the education system. This suggested that these children were realising a self-fulfilling prophecy, by ending up in low skilled employment, without the education process. Therefore, from a Marxist perspective, the education system needs to account for socioeconomic background, to address the inherent inequality in educational prospects.

Figure 2.3. Timeline of government funded education in England



2.20 Functionalism

The second school of thought on the sociology of education is functionalism. Functionalism agrees with the Marxist view on the basic concepts of the education system (Table 2.4), the difference comes with the perception of whether these concepts are right or wrong. Durkheim (1956) believed there were two functions of education, the creation of social solidarity and a workforce equipped with specialist skills. Parsons (1951) theorised that with the promotion of meritocracy in education, could bridge the gap between family and society, allowing gain in social status through achievement. Therefore, the functionalist perspective believes in education as a means to social mobility.

Table 2.4. Major educational reform throughout England’s history

Education policy	School structure	Functionalist	Marxist
Butler Education Policy: Tripartite system	Grammar schools, secondary technical schools and secondary modern schools	System promotes meritocracy and gives children an opportunity to prove ability. Inequality present but necessary to fill all professional roles.	System is biased to the middle classes, promoting inherent elitism.
Comprehensive system	Meritocracy No selection Some local authorities chose to keep the 11+ system	Mixing of children from different social classes increases social solidarity. Abolishment of the eleven plus exam used in the tripartite system further promotes meritocracy.	Does not challenge the streaming system apparent in the tripartite system as students within the same school are still separated by ostensible ability. This results in no significant mixing of social classes.
Education Reform Act: Marketisation	Transparency for parents through publication of league tables 'Parentocracy' Competition between schools	Introducing a market into the education system creates competition between schools, encouraging improvement and consumer choice.	Effectively leads to high achieving schools becoming popular and therefore selective. As social inequality has not been addressed then this results in the reproduction of class inequality in education.

Note: References: Wilkins, 2015; Morrison, 1998; Ball, 1994; Kearney & Arnold, 1994; Ball, 1990; Brown, 1990; Parsons, 1951

2.21 Neoliberal, New Right

A more recent view of the education system in England was derived from neoliberalist concepts taken from America and brought in with the Thatcher government in 1979 (Morrison, 1998). Neoliberalists argued that state control of education discouraged efficiency and that the current system was underperforming (Chubb & Moe, 1990). The period 1980s-2010s has seen the majority of educational reform (Figure 2.3). These reforms took place without any comprehensive evaluation of the impacts they were having on school management or teaching practices (Wilkins, 2015; Machin & Vignoles, 2006; Hughes, 1997).

In essence, neoliberalists promote an extreme version of functionalism (Ball, 1994). Whilst functionalists believe that marketization of schools will create competition and increase consumer choice, neoliberalists see this as a tool to see weaker schools fail (Wilkins, 2015; Morrison, 1998; Ball, 1994). Neoliberalists support austerity measures and the publishing of league tables, with the underlying policy of parentocracy, rule by parents, as key to marketization (Brown, 1990). In an almost contradictory view, to the separation of schools from state control, neoliberalists do support the use of a National Curriculum. Therefore, the neoliberal approach to the education system effectively maintains control on the proposed teaching and learning outcomes whilst absolving any responsibility for the method (Morrison, 1998).

2.22 Current education system

The opening message from the Secretary of State for Education in the 2016 White Paper, *Educational Excellence Everywhere*, is *“Education has the power to transform lives and, for me, is a matter of social justice – extending opportunity to every child, wherever they live and whatever their background”* (DfE, 2016, pg. 3). Education as a means to social mobility and justice are themes that have resounded throughout English education policy since the development of the original National Curriculum in 1988 (Hughes, 1997). Despite this, there has been little in the way of progress in addressing educational inequality for children from different socio-economic backgrounds (Gillborn & Mirza,

2000). Government changes have created a lack of consistency, making policy longevity difficult to achieve (Pollard & Triggs, 2001; Hughes, 1997). With education used as a bargaining point between political parties, constant reformation in the education policy paradigm has provided a turbulent set of guidelines for schools to follow (Sandford, 2018; Machin & Vignoles, 2006). Therefore, this instability could account for the lack of progress in addressing the inherent issue of educational inequality.

Market driven reform has been part of the educational agenda since the turn of the 21st Century (Morrison, 1998; Ball, 1994). The publication of league tables provides parents with information on progress scores in reading, writing and math, and the percentage of pupils achieving expected standard and higher. This provides transparency for parents but puts schools under the competitive pressure of parentocracy (Brown, 1990). The pressure to perform and reduced guidance on how to do so, has led some schools to focus solely on core subjects (Wilkins, 2015; Craft et al, 2014). The 2014 curriculum changes accentuated this by presenting a reduced primary syllabus focussing on the core academic subjects of reading, writing and mathematics (DfE, 2013d). The government stipulated their intention was not for this to become the only focus for schools, but rather to increase autonomy for schools to deliver both curricula and extra-curricular subjects as they see fit for their pupils (DfE, 2013d). With increased autonomy also came increased scrutiny, with the introduction of strict monitoring of school governance (Wilkins, 2015). The result of this has been many schools concentrating all of their efforts on targets and league table performance in order to attract high achieving students. This effectively means that high achieving academic schools are able to be selective when taking new students, mirroring the issues created by the tripartite system. Therefore, the modern education system, in line with Marxist theory, serves to alienate a majority of the population from a very young age (Ainley, 2016).

2.23 Alternative provision

The emphasis on attaining academic success in the core subjects throughout the school journey has received some criticism (Craft et al, 2014). There is concern that early years and primary education has become too prescriptive and formalised (Sylva et al, 1992).

In doing so, this has removed much of the opportunity for creative and play-based learning, considered fundamental for child development (Kirkham & Kidd, 2017; Gray, 2011, 2009; Goldstein, 1994; Montessori, 1912; Froebel, 1899). Alternatives to mainstream primary education have derived globally from the desire to incorporate aspects of play, creativity and inclusivity e.g. Forest Kindergartens and Montessori Schools (Hunt, 2013; O'Brien & Murray, 2007; Montessori, 1912). These alternatives are often independent to mainstream education. Therefore, opportunities for alternative provision are limited to those from lower social-economic backgrounds.

2.24 Importance of Play

When looking at social mammalian species, play is an important aspect in the development of knowledge and skills (Gray, 2011; Burghardt, 2005). Imitative play is important in developing complex skills, such as hunting (Van den Berg & Kielhofner, 1982). Primate groups use play as a means to develop cognition, practicing adult skills such as childcare, hunting and social interactions (Burghardt, 2005; Lewis, 2000; Poirier & Smith, 1974). Froebel (1885) theorised that children also use play for development, positing that children could develop perceptions of global issues through direct experience of social play. Froebel's play principle and subsequent development of the kindergarten concept became common in both the USA and UK (Kirkham & Kidd, 2017; Baader, 2014; Synodi, 2010). There are different methods of initiating play-based education, comprising child-led, i.e. no interference from teachers; teacher led, i.e. constant interference from teachers; and mutually led, i.e. some interference for directed play (Synodi, 2010). In England, early years education uses play based learning but in many cases play is directed, stipulating what skill the activity is developing and somewhat removing the playful element (Plowman & Stephen, 2005). It seems the importance of play for child development has become somewhat overtaken by the desire for academic success (Waite, 2010). Paradoxically, multiple learning theories, i.e. experiential learning, constructivism and social cognitive theory, propose that removal of the constructs of pressure and control allows for holistic skills development, beneficial to academic progress (Bratman et al, 2012; Kellert, 2002; Korpela & Hartig, 1996; Kolb, 1984). Learning in outdoor settings, without the boundaries of the classroom, can help provide a more neutral environment allowing for dynamic and creative play (Clements,

2004). Therefore, enabling outdoor play during school can encourage children's holistic development.

2.25 Steiner Schools

Steiner Schools' in England are independent and based on the educational philosophy of Rudolf Steiner (Woods et al, 2005). Steiner (1907) believed in holistic and unhurried approach to learning that focused on citizenship values (1996). A mixed method learning approach is applicable throughout the curriculum, providing a flexible and inclusive learning environment (Woods et al, 2005). Therefore, Steiner's philosophy of education is well suited to learning in outdoor environments where children are more able to follow their own interests as they see fit (Knight, 2013).

2.26 Montessori schools

Montessori Schools are the legacy of Maria Montessori, who developed a learning theory based on her observed limitations of the then education system (Valsiner, 2013). She theorised that if given the freedom to choose their own direction, children would organically choose activities that would optimise their personal development (Hunt, 2013; Montessori, 1912). Bakhtin (1981) incorporated this continually developing process of observation and action, with the development of the constructivist progression of knowledge. Montessori (1912) focused on teaching educators to enable and facilitate children's ideas and imaginative play, rather than stifling their creativity with prescribed activities. The freedom of the Montessori Method was both its innovation and its downfall (Hunt, 2013). Early years teacher-training methods respect and utilise her learning theories, with a focus on free movement between indoor and outdoor environments. However, due to the curriculum focus on reading and literacy, Montessori's theories have not infiltrated later key stages. Therefore, this could have potential to hinder developmental opportunities (Valsiner, 2013).

2.27 Educational theory

Educational theories have derived from the disciplines of sociology and psychology, and have been informed by epistemology (Egan, 2012). Educational theories explore the framework within which humans develop and acquire knowledge, as individuals and within society (Williams, 2012). Learning, as the acquisition of knowledge and emotional response, is complex and the processes by which it occurs have inspired much debate (Grahn & Stigsdotter, 2010; Kaplan, 1995). There are multiple learning theories accepted within the field of education, and teachers are encouraged to explore them all, applying the different principles as they see fit (Ertmer & Newby, 1993; Snelbecker, 1983). Therefore, the approach to learning may vary depending on the values and hierarchical structure of a specific type of school. Knowledge of the basic theories of learning is required to understand their application to learning in outdoor environments.

2.28 Theories of learning

2.29 Behaviourism

The empiricist view that humans are born with no existing knowledge is the basis for the theory of behaviourism (Watson, 2013). Children all start with the same learning capabilities and are passive in the learning process (Skinner, 1951; Pavlov, 1927). Pavlov's (1927) classical conditioning theory, exploring dogs' responses to a stimulus with and without reward, constructed the concept of behavioural learning. Skinner (1951) explored the idea of conditioned stimulus and response through reward, punishment and positive reinforcement. Behavioural learning approaches in schools are teacher led, where the teacher's role is to provide programmed instruction. Observable behaviours are assessed and reinforced using reward systems, with achievement recompensed (Skinner, 2014). Behavioural learning theory can relate to learning in outdoor environments as the exploration of structurally diverse, natural environments can help children develop concepts of risk analysis based on self-regulation and awareness (Waite, 2013; Mirrahimi et al, 2011). Therefore, the behaviourist approach

in outdoor learning could encourage children to trust their own judgement and decision-making, helping to develop their self-confidence (O'Brien & Murray, 2007).

2.30 Cognitivism

Cognitivism moved the focus away from observable behaviours, towards different levels of cognitive function (Berman et al, 2008; Ertmer & Newby, 1993). Cognitivism derived from a rationalist view that knowledge gain occurs through reasoning and processing of information (Schunk, 1991). The cognitive approach works on the assumption that each child is different and only able to learn certain functions at specific stages of cognitive development (Bruner, 1956). Piaget's (1968) theory of cognitive development suggested that the learning process was iterative and formation of new information derived from what was known. Piaget challenged the assumption that children were less competent learners than adults were. Instead, he theorised that children think in an entirely different way and require a different learning approach (Piaget, 1968). Implementing a cognitivist approach in schools can mean streaming children into competence levels (Cooper, 1993). Children are active in the learning process and the teacher helps students to develop strategies with which to process information. Assessment of students learning occurs through the testable acquirement of knowledge (Bruner, 1956). Therefore, from a cognitivist approach, learning in outdoor environments could help to break down the boundaries of the classroom, allowing children to follow their own interests at a level of cognitive function appropriate to them (Knight, 2013).

2.31 Social cognitive theory

Social cognitive theory stems from cognitivism, however it differs in that it emphasises the importance on development of learner confidence (Krasmy & Tidball, 2017). Bandura (1993) found that not only does cognitive development occur through social interactions but through the learner's self-efficacy. Learning in outdoor environments encourages children's social development and can improve their evaluative development, thus increasing their self-belief (Kellert, 2002; Korpela & Hartig, 1996).

Therefore, using social cognitive theory to outdoor learning could be an important consideration for tackling inequalities within the education system.

2.32 Constructivism

Constructivism developed from the cognitivist theories, the difference being that the acquisition of knowledge derived from associating meaning with experience (Bednar et al, 1991). Bruner (1978) theorised that children have the ability to develop cognitive function at any stage as long as there is an appropriately scaffolded learning process. Scaffolding in this context refers to the structured interaction between adult and child to facilitate the child's particular goal (Bruner, 1978). This makes the learning journey personal and unique (Ertmer & Newby, 1993). John Dewey, a constructivist and influential critic of traditional schooling methods reinforced the use of the scaffolding process, theorising that knowledge could not be gained without first instilling context and meaning (Webb, 2006). Kolb's (1984) Experiential Learning Theory proposed that knowledge creation occurs through cognitive processes developed through experience. Experiential learning is an important part of the constructivist approach, and of learning in outdoor environments (Priest, 1986). Therefore, contextualising theoretical learning in real world situations could use experience and reflection to develop cognitive function (Wolsko & Lindberg, 2013; Bratman et al, 2012).

2.33 Social constructivism

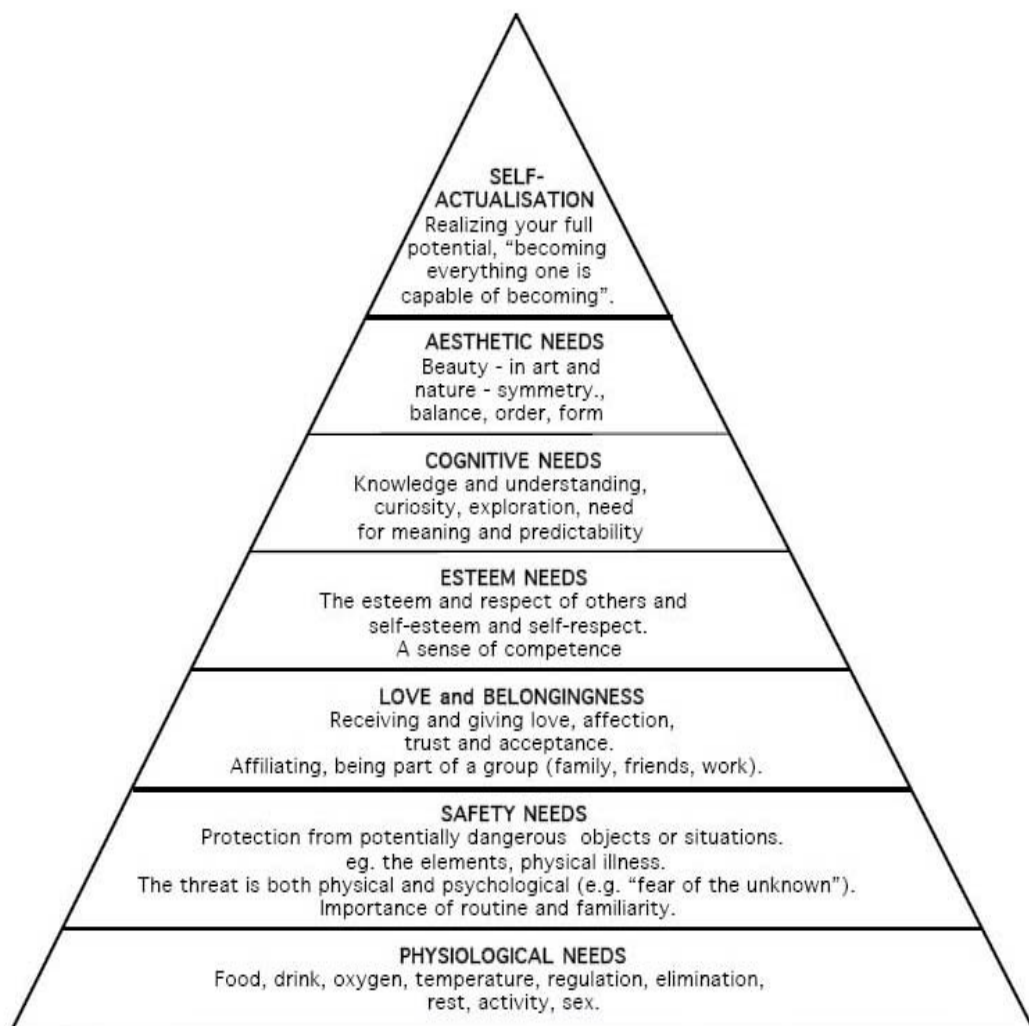
Social constructivism is a connecting branch of constructivist theory. Vygotsky (1987) theorised that knowledge was constructed through social interactions and active, self-led exploration. In this concept, educators are there as co-collaborators and facilitators of the learners experience (Vygotsky, 1987). Vygotsky suggested that there is a zone of proximal development between a learners potential to learn unaided and their expanded potential with social interaction (Krasmy & Tidball, 2017; Vygotsky, 1987). Social constructivists believe in utilising knowledge as a tool, as an interconnected part of humanity and the ecosystem (Palincsar, 1998). Social constructivism strongly relates

to many aspects of holistic learning in outdoor environments. Children are encouraged to become socially and environmentally aware through self-led exploration of the world around them (O'Brien & Murray, 2007).

2.34 Humanistic theory of learning

Humanistic theory of learning stems from the psychological theory of personality development and the philosophical ideology of humanism. The basis of the concept is that people are inherently motivated to improve themselves for the greater good, striving for self-actualisation. In order to enable this, Maslow (1943) theorised that a structural hierarchy of needs were required (Figure 2.4).

Figure 2.4. Maslow's hierarchy of needs



Source Poston (2009)

The humanistic theory proposes that if children lack nurture and their basic needs are not met then there is no potential for growth (Rogers, 1969). The humanistic style of learning is child centred and takes a holistic approach to child development (Kayler & Sullivan, 2011). The development of a quality student teacher relationship is also emphasised (Kirschenbaum & Henderson, 1989). To ensure a humanistic approach to outdoor learning, children must feel secure and comfortable in their surrounding environment (Knight, 2013). Therefore, establishing the development of group trust is necessary before psychological and self-fulfilment needs can be reached (Waite et al, 2006).

2.35 Summary of learning theories for use in outdoor environments

In summary, all of the major learning theories used within mainstream primary curriculum delivery can be utilised in outdoor environments (Table 2.5). This means that current teaching and learning practices can be adapted rather than changed to suit outdoor environments. Therefore, including use of outdoor environments within teacher training programmes would reduce the additional training required and enable teachers to utilise diverse outdoor environments maximising developmental opportunities (Cervinka et al, 2011; Hinds & Sparks, 2008).

2.36 Outdoor use in schools

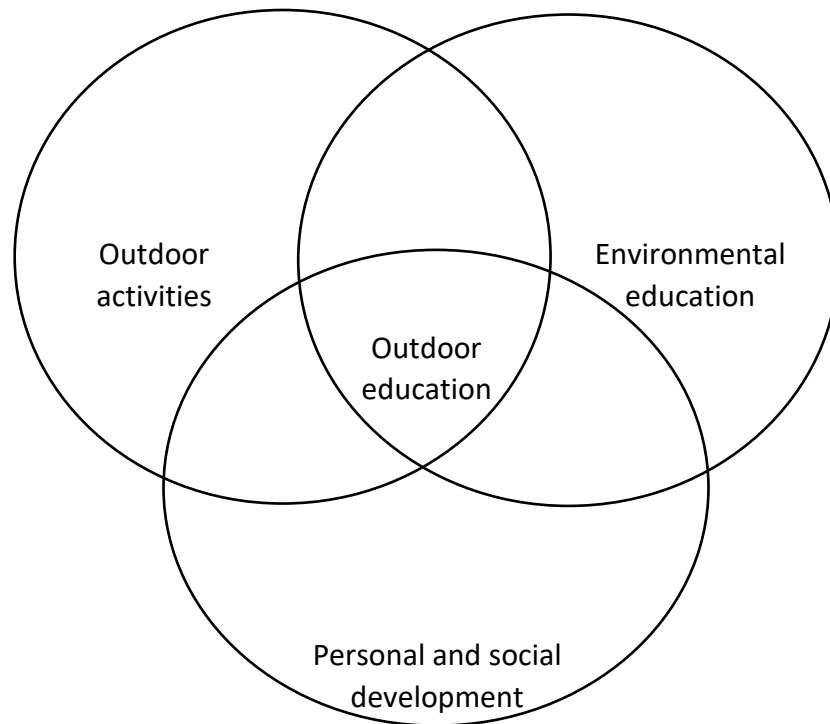
The idea of using outdoor environments within education is not a new concept (Ross et al, 2014; Scott et al, 2013; Ogilvie, 2013; Quay & Seaman, 2013; Nicol, 2002). Historically, attempts to embed outdoor use in education have been through environmental or nature based education (Quay & Seaman, 2013). The first major introduction was through the nature study movement in early 20th century, with the aim of building character and increasing environmental knowledge and awareness (Christie et al, 2016; Rickinson et al, 2004). Subsequent reforms to outdoor use in education have often aimed to tackle issues within, or relating to, the education system (Quibell et al, 2017; Quay & Seaman, 2013; Ungar et al, 2005).

Table 2.5. Learning theory in relation to educating outdoors

Group of theories	Main theories	Summary	Connection to outdoor learning	References
Reductionism	Behaviourism	Behaviourism is based on the view that humans are born with no existing knowledge and are passive within the learning process. Learning is teacher led and assessed through observable behaviours reinforced using reward systems.	Exploration of structurally diverse, natural environments can help children develop concepts of risk analysis based on self-regulation and awareness.	Waite, 2013; Mirrahimi et al, 2011; Skinner, 1951; Pavlov, 1927
	Cognitivism	Focuses on different levels of cognitive function, assuming that every child is different and only able to learn certain functions at specific stages of cognitive development. Children are active in the learning process, with teachers helping develop strategies to process information.	Learning in outdoor environments helps to break down the social constructs of the classroom. This can help to encourage children to follow and develop their own interests. This can also change and improve the teacher/pupil dynamic.	Knight, 2013; Piaget, 1968; Bruner, 1956
	Social cognitive theory	Social cognitive theory emphasises the importance on development of learner confidence. Pupil's self-efficacy is thought to affect their approach to situations.	Freedom to explore outdoor environments can help children develop socially building self-esteem, confidence and self-efficacy.	Krasmy & Tidball, 2017; Korpela & Hartig, 1996; Bandura, 1993
Holism	Constructivism	The acquisition of knowledge is derived from associating meaning with experience. The process of scaffolding is used throughout primary education to facilitate a particular goal.	Experiential learning is a key concept in learning in outdoor environments. It allows children to put theoretical learning into context in real world situations.	Wolsko & Lindberg, 2013; Webb, 2006; Priest, 1986; Kolb, 1984; Bruner, 1978
	Social constructivism	Knowledge constructed through social interactions and active, self-led exploration In this concept educators are there as co-collaborators and facilitators of the learners experience.	Learning in outdoor environments gives freedom for children to work and learn from each other in self-led exploration.	Krasmy & Tidball, 2017; Palincsar, 1998; Vygotsky, 1987
	Humanistic theory of learning	The humanistic style of learning is child centred and takes a holistic approach to child development. Emphasis is placed on the development of a quality student teacher relationship.	Learning outdoors helps to break down the barriers between student and child, helping to build trust within the relationship.	Waite et al, 2006; Kirschenbaum & Henderson, 1989; Rogers, 1969; Maslow, 1943

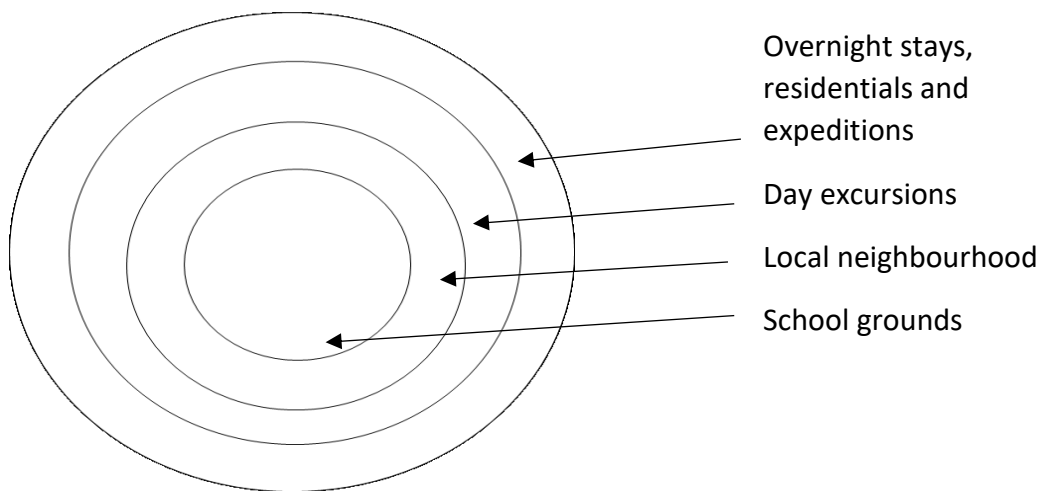
Whilst outdoor education is well established in the UK, the theory supporting the use of outdoor environments in education is lacking (Nicol, 2002). The benefits of increasing children’s outdoor engagement within schools, is an interdisciplinary subject, recognised by a wide range of professionals, including academics, healthcare professionals, social workers and teachers (Bentsen et al, 2012; McCurdy et al, 2010; Mårtensson et al, 2009; Ungar et al, 2005). However, the existing research surrounding the use of outdoor environments in schools is mostly limited to the health and social benefits (Bento & Dias, 2017; Waite et al, 2014; Ginsburg, 2007), and the contribution to environmental education (Nicol, 2014; Ross et al, 2014, Nicol, 2002). There have been a number of conceptual frameworks developed, e.g. Higgins & Loynes, 1997 (Figure 2.5) and Beames et al, 2011 (Figure 2.6); which depict the range of outdoor education and the effect the range may have on children’s social development.

Figure. 2.5. Higgins & Loynes (1997) framework depicting the range and scope of outdoor learning



Note: The Higgins & Loynes (1997) framework provides an overview of the traditional aspects of what perceived as outdoor learning, i.e. adventure activities and environmental education. However, it does not provide insight into the potential for cross-curricular teaching and learning outcomes or wider educational benefits.

Figure 2.6. Beames et al's (2011) depicting the four zones of outdoor learning. Adapted from Higgin's & Nicol's (2002) concentric circles model.

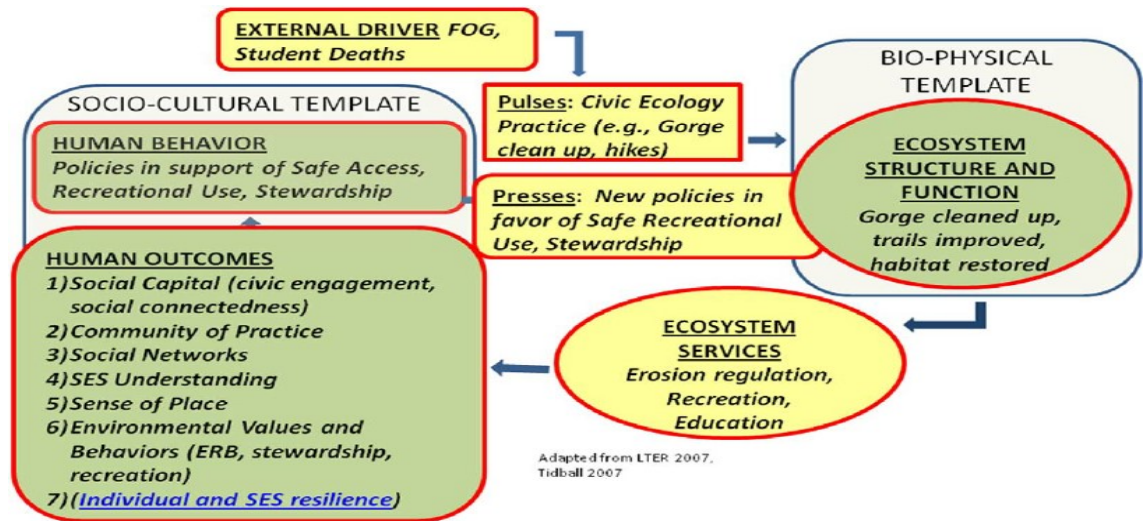


Note: The Beames et al (2011) model suggests that pupil's outdoor learning experience progresses the further the outdoor site is from the school grounds. Whereas this may have been true of a traditional, outdoor activity based outdoor learning programmes, it lacks insights into the educational potential of local outdoor environments.

Other conceptual models have been developed using urban environments to explore the educational potential of green infrastructure, e.g. Tidball & Krasny, 2011 (Figure. 2.7) and Cole et al, 2017 (Figure 2.8). Whilst these models provide further understanding of the social-ecological benefits of urban environmental education, they omit the potential for other educational and psychological benefits. Therefore, there is need for a conceptual framework that uses systems thinking to identify the potential cross-sector benefits that could improve opportunities for schools' outdoor use.

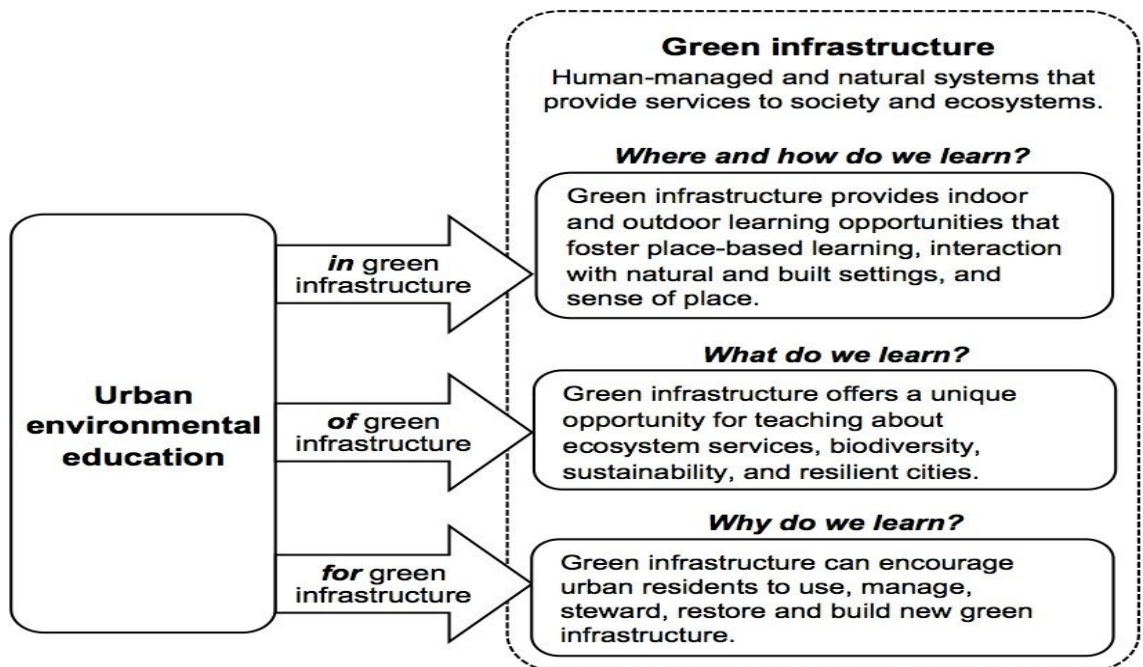
Throughout outdoor education research, there is a focus on what outdoor education should entail and the benefits gained at an individual level (Beames et al, 2012). Lacking within the research is how these benefits occur, the wider educational benefits and how mainstream use of outdoor environments in schools could be facilitated. Research is needed to determine the barriers schools have to using outdoor environments and how opportunities can be increased.

Figure 2.7. Tidball & Krasny's (2011) conceptual model for urban social-ecological systems based on Grimm et al's (2000) model of civic ecology education.



Note: The Tidball & Krasny (2011) model provides insight on how the urban environment can contribute to interactive and social learning processes. However, the educational benefits are only viewed from the perspective of environmental education and do not include cross-curricular benefits. The process of how this model could be implemented is also missing.

Figure 2.8. Cole et al's (2017) conceptual model for urban education in, of, and for green infrastructure.



Note: The Cole et al (2017) model depicts the potential educational benefits of green infrastructure and how this could increase environmental awareness. However, there is a lack of insight into the wider social and educational benefits that green infrastructure could provide.

In part, the theoretical gap in the field of outdoor education may be why research detailing the benefits of children's contact with nature is not clearly reflected within English education policy (Barrat et al, 2014; Nicol, 2002). Outdoor use remains an optional, non-integral part of the KS1+ curriculum. In 2006, the Department for Education and Skills (DfES) produced the Learning Outside The Classroom Manifesto (DfES, 2006), detailing the benefits and necessity of providing every child with the opportunity to engage in outdoor learning (Table 2.6). The intended purpose and processes portrayed in the manifesto were inspiring and promised real progress in provision of outdoor learning within the curriculum (Waite, 2011). However, apart from the portrayal of the educational benefits, there was little acknowledgement of the wider societal benefits, indicating the use of an intra-disciplinary approach. The council for Learning Outside The Classroom remains, but without their influence on subsequent education policy. This indicates that an integrated approach to embedding schools use of outdoor environments is needed to influence long-term policy change. Therefore, making explicit links between the psychological, social and physical benefits (Wolsko & Lindberg, 2013; Kellert, 2002; Bento & Dias, 2017; Aarts et al, 2010) of engaging with outdoor environments and the intended benefits for educational performance and attainment could help increase opportunities for schools outdoor use (Grahn & Stigsdotter, 2010).

2.37 Current use of outdoor learning

The current government in England has shown support and recognition of the benefits of outdoor learning within environmental policy, including specific benefits to education, e.g. the Environment White Paper supports outdoor engagement in education, i.e. *'the natural environment can do much to benefit [...] health and education'* (DEFRA, 2011l, pg. 45). However, there is little in the way of accompanying support within the education policy. The last acknowledgement of learning outside the classroom within an education White Paper occurred in a singular statement within *Your Child, Your School, Our Future*, i.e. *'We will need an increasingly professional group of staff supporting teachers to deliver high-quality personalised learning both within and*

Table 2.6. Intended goals of the Learning Outside The Classroom Manifesto (DfES, 2006)

Actions pledged	Purpose	Potential benefits	
Provide young people with a wide range of experiences outside the classroom, including extended school activities and residential visits.	Act as a statement of common intent that will make better use of our individual and collective resources.	Improve academic achievement.	Reduce behaviour problems and improve attendance.
Make a strong case for learning outside the classroom, so there is widespread appreciation of the unique contribution these experiences make to young people's lives.	Encourage widespread use of educational opportunities outside the classroom.	Provide a bridge to higher order learning.	Stimulate, inspire and improve motivation.
Offer learning experiences of agreed high quality.	Inspire schools and those organisations that support learning outside the classroom to provide high quality experiences for all young people.	Develop skills and independence in a widening range of environments.	Develop the ability to deal with uncertainty.
Improve training and professional development opportunities for schools and the wider workforce.	Set out a shared agenda for future activity, which recognises that real progress will depend on the co-operation and collaboration of all signatories.	Make learning more engaging and relevant to young people.	Provide challenge and the opportunity to take acceptable levels of risk.
Better, enable schools, local authorities and other key organisations to manage visits safely and efficiently.	Make it easier for more organisation and individuals to see how they can best contribute.	Develop active citizens and environmental stewards.	Improve young people's attitudes to learning.
Provide easy access to information, knowledge, expertise, guidance and resources.	Inform the development of government policy.	Nurture creativity.	Giving young people responsibility for outcomes helps them learn from their successes and failures. LOTC provides support for many curriculum areas.
Identify ways of engaging parents, carers and the wider community in learning outside the classroom.	Call on others in the public, private, voluntary and community sectors to work in partnership with us to deliver our aims.	Provide opportunities for informal learning through play.	

outside the classroom' (DCSF, 2009, pg.91). The omission from education policy has meant that initiatives to increase outdoor environment have remained external to mainstream educational policy. Many of these initiatives are commissioned by, or obtain support from government, but the constantly changing political paradigm has meant support is inconsistent and short-lived (Carleton-Hug & Hug, 2010). This provides an inconsistent message to schools looking for support in implementing outdoor use. Therefore, an in depth review of national and local policy frameworks is required to determine a complete picture of policy guidance for schools use of outdoor environments (Bentsen et al, 2012; Bell et al, 2007).

Introduction of numerous initiatives over a relatively short period can cause initiative fatigue (Kuh & Hutchings, 2015; McDougall, 2005; Freedman, 1992). As soon as one initiative becomes the mainstay of good practice, educational reform or policy change means schools are encouraged to replace it with another (McDougall, 2005). This can force schools into ticking boxes rather than striving for real change (Kruse & Louis, 2008). This has happened in schools, with initiatives aimed at enhancing pupil development, or establishing extra-curricular subjects introduced in rapid succession (Kuh & Hutchings, 2015). Popular initiatives include the Eco-schools (1994), Forest Schools (1994), Healthy Schools (NHSP, 1998), Sustainable Schools (2004), Green Tree Schools Award (2008), and School Games Mark (2012). These initiatives (Table 2.7) aimed to introduce positive change within schools, but have lacked a consistent evaluation process assessing actual outcomes (Rickinson et al, 2004). Facilitation of each initiative can drain teacher enthusiasm and school resources, eventually reaching a saturation point (Kuh & Hutchings, 2015; McDougall, 2005). Therefore, embedding outdoor use as part of everyday curriculum delivery is necessary to reduce strain on teachers and ensure children are not missing fundamental developmental opportunities.

2.38 External organisations promoting outdoor education in schools

Many external organisations, e.g. charities, aim to encourage schools outdoor engagement and children’s connection with nature (Table 2.8). External organisations do significant work in engaging schools with the environment and nature (Knight, 2013; Lacking, 2006). Research has shown that educational visits to natural environments can have a positive impact on school groups and individual pupils. Educational visits are often one-off or annual events, limiting the scope of the positive impact they can have (Bogner, 1998).

Table 2.7. Examples of schools’ initiatives that include use of outdoor environments

School initiative	Background and aim	References
Eco-schools (1994)	Developed in direct response to needs identified in the UN Conference on Environment and Development, Eco-schools encouraged a shift in curriculum focus from just the core subjects towards environmental sustainability, i.e. energy use, waste reduction. Eco-schools received nationwide interest, with success in terms of school recruitment, helped by Ofsted approval.	Cincera and Krajhanzl, 2013; Huckle, 2013; Goldup, 2011; Chapman & Sharma, 2001
Forest Schools (1994)	Originating from the Danish model, the UK Forest School movement is based on a strong belief that free play, open-air and physical movement are what stimulate creative, independent and successful learners whilst promoting health and well-being.	Knight, 2013; Ridgers et al, 2012; O’Brien & Murray, 2007
Healthy Schools (1998)	The National Healthy Schools Programme (NHSP) was a collaborative approach aimed to increase academic achievement, and improve social inclusion and health.	Keyte et al, 2012; Warwick et al, 2009
Sustainable Schools (2006)	The Sustainable schools strategy aimed to deliver an integrated approach to teaching, learning, values and community engagement. The strategy ended in 2010 with the appointment of the new coalition government.	Kadji-Beltran et al, 2013; Gough, 2006

Some organisations, such as The Wildlife Trusts, offer a range of bespoke services for schools. With the loss of funding from local authorities, schools must source external funding or self-fund, which is reducing their access to these services (Palmer & Birch, 2010). Therefore, a collaborative approach to enabling schools use of outdoor environments is required to ensure children receive equal opportunities to gain the associated developmental and educational opportunities (Cervinka et al, 2011; Hinds & Sparks, 2008).

Table 2.8. Example of organisations that work with schools to provide opportunities for connecting with nature

External organisations	Work with schools	References
Field Studies Council (FSC)	A charity dedicated to promoting and enabling the use of urban and natural outdoor environments within education. One key focus of their strategy is providing support and professional development for teachers, in order to increase knowledge and confidence.	Glackin, 2016; Glackin, 2007; Barrett, 1987
Royal Society for Protection of Birds (RSPB)	The RSPB run outreach programmes with schools to connect children with nature in their school grounds. They also run annual engagement events, that schools are encouraged to engage with, e.g. the Big Garden Birdwatch.	Richardson et al, 2016
Wildlife Trusts	The Wildlife Trusts are committed to connecting people and nature. Their work with schools includes teacher training, engagement events at nature reserves, conservation work, Forest Schools, tailored school visits and school grounds greening. Each Trust is an independent charity, raising money through members and sponsors. Provision of their engagement events are funded via grants and some work is charged for, although schools are helped to apply for funding if appropriate.	Wildlife Trust, 2017; Palmer & Birch, 2010
Woodland Trust	The Woodland Trust aims to connect children with nature by providing free, self-led activities. They also implemented the Green Tree Schools Award programme. This self-assessed programme encourages schools to complete environmental projects.	Knight, 2013; Lackin, 2006
Forestry Commission	The Forestry Commission are a non-ministerial government department that provide free, curriculum linked lesson plans for schools to use in woodland settings. School groups are permitted to visit Forestry Commission sites free of charge	Knight, 2011
Groundwork	Groundwork aim to raise environmental awareness and educational prospects of young people. They combine environmental and youth work, often working with children and teaching staff from disadvantaged communities.	Grossman et al, 2009; Bronstein et al, 2003

2.39 Natural connections project

The Natural Connections Demonstration Project (2012-2016) was set up in partnership with Natural England, Department for Environment, Food and Rural Affairs, Historic England and Plymouth University. The aim of the project was to pilot a strategy for enabling widespread, learning in natural environments in schools, using a distributed delivery support model (Waite et al, 2016). This project provided valuable evidence of the benefits gained from schools' transition to embedding outdoor use within the curriculum. The overall evaluation of the project established that there had been many successes, with positive impacts for teachers, students and pupil attainment (Waite et al, 2016). There were many barriers to outdoor learning identified during the project (Table 2.9). Whilst the majority of barriers reduced within the duration, time persisted as a barrier due to the need for teacher training. The project evaluation posited that a lack of teacher confidence and knowledge were the main barriers to mainstream facilitation of outdoor engagement, rather than a change in government legislation (Waite et al, 2016). However, if outdoor use in education was included within initial teacher training, this would negate the need for professional development at a later stage, saving money and time resource.

2.40 Summary of opportunities and barriers to schools outdoor use

The literature review identified seven factors contributing opportunities or barriers to schools use of outdoor use, with some factors identified as contributing both (Table, 2.9). Opportunities for schools use of outdoor environments is varied and intermittent (Rickinson et al, 2004). Factors contributing opportunities to schools use of outdoor environments comprised recognition of benefits within national policy, pupil development, teacher enthusiasm and autonomy within the curriculum (Table 2.9). Factors contributing barriers to schools use of outdoor environments comprised inconsistent and changing policy, teachers' lack of confidence, focus on core curriculum subjects, health and safety issues, time taken to train teachers and reduced funding for external outdoor education organisations (Table 2.9). The national policy guidance for schools use of outdoor environments appeared inconsistent and inaccessible, with support appearing within the environment White Paper (DEFRA, 2011) and not the

Table 2.9. Factors identified within the literature review as contributing opportunities and barriers to schools outdoor use

Identified factor	Opportunities	References	Barriers	References
National policy	Recognition of the educational benefits of schools use of outdoor environments, Outdoor initiatives.	Cincera & Krajhanzl, 2013; Huckle, 2013; DEFRA, 2011l; Goldup, 2011; Chapman & Sharma, 2001	Shifting requirements of government policy, inconsistent guidelines, lack of support in education policy, lack of evaluation of educational reform.	Sandford, 2018; Spicker, 2018; Barrat et al, 2014; DfE, 2010; Machin & Vignoles, 2006; Pollard & Triggs, 2001
Teachers	Enthusiastic teachers, increasing teacher confidence, development of pupil/teacher relationship.	Glackin, 2016; Waite et al, 2016; Hunt, 2013; Knight, 2013; Montessori, 1912	Lack of confidence, lack of knowledge, lack of enthusiasm, initiative fatigue.	Waite et al, 2016; Kuh & Hutching, 2015; McDougall, 2005
Pupil development	Educational benefits, cognitive development, Attention restoration, stress reduction.	Bilton, 2014; Clements, 2004; Ulrich et al, 1991; Kaplan & Kaplan, 1989	No barriers identified.	NA
Curriculum	Autonomy gives teachers freedom to deliver curriculum as they see fit, potential for use of outdoor environments.	DEFRA, 2011l	Focus on core subjects, increased scrutiny of progress.	Wilkins, 2015
Safety	No opportunities identified.	NA	Health and safety fears of using outdoor environments, parent anxiety.	Carver, et al 2008; Clements, 2004
Time	No opportunities identified.	NA	Time taken training teachers, time taken away from curriculum.	Waite et al, 2016; Dymont, 2005
Funding	No opportunities identified.	NA	Loss of funding for external outdoor education organisations.	Palmer & Birch, 2010

Note: NA = Not applicable **Additional references highlighting literature that identify the same barriers have been added since the original literature review that informed the case study framework.

education White Paper (DfE, 2010). There is need for further work to identify any additional support within national and local policy frameworks (Bentsen et al, 2012; Bell et al, 2007). Outdoor use through use of initiatives and external organisations can be an inefficient use of schools resources and does not provide consistent opportunities across schools (Kuh & Hutchings, 2015; McDougall, 2005; Freedman, 1992). Embedding outdoor use as part of everyday curriculum delivery would help to ensure every child has opportunity to connect with nature and benefit from the associated developmental and educational opportunities (Cervinka et al, 2011; Hinds & Sparks, 2008). There is need for further research to determine how the identified factors contribute actual opportunities and barriers in real life examples. As many schools have limited access to outdoor space, enabling schools' use of green space would help to ensure equal opportunities for access (Dyment, 2005). The barriers identified through the natural connections project, and much of the literature, related to use of school grounds and not external green spaces (Waite et al, 2016). Therefore, additional research would be required to determine additional factors contributing to schools use of external green space.

2.41 Research needs

There are gaps between the recognised benefits of outdoor use in schools and its implementation (Beyer et al, 2015; Nicol, 2002). This could be due to the gaps in theory relating to the educational benefits of outdoor use and the potential for its implementation (Beames et al, 2012). There is a need for further research to explore the opportunities and barriers to schools outdoor use. To do this, a complete review of national and local policy frameworks is required to determine where relevant policies compliment or contradict one another (Bentsen et al, 2012; Bell et al, 2007). The literature review identified opportunities for outdoor curriculum delivery across primary curricula. As provision of school grounds varies greatly, further evaluation of current opportunities and barriers for schools use of urban green space is necessary (Jabareen, 2012; Dawe et al, 2005). This could provide potential support for evidence-based policymaking.

2.42 Aim

The aim of this research is to develop a theoretical contribution addressing ways to improve opportunities for outdoor use in mainstream primary education.

2.43 Research questions

- What is the national and local policy contribution to schools' use of outdoor environments?
- What are the opportunities and barriers to schools' use of outdoor environments, including urban green space?
- How can opportunities for schools' use of outdoor environments be improved?

2.44 Objective

The objective is to undertake multiple best practice case studies incorporating a mixed method research approach. Each case study incorporates national and local policy reviews and semi-structured interviews. The development of a conceptual framework will help visualise a collaborative, systems-based approach to implementing outdoor curriculum delivery. This will help to address a theoretical gap present in outdoor education research that identifies the barriers to facilitating schools outdoor use.

2.45 In the next chapter

Chapter three explains the ontological and epistemological context of this research and the proposed method. This chapter explains the scientific paradigms used to develop the research design and develop a grounded theory approach. The chapter sets out the justification for use of a multiple best practice case study design, using a mixed method research and each component part, i.e. academic literature review, document analysis, semi-structured interviews, thematic classification and relationship analysis.

Chapter 3. Method

3.1 Ontological and epistemological context

This research incorporated aspects of social sciences to explore how schools use outdoor environments. For this reason, it was appropriate to follow a combination of post-positivist and interpretivist paradigms (Lin, 1998).

There are three paradigms in scientific enquiry, comprising reductionism, holism and systems thinking (Everard, 2017). Reductionism, places focus on the component parts of a system. The reductionist approach explains higher-level functions, by breaking it down to the fundamental parts (Byrne, 1998). The reductionist approach has been fundamental in the advance of scientific knowledge across all disciplines (Kline, 1996). This research, applied reductionist principles of inquiry to break down and analyse component parts of the factors that affect how schools use outdoor environments (Byrne, 1998). However, in order to focus on the synthesis of these parts rather than the break down, the research design also utilised holism and systems thinking (Mulej, 2007).

Holism focuses on whole systems and the complex dynamics that contribute to their function (Mulej, 2007). Holism is characterised by the application of systems theory (Everard, 2017). The application of systems theory involves interdisciplinary approaches for gathering multiple perspectives, which are then synthesised to gain understanding of how a system works (Everard, 2017). Systems theory emphasizes consideration of interrelated aspects in conjunction with and adapting to one another (Pandit et al, 2017; Byrne, 1998). No one aspect is considered more than another, allowing for an integrated approach to holistic understanding (Alshuwaikhat & Adubakar, 2008). Holism principles of inquiry were used to synthesize the component parts of the factors affecting schools use of outdoors; this formed the core of this research.

The systems thinking paradigm is grounded in the concept of emergence, distinguishing it from systems theory (Richmond, 1993). The systems thinking paradigm combines understanding of dynamic, complex and interdependent factors to explain emergent phenomena (Everard, 2017). This paradigm can inform amendable management plans,

allowing for adaptive, strategic planning (Davis & Stroink, 2016). Applied systems thinking principles of inquiry were used to develop a grounded theory approach identifying emergent patterns within the data, e.g. relationships between factors (Davis & Stroink, 2016). It was necessary to combine the different research paradigms to strengthen the transdisciplinary aspect of the research (Bodin, 2017).

Grounded theory is a methodological process that involves cycles of thorough and repetitive coding that gradually uncover patterns within the data (Charmaz & Belgrave, 2007). This iterative process can lead to development of new theory (Charmaz, 2014; Saldaña, 2009). The literature review and policy analysis highlighted a theoretical gap in understanding how schools use outdoor environments. Employing a grounded theory approach synthesised and interpreted patterns addressing this theoretical gap. Thus, drawing more heavily from post-positivist and interpretivist paradigms than from positivism (Lin, 1998).

3.2 Research design

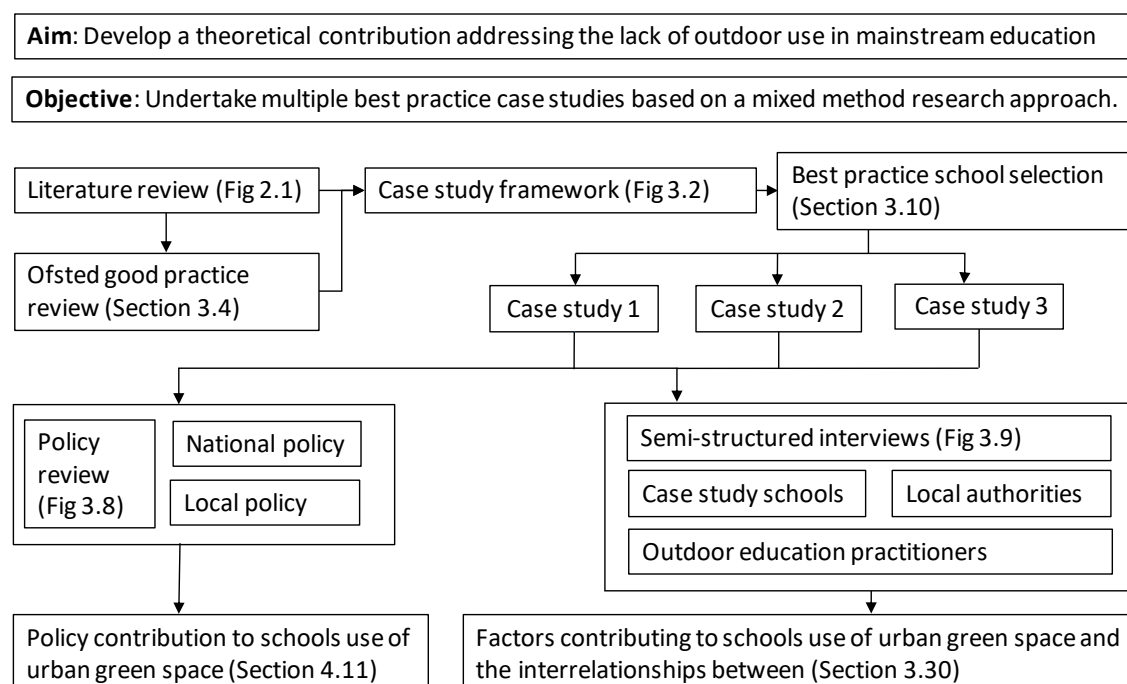
The research design was multiple best practice case studies with a mixed method approach (Figure 3.1). The appropriate type and number of case studies, is dependent on the information required (Stake, 1995). There are three main types of case study, descriptive, explanatory and exploratory (Robson, 1993). Descriptive case studies allow observation of a particular phenomenon (Yin, 2013). Explanatory case studies exemplify a known phenomenon (Yin, 2013). Exploratory case studies explore unknown causal links to gain a deeper understanding (Zucker, 2001; Yin, 2013). Some of the complexities surrounding the opportunities and barriers to schools use of urban green space are currently unknown (Jabareen, 2012; Dawe et al, 2005), meaning descriptive and explanatory case studies were inappropriate for this research. Using an exploratory best practice, case study design allowed exploration of the relationships between contributing factors and the successful implementation of outdoor use.

Use of a single case study could explore an isolated phenomenon or individual's circumstance (Zainal, 2007). Using multiple case studies allows for the exploration of patterns within and across different cases (Robson, 1993). If developing a conceptual framework this can help to enhance the transferability (Smyth, 2004; Yin, 2013). Using

a naturalistic approach allows case studies to be explored in context (Yin, 2012; Robson, 1993). Use of urban green space for education is not isolated; occurring internationally at different levels and frequency (Quay & Seaman, 2013; Rickinson et al, 2004). There is no prescript method for implementing outdoor use within education and every school presents a unique set of circumstances. Therefore, a naturalistic, multiple case study research design was most appropriate, enabling multiple opportunities to explore the complex opportunities and barriers to schools' use of outdoor environments.

In-depth data was required to exemplify cases of schools surmounting barriers and creating opportunities for outdoor curriculum delivery. Using a combination of methods can enable verification of results, allows triangulation and helps reduce bias (Robson, 2011; Yin, 1994). For this reason, collection of data from each case study used a mixed-method approach, exploring the contributing variables. The mixed method approach comprised a two-stage process. Firstly, document analysis comprising Ofsted good practice and policy analysis. A review of Ofsted good practice examples augmented and supplemented factors identified within the literature review (Section 3.4). The findings of the literature review and Ofsted good practice review developed the case study framework. The policy analysis identified potential opportunities and barriers to schools use of outdoor environments at national and local levels (Section 3.17). Secondly, semi-structured interviews collected perspectives of opportunities and barriers from the sectors contributing to schools implementation and facilitation of urban green space use (Section 3.18). The results from the two-stage method were analysed and synthesised. Each case study presented a unique example of best practice for implementing outdoor curriculum delivery. This allowed exploration of opportunities and barriers within contextual examples (Johnson & Onwuegbuzie, 2004). Synthesising the results from best practice case studies developed the conceptual framework helping to interpret the complex issues surrounding schools use of urban green space (Figure 5.2). This then formed the evidence for developing a theory, based on a grounded theory approach.

Figure 3.1 Mixed method research approach



3.3 Development of the case study framework

A case study framework was required to frame and inform the data collection (Helitzer et al, 2014; Eisenhardt, 1989). To develop the case study framework factors contributing to schools use of outdoor environments were required. Identification of the initial factors came from the literature review (Chapter 2). There were seven factors identified (Table 2.9), with three contributing both opportunities and barriers. These comprised national policy, teacher attitude and curriculum. Three factors were identified as contributing further barriers. These comprised safety, time and funding. The final factor, pupil development, was identified as contributing opportunities only. The factors, identified within the literature review, included a range of examples of schools outdoor use, e.g. one-off outdoor visits, long-term engagement and initiative based engagement. To corroborate these factors and develop a framework that comprised factors contributing to schools embedded use of outdoor environments, a review of good practice case studies was required. For the purpose of the case studies, the term outdoor environments refers to school grounds and natural or semi-natural environments external to the school grounds, specifically urban green space.

3.4 Ofsted good practice review

The first stage of the document analysis was to undertake a critical review of Ofsted good practice examples to supplement the factors identified within the literature. At the time of the critical review (2013), Ofsted operated a good practice resource (www.ofsted.gov.uk/goodpractice). This resource was used for this research as the only accessible collection of independent good practice examples (Ofsted no longer continue this practice although the examples are still available through the government publications search tool (<https://www.gov.uk/government/publications>)). Good practice examples were identified using the search terms outdoor and sustainability. The decision to use the search term sustainability, although not directly relating to use of outdoor environments, was due to sustainability being identified as a buzzword used by schools to encompass both environmentally friendly behaviours and outdoor use. Other search terms were trialled, e.g. environment and nature, but they returned no new results. The good practice searches revealed eighteen case studies, ten from the term outdoor and eight from the term sustainability. Fourteen were appropriate for inclusion as they documented good practice examples of outdoor use in education (Table 3.1). The remaining four, all from the term sustainability, were not included as they focused wholly on ecologically friendly behaviours, e.g. recycling, litter picking.

Once identified, the Ofsted good practice case studies were downloaded for review. A critical review of each case study document systematically collected all indications of opportunities and barriers relating to the case study schools use of outdoor environments (Table 3.2). The Ofsted good practice review identified seven factors. Four of the factors were the same as those identified within the literature review, i.e. teachers' attitude, curriculum, time and funding. Within the literature review, time and funding had only identified as contributing barriers.

Table 3.1 Ofsted good practice case studies selected for critical review.

Key search term	Ofsted good practice case studies	Citation
Outdoors	Developing the indoor and outdoor environments to support and promote children’s communication skills: Townsend Children’s Centre	(Ofsted, 2011a)
	Maximising the use of the outdoor environment: Aughton Early Years Centre	(Ofsted, 2011b)
	Using the natural environment to improve provision: Waverley Church of England Secondary School	(Ofsted, 2011c)
	Magical sensory experiences outdoors: Caverstede Early Years Centre	(Ofsted, 2012a)
	Taking problem solving, reasoning and numeracy into the great outdoors: Farley nursery school	(Ofsted, 2012b)
	Improving outdoor play for young children	(Ofsted, 2012c)
	Taking children into the world of possibilities: Courthouse Green Primary School	(Ofsted, 2012d)
	Meaningful mark making: The Mead Community Primary School	(Ofsted, 2012e)
	Letting children make the decisions in a natural environment: Norcot Early Years Centre	(Ofsted, 2012f)
	Improving teaching and learning using the outdoor environment: Lavington Park Federation	(Ofsted, 2013a)
Sustainability	Sustainable development at the heart of a school: Emscote Infants School	(Ofsted, 2011d)
	Creating a sustainable environment: The Academy of St Francis of Assisi	(Ofsted, 2012g)
	Preparing children to be 21 st century citizens, contributing to sustainable communities: Southwood School	(Ofsted, 2012h)
	Developing a relevant curriculum: Good Shepherd Catholic Primary School	(Ofsted, 2013b)

All of the factors identified within the Ofsted good practice review, including time and funding, presented both opportunities and barriers (Table 3.2). This is likely due to the use of case studies selected for good practice in embedded outdoor use, showing they had already overcome barriers to facilitation. There were also three new factors identified as contributing opportunities and barriers, management, diverse conditions and child development (Table 3.2).

Table 3.2 Factors identified within Ofsted good practice review as contributing opportunities and barriers to schools outdoor use

Identified factor	Opportunities	Barriers
Teachers attitude	Key staff member - passion	Lack of staff confidence
Management	Support from head teachers	Lack of support from head teachers
Child development	Holistic development	Bad behaviour
Curriculum	Cross-curricular opportunities Educational benefits	Curriculum pressures
Diverse conditions	Diverse weather conditions providing learning opportunities	Bad weather – safety
Time	Outdoor use embedded within curriculum Time set aside for professional development	Additional time needed for transitional period
Funding	Grant funding received Use of pupil premium to enable outdoor learning	Lack of funding for equipment

**For document citations, see table 3.1*

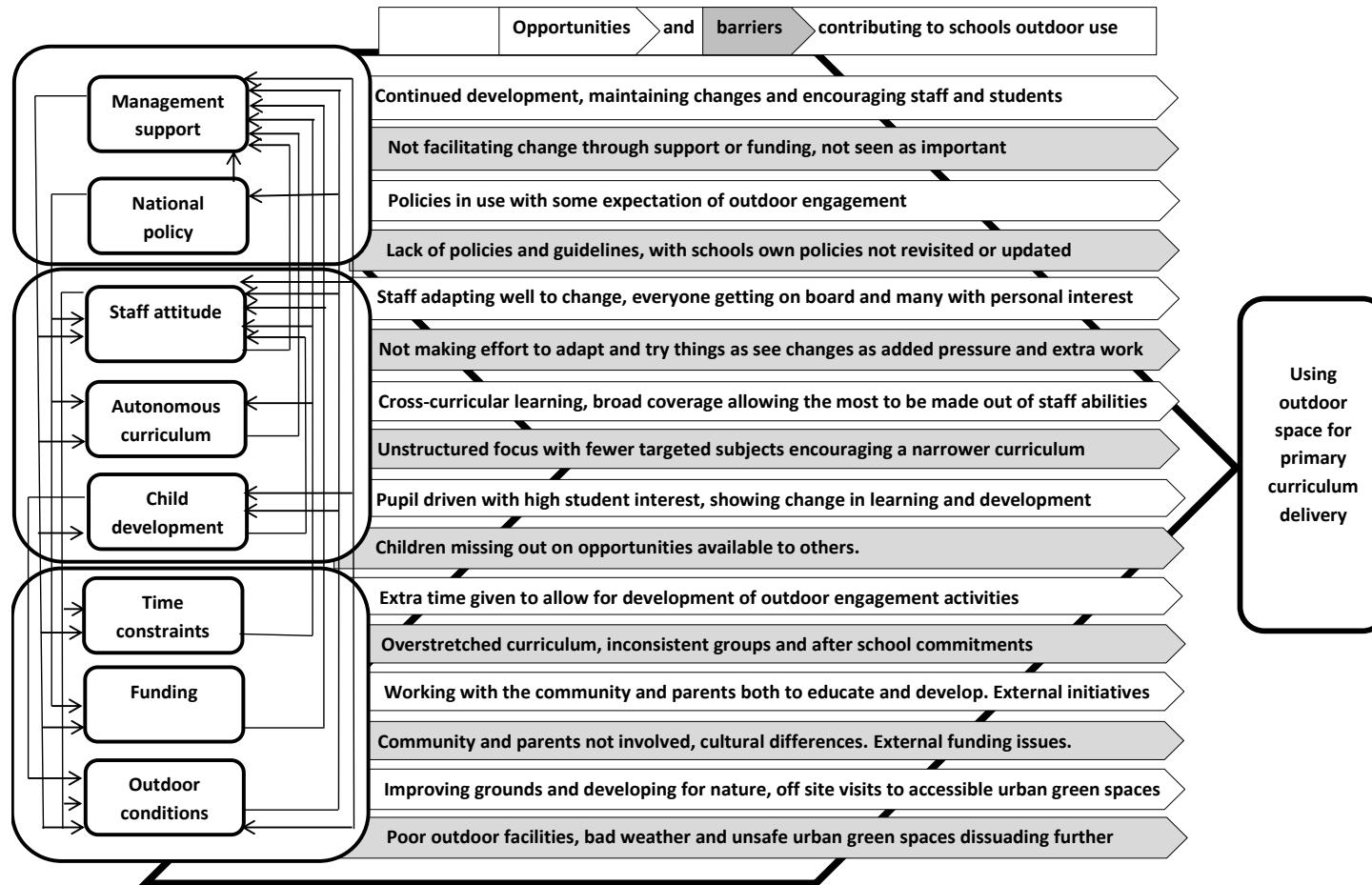
3.5 Thematic classification for the case study framework

To develop the initial case study framework factors identified within the literature (Table 2.9) and Ofsted good practice review (Table 3.2) were synthesised (Table 3.3). Thematic classification identified eight themes identified as presenting opportunities and barriers to schools' use of outdoor environments. For example, the factor safety, identified within the literature review, and the factor diverse conditions, identified within the Ofsted good practice review, merged to create the theme outdoor conditions (Table 3.3). Categorisation of themes dependent on their context helped the initial development of the case study framework (Figure 3.2). Each theme contributed both opportunities and barriers to schools outdoor use. The initial case study framework also included relationships between themes, identified within the literature and good practice documents e.g. management effect on staff attitude (Figure 3.2). The initial framework informed the case study selection process and was refined with the analysis of data from each case study (Helitzer et al, 2014; Eisenhardt, 1989).

Table 3.3 Themes contributing opportunities and barriers identified within the literature review (Table 2.9) and Ofsted good practice review (Table 3.2).

Factor identified within the literature review	Factor identified within the Ofsted good practice review	Subsequent theme	Grouping for framework
NA	Management- opportunity and barrier	Management support	Factors related to top down management approaches.
National policy - opportunity and barrier	NA	National policy	
Teachers- opportunity and barrier	Teacher attitude - opportunity and barrier	Staff attitude	Factors are dependent on individual interpretation and motivation.
Pupil development – opportunity	Child development – opportunities and barriers	Child development	
Curriculum - opportunity and barrier	Curriculum - opportunity and barrier	Autonomous curriculum	
Safety - barrier	Diverse conditions - opportunity and barrier	Outdoor conditions	Factors related to external circumstances, often out of control of individual teachers and pupils.
Time - barrier	Time- opportunity and barrier	Time constraints	
Funding - barrier	Funding- opportunity and barrier	Funding	

Figure 3.2 Initial case study framework developed using the critical review of academic literature and Ofsted best practice case studies



Note: White arrows represent opportunities presented by a theme. Grey arrows represent barriers presented by a theme. The case study framework informed the case study selection process and was refined with each case study

3.6 Case study selection

The next stage of the method required in-depth case study research to develop the framework and explore the identified themes and the relationships between them. The case study framework had identified a range of themes across three sectors, schools, local authorities and outdoor education practitioners. The research required key participants with specific involvement with the management and maintenance of urban green space and the facilitation or implementation of schools' use of outdoor environments. This would help to identify any further opportunities and possible ways of overcoming barriers. Development of a case study selection process helped identify case studies with predetermined characteristics, i.e. schools with best practice in outdoor curriculum delivery and overall academic achievement.

The North-West of England was instrumental in the urban green space movement, with the first purpose built public parks developed there (Wheater et al, 2007a). The longstanding relationship of urban green space planning made the North-West a suitable area for this research. In 2011, the Greater Manchester Combined Authority was established, with representation from ten local authorities (Figure 3.3). The authorities comprise Manchester, Salford, Stockport, Bury, Bolton, Trafford, Tameside, Rochdale, Oldham, Wigan (AGMA, 2012). This provided a unique opportunity to explore the Combined Authorities influence on schools and schools use of outdoor environments, including urban green space. The Greater Manchester Combined Authority have pledged a united commitment to improving prospects for children, improving community health and enhancing the natural environment (Greater Manchester Combined Authority, 2018). Each local authority remains responsible for their devolved responsibilities toward schools. This means that utilising Greater Manchester as a research area gives a unique opportunity to determine the influence of a combined authority on the local authorities' policy frameworks. How this effects schools within their jurisdictions and schools use of urban green space will also be determined.

Figure 3.3 Map showing the local authorities of Greater Manchester in relation to the rest of the UK



Source Moore (2018)

Note: The selected case study schools (Section 3.10) were in the local authorities of Manchester, Tameside and Bolton

The child population within Greater Manchester (19%, $n=540,663$) is comparable to that of England (18%, $n=10,048,365$) and the United Kingdom (18%, $n=11,807,573$). This is also true of the ten local authorities, each with their child population ranging between 18-21% (Table 3.4). Greater Manchester has a mid-level density in relation to other UK cities (New Economy, 2016). These demographics, typical of the UK urban context helped to increase the transferability of the framework.

Table 3.4 Population densities for the UK, England and Greater Manchester authorities

Name	All ages	Children aged 0 to 15	Children aged 0 to 15 (%)
United Kingdom	66,040,229	11,807,573	18
England	66,040,229	10,048,365	18
Greater Manchester	2,798,799	540,663	19
Bolton	284,813	57,188	20
Bury	189,628	36,576	19
Manchester	545,501	104,784	19
Oldham	233,759	49,829	21
Rochdale	218,459	44,327	20
Salford	251,332	48,004	19
Stockport	291,045	53,187	18
Tameside	224,119	42,263	19
Trafford	235,493	47,176	20
Wigan	324,650	57,329	18

Note: Data from the Office for National Statistics (2018)

3.7 Defining best practice for this research

Within this research, best practice referred to primary schools, identified as effectively using urban green space for curriculum delivery. The primary curriculum (key stage 1 and 2) is less target-driven than secondary curriculum, with only English (reading and writing) and maths tested at this stage (www.gov.uk/national-curriculum/key-stage-1-and-2). To reduce the potential barriers posed by the curriculum this research focussed on primary schools. This is not to say that use of outdoor environments is not appropriate within secondary education, of which there are many successful examples (Glackin, 2016; Rickinson et al, 2004). Effective use of urban green space was determined using a review of school websites. Promoting the use of urban green space in this way was used as an indicator that schools were keen to share experiences and considered outdoor use as an important part of school life (Education Scotland, 2011). The additional inclusion of schools overall performance, determined through their latest Ofsted report, ensured robust academic development.

3.8 School selection criteria

The Ofsted good practice review indicated a range of potential selection criteria, which included academic achievement, initiatives and encouraging use of outdoor environments (Table 3.5).

Table 3.5 Potential criteria identified using the Ofsted best practice case studies

Potential criteria for school selection	
Eco-school green flag since 2010	John Muir award
Eco-school green flag, + extra award since 2010	Community work
Healthy school	Extra outdoor engagement
Ofsted 'outstanding' at last report	Extra environmental focus
Ofsted good	Rights respecting school
International school award	National support school
Website has sustainability section	RBS super grounds
Forest school	Fairtrade
Garden/allotment	Quality in Study Support
Green tree school	RHS campaign for school gardening
Active mark	Distinction for sustainable schools
	Silver in big wildlife garden

To narrow the selection focus and ensure the relevance of the criteria to Greater Manchester primary schools, a review of Greater Manchester primary school websites was undertaken. Each website underwent detailed review to collect data on the initiatives and awards each school had received relating to the outdoor environment or academic achievement. The relevant initiatives and awards occurring most frequently were used for the final selection criteria (Table 3.6).

Table 3.6 Selection criteria for best practice case study schools.

Status	Selection Criterion	Eligibility
Essential criteria	1 Effective communication of urban green space use	Schools had to meet all three essential criteria
	2 Eco-school green flag/additional award since 2010	
	3 Ofsted satisfactory level or above	
Non-essential criteria	4 Forest School accreditation	Additionally, schools had to meet three of the four, non-essential criteria
	5 Extra-curricular focus on community work	
	6 Focus on outdoor engagement	
	7 Focus on environment	

3.9 Criteria justification

The first three criteria were essential for identifying potential best practice schools (Section 3.7). Criterion (1) allowed initial identification of schools and demonstrated effective communication of urban green space use. Criterion (2) ensured that schools' environmental focus was current at time of analysis. Criterion (3) ensured that schools were achieving academically.

For the next stage, three of the four criteria were required. This recognised that schools demonstrating commitment to outdoor curriculum delivery might not have developed all available opportunities. Criterion (4) showed commitment to connecting children with nature, as the Forest School accreditation process is rigorous and time consuming. Criterion (5) demonstrated work with the wider community, which indicated a desire to integrate school and community life. Criteria (6) and (7) indicated a sustained, whole school focus on outdoor use and or environment.

3.10 School recruitment

At the time of the case study selection (August 2013), 59 Greater Manchester primary schools met the three essential criteria (Table 3.6). Private schools were excluded at this stage to ensure best practice was achievable irrelevant of schools available budget. This exclusion was made to further enhance potential transferability of the framework. Evaluation of the remaining schools, against the final four criteria (Table 3.6), left seven eligible schools for use as best practice case studies (Table 3.7). A letter sent via email to the head teachers of all seven schools began correspondence to determine their interest in partaking in the research (Figure 3.4). Of the seven schools that were contacted, three agreed to participate. The three selected case studies, described below, provided appropriate case studies for gaining in-depth information from different types of schools in different circumstances, process and locations. Green space within walking distance of the case study schools were identified using a review of ordnance survey map on ArcGIS10.4.1 and Google Maps review (Figures 3.5, 3.6 & 3.7). Green spaces were verified by ground-truthing and then digitised using ArcGIS10.4.1. Walking distance was based on the findings of Sugiyama et al (2009) and Bullock (2008) who found that green space within a fifteen-minute walk was accessible within a school

day. This was to gain an understanding of the available green space opportunities accessible to each case study school.

Table 3.7 Primary schools listed by District, identified as eligible case studies through the selection process.

Selection criteria		Eligible boroughs and case study schools						
		B.1	B.2	M.3	O.4	O.5	R.6	T.7
1	Effective communication of outdoor engagement	X	X	X	X	X	X	X
2	Eco-School green flag or additional award since 2010	X	X	X	X	X	X	X
3	Ofsted satisfactory level or above	X	X	X	X	X	X	X
4	Forest School accreditation					X	X	
5	Extra-curricular focus on community work	X	X	X	X	X		X
6	Focus on outdoor engagement	X	X	X	X	X	X	X
7	Focus on environment	X	X	X	X	X	X	X

**Boroughs and schools: B = Bolton, 1 = St Peter's CofE, 2 = Sunning Hill, M = Manchester, 3 = Heald Place, O = Oldham, 4 = Broadfield, 5 = Roundthorn, R = Rochdale, 6 = Milnrow Parish, T = Tameside, 7 = Canon Burrows*

A. Case study 1: Sunning Hill (Table 3.7, B.2)

Sunning Hill demonstrates resilience and commitment to outdoor engagement. Sunning Hill is located within an urban area of Bolton and has limited outside space, a problem faced by many urban schools. The school managers' have worked to overcome this barrier by implementing staggered break times (Teacher interview, Personal communications, 2013). The school focuses on working with the community, engaging with outdoor environments and on local environmental issues such as litter picking (Teacher interview, Personal communications, 2013). In 2008, Sunning Hill received the Eco-School bronze award, quickly succeeded by silver in 2009 and green in December 2011 (Eco-Schools, 2013). Sunning Hill received an 'outstanding' Ofsted report in 2013 with pupils showing good levels of progress throughout school (Ofsted, 2013). Sunning Hill had received permission to develop an area of urban green space in close proximity to the school with further plans to create a community, growing alley (Figure 3.5; Teacher interview, Personal communications, 2013). This case study school provided

opportunities to gain unique insights in the collaborative process with which it overcame barriers to secure use of close by amenity green space.

Figure 3.4 Letter sent as initial correspondence with best practice schools



John Dalton Building
School of Science and the Environment
Manchester Metropolitan University
Manchester
M1 5GD

[Phone number]
[Date]

Dear [*head teacher*],

I am undertaking doctoral research, which aims to evaluate urban, primary school engagement with outdoor environments. This research will form an evaluation framework that schools may use to develop opportunities, and overcome barriers to integrating outdoor engagement within the curriculum. The project is funded by the School of Science and Environment, Manchester Metropolitan University.

Using a selection criteria based on external awards and information from the school websites I have identified seven primary schools across Greater Manchester that are ideal for this research. [*School name*] is one of these seven schools and has shown excellent progress in both outdoor engagement and sustainability related education. Therefore, I would like to invite your school to be one of the best practice case studies for this research.

For each best practice school I will:

- a) Analyse relevant documentation – this would require access to environmental and green procurement policy, eco-schools documentation and lesson plans detailing outdoor education and sustainability related education (if applicable).
- b) Conduct interviews with key staff - I would like to interview yourself, as head teacher and any staff members that you identify. Interviews will last 60 minutes and will be arranged at your convenience.
- c) Undertake mapping of the school grounds and local public green spaces.

I will need to visit your school to conduct the interviews; everything else can be done externally. Interviews would be organised at your convenience. All research will be conducted confidentially and data will be kept anonymous. I have an enhanced CRB [*cert. no.*] gained specifically for this research. If you have any further questions, please do not hesitate to contact me.

School visits will take place before the end of the summer term 2014. If you would like your school to be one of the best practice case studies or if you have any further questions then please contact me by phone [*phone number*] or email: [*email address*].

Kind Regards,
Sally Veitch

progressing to green flag status in December 2012 (Eco-Schools, 2013). This school has collaborated with the local authority to secure urban green space outside of the grounds, reflecting the school's commitment to outdoor engagement. Heald Place shares use and maintenance of this area with the local community (Figure 3.6). At the time of data collection (September 2014), Heald Place was in the transitional stages of implementing an integrated outdoor curriculum programme. This case study school provided opportunities to gain understanding of the collaboration processes with local authority as well as potential barriers transpiring from the transitional process.

Figure 3.6 Green space provision within walking distance of Heald Place



Note: Pink box represents school building; Red arrow marks the green space that Heald place have shared maintenance and use with the local residents and local authority. ©OpenStreetMap (and) contributors, CC-BY-8A, Source: Earl Digital, GeoEYE, Earthstar Geographics, CNES;

C. Case study 3 (Table 3.7, T.7)

Canon Burrows Church of England primary school in Tameside has a well-established focus on the outdoor environment. In 1990, the school helped establish the Taunton Brook Nature reserve, gaining them national recognition by Her Majesty's Inspector (HMI) advisor (Teacher interview, Personal communications, 2013). Canon Burrows have a collaborative relationship with the local authority and local community, which permits them to maintain and develop Taunton Brook Nature reserve area as part of their curriculum (Figure 3.7; Teacher interview, Personal communications, 2014).

Figure 3.7 Green space provision within walking distance of Canon Burrows



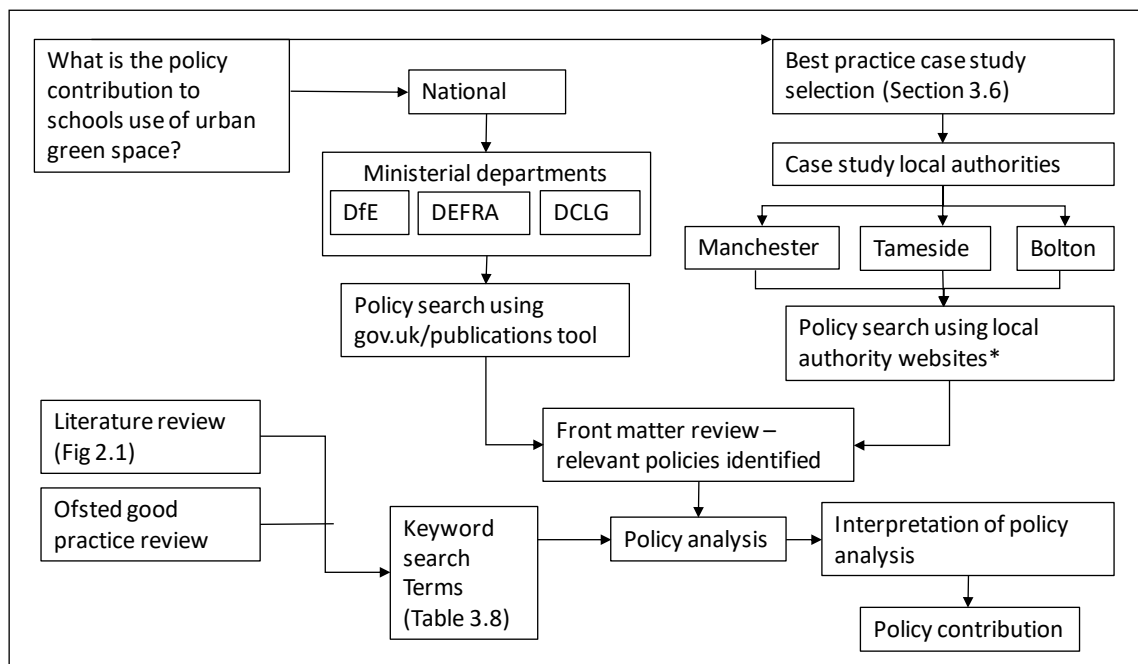
Note: The pink box represents the school building; Red arrow represents the green space that Canon Burrows have permission to access and develop through the local authority; ©OpenStreetMap (and) contributors, CC-BY-8A, Source: Earl Digital, GeoEYE, Earthstar Geographics, CNES;

Since 2000, staff at Canon Burrows have worked to improve the school's ecological footprint and the school was designated Beacon Status in 2001. Canon Burrows have training partnerships with other schools related to integration of environmental and outdoor education. Canon Burrows won the first David Bellamy Environmental Awareness Award in 2000 (Canon Burrows, 2014). In addition, the school has been a green-flag Eco-School since 1998 and has received the Eco-School ambassador award in May 2011, a role lasting two years (Eco-Schools, 2013). Canon Burrows received an 'outstanding' Ofsted report in 2008, something that the school staff credits in part to the embedded use of outdoor environments. As a best practice case study, this school provided opportunities to develop insights on the embedding of outdoor curriculum delivery.

3.11 National policy review

The literature review highlighted a potential gap in national policy, i.e. support of outdoor curriculum delivery detailed within the environment white paper (DEFRA, 2011) was not present in the education white paper (DfE, 2010). Furthermore, the case study framework identified government influence as a factor affecting schools' use of outdoor environments. To confirm and address this gap, and to explore government influences on schools use of outdoor environments, a systematic policy review and analysis were undertaken (Figure 3.8). The policy analysis was designed to determine vertical and horizontal policy integration and identify policy drivers for increasing schools' outdoor use (Van Oosten et al, 2018; Bentsen et al, 2012; Bell et al, 2007).

Figure 3.8 Overview of the policy review and analysis



* www.manchester.gov.uk, www.tameside.gov.uk, www.bolton.gov.uk

3.12 Developing the policy analysis tool

The purpose of the policy analysis was to identify gaps in policy and policy drivers effecting government influence on schools’ use of outdoor environments. The policies did not require in-depth qualitative analysis because this part of the research was designed to identify a gap, rather than to fill a gap (Patton et al, 2015). For consistency, it was important to use a method that could be applied at both national and local policy levels. Such a method would ensure consistency across the policy frameworks (Khan et al, 2013), and help evaluate vertical integration. Seale et al, (2006) have shown that key word analysis provides a time-effective method for generating quantitative data describing policy content in relation to the research question, without the need to complete qualitative critical analysis. For these reasons, key word analysis was the most suitable method for this part of the research.

Having decided that key word analysis was the most suitable method for analysing national and local policy, the next step was to develop the list of key words. An initial list was compiled comprising 75 key word terms identified from published literature and schools’ based initiatives. To ensure inclusion of all examples of urban green space, it

was necessary to include all definitions of outdoor space as detailed in the government Planning Policy Guidance 17 (PPG17). This brought the total key word search terms used to 114 (Table 3.8). Categorisation of the key word search terms resulted in three themes i.e. education, education and environment, and environment. The inclusion of urban green space typology meant there were more environment (n=68) key words than both education (n=23), and education and environment (n=23). Suffixes of each word were included, the aim to capture as much related data within the policies as possible (Table 3.8). Once the key word terms were selected, the next step was to apply them within the policy analysis (Section 3.17).

Table 3.8 Key word terms used for analysis.

Theme	Education	Education and Environment	Environment		
Key word search terms	Education ¹	Forest ^{2 3}	Space* ⁶	Running ⁸	ForestΔ
	School ¹	Eco ²	Flag ⁶	Way ⁸	WoodΔ
	Learn*	Sustainable ²	Infrastructure ⁶	Wildlife	FringeΔ
	Early year*	Growing ²	Corridor* ⁶	Wetland	Playing ⁵
	Teach*	Healthy ²	Village ⁶	Wasteland	Area€
	Train*	Learning ⁴	Biodiversity	Derelict land	Adventure€
	Experiential	Grounds ²	Species	Cliff	Garden
	Imagination	Field ²	Environment* ⁴	Quarr*	Formal♠
	Creativ*	Sustainab* ³	Ecolog*	River	Community♠
	Vocational	Outdoor ³	Nature ⁴	Canal	Public♠
		Environmental ³	Ecosystem*	Cycleway	Botanical♠
		Biodiversity ³	Conservation	Right* of way	Allotment
		Countryside ³	Engagement ⁴	City ⁹	Urban ⁹
		Trip ⁵	Open space	Outdoor +space	Outdoor sport
		Visit ⁵	Park ⁴	Pitch+	Community ⁹
		Work ⁵	Urban ⁷	Children F	Churchyard
		Going outside	City ⁷	Teenagers F	Scrub
		Contact (with nature)	Country ⁷	Civic space	Animal
		Connection ⁴	National ⁷	Public square	Fauna
	Scout	Grasslands	Cemetr*		
Duke of Edinburgh	Meadow	Plants			
	Open ⁸	Flora			

*All possible suffixes, ¹Generic or relating specifically to primary age i.e. not secondary or post-16 etc., ²school, ³education, ⁴relating to outdoor/natural, ⁵field, ⁶green, ⁷park, ⁸water, ⁹farm, +recreational, Fprovision for, Δ urban, € play, ♠ garden

3.13 Selecting government departments

The development of the case study framework had determined there were cross-disciplinary factors involved with both implementation and facilitation of schools outdoor use. This indicated that effective support from national policy would require horizontal integration across ministerial departments. For this reason, the policy review included any ministerial department with responsibility for schools, education, green space, natural environment and local planning effecting Greater Manchester. Department responsibility was determined by reading the summary information for each of the 25 ministerial departments (<https://www.gov.uk/government/organisations>). This process identified three relevant departments comprising Department for Education (DfE), Department for Environment, Food and Rural Affairs (DEFRA) and Ministry for Housing and Local Government (MHLG – formerly Department for Communities and Local Government, DCLG).

3.14 Selecting local authorities

The case study framework identified green infrastructure and outdoor conditions, e.g. green space conditions and health and safety concerns, as factors contributing to schools potential use of outdoor environments (Figure 3.2). These factors raise the question of whether local authorities are considering schools' use as an objective in green space planning. To answer this question and to determine if there was vertical policy integration between the national and local policy levels, a local policy review was undertaken for each best practice schools' local authority. The key word analysis used for the national policy was also used for the local policy review. However, the latter included local authority policy relating to education, environment or green space.

3.15 Selecting national policies

A systematic approach for selection identified policies that could potentially affect schools use of outdoor environments. It was important to use a systematic process to ensure that policy identification occurred efficiently and thoroughly (Patton et al, 2015). Use of the publication filter tool on the government website ensured a systematic process (www.gov.uk/government/publications accessed 2013). The filter tool

facilitated a customised systematic process using the six available options, comprising publication type, policy area, department, official document status, world location and publication dates (Table 3.9). Design of the selection criteria used relevant combinations of the available options.

Table 3.9 National policy selection criteria identified using filter function of UK government website (www.gov.uk/government/publications, 2013).

Filter criteria	No. of options	Option selection	Justification
Pub. Type	5	Policy papers	The methodological objective was to assess the national policy framework, so only documents classified as policy documents were used
Policy area	47	Children and young people	Children's services and safeguarding
		Community and society	Maintenance and improvement of local neighbourhoods and those who use them
		Environment	Protection of the natural environment, including maintaining parkland and biodiversity
		Planning and building	Local land reform and development
		Schools	Improving people's health and environment
		Public health	Management of schools, parental choice and increasing attainment
		Sports and leisure	Increasing people's physical activity and improving recreational and amenity facilities
Dept.	26	DfE	Responsible for the provision of children's services and delivering equal opportunities for education for all in England
		DEFRA	Responsible for the protection of the natural environment in England, whilst investing and promoting the economic development of the agricultural industry
		DCLG	Responsible for supporting communities and the devolution of responsibilities to local authorities
Official doc. status	4	All documents	This was left unrestricted as policy papers could have been developed from more than one of the options.
World loc.	215	All locations	Department choice had already determined the place of policy publication as England or England and Wales. If these options were selected then no results were returned, making it necessary to select all locations.
Pub. Betw.	NA	05/2010 07/2013	At the time of analysis (July 2013), all policies published since the most recent general election (6th May 2010) were included. This ensured that all policies selected for analysis were current and in use by the then serving, coalition government*

*Note: DfE = Department for Education; DEFRA = Department for Environment, Food and Rural Affairs; DCLG = Department for Communities and Local Government (Ministry of Housing, Communities and Local Government (MHCLG) since 2018); *Conservatives and Liberal Democrats*

To identify policies for analysis all possible filter combinations were used returning 288 policy documents (Table 3.10). Of these, DfE had published 76, DEFRA, 161 and DCLG, 51 (Table 3.10). A preliminary review of each policy was undertaken to filter out those without relevance. The preliminary review involved reading the front matter of each policy to determine its relevance to the use, management or maintenance of urban green spaces or use of outdoor environments by schools. Front matter varied depending on the policy document and comprised ministerial forewords, executive summaries and prefaces. Removal of duplicate policies occurred during this process. Duplicates occurred if the policy had a cross-disciplinary subject, identified under more than one policy area. The preliminary review reduced the initial 288 policies to 63 policies with potential relevance; 17 published by DfE, 23 by DEFRA, and 23 by DCLG (Table 3.10). These policies were selected for policy analysis (Section 3.17A).

Table 3.10 Number of national policies selected for each ministerial department under each policy area.

Policy area	Identified using filter tool				Selected after review			
	DfE	DEFRA	DCLG	Total	DfE	DEFRA	DCLG	Total
Children and young people	38	0	0	38	10	0	0	10
Community and society	5	1	25	31	1	1	13	15
Environment	0	146	4	150	0	22	0	22
Planning and building	0	6	21	27	0	1	11	12
Public health	0	0	1	1	0	0	0	0
Schools	32	0	0	32	10	0	0	10
Sports and leisure	0	1	0	1	0	0	0	0
All policy areas key word Green Space	1	7	1	9	0	2	1	3
Total	76	161	51	288	17	23	23	63

Note: Some policy documents occurred in searches under more than one policy area and therefore only counted once in the total policy count.

3.16 Selecting local policies

The first step for selecting local authority policies was to systematically, review each local authority website (www.manchester.gov.uk, www.bolton.gov.uk, www.tameside.gov.uk, accessed July-August 2015). The detailed website review identified local authority policies with potential relevance to schools outdoor use. It was necessary to examine every website section, as each had a different structure with publications' content across numerous areas (Table 3.11). Use of the same customised

date range as that used in the national policy analysis, i.e. between May 2010 and July 2013, ensured continuity. The systematic search identified 11 policies, with potential relevance to education, environment or green space. Of these, one was published by Bolton, four by Tameside and six by Manchester. These policies underwent a preliminary review, using the same method used for national policy (Section 3.15). This removed two policies, both published by Manchester city council that had no potential relevance to schools' use of outdoor environments (Table 3.11). This left nine policies that were selected for policy analysis (Table 3.16).

Table 3.11 Detailed search of local council websites* to select policies for analysis

Local authority	Number of website sections	Total number of subsections	Number of potentially relevant subsections	Number of relevant policies
Tameside	8	50	7	4
Bolton	12	83	12	1
Manchester	9	108	7	4
Total	29	241	26	9

* www.manchester.gov.uk , www.bolton.gov.uk , www.tameside.gov.uk

3.17 Policy analysis

A. National policy

The selection process identified 63 national policies relevant for analysis across the three ministerial departments, i.e. DfE, DEFRA and DCLG (Table 3.12). These policies were analysed using the selected key word terms (Table 3.8). Policies were analysed using the PDF Full Reader search tool to search for presence and frequency of each key word search term within each policy. Policies that did not include any of the key words in the text were excluded, reducing the number of policies from 63 to 34 (Table 3.12).

Table 3.12 Number of policies identified at each stage of selection process.

Department published by	Policies identified using the publication filter tool	Policies selected after preliminary review	Policies identified through policy analysis
DfE	76	17	6
DEFRA	161	23	19
DCLG	51	23	10
Total	288	63	34

Of these, 5 were published by DfE (Table 3.13), 19 by DEFRA (Table 3.14), and 10 by DCLG (Table 3.15). The national primary curriculum (DfE, 2013d), although published two months after the custom date range, was included in the analysis (Table 3.13). This was due to its fundamental importance in answering the research question of whether there were opportunities to use outdoor environments within the national primary curriculum. This brought the total number of policies to 35, all of which had potential relevance to schools use of outdoor environments and included some policies with cross-disciplinary links between ministerial departments (e.g. an education key word in a policy published by DEFRA). The data collected in the national policy analysis was summarised by quantifying the frequency of key words identified under each theme, i.e. education, education and environment and environment. This helped to collect evidence of cross-disciplinary links between policies, and assess horizontal integration. The findings of the national policy analysis is presented in section 4.2 (Tables 4.2, 4.4, 4.5).

Table 3.13 Policies published by the Department for Education selected for analysis

Policy area	Policy title	Citation
Children and young people	Positive for Youth: progress since December 2011	(DfE, 2013a)
	Early learning for 2-year-olds: trials	(DfE, 2013b)
	Supporting young people to develop the skills for apprenticeships and other sustained jobs: a discussion paper	(DfE, 2013c)
Schools	Framework for the National Curriculum: a report by the expert panel for the National Curriculum review	(DfE, 2011)
	The importance of teaching: the schools white paper	(DfE, 2010)
	The National Curriculum in England. Key stages 1 and 2 framework document	(DfE, 2013d)

Note: Repetition of the policy selection process identified relevant policies published after the custom date range, e.g. Education White Paper, 2016. These underwent the same policy analysis (Section 3.17) to check for incorporation of outdoor environment use but no inclusion was identified; Publication of the 2013 National Curriculum was after the custom date range. However, it was included as it is fundamental to the research question

Table 3.14 Policies published by the Department for Environment, Food, and Rural Affairs selected for analysis

Policy area	Policy title	Year pub.
Environment	Bees and other pollinators: their health and value	(DEFRA, 2013a)
	Public Forest Estate Management Organisation: development of responsibilities	(DEFRA, 2013b)
	Payments for Ecosystem Services (PES) action plan	(DEFRA, 2013c)
	Mainstreaming sustainable development: government progress 2013	(DEFRA, 2013d)
	English national parks and the broads: UK government vision and circular 2010	(DEFRA, 2013e)
	Government forestry policy statement	(DEFRA, 2013f)
	Report of the Habitats and Wild Birds Directives Implementation Review	(DEFRA, 2012)
	Securing the future - delivering UK sustainable development strategy	(DEFRA, 2011a)
	Social Impacts and Wellbeing: multi-criteria analysis techniques for integrating non-monetary evidence in valuation and appraisal - A discussion of current approaches and opportunities	(DEFRA, 2011b)
	Biodiversity 2020: A strategy for England's wildlife and ecosystem services	(DEFRA, 2011c)
	Enabling the transition to a green economy	(DEFRA, 2011d)
	Government response to the making space for nature review	(DEFRA, 2011e)
	Natural environment: Adapting to climate change	(DEFRA, 2011f)
	Conserving Biodiversity - The UK Approach	(DEFRA, 2011g)
	England biodiversity strategy: Climate change adaptation principles	(DEFRA, 2011h)
	Working with the grain of nature: a biodiversity strategy for England	(DEFRA, 2011i)
	An invitation to shape the Nature of England - Discussion document	(DEFRA, 2011j)
An introductory guide to valuing ecosystem services	(DEFRA, 2011k)	
Environment; Community and young people	The natural choice: securing the value of nature	(DEFRA, 2011l)

Table 3.15 Policies published by the Department for Communities and Local Government selected for analysis

Policy area	Policy title	Year pub.
Community and society	Accelerating the release of surplus public sector land: progress report	(DCLG, 2012a)
	Building safe, active communities: strong foundations by local people	(DCLG, 2012b)
	Decentralisation: an assessment of progress	(DCLG, 2012c)
	Government response to the Communities and Local Government Select Committee's report: localism	(DCLG, 2011a)
	Working neighbourhoods fund: project study	(DCLG, 2010)
All (green space)	High streets at the heart of our communities: government response to the Mary Portas review	(DCLG, 2012d)
Environment	Shaping our future: implementation plan for government commitments	(DCLG, 2012e)
Planning and buildings	National Planning Policy Framework	(DCLG, 2012f)
	Government response: regeneration	(DCLG, 2012g)
	Change of land use in the planning system: issues paper	(DCLG, 2011b)

B. Local authority

The selection process (Section 3.6) identified nine local policies relevant for analysis across the three authorities, i.e. Manchester, Tameside and Bolton (Table 3.16). These policies were analysed using the same, key word terms as the national policies (Table 3.8). The policy analysis determined that all nine policies had potential relevance to schools use of outdoor environments. The data collected in the local policy analysis were summarised using the same method as the national policy (Section 3.17A). This helped to collect evidence of cross-disciplinary links between policies, and assess vertical integration between national and local policy frameworks. The findings of the local policy analysis is presented in section 4.8 (Table 4.6).

Table 3.16 Local policies selected for policy analysis through local authority websites*

LA	Website sub section	Policy title	Pub.
TC	Strategic planning	Joint core strategy and development management policies development plan document	(TC, 2013a)
		Local development framework - Green Infrastructure, open space, sport, recreation and biodiversity	(TC, 2013b)
	Sustainability appraisal	Tameside community strategy 2012-22	(TC, 2012)
	Health and well being	Tameside health and well-being strategy 2013-2016	(TC, 2013c)
BC	Core strategy	Local development framework, Bolton's core strategy document plan: Shaping the future of Bolton	(BC, 2011)
MCC	Biodiversity and wildlife	Manchester Biodiversity action plan 2012-16	(MCC, 2012b)
	Health and well-being	Manchester health and wellbeing strategy	(MCC, 2013)
		Joint strategy for improving outcomes for children, young people and their families	(MCC, 2011)
	Planning	Manchester's Local development framework. Core Strategy Development Plan Document	(MCC, 2012a)

* www.manchester.gov.uk, www.bolton.gov.uk, www.tameside.gov.uk; Key: LA = Local authority, TC = Tameside Council, BC = Bolton Council, MCC = Manchester City Council, Pub. = Publication date

C. Greater Manchester Combined Authority Policy

Local authority policy showed little evidence of direct influence from either Greater Manchester Combined Authority (GMCA) or its predecessor Association of Greater Manchester Authorities (AGMA) policy. There were only two combined authority policies referenced within relevant sections of the local authority websites that were within the customised date range (Table 3.17). These two policies underwent the same policy analysis as both local and national policies (Section 3.17). The case study selection process (Section 3.6) had highlighted the unique opportunity provided by using case studies from within a combined authority. Further work is needed to determine whether the combined commitment goals, set out within The Greater Manchester Strategy (2018) are influencing local policy frameworks. This is explored further in section 5.7.

Table 3.17 Policies for Greater Manchester selected for analysis

Association	Policy title	Citation
Association for Greater Manchester Authorities	Green Infrastructure Framework. Final report	(AGMA, 2011)
Association for Greater Manchester Authorities and Greater Manchester Combined Authority	Greater Manchester Strategy	(AGMA, 2013)

Note: There was no policy specifically for primary education as AGMA does not have powers associated with primary education, only higher and adult education.

3.18 Interview data methodology

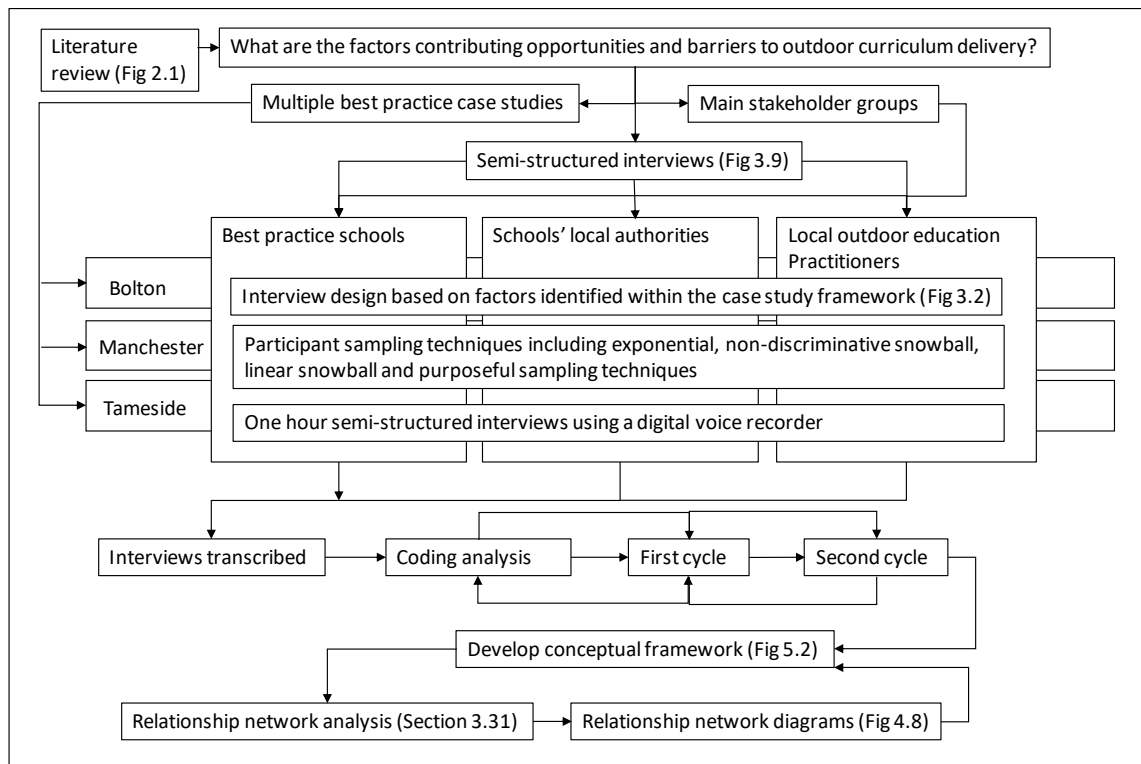
3.19 Introduction

The purpose of this methodological stage was designed to gather in-depth qualitative data on participant perspectives of opportunities and barriers to schools use of outdoor environments (Figure 3.9). The method needed to be appropriate for the three key sectors involved i.e. schools, local authorities and outdoor education practitioners. Data gathered needed to cover individual participant perspectives, working methods, i.e. individual or collaborative, and data determining actual engagement with the facilitation and implementation of schools' outdoor use.

3.20 Qualitative methodological justification

There are numerous qualitative methods for generating in-depth data, including focus groups, participant and non-participant observation, questionnaires and individual interviews (Bergold & Thomas, 2012). Focus groups would have given the opportunity to explore interactions between individuals but circumvented the opportunity to discuss specific issues at individual level (Kitzinger, 2005; Mansell et al, 2004). The Ofsted good practice review had identified that having a key staff member was an important factor for facilitating schools outdoor use (Table 3.2). Therefore, it was important to use a method that focused on participants at an individual level, rather than within a group dynamic (Kitzinger, 2005).

Figure 3.9 Overview of semi-structured interview method and analysis



Both participant and non-participant observation could have gathered best practice examples of outdoor delivery and provided the opportunity for collection of behavioural data (Jorgensen, 2015; O'Reilly, 2005). The objective of this part of the method was to collect data of the key participants perspectives and beliefs surrounding schools use of outdoor environments. Therefore, observational data would not have been appropriate (Jorgensen, 2015).

Use of questionnaires would have been appropriate for collecting data across all three key sectors involved in delivering education in outdoor environments (i.e. schools, local authorities and outdoor education practitioners). Questionnaires are most appropriate for gathering large amounts of quantitative data from a large number of participants, as it allows for time efficient data collection (McGuirk & O'Neill, 2016). This research required in depth qualitative data, gathered from key participants, meaning another method was more appropriate.

Individual interviews are a suitable method for gathering in-depth data from participants. Furthermore, appropriate interviews could be designed to systematically

collect data across different sectors. This allows flexibility in capturing participant perspectives on known and unknown factors (Jensen & Laurie, 2016; Berg, 2001). Therefore, individual interviews were selected as the methods for data collection. The next stage was to determine the most appropriate interview type (section 3.21).

3.21 Interview type

There are three main types of interview for qualitative data collection, structured, unstructured and semi-structured (Robson, 2011). Structured interviews use fixed formatted questions. This format, whilst reliable and easily replicable, does not allow for the flexibility required when emergent subjects arise (Jensen & Laurie, 2016). This stage of the research aimed to explore staff perceptions and beliefs about the complex factors affecting schools use of urban green space. There was the possibility that some contributing factors may be unknown and case study dependent. Thus, the structured interview process may have missed emergent subjects.

Unstructured interviews may have a pre-determined topic area but are otherwise undefined, with the possibility of new questions evolving throughout the interview (Berg, 2001). This provides high flexibility but can mean the interview data lacks focus (Jensen & Laurie, 2016). In order to analyse data across the three sectors and case studies, a level of structure was required to maintain focus. Therefore, unstructured interviews may have been too open for keeping the focus.

Semi-structured interviews combine the benefits of a flexible structure with a clear focus. Furthermore, semi-structured interviews allow the collection of both factual and experiential data (Doody & Noonan, 2013; Fontana & Frey, 2003; Merriam, 1998). For this research, a semi-structured interview tool was developed that focused on pre-determined topics relating to delivering outdoor curricula, whilst allowing freedom to elaborate on unprecedented issues (Jensen & Laurie, 2016; Rabionet, 2011). The development of the semi-structured interview schedule for this research is explained in section 3.26.

3.22 Professional sectors recruited for data collection

The semi-structured interviews were targeted to participants from the three, key professional sectors involved in using outdoor environments for education i.e. primary schools, local authorities and outdoor education practitioners. By combining data from all three sectors, it was possible to collect cross-sector perspectives on the opportunities and barriers associated with schools use of outdoor environments. Each sector had a different role within the process of facilitating the case study school's use of urban green space, coming from different backgrounds and areas of expertise. Collectively this variety enabled the collection of a wide breadth and depth of data.

3.23 Participant sampling

A. School participant sampling technique

After the best practice case study schools were selected, it was necessary to identify staff members to participate in the interviews. The participants required were those who had been instrumental in making the school a best practice example of outdoor environment use. This comprised staff who had a direct role in the facilitation or provision of outdoor engagement for pupils. Since participant requisites were predefined, a non-probability sampling technique was used to select the participants (Tansey, 2007).

Non-probability sampling techniques include quota sampling, purposeful sampling and snowball sampling. Quota sampling is the selection of participants based on characteristics designed to mimic assumed characterisations of a wider study population. The purpose of this research was to build a complete picture of the opportunities and barriers to schools use of outdoor environments. Therefore, a sampling technique that allowed focus on key people was needed.

Purposeful sampling is the identification of participants who fit a specific purpose required for the study (Atkinson & Flint, 2001). This research required participants with specific characteristics i.e. experience of facilitating and implementing schools use of

outdoor environments. Therefore, purposeful sampling was required for engaging the head teachers of best practice schools.

Information on the case study school staff involved with facilitation of outdoor engagement was not available through each school's publicly accessible information. This meant that in order to identify individuals within the best practice schools snowball sampling was the most appropriate technique, using the head teacher as a catalyst.

There are three main patterns of snowball sampling, linear snowball sampling, exponential discriminative snowball sampling and exponential non-discriminative snowball sampling (Tansey, 2007; Goodman, 1961). Linear snowball sampling is the identification of one suitable participant who is then able to refer the next suitable participant, and so on. Exponential, discriminative snowball sampling involves the initial participant making multiple referrals of which the researcher selects those who are suitable. Exponential, non-discriminative snowball sampling involves the initial participant providing multiple referrals, all of which are explored (Etikan et al, 2016). Exponential non-discriminative snowball sampling was most appropriate for sampling school participants because it ensured interviews with all relevant staff.

B. Outdoor education practitioner sampling technique

Snowball sampling was also appropriate for identifying outdoor education practitioners actively working within the case study school's areas. There were two methods to collect potential participant suggestions. Firstly, through referrals from the school interviewees based on previous collaborations. Secondly, once a participant had been selected using the first method, they were asked to refer others working within the case study area. This used a combination of linear snowball sampling and exponential non-discriminative snowball sampling. This process identified six organisations that worked within the case study areas. These were Lancashire Wildlife Trust, Groundwork, Manchester Forest School, Red Rose Forest, Pennine Edge Forest and The Wood School.

C. Local authority participant sampling technique

A different sampling approach was required for selecting interview participants from local authorities. Greater Manchester's local authorities had recently experienced many changes to member responsibilities due to localised funding cuts. Members with responsibilities relating to green space worked across different departments within the local authority, as determined within the local policy analysis (Section 3.17B). This meant members did not necessarily know each other, making the process of snowball sampling difficult. Therefore, purposeful sampling alone was more appropriate than the previous combination of sampling techniques, as it allowed interviewee selection based on professional role.

3.24 Participant recruitment

A. School participant recruitment

Initial contact with schools was via email directed to the head teacher during the case study selection process (Section 3.6). The subsequent correspondence was dependent on individual preference, comprising either phone and/or email. The head or deputy head teacher was both the primary interview participant and the catalyst for the snowball sampling. Each case study head or deputy head identified all staff who were involved in the facilitation or delivery of outdoor engagement. The head teacher initially contacted identified staff members to ascertain interest in participation. All those referred agreed to partake. After receiving consent, correspondence continued directly with the participants. Correspondence provided background information on the research design, and provided an opportunity to answer any participant questions. The interview process covered a range of professional roles within the school (Table 3.18). In total, there were eleven interviews conducted with school staff across the three case study schools. One participant was interviewed twice in respect to two professional roles, i.e. within the role of deputy head, and in the role of the schools eco-lead, responsible for facilitating the use of outdoor environments.

Table 3.18 Participants interviewed at each case study school

Professional sector	Participant role	Case study		
		Bolton (Nov/Dec 2013)	Manchester (Sep 2014)	Tameside (Sep 2014)
School	Head/deputy head	SH1		CB1 ⁺
	Forest school lead	SH2	HP1	
	Eco lead	SH3	HP2	CB1 ⁺
	Early years lead	SH4	HP3	CB2
	School council		HP4	
Total number of interviews per school		4	4	3 [°]

Note: SH = Sunning Hill participants, HP=Heald Place participants, CB=Canon Burrows participants. Table shows those interviewed and the role that they held within the case study school. In total there were ten interviews conducted, covering eleven professional roles; ⁺One Canon Burrows participant (CB1) had two different professional roles within the school and was interviewed in regard to both, hence the duplication; [°]Represents two members of staff, responsible for three professional roles within the school

B. Outdoor education practitioner recruitment

Initially email contact was made with organisations identified using the snowball sampling technique. The email contact was based on a modified version of the letter used for schools (Figure 3.4). Modifications made the information relevant to each organisation, with all other content remaining the same. Of the six identified organisations, three were able to provide a participant for interview. The organisations that participated in the interviews were Lancashire Wildlife Trust, Groundwork and Manchester Forest School. Participants from the organisations were directly involved in engagement with schools and children, working in green spaces across all three local authorities where the case study schools were located.

C. Local authority participant recruitment

The local authority websites helped identify the local authority hierarchy (www.manchester.gov.uk; www.bolton.gov.uk; www.tameside.gov.uk). Purposeful sampling then determined the roles relevant to green space maintenance, public engagement with green space and policy affecting green space use. There were twelve members of staff in management, identified as having responsibilities relating to green space within the local authorities. Direct contact with potential participants, in a letter format via email, was used to recruit participants (Figure 3.4 – modified to address specific local authority members). Nine of the 12 local authority staff identified agreed

to partake. Within the nine local authority interviews there were twelve professional roles covered as some participants had responsibilities in more than one relevant position (Table 3.19).

Table 3.19 Participants interviewed for each case study schools local authority

Participant role	Local authority		
	Bolton	Manchester	Tameside
Executive member for environment	BL1	ML1	TL1
Executive member for neighbourhood services	BL2		
Green space/neighbourhood manager	BL3	ML2	TL2
Local ward councillor	BL1	ML1	TL1
Policy and planning officer		ML3	TL3
Total number of interviews for each authority	3	3	3

Note: 'BLn' = Bolton local authority, 'MLn' represents Manchester local authority, 'TLn' represents Tameside local authority. Table shows participants interviewed and the role that they held within their local authority. In total there were nine interviews conducted with participants from local authorities. Some participants' professions spanned more than one role therefore twelve professional roles were covered, e.g. the executive member for environment was also the local ward councillor in all three authorities

3.25 Interview preparation

The development of the interviews was based on the eight themes identified in the case study framework as contributing to schools use of outdoor environments (Figure 3.2). These pre-determined themes were not included within the interview questions in order to minimise interviewer influence on participant responses. Design of the semi-structured questions aimed to generate discussion by being open-ended and non-leading. Opening and closing statements to all interviews were the same, except for the personal address (Table 3.20).

3.26 Interview structure

In order to maintain relevance for interview participants from different professional sectors, it was necessary to adapt the interview structure accordingly (Table 3.21). The interviewer role was to maintain focus on schools use of urban green space from the individuals' experience and role. Some variation did occur within the interview format due to inclusion of personal experiences and perspectives.

Table 3.20 Opening and closing statements used for all semi-structured interviews.

Semi-structured interviews	
Opening statement	<p>Hello, I am Sally Veitch, a post-graduate research student, undertaking my doctoral research at Manchester Metropolitan University. The School of Science and Environment funded this research, which aims to identify the role urban green space could have within primary education. (<i>Your school/A school in your authority/A school within one of the authorities that you work in</i>) has been selected as a best practice case study in outdoor environment use.</p> <p>We are going to go through some semi-structured interview questions. The structure of the interview will allow us to focus on the information relevant to your own experience. Feel free to discuss any information that you think may be relevant or pass over areas that may not be relevant to you.</p> <p>I have received prior consent from yourself, to the recording of the interview. I will be using a Dictaphone to do this so that I can later transcribe the notes. This is to ensure accuracy of data and allow me to give full concentration to our conversation. There will be no disclosure of personal details, with interview data anonymised for this purpose. Do you still consent to this process?</p> <p>Do you have any questions before we start?</p>
Closing Statement	Thank you very much for taking part in this interview, the information given has been very useful and will become an integral part of this research.

3.27 Interview process

Interview design allowed completion within one hour. All participants had given prior consent to the methodological process via email and then again on the audio recording at the beginning of the interview. An Olympus digital voice recorder (model VN-741PC) was used to record interviews. Participants had the option to delete interview recordings once transcribed and transcriptions omitted personal information. Recording the interviews ensured accuracy of data. Interview dates were organised at the participants' convenience (Table 3.22).

Table 3.21 Semi-structured interview format and content for participants from all three sectors

Question topic	Time (mins)	School content	Local authority content	Outdoor education practitioner
Intro.	2	Self and research (Please see opening statement – Table)		
Focus	5	School values Outdoor/ environmental focus Whole school approach	Local authority priorities Outdoor/ environmental focus Inter-departmental/ external collaboration	Organisation aims and objectives Outdoor/ environmental focus Location of work Professional collaboration
Policy	15	School policies (awareness and development) National policy (awareness and effectiveness) Opportunities/ barriers in policy	Local authority policies (awareness and development) Core strategies Green space policy Opportunities/ barriers in policy	Policy awareness (national/school/cu riculum/green space) Opportunities/ barriers in policy
Outdoor engagement	15	Current use of local green space School grounds development Plan examples Subject specific/ cross curricula Management priorities Evaluation CPD opportunities	Targets relating to green space (use/ maintenance/ engagement) Management priorities Evaluation CPD delivery/ opportunities Subject specific/ cross curricula	Requirements relating to access/ use of land Collaboration with authority/land owners Engagement with schools/public Subject specific/ cross curricula Evaluation
Further barriers	10	Barriers to using green space (including school grounds) Potential to overcome barriers		
Further opportunities	10	Potential opportunities for further use of green space Potential for collaboration		
Interview close	3	Questions and thanks (Please see closing statement – Table)		

Table 3.22 Period of completion of semi-structured interviews

Professional sector	From	To
Schools	November 2013	September 2014
Local authorities	November 2015	May 2016
Outdoor education practitioners	November 2015	November 2016

3.28 Piloting interviews

Piloting of the semi-structured interview process occurred at the Bolton school. The participants talked freely about the issues surrounding the use of outdoor environments. The pilot process identified that participants readily interchanged the subjects of outdoor engagement and environmentally sustainable behaviours. To ensure the prioritisation of focus on outdoor use, interview wording underwent minor alterations (Table 3.23). Following the pilot study, there were no further changes to interview questions. Once all interviews were complete, they were transcribed ready for coding (Section 3.29).

Table 3.23 Examples of alterations made to wording of interview questions

Case study 1 questions	Altered questions used for case studies 2 and 3
Would you say that your school has a strong focus on the <u>environment, sustainability or outdoor engagement</u> ?	Would you say that your school has a strong focus on <u>outdoor engagement or the environment</u> ?
Do you know if your school has any policies relating to the <u>environment, sustainability or outdoor engagement activities</u> ?	Do you know if your school has any policies or action plans relating to the <u>use of outdoor environments or sustainability</u> ?

Note: alterations represented with underlined italics

3.29 Pilot coding process

A pilot of the coding process used the first case study's interview data. Completion of the first cycle coding methods occurred twice, once using a manual coding system in Microsoft Excel 2010 and once using the qualitative data analysis software, NVivo 10. The reason for this repetition was to test the consistency of the software. NVivo is a software package designed for data rich qualitative data analysis (Bazeley & Jackson, 2013). The pilot process found that both coding processes returned the same results, the only difference being increased efficiency when using NVivo10. Therefore, coding of all proceeding interview transcripts used NVivo 10.

3.30 Interview coding and thematic classification

Coding of interview transcripts focused on identifying sections of text, referred to as excerpts, which related to schools outdoor use, both directly and indirectly. First, a thorough examination of each interview transcript was undertaken prior to the coding process in order to re-familiarise with the script. Coding transcripts verbatim helps to reduce the potential of overlooking data (Jensen & Laurie, 2016; Richards & Morse, 2007; De Walt & De Walt, 2002). For this reason, all transcripts were coded in their entirety within this research. The coding method terminology used within this research is from Saldaña's (2009) *The Coding Manual for Qualitative Researchers*.

A. First Cycle Coding Methods

Grounded theory can involve a number of different coding methods. These split into first cycle coding i.e. the initial stages of coding, and second cycle coding i.e. the more advanced stages of restructuring and categorising the data (Saldaña, 2009). In this research, the interview transcripts were coded using first cycle coding methods, within their professional sector groups i.e. schools, local authority and outdoor education practitioners. Maintaining the distinction between interview sources during first cycle coding can help to reduce the use of pre-conceived categories and concepts leading to data being emphasised or overlooked (Glaser, 1967). For this reason, when coding interviews from each professional sector a new process was started. In chronological order of data collection the school interviews were coded first, then local authority, and last the outdoor education practitioners' interviews.

Due to the nature of the semi-structured interview data being a mixture of factual description, participant perspective and anecdotal information, it was necessary to employ more than one coding method. First cycle coding methods include, initial coding, process coding, descriptive coding and values coding (Saldaña, 2009). Initial coding is the first stage of thematically sorting the data into areas with similar content. This stage incorporates other code types such as process codes that capture action, and descriptive codes where an assigned summative word or phrase describes the code (Saldaña, 2009). These methods were more appropriate than using in vivo coding (where exact text from the transcript is the code) as it allowed grouping data of a similar theme, right from the

beginning. Thematic categorisation occurred throughout the coding process, with themes continually growing, merging and sometimes changing altogether.

Value codes described participant’s personal attitudes or perspectives. Collecting these data was important as it provided information on personal barriers, as well as the direct and physical barriers. First cycle coding methods can also be described as exploratory coding, as repetition of the methods continually reviews and refines the data (Bazeley & Jackson, 2013). This iterative process was used to draw out emerging patterns within the data. Recoding occurred, replacing original codes when newly discovered phrases were more appropriate to the data. This allowed merging of codes of a similar nature, refining and synthesising of data, and development of thematic categorisation. At this stage, all themes divided into two sub-themes, positive and negative. Positive, representing codes relating to opportunities for use of outdoor environments. Negative, representing codes relating to barriers to the use of outdoor environments (Table 3.24).

Table 3.24 Examples of codes in the same theme split into positive and negative sub-themes.

Theme	Sub-theme	Code
Time	Positive	Extra time set aside
	Negative	Overstretched
Collaboration	Positive	Council partnerships
	Negative	Issues with external partners

Saturation occurred on sixth repetition of the first cycle coding methods split by professional sector, yielding no further results. By combining interview data from the three professional sectors, it allowed merging of codes with similar conceptual content, further refining the thematic categorisation. This allowed codes relating to each source to be identified whilst also highlighting codes with significance across all sources. The thematic classification of the first cycle coding identified nine themes (Table 3.25). Five of the themes identified through the first cycle coding methods were the same as those identified within the initial case study framework (Figure 3.2). Three were adapted versions of similar themes, and there was one new theme identified (Table 3.25).

Table 3.25 First cycle coding themes and descriptions

Coding theme	Relation to initial themes	Description
Child development	Same	Anything relating to the holistic development of children, e.g. academic, emotional or physical development
Autonomous Curriculum	Same	Anything related to the autonomy within the curriculum
External factors	Adapted from funding	Anything external, i.e. community, practitioners, parents
Management support	Same	Management structure and processes of organisations, i.e. schools, local authority, outdoor education providers
Outdoor conditions	Same	Anything relating to local outdoor environments, e.g. accessibility, quality, safety, weather
Government influence	Adapted from national policy	Government initiatives, scrutiny and policy
Outdoor engagement	New	Schools use of outdoor environments, actual and potential, barriers and opportunities
Staff attitude	Same	School and local authority staff's attitude to schools use of outdoor environments, i.e. supportive or unsupportive
Time	Adapted from time constraints	Time pressures and reducing time constraints

Note: Status after coding: New = new theme identified, Adapted = theme adapted from original case study framework theme, Same = theme unchanged from original case study framework theme.

B. Second Cycle Coding Methods

The next stage was to employ the advanced methods of second cycle coding. Second cycle coding continues the process of thematic categorisation by using advanced methods of restructuring and re-examining data (Saldaña, 2009). The second cycle coding methods used comprised focused coding and axial coding, working toward the development of grounded theory.

Focused coding involved the analysis of the first cycle codes to identify the most frequently occurring codes as an indication of their importance in relation to the research. This began the identification of potential patterns within the data. Using a frequency count unearthed further patterns within the data. This helped to reduce preoccupation with one idea at this early stage, and helped to account for the fallibility of frequency as an indicator (Saldaña, 2009).

Another process of axial coding explored additional patterns within the data. Axial coding is a process where thematic categorisation determined within the first cycle coding methods are re-examined, taken apart and restructured (Saldaña, 2009). In doing so, previously determined patterns and relationships within the data were re-examined and the original conclusions questioned (Charmaz, 2006). In some cases, this led back to the original decisions and patterns being re-determined. In other cases, it led to the identification of new patterns previously overlooked within the original data (Saldaña, 2009). Saturation occurred after four iterations of the second cycle coding processes.

The completion of the coding process identified thirteen final themes (Table 3.26). Four themes were unchanged from those identified within the first cycle coding methods, four were adapted to encompass a broader range of codes and five new themes were identified (Table 3.26). The dual positive and negative aspect, identified within the initial case study framework (Figure 3.2), was continually re-evaluated throughout the thematic classification process. Each of the final themes still presented both opportunities and barriers to the case study schools use of outdoor environments and so were assigned positive and negative sub-themes. The expansion of themes through the interview analysis suggests that opportunities and barriers associated with schools use of outdoor environments are more complex than has been previously depicted within the academic literature. Understanding the complexities of the factors contributing to schools use of outdoor environments could be key to identifying opportunities to embed it within teaching practice. The data collected during the coding process was summarised by quantifying the number of excerpts assigned to the sub-themes of each theme. The results are presented in section (Table 4.10, 4.18, 4.26; Figures 4.3-4.7).

Table 3.26 Final coding themes and descriptions

Coding theme	Status after final coding	Description
Child development	Same	Anything relating to the academic, emotional or physical development of a child or children.
Collaboration	New	Any suggestion or evidence of collaborative work between two organisations.
Community	New	Any work or interaction with or within the local community.
Curriculum	Adapted from autonomous curriculum	Anything related to the curriculum
Evaluation	New	Any evaluation of local green space and schools using outdoor environments
Funding	Adapted, separated from external factors	Anything to do with funding, i.e. available funds, lack or funds etc.
Green infrastructure	New	Anything to do with local green infrastructure i.e. access and functionality.
Management	Adapted from management support	Management structure and processes of organisations, i.e. schools, local authority, outdoor education providers
Outdoor conditions	Same	Anything relating to local outdoor environments, e.g. accessibility, quality, safety
Policy drivers	Adapted from government influence	Government initiatives, political priorities and policy
Schools outdoor engagement	New	Schools use of outdoor environments, actual and potential, barriers and opportunities
Staff attitude	Same	School and local authority staff's attitude to schools use of outdoor environments, i.e. supportive or unsupportive
Time	Same	Time pressures and priorities

Note: Status after coding: New = new theme identified, Adapted = theme adapted from original case study framework theme, Same = theme unchanged from original case study framework theme.

3.31 Relationship Network Analysis

Employing iterative coding processes redefined the thematic categorisation of the data and revealed emergent patterns. It also highlighted the importance of the relationships between identified themes. During the second cycle coding iterations, relationships between themes, i.e. the direct and indirect impact one theme could have on another, were continually changing the dynamic, importance and interactions between themes. Understanding these dynamic relationships was central to understanding the complex opportunities and barriers affecting schools use of outdoor environments.

In order to understand the relationships between themes, it was necessary to revisit the thematic classification results. Re-examination of each sub-theme's codes using NVivo 10 determined if there were any relationships between themes, i.e. if the code related in any way to another theme. For example, one councillor said there was a green space clean up service provided, if schools wished to use it. Schools had not received information about this service, meaning that the council's lack of communication, incorporated within the theme collaboration, caused a potential barrier to schools outdoor engagement. The relationship was categorised as potential, as it was not possible to evidence if schools would use this service if they knew it existed. Sub-themes were used to identify the relationships, this transferred to positive or negative association of the sub-theme code to the relationship. There were eight different relationship types determined in this way, four relating to positive sub-themes and four to negative (Table 3.27).

Once a relationship was identified between two themes, codes within the initiating theme that evidenced the relationship were assigned a second, relationship code. This determined the directionality and type of relationship (Table 3.27). To do this it was necessary to assign each of the excerpts within the code to the new relationship code. This allowed the frequency of excerpts relevant to each relationship to be accounted. In many cases, codes were assigned to more than one relationship code, representing the complex interrelations between themes and sub-themes. All themes related, in some way, to every other theme.

Table 3.27 Relationship definitions

Sub-theme	Relationship	Definition	Example
Positive	Creating opportunity	When one contributing factor creates an opportunity for another	Positive management support provides opportunities for staff to facilitate outdoor engagement
	Potential opportunity	When a contributing factor creates an opportunity that may not yet be utilised	Funding for community green space improvements has potential to increase schools outdoor engagement
	Working together	When two stakeholders or contributing factors work together to create further opportunities for outdoor engagement	When a school works with the council to improve an area of green space for community use
	Positive association	When contributing factors have indirect positive benefits	Schools use of green space contributing to perceived safety of an area
Negative	Creating barriers	When one contributing factor creates a barrier to another	Staff lacking confidence to teach outdoors won't take their class outside for curriculum delivery
	Potential barriers	When a contributing factor creates a potential barrier	No specific legislation regarding outdoor engagement could mean that some schools are unwilling to include it
	Working against others	When two stakeholders or contributing factors work against each other creating a barrier to outdoor engagement	Complicated procedures for gaining permission to access green space can increase time pressure on teaching staff
	Negative association	When contributing factors have indirect negative benefits	Teachers worried that taking students outside will encourage bad behaviour

Due to the complex nature of these relationships, network diagrams were created using the drawing tool Inspiration 8 IE, to identify patterns in the relationship coding data (e.g. Figure 4.8). Circles represented the themes, with circle size dependent on the number of excerpts coded within the theme, i.e. the more the excerpts the bigger the circle (Table 3.28). Different arrow types represented the different relationship types (Table 3.29). The arrow line and head distinguished the relationship type (Table 3.29) and the thickness of the arrow represented the number of excerpts (Table 3.30) assigned to that relationship. This allowed patterns within the relationship coding to be identified, such as the importance or absence of a relationship between two themes (Figure 3.10).

Table 3.28 Circles representing the number of excerpts assigned to each theme within the relationship network diagrams.



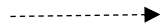


Representative circles	Key	Number of excerpts represented
	1	0 – 200
	2	201 – 400
	3	401 – 600
	4	601 – 800
	5	801 – 1000
	6	1001 – 1200
	7	1202 - 1400

Table 3.29 Relationship types identified within the coding analysis and the acronyms and symbols used to depict them within the network diagrams

Positive relationships	Acronym	Negative relationships	Acronym	Arrow type (both + and -)
Creating opportunity	CO	Creating barriers	CB	
Potential opportunity	PO	Potential barrier	PB	
Working together	WT	Working against others	WA	
Positive association	PA	Negative association	NA	

Note: As the negative and positive sub-themes were analysed and presented separately, opposing relationships for positive and negative could be represented with the same arrow type.

Table 3.30 Key depicting the number of excerpts represented by arrow width in Figure.

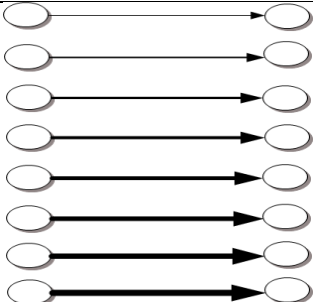
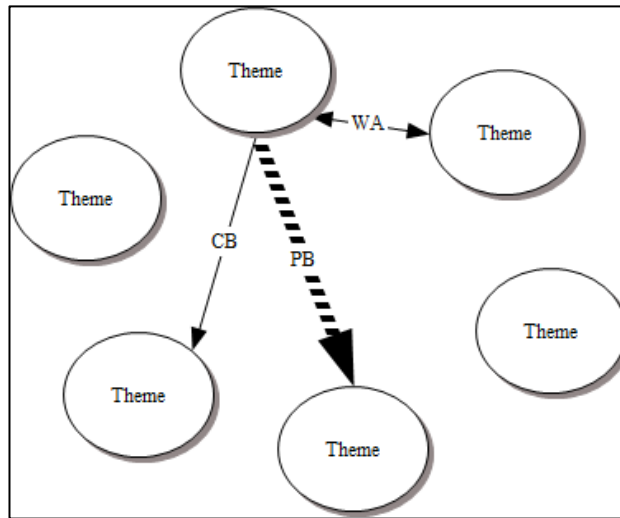
Representative arrows	Key	Number of excerpts represented
	1 x thickness	0 – 100
	2 x thickness	101 – 200
	3 x thickness	201 – 300
	4 x thickness	301 – 400
	5 x thickness	401 – 500
	6 x thickness	501 – 600
	7 x thickness	601 – 700
	8 x thickness	701 - 800

Figure 3.10 Example of the network diagrams created to determine patterns in the relationship coding between themes.



Note: The arrow line and head represent the relationship type (Table 3.29) and the thickness represents the number of references assigned to it. Circles differed in size depending on the number of codes (and excerpts) assigned to each theme

3.32 In the next chapter

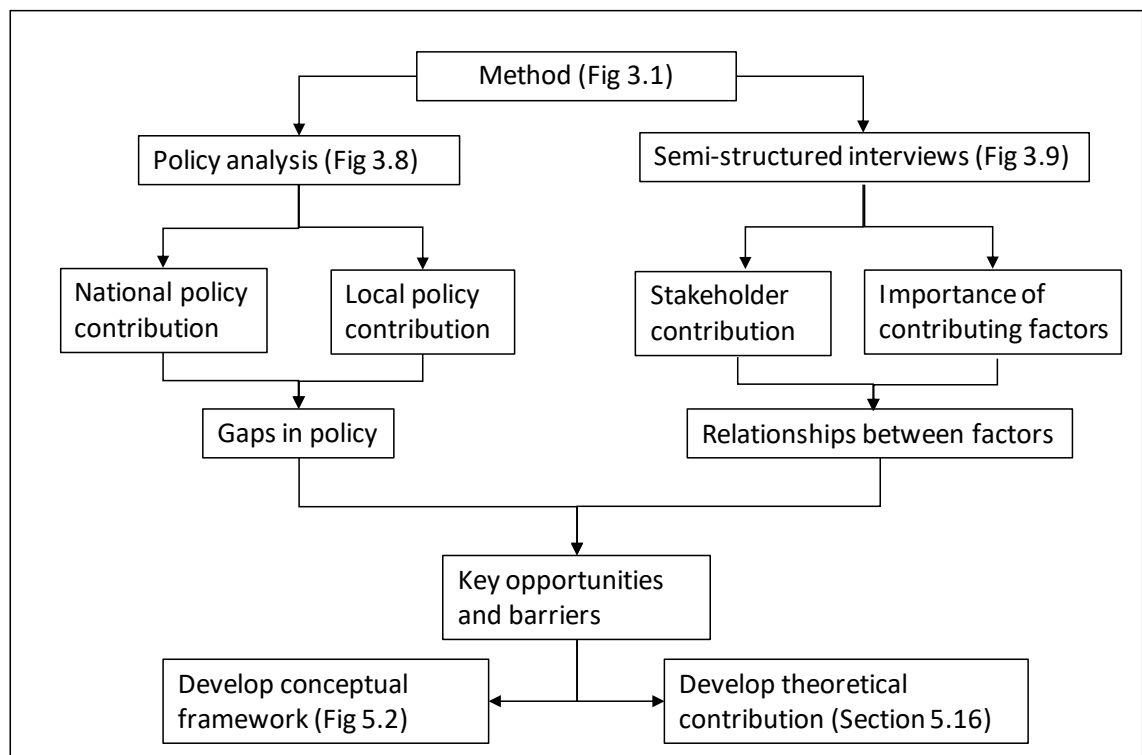
The results chapter presents the findings of the research from the two stages of analysis. These comprise the policy contribution (Section 4.2), thematic classification of the interview coding (Section 4.12) and relationship network analysis (Section 4.26).

Chapter 4. Results and preliminary discussion

4.1 Introduction

The results chapter presents the findings of the three stages of analysis and initial interpretation. These stages comprise policy analysis, coding analysis and relationship network analysis. Firstly, the findings of the policy analysis were summarised and the presence and frequency of key words were used to determine influence on schools' use of outdoor environments. This process identified inter departmental connections, as well as vertical and horizontal integration. Secondly, coding analysis of the semi-structured interviews redeveloped the classification of themes contributing to schools' use of outdoor environments. Thirdly, relationship analysis of the final themes identified how themes related and affected one another. Interpretation of the inter-theme relationships revealed the complexities associated with embedding schools use of urban green space and identified opportunities for cross-sector collaboration.

Figure 4.1 Overview of results and associated interpretations



4.2 Policy results

4.3 National policy findings

The national policy selection (Section 3.15) identified 35 national policies; 6 published by DfE, 19 by DEFRA and 10 by DCLG (Table 4.1). Policies were selected that had potential to influence schools' outdoor use. Policy analysis revealed that national policies focused on their departmental discipline, although there were some interdepartmental associations between policies. The findings of the national policy analysis can be found in Sections 4.4, 4.5 and 4.6. These findings are then summarised in Section 4.7.

Table 4.1 Frequency and percentage of key words identified through national policy analysis

Ministerial department	No. of polices analysed	Ed.		Ed. and Env.		Env.		Total	
		No.	%	No.	%	No.	%	No.	%
DfE	6	3975	95	6	<1	193	5	4174	100
DEFRA	19	639	6	88	1	10351	93	11078	100
DCLG	10	314	44	1	<1	397	56	712	100
Total	35	4928	31	95	1	10941	68	15964	100

4.4 Department for Education policy contribution

The national policy selection identified six national education policies (including the addition of the National Curriculum) with potential relevance to schools' use of outdoor environments (Section 3.14; Table 3.13). The policy analysis determined the absence and frequency of key words (Table 3.8) within the policies. In total, 4174 key words were identified within the six education policies (Table 4.2). The majority of these, 95% (n=3975), were education key words, with <1% (n=6) education and environment key words and 5% (n=193) environment key words (Table 4.2).

Education and environment key words were found within just two of the education policies. The first policy (DfE, 2013b) focused on early years learning. The early year's framework in use when DfE, 2013b was published, stipulates the expectation of providers to facilitate regular access to outdoor environments i.e. *'Wherever possible, there should be access to an outdoor play area, and this is the expected norm for providers. In provision where outdoor play space cannot be provided, outings should be planned and taken on a daily basis'* (DCSF, 2008, pg.35). The same guidance is provided in the 2017 framework (DfE, 2017, pg.30). With this stipulation, it could be expected that further support would be provided for the implementation of outdoor use. Despite this, analysis found <1% (n=1) of key words pertaining to the use of outdoor environments within this policy (Table 4.2). The identified key word term, 'going outside' was included in an excerpt from a childminder who described the use of outside environments as a learning tool (DfE, 2013b, pg.20). The implications of this means that the only indication of the potential of using outdoor environments is an anecdotal example, unrelated to school or the curriculum. This means that the suggestion in the early years framework (DfE, 2017; DCSF, 2008), that outdoor environments should be used daily is unsupported, providing schools with incomplete guidance.

The second policy that contained education and environment key words was the National Curriculum (DfE, 2013d). DfE (2013d) included 1% (n=5) education and environment key words, all pertaining to the use of fieldwork in Geography. Whilst the inclusion of fieldwork is positive, limiting it to use within one-subject gives the impression that it cannot be used as a cross disciplinary learning resource.

Table 4.2 Policy analysis results for policies published by DfE

DfE policies	Ed.		Ed. and Env.		Env.		Total	
	No.	%	No.	%	No.	%	No.	%
Key words found								
Positive for Youth: progress since December 2011 (DfE, 2013a)	119	99	0	0	1	1	120	100
Early learning for 2-year-olds (DfE, 2013b)	241	98	1	<1	5	2	247	100
Supporting young people to develop the skills for apprenticeships and other sustained jobs: a discussion paper (DfE, 2013c)	150	99	0	0	1	1	151	100
Framework for the National Curriculum: a report by the expert panel for the National Curriculum review (DfE, 2011)	949	97	0	0	26	3	975	100
The importance of teaching: the schools White Paper 2010 (DfE, 2010)	2099	100	0	0	1	<1	2100	100
The National Curriculum in England. Key stages 1 and 2 framework document (DfE, 2013d)	417	72	5	1	159	27	581	100
Total key words found	3975	95	6	<1	193	5	4174	100

Note: Numbers represent the total key words found for each policy under each category and the percentage of key words per categorisation (rounded up to zero decimal). Letters (i.e. a, b, c) differentiate between policies with the same citation.

Only 5% (n=193) of the key words found within the education policies were environment key words, and appeared across five of the six policies. Of the environment words found, 82% (n=159) were in the National Curriculum (DfE, 2013d). Within this policy (DfE, 2013d), there were three direct mentions of delivering curriculum outdoors. One mention was within guidelines for physical education and there were two further mentions for using school gardens as a teaching resource (Table 4.3).

Table 4.3 Direct mention of using outdoor environments for education within DfE (2013d)

Context	Quote	Citation
Physical education	<i>'Take part in outdoor and adventurous activity challenges both individually and within a team.'</i>	DfE, 2013d, Pg.199
School gardens	<i>'They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment'</i>	DfE, 2013d, Pg.168
	<i>'They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds...]</i>	DfE, 2013d, pg. 181

There were further suggestions of using outdoor environments, described using the terminology 'local environment'. Reference to local environment made up 7% (n=11) of the environment key words, with 5% (n=8) pertaining to the use of, and 2% (n=3) to the knowledge of. This suggests that using community resources is an expected part of the curriculum. However, this can require specialist knowledge and confidence in outdoor environments, none of which are included within teacher training programmes. The terminology used within these instances, e.g. *'Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment'* (DfE, 2013d, pg.158); although seemingly encouraging the use of outdoor, natural environments, does not explicitly say that children have to go outside. This leaves the interpretation open, e.g. using symbolic representation of the local environment such as pictures, natural materials brought in to the classroom or use of the local built environment. The lack of specific guidance on how schools could use outdoor environments could, in itself create a barrier to engagement.

4.4 Department of Environment, Food and Rural Affairs contribution

The national policy selection process identified 19 policies published by DEFRA with potential relevance to the use of outdoor environments (Section 3.15; Table 3.14). In total, 11078 key words were identified, the majority of which, 93% (n=10351), were categorised under environment (Table 4.4). The key word analysis identified the highest number of interdepartmental connections within the DEFRA policies (Table 4.4). However, to put this in relation of the policy priorities, only 7% (n=727) of the key words identified, were within the other two categories; 6% (n=639) were education, whilst education and environment key words made up only 1% (n=88). The inclusion of multi-disciplinary connections may be considered a positive result as it indicates an understanding of policy integration. However, the low percentage of multi-disciplinary connections suggests policy integration could be improved across all departments.

Two policies contained the majority of the education and environment key words (Table 4.2). The first policy (DEFRA, 2011i) contained the highest number (n=40), although only 1% of the total key words found within the policy. Of these, 26 were in reference to initiatives relating to ecological behaviour change e.g. Sustainable Schools, Forest School and biodiversity education. A further seven, related to school grounds, and five related to the importance of contact with nature. The inclusion of these topics indicates a level of appreciation of their importance. However, the use of initiatives could maintain the perception of outdoor use as extra-curricular. This could hamper schools own efforts to embed outdoor learning in a way that is maintainable for them.

The second policy was the government's Natural Environment White Paper (DEFRA, 2011l) and contained 2% (n=27) education and environment key words. Of these, 12 related to initiatives encouraging schools to increase ecologically friendly activity, e.g. preserving natural environments, health and waste management. The remaining 15 were regarding the social benefits of interacting with nature, particularly in relation to child development and education. The inclusion of education and environment key words within the environment White Paper indicates an understanding of the potential

benefits gained from schools use of outdoor environments. The lack of reiteration within the national education policy presents inconsistencies in the guidance provided for schools on use of outdoor environments and a lack of horizontal policy integration between departments.

The remaining education and environment key words appeared within a further seven policies (Table 4.4). DEFRA (2013f) contained 10% (n=9), all relating to forest school and forest education. The final 14% (n=12) occurred across six policies and covered topics such as biodiversity, well-being, national parks and sustainable development. The dispersal of education and environment key words across nine environment policies is an indication that the educational potential of outdoor environments is far-reaching and multidisciplinary. This could mean that with the appropriate support structure, schools utilising outdoor environments could provide diverse opportunities for learning.

Education key words made up 6% (n=639) of the total key words found. These were in just two policies, DEFRA (2011a) and DEFRA (2011i). The key words relating to primary education, focused on the use of initiatives in schools to embed environmentally friendly behaviours, i.e. recycling, energy saving, use of sustainable transport. This indicates a one-sided view of the connections between environment and education. The use of initiatives does not account for variation in school circumstances and could mean that schools resources are utilised inefficiently. This could affect the longevity of a school's ability to engage with such initiatives.

4.6 Department for Communities and Local Government contribution (Ministry of Communities and Local Government since January 2018)

There were ten DCLG policies selected using the criteria (Section 3.15; Table 3.15). Within these ten, a total of 712 key words were found (Table 4.4). Of these, 56% (n=397) were environment key words, 44% (n=314) education and <1% (n=1) education and environment (Table 4.5). The only education and environment key word term was 'going outside' and found in DCLG (2012b).

Table 4.4 Policy analysis results for policies published by DEFRA

DEFRA policies	Ed.		Ed. and Env.		Env.		Total	
	No.	%	No.	%	No.	%	No.	%
Key words found								
Bees and other pollinators: their health and value (DEFRA, 2013a)	12	7	0	0	172	93	184	100
Public Forest Estate Management Organisation: development of responsibilities (DEFRA, 2013b)	1	9	0	0	10	91	11	100
Payments for Ecosystem Services (PES) action plan (DEFRA, 2013c)	17	4	0	0	452	96	469	100
Mainstreaming sustainable development: government progress 2013 (DEFRA, 2013d)	24	17	0	0	118	83	142	100
English national parks and the broads: UK government vision and circular 2010 (DEFRA, 2013e)	20	3	2	<1	675	97	697	100
Government forestry policy statement (DEFRA, 2013f)	38	13	9	3	242	84	289	100
Report of the Habitats and Wild Birds Directives Implementation Review (DEFRA, 2012)	4	1	0	0	350	99	354	100
Securing the future - delivering UK sustainable development strategy (DEFRA, 2011a)	217	21	3	<1	822	79	1042	100
Social Impacts and Wellbeing * (DEFRA, 2011b)	29	25	1	<1	84	74	114	100
Biodiversity 2020: A strategy for England's wildlife and ecosystem services (DEFRA, 2011c)	12	1	3	<1	851	98	866	100
Enabling the transition to a green economy (DEFRA, 2011d)	3	8	0	0	33	92	36	100
Government response to the making space for nature review (DEFRA, 2011e)	3	1	0	0	229	99	232	100
The natural choice: securing the value of nature (DEFRA, 2011l)	98	7	27	2	1277	91	1402	100
Natural environment: Adapting to climate change (DEFRA, 2011f)	7	1	0	0	578	99	585	100
Conserving Biodiversity - The UK Approach (DEFRA, 2011g)	6	1	2	<1	462	98	470	100
England biodiversity strategy: Climate change adaptation principles (DEFRA, 2011h)	4	2	0	0	187	98	191	100
Working with the grain of nature: a biodiversity strategy for England (DEFRA, 2011i)	127	5	40	1	2549	94	2716	100
An invitation to shape the Nature of England - Discussion document (DEFRA, 2011j)	1	<1	1	<1	290	99	292	100
An introductory guide to valuing ecosystem services (DEFRA, 2011k)	16	2	0	0	970	98	986	100
Total key words found	639	6	88	1	10351	93	11078	100

*Note: Numbers represent the total key words found for each policy under each category and the percentage of key words per categorisation (rounded up to zero decimal). Letters (i.e. a, b, c) differentiate between policies with the same citation. * Sub- heading: Multi-criteria analysis techniques for integrating non-monetary evidence in valuation and appraisal.*

Rather than referencing a positive attitude to the use of outdoor environments, it was in relation to a study that found young people did not feel safe in their own community, i.e. ‘70% of local young people didn’t feel safe in their own communities and 95% felt unsafe going outside their area.’ (DCLG, 2012b, pg.73). This highlights two barriers to schools use of outdoor environments. Firstly, the perception that the outdoor environment within people’s community are unsafe. Secondly, as the National Curriculum (DfE, 2013d) specifically recommends schools use of local environments; guidance is needed supporting local authorities to enable this. However, there is no mention let alone guidance. This means that once again, the message provided through national policy is incomplete.

Table 4.5 Policy key word analysis results for policies published by DCLG

DCLG policies	Ed.		Ed. and Env.		Env.		Total	
	No.	%	No.	%	No.	%	No.	%
Accelerating the release of surplus public sector land: progress report (DCLG, 2012a)	4	17	0	0	19	83	23	100
Building safe, active communities: strong foundations by local people (DCLG, 2012b)	111	81	1	<1	25	18	137	100
Decentralisation: an assessment of progress (DCLG, 2012c)	68	69	0	0	30	31	98	100
High streets at the heart of our communities: response to the Mary Portas review (DCLG, 2012d)	10	91	0	0	1	9	11	100
Shaping our future: implementation plan for government commitments (DCLG, 2012e)	4	11	0	0	33	89	37	100
National Planning Policy Framework (DCLG, 2012f)	14	5	0	0	265	95	279	100
Government response: regeneration (DCLG, 2012g)	17	57	0	0	13	43	30	100
Government response to the Communities and Local Government Select Committee's report (DCLG, 2011a)	8	80	0	0	2	20	10	100
Change of land use in the planning system: issues paper (DCLG, 2011b)	8	80	0	0	2	20	10	100
Working neighbourhoods fund: project study (DCLG, 2010)	70	91	0	0	7	9	77	100
Total key words found	314	44	1	<1	397	56	100	100

Note: Numbers represent the total key words found for each policy under each category and the percentage of key words per categorisation (rounded up to zero decimal). Letters (i.e. a, b, c) differentiate between policies with the same citation.

4.7 National Policy Summary

The education policy provided the least interdisciplinary representation within their policies, with only 5% (n=199) of the total key words categorised under a different theme (Table 4.1). Quotes identified within the environment paper directly linking to education policy, were not reciprocated. This indicates a potential lack of inter departmental collaboration and horizontal integration. The DEFRA policies included discussion of other disciplines as isolated subjects but also incorporated a holistic approach exploring how natural environments can be utilised for social and economic benefit, as well as environmental. Utilising a holistic approach to policy development across ministerial departments could help to develop mutually beneficial and effective solutions (Van Oosten et al, 2018). However, the policy analysis identified that this interdisciplinary approach was largely restricted to two policies (Table 4.4). This means there is potential to increase the use of this approach across all ministerial departments. Analysis of the DCLG policies identified representation of both environmental and educational issues. However, there was no representation of the use of outdoor environments for education or any other social benefit. This means that local authorities have no guidance through vertical policy integration in relation to schools use of outdoor environments. This also means that there is no policy drive to include education as an objective within the planning and maintenance of the outdoor environments that they are responsible.

4.8 Local authority policy findings

There were nine policies identified across the three local authorities (Section 3.14; Table 3.16) suitable for analysis (Table 4.6). Across the nine selected policies, a total of 2596 key words were found, 83% (n=2154) of these were categorised under environment, 17% (n=126) under education, and <1% (n=13) under education and environment (Table 4.6).

Table 4.6 Frequency and percentage of key words identified through local policy analysis

Local authority	No. of policies analysed	Ed.		Ed. and Env.		Env.		Total	
		No.	%	No.	%	No.	%	No.	%
Bolton	1	91	23	0	0	310	77	401	100
Manchester	4	212	14	13	<1	1253	85	1478	99
Tameside	4	126	18	0	0	591	82	717	100
Total	9	429	17	13	<1	2154	83	2596	NA

The education and environment key words were in just one policy (Table 4.6). This policy (Manchester City Council, 2012b), discussed the environmental, economic and social benefits of increasing biodiversity and access to green space within the city. This included engaging schools using resource packs and initiatives (Table 4.7). This indicates that Manchester city council recognises the value of multi-functionality and of biodiverse environments within the city. This could be because Manchester city council often collaborates with local universities in the field of urban ecology i.e. Oxford Road Green Corridor and Birley Fields Campus, Manchester Metropolitan University (Manchester City Council, 2015). This could indicate a lack of understanding or resources within the other two authorities. This could mean that having a cross-authority approach to sharing knowledge would help develop an integrated approach to improving opportunities for biodiversity, and consequently education, across Greater Manchester.

Table 4.7 Education and environment key words found within MCC, 2012b

Ed. and Env.	No. of key words found	Context
Outdoor learning	1	Encouraging outdoor learning programmes
School grounds	5	Use of school grounds to encourage nature, i.e. biodiversity audit.
Environmental education	3	Resources – Wild About Manchester environmental education teacher packs.
Eco-School	3	Increasing opportunities for schools to engage. Platform for incorporating biodiversity.
Forest school	1	Increasing opportunities for schools to engage.

Analysis of the remaining local authority policies identified links to both education and environment (Table 4.6). These were included as separate topics and with no interdisciplinary connections made between the two. This indicates that local

authorities may not use an interdisciplinary approach to policy development. This could mean that inter departmental opportunities for collaboration are being missed, potentially hindering efficiency.

4.9 Local authority policy summary

The low number of relevant policies identified across the three local authorities suggests that green space responsibilities were low on their agenda. This could be an indication of the effect that cuts to local authority budgets are having on their ability to provide public services. This could mean further barriers to schools use of green space, if maintenance and management responsibilities are reduced.

The results of the local authority policy analysis identified further gaps at local government level, with regard to schools use of outdoor environments. Overall, there was a higher representation of environmental issues than educational issues within the local authority policy. Of all the key words found, 83% (n=2154) were environment, 17% (n=429) education, and <1% (n=13) education and environment (Table 4.6). The low number of education and environment key words indicates that local authorities do not consider schools when developing strategies to deliver on community objectives. This could be because local authorities have few educational responsibilities surpassing attainment levels and school budget allocation, with fundamental decision-making for schools centralised. This means that schools trying to facilitate the use of outdoor environments could face barriers. Isolating schools from community objectives could also contribute to long-term social issues.

4.10 Greater Manchester combined policy findings

There were only two relevant Greater Manchester policies referenced on the local authority websites at the time of policy selection (Section 3.17C). Within these two policies, there were 255 key words found; 80% (n=205) were environment and 20% (n=50) were education. The interdisciplinary topic of schools use of outdoor environments was not included and there were no education and environment key

words found (Table 4.8). This indicates that schools use of outdoor environments is not a consideration at sub-regional level authority. This highlights a missed opportunity in terms of sub-regional level green infrastructure strategy. Vertical policy integration could influence whether local authorities include the educational benefits of green space. The inclusion of the educational benefits of green infrastructure as an objective could provide another aspect supporting the protection and enhancement of urban green space.

Table 4.8 Frequency and percentage of key words in Greater Manchester combined authority policy

Policy	Ed.		Ed. and Env.		Env.		Total	
	No.	%	No.	%	No.	%	No.	%
Green Infrastructure Framework. Final report *	3	2	0	0	194	98	197	100
Greater Manchester Strategy **	47	81	0	0	11	19	58	100
Total	50	20	0	0	205	80	255	100

* (AGMA, 2011); **(AGMA, 2013)

4.11 Overall policy analysis summary

The results of the national policy review found a disparity in the government's support for schools' use of outdoor environments. National environmental policy demonstrated understanding of the potential benefits gained from engaging with outdoor environments. Many of these benefits were included from a societal perspective but with recognition for the particular value, interactions in nature can have for urban children. The environment White Paper advocated the use of outdoor environments in schools, drawing on the potential educational benefits. However, the education White Paper did not reiterate this message and throughout all national educational policy, there was little guidance on outdoor use by schools. The inconsistent message to schools that this presents indicates a lack of horizontal integration between departments.

The results of the local authority policy review identified a lack of support for schools' use of outdoor environments. Only one of the three authorities demonstrated any understanding of the potential of green space as an educational resource. This was

encouraged through use of initiatives and educational resource packs, rather than tailored support for individual schools. As local authorities are currently responsible for the majority of public green space available for schools use, their lack of consideration of its educational benefits could cause barriers to schools use.

The Greater Manchester Combined Authority policy analysis also had no indication that the educational benefits of green space were considered an objective in the two policies used. Further exploration of sub-regional level support for the educational benefits of green space is included as part of the in-depth discussion (Section 5.7).

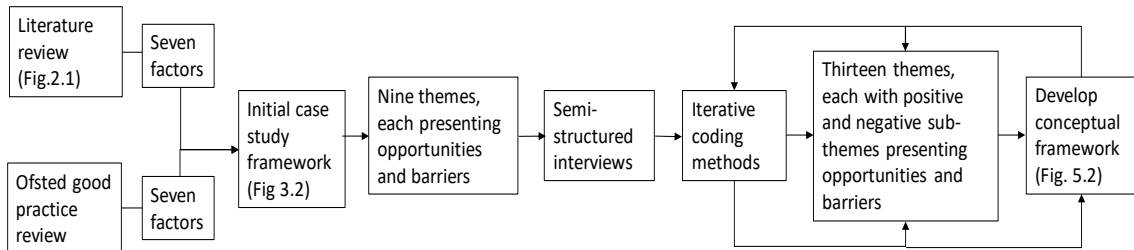
Overall, the results of the policy analysis found that there were gaps in policy at all levels. The inconsistent message found within national policy, resulting from a lack of horizontal integration means that any guidance on the use of outdoor environments is unlikely to reach the majority of schools. The national primary curriculum includes some reference to the use of outdoor environments. However, this is included without any specific guidance on implementation or inclusion in teaching training programmes (Beames et al, 2012). The omission of schools outdoor engagement from local authority objectives means that schools proactively seeking to use outdoor environments for curriculum delivery may face barriers to engagement. Analysis of the interview data is required to determine if the lack of policy support effects schools actual engagement opportunities.

4.12 Interview coding results

The initial case study framework identified eight themes contributing both opportunities and barriers to outdoor environment use within primary curriculum (Figure 3.2). These themes contributed to the development of the semi-structured interviews with the three main sectors involved in using outdoor environments for education, i.e. schools, local authorities and outdoor education practitioners. Interview data was then thematically classified using an iterative coding process (Section 3.30). The coding

process (Figure 4.2) developed the themes used within the conceptual framework (Figure 3.2).

Figure 4.2 Methodological process from initial case study framework through to conceptual development



The full interview transcripts were analysed using first and second coding cycles (Section 3.30). Thematic classification identified thirteen themes (child development, collaboration, community, curriculum, evaluation, funding, green infrastructure, management, outdoor conditions, policy drivers, schools outdoor engagement, staff attitude and time), each with two sub-themes (Section 3.30B, Table 3.26). The sub-themes categorised the opportunities (positive) and barriers (negative) presented within a theme. The coding process assigned excerpts from the transcripts to the relevant sub-theme. The number of excerpts coded to a sub-theme was an indicator of the sub-themes associated importance to the interview participants. For example, the positive sub-theme with the highest number of excerpts assigned within the school interviews was indicative of the factor that schools identified as presenting the most opportunities for using outdoor environments.

4.13 Data interpretation

The coding results revealed 68% percent (n=7122) of coded excerpts, were assigned to positive, rather than negative, sub-themes (Table 4.9). This indicates that participants identified more opportunities than barriers for using outdoor environments. This could be a result of using best practice schools, meaning that participants across all sectors had prior involvement with enabling schools use of outdoor environments. The identification of more opportunities than barriers was consistent across all participant sectors, although local authority participants identified the highest percentage, 39%

(n=1209), of excerpts assigned to a negative sub-theme. This could be an indication that the main barriers to schools use of outdoor environments lies within the local authority sector. This could be a result of local authority funding cuts and the lack of collaboration between schools and local authorities.

Table 4.9 Number and percentage of excerpts assigned to sub-themes across professional sectors

Sub-theme	Negative excerpts		Positive excerpts		Total excerpts	
	Number	%	Number	%	Number	%
Schools	1548	29	3799	71	5347	100
Local authority	1209	39	1905	61	3114	100
Practitioners	567	29	1418	71	1985	100
Overall	3324	32	7122	68	10446	100

Note: The number of excerpts assigned to a sub-theme was, an indicator of its perceived importance.

Nearly one third of all of the excerpts were assigned to negative sub-themes (32%, n=3324) identified throughout the interviews (Table 4.9). This suggests that even for schools actively facilitating the use of outdoor environments there are still barriers to overcome. Identifying the themes contributing these barriers and the relationships between themes, could help identify ways to overcome barriers to schools use of outdoor environments. Analysing the data by professional sector identified patterns that ran across the data as well as revealing conflicting perspectives between sectors.

4.14 School interview coding results

Coding of the school interviews revealed patterns across the sector and between schools. There were opportunities and barriers identified within all sub-themes, across the thirteen themes (Table 4.10). Ten of the thirteen themes had the majority of the coded excerpts assigned to the positive sub-theme, indicating higher representation of opportunities (Table 4.10). The school interviewees identified three themes, funding, outdoor conditions and time as presenting more barriers than opportunities. The theme policy drivers presented almost equally for creating both opportunities (51%, n=191) and barriers (49%, n=184). The themes time and policy drivers had the highest number of excerpts assigned to the negative sub-themes, indicating that they both present

important barriers to schools use of outdoor environments. Child development, management and staff attitude had the highest number of excerpts categorised to the positive sub-themes, indicating that they are important for enabling schools' use of outdoor environments. Exploration of these themes in the next section will help identify opportunities for overcoming barriers to schools use of outdoor environments. These findings are discussed in relation to the literature within the discussion (Chapter 5).

Table 4.10 Coding results from the semi-structured school interviews

Theme	Measure	No. of excerpts per sub-theme		Total excerpts per theme	% of excerpts per sub theme		% excerpts per theme
	Sub-theme	-ve	+ve		-ve	+ve	
Child Development		103	833	936	7	22	29
Collaboration		65	272	337	4	7	11
Community		152	314	466	10	8	18
Curriculum		42	211	253	3	6	9
Evaluation		18	158	176	1	4	5
Funding		71	26	97	5	<1	5
Green infrastructure		181	320	501	12	8	20
Management		106	541	647	7	14	21
Outdoor conditions		142	42	184	9	1	10
Policy drivers		184	191	375	12	5	17
Outdoor engagement		70	354	424	5	9	14
Staff attitude		152	495	647	10	13	23
Time		262	42	304	17	1	18
Total		1548	3799	5347	102	99	NA

Note: Percentages used were rounded up to the nearest decimal place, hence +/- 100% total

4.15 Important barriers for schools

The school interviewees identified time and policy drivers as the main barriers to facilitating use of outdoor environments. The sub-theme presenting the highest number of barriers was time, with 17% (n=262) of the total excerpts. Of the excerpts assigned under the theme time, 262 were categorised within the negative sub-theme, with only 42 of the excerpts categorised as positive. The negative majority indicates that overall time is a major barrier to schools use of outdoor environments. The perception of time as a barrier to schools outdoor use could be due to the traditional view that outdoor use in education is extra-curricular (Nicol, 2002). The issues raised as barriers presented by time included teachers feeling overstretched, with too many outcomes expected of

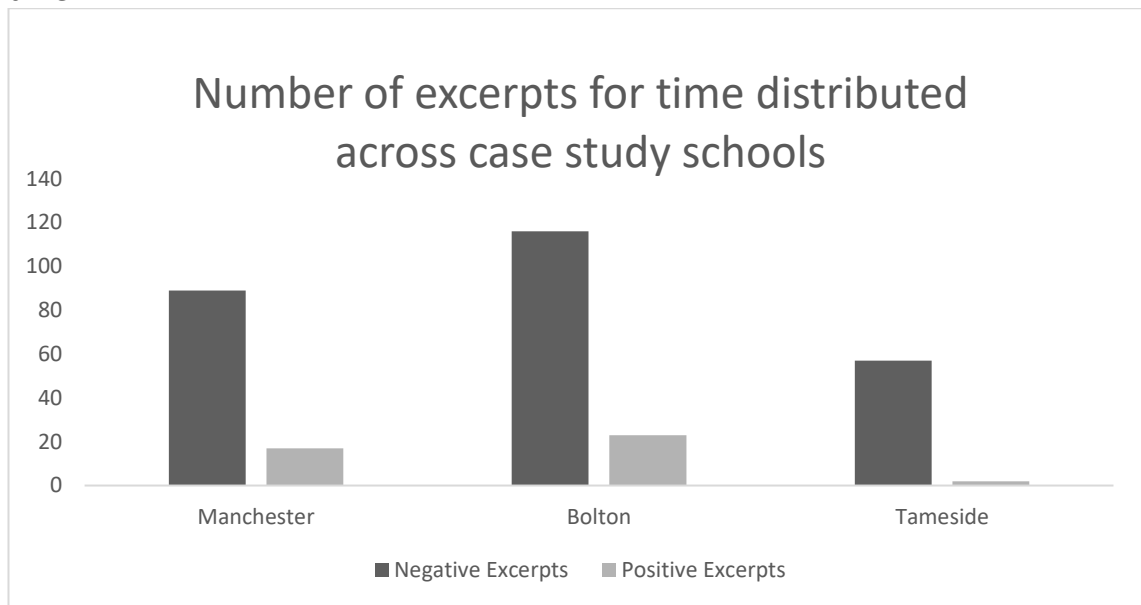
them (Table 4.11). This could mean that teachers do not view the outdoor environment as an educational resource that will help them deliver the core teaching and learning outcomes outlined in the curriculum. The stated purpose of the autonomous curriculum was to allow teachers to have more freedom to deliver their teaching around the curriculum (DFE, 2013d). However, without initial teacher training to use outdoor environments, the autonomy afforded to schools, may have actually restricted how teachers feel they are able to deliver the curriculum.

Table 4.11 Examples of coding categorised under time within the school interviews

Sub-theme	Code	Source	Excerpts
Positive	No additional time needed	Manchester school	<i>"For my grow it (outdoor sessions) in the afternoons, it takes me about the same (planning time) if not less."</i>
Negative	Slow progress	Bolton school	<i>"It is baby steps...its taking one step at a time."</i>
	Not enough time	Bolton school	<i>"We don't really have time... if there were less of all the other things that you had to do."</i>
		Manchester school	<i>"We have got to fit in so many different things...there are time constraints."</i>
	Added pressure	Tameside school	<i>"It is really hard, you don't want to overload people."</i>
Additional work	Bolton school	<i>"It just makes more work in some ways, from a class teachers point of view."</i>	

To explore the theme time further, results were also analysed separately by case study school (Figure 4.3). The results show that interviewees from Tameside, the school with the most well established outdoor engagement programme, identified fewer (n=60) barriers associated with time, than either Bolton (n=125) or Manchester (n=100). The interviewees from the Tameside school also identified very few opportunities associated with time (n=2), indicating that time may not be perceived as an important factor for this school. This could be because the Tameside school have access to green space directly attached to their school grounds, meaning that issues associated with travelling time and access to resources are reduced. The Bolton school on the other hand, the school with the least amount of onsite outdoor space, identified time as the second highest (n=125) contributing barrier to using outdoor environments. Overall, the coding analysis identified time as a major barrier to schools' use of outdoor environments, with the associated barriers reduced as proximity to green space increased.

Figure 4.3 School interview coding results, divided by case study school for the theme time



The policy drivers theme was identified as important for presenting barriers to outdoor use in schools because it was one of only three themes with a higher percentage of negative excerpts (12%, n= 184) than positive excerpts (5%, n=191). When examined in detail, the majority, 71% (n=131) of the excerpts assigned to these negative codes were from the Bolton school (Figure 4.4). It was Bolton that also had the majority share of excerpts for the positive sub-theme of policy drivers, although this was lower at 46% (n=87) (Figure 4.4). The high importance the Bolton school attributed to both positive and negative sub-themes in policy drivers indicates the school may have been more aware or affected by educational policy than either the Manchester or Tameside schools. The issues raised as barriers created by policy drivers comprised lost focus on outdoor learning due to local government funding cuts, lack of consistency caused by changing initiatives and national policies ineffectiveness at a local level (Table 4.12). These issues suggest a sense of disillusion with government, caused by inaccessible and ineffective policies. This could be a result of a top down and market driven governing structure that is putting pressure on schools to perform to certain targets (Wilkins, 2015).

Figure 4.4 School interview coding results, divided by case study school for the theme policy drivers

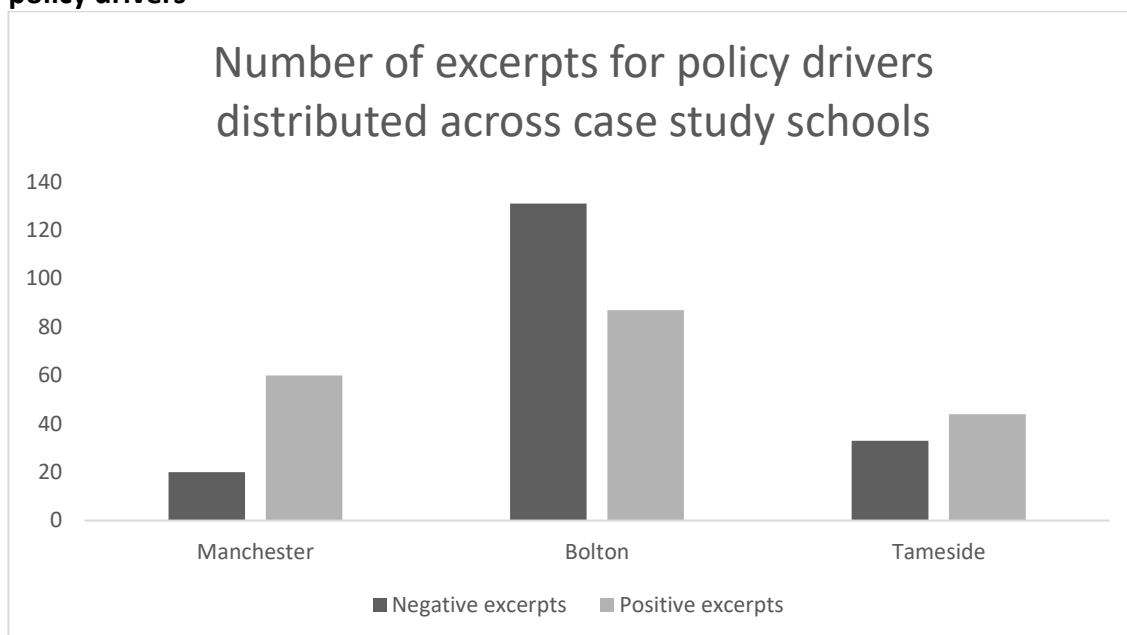


Table 4.12 Examples of coding categorised under policy drivers within the school interviews

Sub-theme	Code	Source	Excerpts
Positive	Some frameworks available	Bolton school	<i>"Things like that give a good structure for doing that kind of thing."</i>
		Tameside school	<i>"It makes sure that you are on the right track."</i>
Negative	Negative government influence	Bolton school	<i>"Since Conservatives* came into government, they got rid of it all."</i>
		Tameside school	<i>"Well, the present Government, without getting to political, is far less interested than the last one."</i>
	Not main priority	Bolton school	<i>"It's these things that are the optional extras, you'll not do as often."</i>
			<i>"It is not one of the top priorities on the school improvement plan."</i>
	Policies ineffective	Tameside school	<i>"I wouldn't say that the policies are referred to."</i>
More support needed	Manchester School	<i>(Using outdoors) "is not one of those things where you can say, this is history...it is actually leaving a lot to the class teachers."</i>	

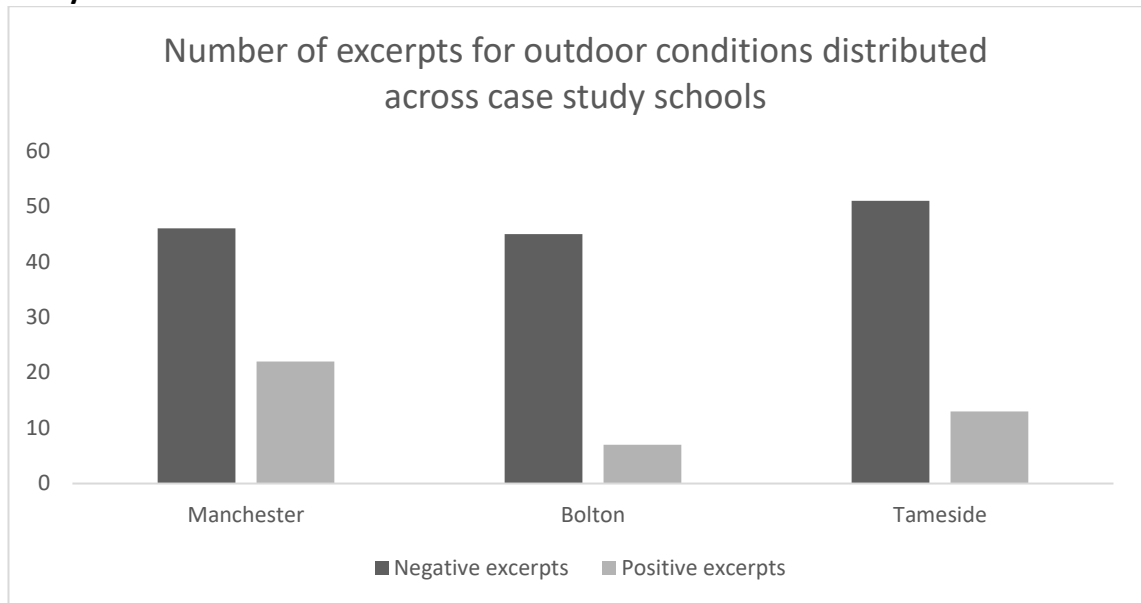
*Conservatives are a centre-right, UK political party that have been in full power since 2016, but prior to this as part of a coalition with the liberal democrats (2010-2015).

Similarly to time, outdoor conditions was found to provide few opportunities for schools outdoor use, with only 1% (n=42) of the total positive excerpts (Table 4.10). Overall, the theme was found to create more barriers than opportunities, with 77% (n=142) negative excerpts. The number of excerpts assigned to the negative sub-theme was similar across Manchester (n=46), Bolton (n=45), and Tameside (n=51) schools, indicating this was an important barrier for all schools (Figure 4.5). Barriers identified in relation to outdoor conditions included health and safety, hygiene and weather (Table 4.13). The school interviewees did identify ways to overcome these conditions i.e. using risk assessments, all weather clothing and risk benefit analysis (Table 4.13). The positivity in relation to overcoming barriers suggests that they could be easily surmountable with the right resources. As the associated barriers have been identified this could mean that schools are unable to provide these resources due to a lack of time or funding.

Table 4.13 Examples of coding categorised under outdoor conditions within school interviews

Sub-theme	Code	Source	Excerpts
Positive	Mitigating risk	Tameside school	<i>"It is just making sure that all of your risk assessments are in place."</i>
	All weathers	Manchester school	<i>"They come out in any weather."</i>
Negative	Safety concerns	Bolton school	<i>"Health and safety is a constant battle."</i>
		Tameside school	<i>"If you go to the nearby park, you do not know who has been. There are broken bottles; it is not safe to take the children."</i>
	Bad weather conditions	Bolton school	<i>"We didn't (have a back-up plan) and it really messed the topic up because there wasn't the decent weather for it."</i>
		Manchester school	<i>"Especially in the winter that the children might be very cold."</i>

Figure 4.5 School interview coding results for outdoor conditions, divided by case study school



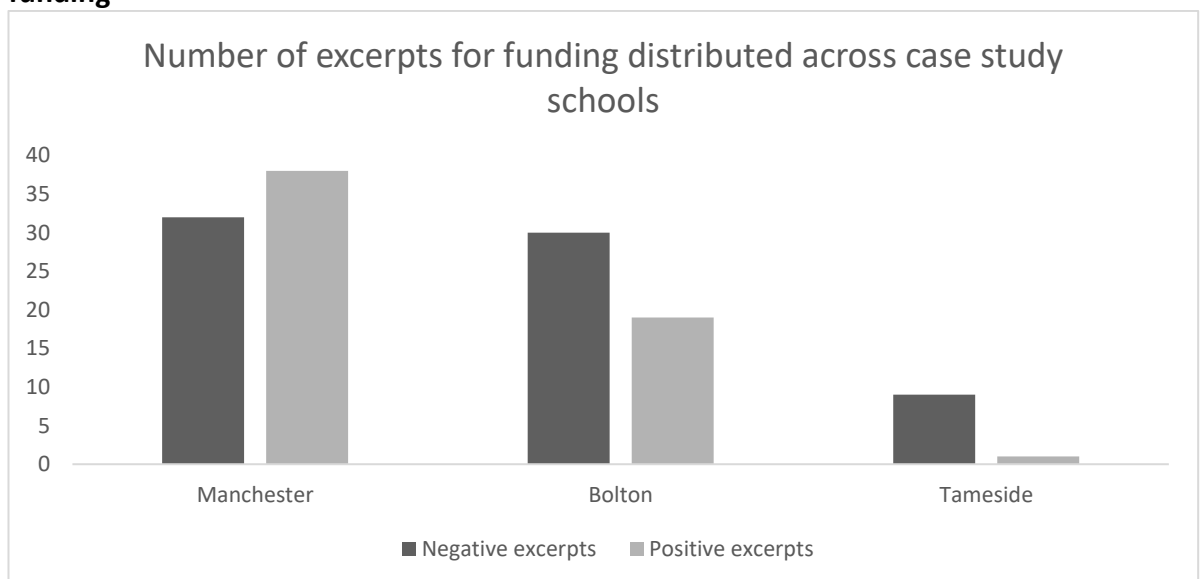
Funding received very little attention within the school interviews with the lowest percentage of excerpts (6%, n=97) out of all the themes (Table 4.10). Despite this, funding was one of three themes that had a higher percentage of negative excerpts (73%, n=71) than positive (27%, n=26). The barriers associated with funding comprised reduced schools funding, and services that were once free now costing money, e.g. eco-schools (Table 4.14). The result varied across the case study schools. Manchester interviewees associated more opportunities (n=38) than barriers (n=32) with funding, whilst Tameside attributed very little opportunity (n=10) to funding (Figure 4.6). The variation in results could be due to differences in financial constraints. Although schools have broadly similar budgets, under tight budget constraints even little differences in available money can make a big difference on delivery opportunities. The low percentage of excerpts (27%, n=26) assigned to the positive sub-theme suggests funding currently provides very few opportunities for schools' use of outdoors. This could be because schools budgets have been cut, meaning they have less money to implement outdoor initiatives. The low overall representation of the theme funding could indicate that the best practice schools do not see funding as an important barrier. Funding may not be a barrier to the best practice schools because they have already embedded use of outdoor environments, requiring little further funding input. This could mean that schools only require start-up funding to provide necessary resources before they are

able to provide a regular level of outdoor use. However, the ability to embed outdoor use may be dependent on other factors, i.e. staff confidence and knowledge.

Table 4.14 Examples of coding categorised under funding in the school interviews

Sub-theme	Code	Source	Excerpts
Positive	Available funding	Bolton school	<i>"Once we have got a proper committee with a constitution, then we can actually apply for funding."</i>
			<i>"There was some funding available so we put in a bid and then the (Forest School) sessions got funded."</i>
		Manchester school	<i>"We did win £2500 from WWF and with the money we have got a clean city bid going in."</i>
Negative	Internal funding constraints	Manchester school	<i>"The financial committee...we will have to fight our corner on that."</i>
		Tameside school	<i>"So each time you renew you have to pay, which means we have to justify it."</i>
	External opportunities diminished	Bolton school	<i>"There aren't huge amounts of opportunities that come up. In the past there was a big push, and funding, to get schools doing these kind of things."</i>
		Tameside school	<i>"It is going to be more difficult over the next five-ten years for schools to become involved...their funding has been withdrawn."</i>
	External funding constraints	Manchester school	<i>"That used to be free but it isn't anymore."</i>

Figure 4.6 School interview coding results, divided by case study school for the theme funding



4.16 Important opportunities for schools

The school interviewees identified child development as presenting the most opportunities for schools' use of outdoor environments, with 22% (n=833) of the total excerpts (Table 4.10). Opportunities represented within the positive sub-theme were associated with the observed benefits of taking children outside. This included, academic and social development, responses to changing learning environments and connecting with nature (Table 4.15). The perception that the observable benefits of outdoor engagement present further opportunities indicates that the benefits to child development provide motivation for further engagement. Therefore, comprehensive evaluation and sharing of best practice could help to provide motivation and encouragement to other schools wanting to facilitate the use of outdoor environments.

Table 4.15 Examples of coding categorised under child development within the school interviews

Sub-theme	Code	Source	Excerpt
Positive	Academic development	Bolton school	<i>"We didn't realise the impact it would have on their writing."</i>
		Tameside school	<i>"Academic results in terms of SAT* results have continued to rise."</i>
	Connecting with nature	Bolton school	<i>"The way things move, the way things feel, how they behave, building up understanding of the natural world."</i>
		Manchester school	<i>"I think it is just being in the outdoors, that connection. Some children respond really well to nature."</i>
Negative	Children not interested	Tameside school	<i>"There are some children that don't want to go outside."</i>
	Behavioural issues	Tameside school	<i>"I have got some difficult children this time, so that makes a difference."</i>
	Children missing out	Manchester school	<i>"Many of the students don't actually have back gardens...some might only have one pair of shoes."</i>
		Bolton school	<i>"Other children that perhaps had an interest weren't getting an opportunity."</i>

*SAT – Statutory Assessment Testing (National Curriculum assessments used in primary schools across England and Wales)

The coding results for the school interviews identified management as the second most important theme for presenting opportunities, with 14% (n=541) of the excerpts

assigned to the positive sub-theme (Table 4.10). Opportunities arising through positive management related to management support for outdoor use, and the implementation of changes that allow embedded outdoor use within school life (Table 4.16). This reflects the findings of the Ofsted good practice review (Section 3.4) and indicates that management has an important role in embedding the use of outdoor environments. Management support could occur as benefits to pupil development are recognised, meaning school managers are motivated to encourage staff and allocate additional time and resources to outdoor use.

Table 4.16 Examples of coding categorised under management within the school interviews

Sub-theme	Code	Source	Excerpts
Positive	Management support	Bolton school	<i>“The head has been very supportive in implementing it...there is that encouragement from the top down.”</i>
		Tameside school	<i>“She is very good at getting everybody to do their roles in it (outdoor engagement).”</i>
	Open to change	Manchester school	<i>“Management, and everybody, is quite receptive in this school.”</i>
Negative	Losing touch	Manchester school	<i>“There might be things that teachers are doing that I just don’t know about.”</i>
	Developments not maintained	Bolton school	<i>“We scrapped that... so, yes it only lasted two weeks.”</i>
<i>“Probably over 18 months since we last did one (audit of outdoor use)... it is probably something that we should revisit.”</i>			

School interviewees also identified staff attitude as an important theme for contributing to opportunities for outdoor use, with 13% (n=495) of the positive excerpts (Table 4.10). Opportunities through staff attitude included having a passionate key staff member responsible for facilitating and encouraging outdoor use (Table 4.17). The relationship between key staff members and other staff often determined whether further opportunities or barriers presented, i.e. response of other staff to encouragement (Table 4.17). Key staff member’s passion often linked to experience within outdoor environments and an understanding of the benefits of connecting children with nature.

This could indicate that having an understanding of why using outdoor environments is important, as well as having the confidence to do so, is important for enabling staff to engage. Therefore, including use of outdoor environments within initial teacher training programmes could help to inspire and enable teachers to embed outdoor use in their teaching.

Table 4.17 Examples of coding categorised under staff attitude within the school interviews

Sub-theme	Code	Source	Excerpts
Positive	Staff support	Bolton school	<i>"I think we are very lucky here, we've got staff who are really on board."</i>
	Key staff responsibilities	Tameside school	<i>"It is having that member of staff as that key person."</i>
			<i>"Have you got any compost? Can you get the trowels out? Do you know where this is? Do you know how I could do this?"</i>
Adapting lessons	Manchester school	<i>"It is getting to that stage where teachers say, wait a minute, I could do that outdoors."</i>	
Negative	Staff not interested	Tameside school	<i>"There are some staff who act as a barrier, as they wouldn't want to go outside."</i>
		Manchester school	<i>"It doesn't create the best learning environment when the staff aren't interested."</i>
	Not understanding the benefits	Bolton school	<i>"Sometimes I think you just go outside for the sake of it, which is daft."</i>
		Tameside school	<i>"At the minute there isn't really that understanding of why."</i>
	Lacking confidence	Manchester school	<i>"It is a lot to do with their confidence, taking learning outdoors. If they've not had much experience."</i>

4.17 Summary of school interviews

The school interviewees identified time and policy drivers as the major barriers effecting their use of outdoor environments. The perception of time as a major barrier indicates that use of outdoor environments is viewed as extra curricula. This would suggest that learning in outdoor environments is not linked effectively to the core curriculum objectives, even within the best practice schools. The autonomous curriculum and lack of policy drivers supporting schools use of outdoors has also served to restrict teaching practices. An identified lack of policy awareness suggests that some national policies may be inaccessible and thus, ineffective.

Additional barriers of funding and outdoor conditions were identified as themes presenting a higher negative contribution than positive. The school interviewees

indicated that the barriers related to outdoor conditions were surmountable with the appropriate resources. Funding, although mostly negative did not receive much attention within any of the interviews, indicating that once embedded (as in the case of the best practice schools), outdoor use requires little funding resource.

Child development, management and staff attitude were the themes presenting the main opportunities for schools outdoor use. The use of best practice schools highlighted the importance of having supportive management and passionate staff. The observable benefits to child development acted as motivation to keep furthering opportunities for schools outdoor use. Therefore, promotion of these benefits through comprehensive evaluation and inclusion within teacher training could help to motivate other teachers to utilise outdoor environments.

4.18 Local authority coding results

Coding of the local authority interviews revealed patterns across the sector and between the three authorities. The interviews revealed that local authority interviewees associated more barriers (39%, n=1209) with schools use of outdoor environments than the school interviewees (29%, n=1548). Eight of the thirteen themes had the majority of the coded excerpts assigned to the positive sub-theme, indicating a higher representation of opportunities overall (Table 4.18). Coding of the local authority interviews identified five themes, curriculum, funding, outdoor conditions, policy drivers and time as presenting more barriers than opportunities. The themes funding, policy drivers and green infrastructure had the highest number of excerpts assigned to the negative sub-themes, indicating that they present important barriers to local authorities ability to help schools utilise outdoor environments. Community, green infrastructure and collaboration had the highest number of excerpts assigned to the positive sub-themes indicating they provide opportunities for helping schools to use outdoor environments.

Table 4.18 Coding results from the semi-structured local authority interviews

Theme	Measure	No. of excerpts per sub-theme		Total excerpts per theme	% of excerpts per sub theme		% excerpts per theme
	Sub-theme	-ve	+ve		-ve	+ve	
Child development		9	109	118	1	6	7
Collaboration		124	275	399	10	14	24
Community		135	482	617	11	25	36
Curriculum		25	23	48	2	1	3
Evaluation		40	78	118	3	4	7
Funding		303	132	435	25	7	32
Green infrastructure		168	357	525	14	19	33
Management		65	144	209	5	8	13
Outdoor conditions		47	0	47	4	0	4
Policy drivers		166	150	316	14	8	22
Outdoor engagement		45	49	94	4	3	7
Staff attitude		59	104	163	5	5	10
Time		23	2	25	2	<1	2
Total		1209	1905	3114	100	100	NA

Note: Percentages used were rounded to the nearest decimal place

4.19 Important barriers for local authorities

All of the local authority interviewees identified funding as presenting the highest number of barriers to schools' use of outdoors, with 25% (n=303) of the total excerpts. This was almost double the excerpts assigned to any other negative sub-theme, indicating that local authority staff perceived funding as a major barrier to schools use of outdoor environments. Thematic classification revealed that the majority of barriers associated with funding related to local authority budget cuts (Table 4.19). The perception of funding as a barrier indicates local authorities no longer feel they have the resources to support schools use of outdoor environments. This suggests local authorities might think schools require additional resources and facilities to other users. Local authority budget cuts have meant some local authorities have had to reduce services in relation to outdoor environments, i.e. green space maintenance (Communities and Local Government Committee, 2017). This could mean that local authorities feel that the green spaces in their jurisdiction are no longer fit for purpose. Therefore, with local authorities facing more cuts, alternative methods of maintaining green spaces is required to conserve them for public use.

Table 4.19 Examples of coding categorised under funding in the local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	Generating income	Manchester council	<i>"We believe that we can trade our way out of this... we are looking at an approach that will raise income."</i>
			<i>"We raise about half a million pounds worth of income through parks, across the 143 sites at the moment."</i>
	Funding community projects	Bolton council	<i>"This is about setting up a community group up so they are able to take over."</i>
	Saving money	Manchester council	<i>"What we can do there to cut back on. Is there a better way, a cheaper way of actually doing it?"</i>
Negative	Cuts affecting services	Bolton council	<i>"A disproportionate amount of the cuts have gone to environmental services."</i>
		Manchester council	<i>"The funding cuts have just dramatically reduced our operational capacity."</i>
	External funding constraints	Tameside council	<i>"The money is not there."</i>
		Manchester council	<i>"When they come to design a new school building, even sustainability measures are limited because of funding."</i>
	Loss of services for schools	Bolton council	<i>"The ranger service, that was quite an active, deliberate engagement by ourselves...that post has now gone."</i>
		Manchester council	<i>"With less and less people, they couldn't do as much outreach with the schools."</i>

The local authority interviewees identified policy drivers as the third most important theme for presenting barriers to schools outdoor use, with 14% (n=166) of the excerpts (4.18). Codes identified within this sub-theme comprised the lack of national guidance on schools' outdoor use and more pressing, and sometimes conflicting objectives, faced by local authorities in relation to green space (Table 4.20). The suggestion of green space responsibilities as low priority indicates that local authorities attribute less importance to the benefits of green space than to other public services. The perception of low importance could indicate a lack of knowledge surrounding the wider benefits, or it could be because green space provision is not a statutory service. Both of these factors could mean that green space benefits are not integrated within local authority strategy. If this is the case, then the potential for the multi-functional contribution of green space to local authority objectives i.e. health provision, social cohesion and inclusion, may not

be fully considered. To understand the potential for transdisciplinary contributions of green space and infrastructure a collaborative approach to developing local authority strategies may be required.

Table 4.20 Examples of coding categorised under policy drivers in the local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	Targeted approach needed	Bolton council	<i>"I can fully understand, outcome driven visits and activities in green spaces are important, from the school/parent point of view."</i>
		Manchester council	<i>"We will do it through a strategic approach rather than just picking random or picking the easier ones."</i>
	Environmental focus	Bolton council	<i>"Working in the council, there is a very strong focus on the environment."</i>
		Manchester council	<i>"People have been put into these central teams to strengthen the environmental agenda."</i>
Negative	Not main priority	Bolton council	<i>"Especially with focus on areas such as crime and educational attainment."</i>
		Tameside council	<i>"There are governing bodies who wouldn't see that as a priority."</i>
	National guidelines needed	Manchester council	<i>"I think if it was more explicit you would get the head teacher giving more time to it."</i>
		Tameside council	<i>"It has got to be built in, so they have to do it."</i>
	Change in guidance	Bolton council	<i>"Historically it (schools outdoor engagement) has been included."</i>
	Conflicting political priorities	Bolton council	<i>"There has been a fundamental shift, politically, and in this authority it doesn't sit comfortably."</i>

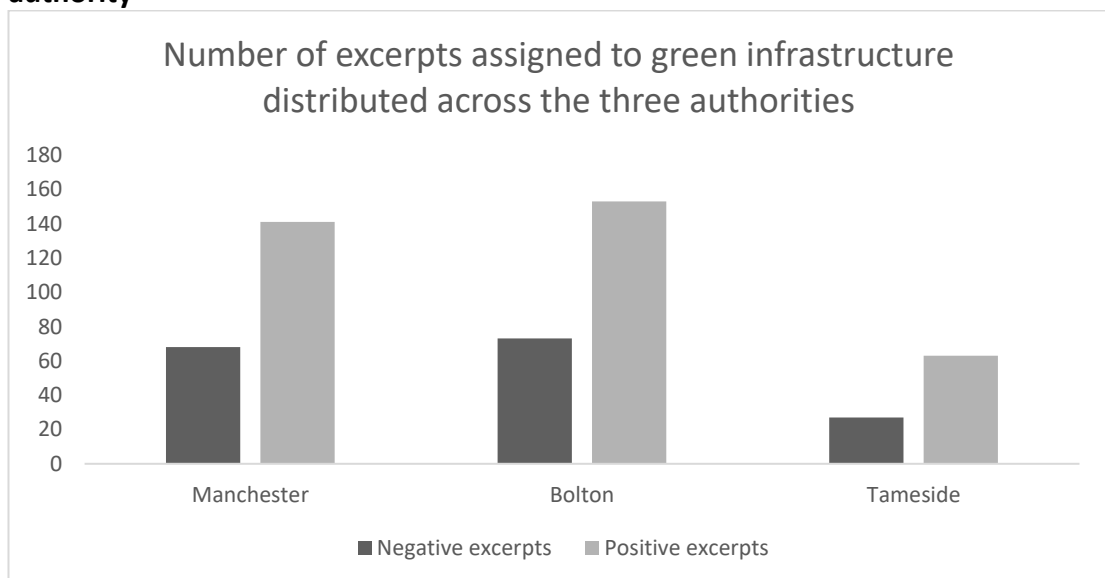
Green infrastructure had the second highest number of excerpts assigned to the negative sub-theme within the local authority interviews, with 14% (n=168) of the excerpts (Table 4.18). Barriers associated with green infrastructure related to a lack of green space, green space facilities and access issues (Table 4.21). Local authorities also identified green infrastructure as important in contributing opportunities to schools' use of outdoor environments, with a higher percentage, 19% (n=357) of excerpts assigned to the positive sub-theme than the negative (Table 4.18). The perception of green infrastructure presenting more opportunities than barriers occurred across all three local authorities (Figure 4.7). This indicates that whilst green infrastructure has associated barriers to use, the benefits of having the provision there currently outweigh those barriers. Therefore, improving the opportunities associated with green

infrastructure, i.e. biodiversity value and available facilities could help to overcome other barriers effecting schools use of outdoor environments.

Table 4.21 Examples of coding categorised under green infrastructure in local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	Land for school use	Bolton council	<i>"As far as we were concerned, it was an unused piece of urban space."</i>
	Value of green infrastructure	Tameside council	<i>"It is probably better for its biodiversity value."</i>
	Improving green infrastructure	Bolton council	<i>"Making green space areas fit for purpose, for this century."</i>
Manchester council		<i>"It is about improving what we have got, as a city."</i>	
Negative	Needs not being met	Manchester council	<i>"Is that really what a municipal park should be doing?"</i>
			<i>"They don't quite have the same facilities as a destination park."</i>
	Lack of green space	Bolton council	<i>"Like with Sunning Hill, the amount of land that the school has, and the amount of surrounding green space...is literally none."</i>
	Green infrastructure under pressure	Bolton council	<i>"Small plots than we can build on, we may lose those."</i>
		Tameside council	<i>"There is increasing pressure on those pocket urban green spaces."</i>
Accessibility issues	Manchester council	<i>"They've got issues with access because the road is in between the school and the green space."</i>	

Figure 4.7 Local authority interview coding for green infrastructure, divided by authority



The positive sub-theme of outdoor conditions was the only sub-theme not to have any excerpts coded to it across all three authorities (Table 4.18). This indicates that none of the local authorities associated any opportunities for schools' use of outdoor environments with outdoor conditions. The lack of positive association could reiterate the indication that local authorities are aware of green space degradation within their authority. The perception that outdoor conditions do not provide any opportunities for schools use of outdoor environments could also indicate that local authorities are aware of the risk averse nature of schools (Table 4.22). This can make it hard for schools to engage with public outdoor spaces. If the condition of green spaces are not seen as fit for use by schools, then this may also mean they are not fit for purpose for other users, e.g. families, the elderly or unsupervised children.

Table 4.22 Examples of coding categorised under outdoor conditions within local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	No Codes or excerpts identified for outdoor conditions within local authority interviews		
Negative	Weather dependent	Tameside council	<i>"This time of year obviously is a bit quieter."</i>
	Safety concerns	Manchester council	<i>"We live in a bit of a health and safety, crazy world."</i>
		Tameside council	<i>"If something were to happen or go wrong then that would put them off."</i>
		Bolton council	<i>"You can work within that space that we have agreed within the management plan and nowhere else."</i>
	Liabile	Bolton council	<i>"You do need to protect the council's position in terms of potential claims."</i>

Coding analysis of the local authority interviews identified time as presenting more barriers than opportunities to schools' use of outdoor environments. On further analysis, it was revealed that the theme time had low representation across all three local authorities, with only 2% (n=23) excerpts assigned to the negative sub-theme, and <1% (n=2) to the positive sub-theme overall (Table 4.18). Despite the low representation, barriers identified within the local authority interviews corresponded with those found in the school interviews. Issues comprised overstretched teachers and local authority staff with multiple responsibilities, often spread across different departments (Table 4.23). The contrasting levels of importance given to time by schools and local authorities could be indicative of the reduced services provide by local

authorities due to budget cuts (Communities and Local Government Committee, 2017). For example, best practice schools' were struggling with finding time to engage with outdoor environments. However, local authorities had been forced to reduce engagement with schools, due to funding, but in doing so, reduced their time commitments. Therefore, a new collaborative and symbiotic approach to schools use of outdoor environments could be required.

Table 4.23 Examples of coding categorised under time within local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	Developing over time	Bolton council	<i>"Developing an outdoor project overtime to see the benefits of that and see their work come to fruition."</i>
Negative	Too much to do	Bolton council	<i>"Not only do the teachers have to find the time but also the purpose."</i>
		Manchester council	<i>"Teachers have just got so much on to do...they basically have to get through what they have to get through."</i>
		Tameside council	<i>"When I speak to teachers the big thing that they always say is they have got so much."</i>
	Overstretched	Manchester council	<i>"I feel like I am saying over and over again... we are trying to eat an elephant! It is impossible."</i>
		Bolton council	<i>"I can't be out there and be here."</i>

4.20 Important opportunities for local authorities

Local authority interviewees identified community as the biggest contributor for presenting opportunities, with 25% (n=482) of the total excerpts (Table 4.18). Bolton and Tameside had the highest overall number of excerpts assigned to community, with 33 % (n=228) and 28 % (n=86) respectively. Opportunities associated with community comprised collaborative community projects and the mutual benefits obtained (Table 4.24). The high importance attributed to community by the local authorities indicates the influence of community stakeholders in decisions relating to community green space. The positive association could mean that local communities are supportive of schools' use of outdoor environments, not least because many of the pupils' parents are likely to be community residents. This means that a collaborative approach to shared community space could help to alleviate some of the barriers associated with schools use of outdoor environments.

Table 4.24 Examples of coding categorised under community within the local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	Working with the community	Bolton council	<i>"This is about a group proving a case, a business case, that they can do a particular level of service, a particular level of work and the council can withdraw from that."</i>
			<i>"It is about linking those people who are already wanting to get engaged, who could be from any part of the community."</i>
	Positive effect for local community	Bolton council	<i>"This will be for the wider benefit."</i>
		Manchester council	<i>"This is good for the city."</i>
Negative	Perceived anti-social behaviours	Bolton council	<i>"Large groups of teenagers gathering, if they are from a particular cultural group, can sometimes cause issues...or concerns anyway."</i>
		Tameside council	<i>"You are never going to stop kids drinking in parks, it is what generations have done."</i>
	Inequality within borough	Bolton council	<i>"The super affluent areas in Bolton are amongst the highest in the country actually and some are amongst the lowest."</i>
		Manchester council	<i>"We've got a disparity between the North and South of the city for green space."</i>
	Anti-social behaviour	Bolton council	<i>"We do occasionally have gang issues."</i>
		Tameside council	<i>"It is full of vandalism, graffiti, anti-social behaviour."</i>

Local authority interviewees identified collaboration as being an important theme, contributing to both opportunities and barriers. Local authority participants identified collaboration as third most important for presenting opportunities with 14% (n=275) of the excerpts (Table 4.18). Opportunities attributed to collaboration related to simplifying procedures, enabling work with schools, other organisations, and between departments (Table 4.25). Barriers associated with collaboration revolved around lack of communication due to a loss of cross-authority collaboration, reduced responsibility for schools and a lack of service promotion (Table 4.25). Negative collaboration had 10% (n=124) of the excerpts. The high overall emphasis on collaboration indicates local authority see this as an imperative process in facilitating schools use of outdoor environments. The higher number of positive excerpts (n=275) than negative (n=124) suggest that the local authorities have already overcome some of the barriers associated with collaboration. This means that improving collaboration across departments and sectors could help to improve opportunities for schools use of outdoor environments.

Table 4.25 Examples of coding categorised under collaboration within the local authority interviews

Sub-theme	Code	Source	Excerpts
Positive	Simplifying procedures	Manchester council	<i>"It is just about making things easier...it is about streamlining the booking procedure."</i>
	LA working with schools	Bolton council	<i>"The schools go, oh that's great, curriculum time filled, boxes ticked, with no additional demand on our resources."</i>
	LA working with other organisations	Tameside council	<i>"We typically engage consultants to advise us on undertaking the survey work that we normally do."</i>
	Interdepartmental collaboration	Manchester council	<i>"Internal colleagues that have come out of the woodwork and said this is brilliant. Actually being able to utilise this as a tool has been really good."</i>
Negative	Available services not promoted	Manchester council	<i>"Schools might not know who to contact...the council don't really promote that service."</i>
	Lack of communication	Bolton council	<i>"You think all the council knows what we (the rest of the council) are doing but they don't."</i>
		Manchester council	<i>"What we found in the last five years also was that other parts of the organisation were making decisions about either the standards within our facilities, without necessarily consulting back."</i>
	Loss of cross-authority collaboration	Bolton council	<i>"There was a lot of joined up activity there. But now different authorities have gone different ways."</i>

4.21 Summary of local authority interviews

The local authority interviewees identified more barriers to schools use of outdoor environments than the school interviewees did. This could be an indicator that the majority of barriers to schools outdoor use are found within this sector. The local authority participants identified funding as presenting the highest proportion of barriers. This indicates that the local budget cuts have affected the authority's ability to provide services, such as school engagement and green space services. The low priority afforded to these services from national government, indicate that policy drivers are restricting local authorities ability to facilitate schools use of outdoor environments. Green infrastructure was identified as important for both opportunities and barriers, indicating that even with the barriers associated with green space; green infrastructure is still perceived as a valuable asset. None of the local authorities associated any opportunities for schools use of outdoor environments with outdoor conditions. The lack of positive association could indicate that the current condition of green space is

not compatible with schools use. Therefore, improving integration of the wider benefits of green space could help to prioritise the need to enhance and conserve it.

Local authority interviewees identified community as the biggest contributor for presenting opportunities. This could indicate the need for collaboration between schools and communities to alleviate barriers associated with schools use of outdoor environments and to improve shared community space. The high overall emphasis on collaboration throughout the local authority interviews suggests this is an important theme in relation to other themes. Improving collaborative processes across local authorities and sectors could contribute transdisciplinary benefits to strategic planning (Van Oosten et al, 2018).

4.22 Outdoor education practitioner coding results

Outdoor education practitioner interviews were analysed as one data set because each practitioner worked across all three local authorities. Overall, the practitioner interviews identified a majority, 71% (n=1418) of opportunities than barriers, 29% (n=567) to facilitating schools outdoor use (Table 4.9). Funding was the only theme identified by the practitioners as presenting more barriers, 21% (n=120) than opportunities 7% (n=97) in the practitioner interviews (Table 4.26). Funding also had the highest number of excerpts 21% (n= 120) assigned to the negative sub-theme, followed by collaboration, 13% (n=72), staff attitude, 10% (n=55) and evaluation, 9% (n=51). The high number of excerpts indicates that they present important barriers to the practitioners' ability to engage schools with outdoor environments. Collaboration, 18% (n=251), green infrastructure, 15% (n=215) and child development, 14% (n=201) had the highest number of excerpts assigned to the positive sub-themes indicating they provide opportunities for helping schools to use outdoor environments (Table 4.26).

Table 4.26 Coding results from the semi-structured practitioner interviews

Theme	Measure	No. of excerpts per sub-theme		Total excerpts per theme	% of excerpts per sub theme		% excerpts per theme
	Sub-theme	-ve	+ve		-ve	+ve	
Child Development		37	201	238	7	14	21
Collaboration		72	251	323	13	18	31
Community		37	153	190	7	11	18
Curriculum		0	24	24	0	2	2
Evaluation		51	64	115	9	5	14
Funding		120	97	217	21	7	28
Green infrastructure		36	215	251	6	15	21
Management		45	85	130	8	6	14
Outdoor conditions		27	30	57	5	2	7
Policy drivers		38	60	98	7	4	11
Outdoor engagement		42	152	194	7	11	18
Staff attitude		55	78	133	10	6	16
Time		7	8	15	1	<1	1
Total		567	1418	1985	101	101	202

Note: Percentages rounded to the nearest decimal place, hence +/- 100% total

4.23 Important barriers for practitioners

The practitioner interviewees identified funding as presenting the highest number of barriers to schools' use of outdoors, with 21% (n=120) of the excerpts (Table 4.26). Barriers found under this theme comprised the negative impacts of funding cuts on schools and local authorities reducing the practitioners' workload. The reduction in workload has meant that practitioners are having to charge schools for services that would have previously received funding (Table 4.27). There were opportunities identified within the interview analysis that related to schools' willingness to pay for these services and the facilitation of collaborative funding bids (Table 4.27). This indicates there that there is inconsistency between schools who are able to pay for practitioner services and schools that are not. The variation could relate to the value schools place on the practitioner services. Helping schools acquire external funding to utilise practitioner services and including outdoor use within teacher training programmes, could help give teachers confidence to utilise outdoor environments. Providing training could also help teachers gain a good understanding of the benefits for

pupils. Practitioners' specialised skills could then be used for bespoke services, rather than standard curriculum delivery.

Table 4.27 Examples of coding categorised under funding in the practitioner interviews

Sub-theme	Code	Source	Excerpts
Positive	Value added to paid for services	Wildlife Trust	<i>"I think they value our paid stuff more than the ever did our free stuff."</i>
		Wildlife Trust	<i>"It is interesting that they still go for that higher priced option... they cry poverty when in reality if they value something then they will pay for it."</i>
		Groundwork	<i>"We are finding schools are quite happy to pay that bit extra."</i>
	Utilising pupil premium	Groundwork	<i>"You only need five kids who are interested and on pupil premium and that is the training funded."</i>
	Supporting funding access	Wildlife Trust	<i>"Sometimes we support schools to access funding."</i>
		Groundwork	<i>"If we can help them get some funding or signpost them to where they could get funding, even better."</i>
		Forest School	<i>"We can help other organisations achieve funding."</i>
Negative	External funding constraints	Wildlife Trust	<i>"Obviously schools have had their budgets cut they will not be able to fund anything."</i>
		Groundwork	<i>"Funding is very tight out there under the Tories."</i>
		Forest School	<i>"We don't have any access to funding. We can't apply for it directly. There is no funding pot for us."</i>
	Charging for services	Wildlife Trust	<i>"Most of our stuff now, 90% of our work with schools now is a charged service."</i>
	Cuts affecting services	Forest School	<i>"It used to be I could phone up the head of trees or parks or find this information on the internet but now everything has changed."</i>
	Less work available	Groundwork	<i>"We were doing multi-million pounds work for housing associations or Councils. Those days are gone."</i>

Staff attitude was identified as presenting the third highest contribution of barriers in the practitioner interviews, with 10% (n=55) of the excerpts (Table 4.26). As in the local authority interviews, barriers related to staff who were uninterested, lacked confidence and were hard to engage (Table 4.28). The barriers attributed to staff attitude by practitioners indicate that not all teachers using their services understand the importance of what the practitioners are delivering. Teachers' disinterest could be because they themselves have had no meaningful contact with outdoor environments and do not understand the benefits relating to academic and social development. This could mean that staff do not associate any value with the practitioners' services. An in

depth and extensive evaluation is needed to promote the developmental benefits of outdoor environment use and the direct links to improvements in academic success. Promotion of the benefits could help to engage staff and increase opportunities for outdoor use.

Table 4.28 Examples of coding categorised under staff attitude within the practitioner interviews

Sub-theme	Code	Source	Excerpts
Positive	Staff support	Wildlife Trust	<i>"Some teachers are really interested in the outdoors, they build on what we talk about and take it that step further."</i>
		Groundwork	<i>"I do enjoy going to meet the schools and meeting like-minded individuals within education."</i>
	Understanding the benefits	Groundwork	<i>"It was the Victorians valuing or understanding the benefits of green space...I think we have almost come full circle haven't we? In that type of thinking."</i>
		Forest School	<i>"So much stuff is published on benefits of being outside, outdoor spaces, connection with nature, they do learn."</i>
Negative	Staff not interested	Wildlife Trust	<i>"Others just let us do our bit if you like and don't necessarily get in to it too much."</i>
	Missed opportunities	Forest School	<i>"Often we find sites very close to schools or within their grounds that they have discounted and they are perfect."</i>
		Groundwork	<i>"It is amazing really, in terms of the information that they haven't got."</i>
	Lack of confidence	Wildlife Trust	<i>"A lot of the enrichment stuff really that could and should be done by teachers...there is an element of not having the confidence to do it."</i>
		Forest School	<i>"It is giving people the confidence to get out of their classrooms and into the woods."</i>

4.16 Important opportunities for practitioners

The practitioner interviewees attributed high importance to collaboration for presenting both opportunities and barriers. The coding analysis assigned the highest number of excerpts (18%, n= 251) to the positive sub-theme, and second highest number of excerpts (13%, n=72) to the negative sub-theme (Table 4.26). Opportunities comprised working with schools and other organisations as well as gaining permission to use land from the local authorities and private landowners (Table 4.29). Barriers included difficulties in working relationships with other organisations and schools struggling to maintain meaningful outdoor engagement by themselves (Table 4.29). This indicates

that whilst collaboration is necessary for practitioners to engage schools with outdoor environments, there are still associated barriers to it. This conflict could be a result of the economic climate, as the introduction of austerity measures in 2010 affected school budgets, making them harder to engage. An integrated understanding of the cumulative benefits of outdoor environment use could help to promote its value across schools and local authorities encouraging a collaborative approach to facilitation.

Table 4.29 Examples of coding categorised under collaboration within the practitioner interviews

Sub-theme	Code	Source	Excerpts
Positive	Gaining permission to use land	Forest School	<i>"One of the ways I work to get permission to use a site is looking up the management plan for a site and identifying areas that we can help them with."</i>
	Collaborating with private land owners	Forest School	<i>"Private land owners are very keen to share their land and for it to be used for educational use."</i>
	Taking responsibility from council	Wildlife Trust	<i>"If there is an enquiry that goes to the council, they will normally shove it our way to be honest."</i>
	Fulfilling objectives	Groundwork	<i>"We are ticking their boxes. That is what I say to them, look I will help you with your box filling."</i>
Negative	Struggling to do it themselves	Wildlife Trust	<i>"I get the sense they wouldn't do it on their own without an organisation holding their hand... they are relying on us and our risk assessment activities and our experience."</i>
		Groundwork	<i>"They might have ideas but they don't know how to put it on paper."</i>
	Lack of collaboration	Wildlife Trust	<i>"I don't think that the support network is there."</i>
		Forest School	<i>"The cluster group for Manchester, it is not as strong as it was."</i>

The practitioner interviewees identified green infrastructure as the second most important theme for presenting opportunities, with 15% (n=215) of the excerpts assigned to the positive sub-theme (Table 4.26). Opportunities related to good quality green space and levels of access (Table 4.30). This indicates that practitioners were able to overcome barriers associated with green infrastructure. Their ability to do so could be because they are experienced in the use of outdoor environments as an educational resource. Therefore, increasing teachers' experience of utilising outdoor environments could help to increase their confidence and reduce barriers to outdoor use.

Table 4.30 Examples of coding categorised under green infrastructure within practitioner interviews

Sub-theme	Code	Source	Excerpts
Positive	Good quality green space	Wildlife Trust	<i>"Accessing a really high quality space outdoors...it has got a lot of stimulus."</i>
		Forest School	<i>"You can find amazing diversity in just a tiny bit of woodland."</i>
	Green space outside of school	Wildlife Trust	<i>"We have done sessions on the nature reserve and some in the school grounds. There is no doubt the students have a better time out, they have a different experience."</i>
	Access to green space	Groundwork	<i>"It is having that close proximity to nature."</i>
Forest School		<i>"I love the fact that I am in the middle of Manchester but can still find amazing bit of nature."</i>	
Negative	Low quality green space	Wildlife Trust	<i>"Much of the outdoor environment is neglected and full of litter."</i>
		Forest School	<i>"There is contamination of sites, where there have been sharps, rubbish."</i>
	Controlling green space	Wildlife Trust	<i>"For many years they weren't keen on community groups using green space as they gave them a bit of a headache."</i>
		Groundwork	<i>"They fenced it off and shut it down."</i>

The outdoor education practitioners identified the third highest number of opportunities under child development, with 14% (n=201) of the positive excerpts (Table 4.26). Opportunities relating to child development corresponded with those identified in the school interviews, e.g. academic development and connecting with nature. The practitioner interviewees also applied additional emphasis on learning to listen, self-regulation and emotional development (Table 4.31). The addition of evaluative developmental benefits indicates that practitioners have a more holistic focus on the benefits obtained from connecting with outdoor environments. This could be because practitioners do not have the restrictions presented by curriculum objectives. It could also mean they have a deeper understanding of the associated benefits. The different perceptions and motivations across stakeholder groups could be beneficial for collaborative projects.

Table 4.31 Examples of coding categorised under child development within the practitioner interviews

Sub-theme	Code	Source	Excerpts
Positive	Emotional development	Groundwork	<i>"If they are experiencing emotional turmoil, we can work with that. Help build resilience to it, reflect on it."</i>
	Self-regulating	Forest School	<i>"They regulate themselves as a group and it really lovely to see."</i>
Negative	Risk of getting it wrong	Wildlife Trust	<i>"It comes back to that quality, quality of engagement. It is so important that you get that experience right for children."</i>
	Children missing out	Forest School	<i>"They don't play out in the fields, the fields are all farmers' fields so they are not allowed in the fields."</i>

4.25 Summary of practitioner interviews

Within the practitioner interviews, funding was identified as a major barrier to their ability to facilitate schools' use of outdoor environments. Funding cuts to both local authorities and schools meant that engagement opportunities had reduced and practitioners had a reduced workload. Collaboration was perceived as both a major barrier and important for providing opportunities, with more opportunities presented than barriers. This indicates that whilst collaboration is necessary for practitioners to engage schools with outdoor environments, there are currently many issues associated with the process. This could be related to the identified engagement issues caused by lack of funding. Staff attitude was also identified as a barrier to practitioners work with schools, adding to the negative perception of collaboration. Staff disinterest was linked to a lack of confidence and understanding of the benefits of outdoor use. Therefore, promoting the developmental benefits through evaluation, teacher training and shared best practice could help to improve staff attitude and subsequent collaborative opportunities.

Green infrastructure was identified as important for presenting both opportunities and barriers. The practitioners associated more opportunities than barriers, indicating they had succeeded in overcoming some of these barriers. As the practitioners are experienced in working in outdoor environments, this suggests the importance of experience in providing confidence. Like the school interviewees, the practitioners placed particular emphasis on the motivation gained from child development. This

reiterates the need for teacher training to increase confidence to utilise outdoor environments and understand the benefits of doing so. The different perceptions and motivations across the three sectors highlights the need for effective collaboration in order to overcome the barriers to schools outdoor use.

4.26 Relationship analysis outcomes

Coding analysis of the interviews from the three sectors identified that each theme presented both opportunities and barriers to schools' use of outdoor environments. This indicates that the management of factors associated with each theme could help to overcome barriers to facilitation. The purpose of the relationship analysis was to identify how themes related and affected one another, identifying potential for cross-sector collaboration. Relationship network models were generated to identify relationship types between themes. The results of the relationship analysis found that all themes and sub-themes related to more than one other theme in some way (Figure 4.8). The inter-theme relationships are indicative of the complexities associated with the collaborative approach required to embed schools use of urban green space.

Table 4.32 Coding analysis data for all three sectors combined.

Theme	Negative excerpts		Positive excerpts		Total		Negative	Positive	Total
	No.	% of total	No.	% of total	No.	%	% of theme	% of theme	%
CD	149	1	1143	11	1292	12	12	88	100
CL	259	2	798	8	1057	10	25	75	100
CM	324	3	949	9	1273	12	25	75	100
CU	67	1	258	2	325	3	21	79	100
EV	109	1	299	3	408	4	27	73	100
FN	494	5	255	2	749	7	66	34	100
GI	385	4	892	9	1277	13	30	70	100
MN	216	2	770	7	986	9	22	78	100
OC	216	2	72	1	288	3	75	25	100
PD	388	4	401	4	789	8	49	51	100
OE	159	2	555	5	714	7	22	78	100
SA	266	3	677	6	943	9	28	72	100
TM	313	3	52	<1	365	<4	86	14	100
Total	3345	32	7121	68	10466	100	NA	NA	NA

Note: Theme codes: CD = Child development, CL = Collaboration, CM = Community, CU = Curriculum, EV = Evaluation, FN = Funding, GI = Green infrastructure, MN = Management, OC = Outdoor conditions, PD = Policy drivers, OE = Schools outdoor engagement, SA = Staff attitude, TM = Time

The inter-theme connections affected how themes were able to contribute to schools outdoor use. For example, funding received by the Bolton school had enabled them to create opportunities for collaboration with the Wildlife Trust co-running Forest School sessions (Table 4.14). These relationships indicate that there may be further potential to increase opportunities for schools use of outdoor environments across all themes. The potential for creating new opportunities could be a reflection of the opportunities arising from cross-sector collaboration, as each sector provides different expertise and knowledge.

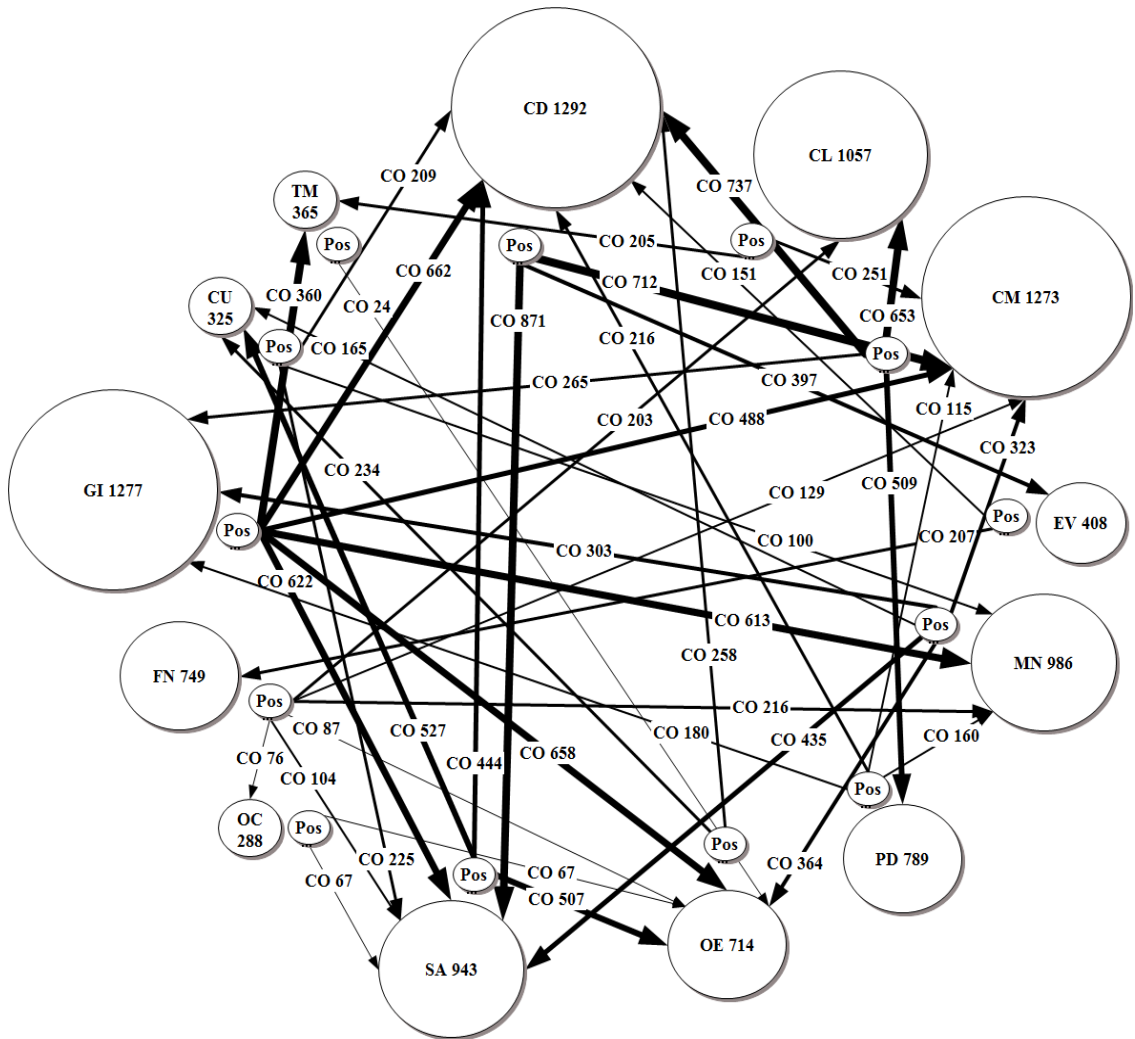
Crucially, there were inter-theme relationships creating opportunities for every other theme (Figure 4.8). This was inclusive of the three themes identified in the coding analysis as presenting more barriers than opportunities, i.e. time, funding and outdoor conditions. This indicates that there is potential to overcome barriers presented within a theme, by identifying the enabling opportunities arising from other themes. For example, the school interviewees identified policy drivers as a main barrier to their outdoor use. The relationship analysis identified the theme community as enabling opportunities through policy drivers. This could be indicative of the shared benefits of community and schools use of outdoor environments, some of which are local authority objectives, e.g. improved health. This could mean that if policy were to tackle these issues as a connected entity, rather than isolated problems, it could help create collective solutions.

4.27 Creating opportunities for time

There were two themes identified as creating opportunities for the theme time. These two themes were collaboration and green infrastructure. Collaboration had 798 excerpts assigned to the positive sub-theme (Figure 4.8). Of these, 26% (n=205) were attributed to creating opportunities to reduce the barriers presented by time (Table 4.32). This indicates that the process of collaboration can alleviate time pressures. This could be because sharing resources and good practice can help to reduce planning time and relieve overstretched teachers. This means that if schools formed collaborative

relationships with other schools and organisations, the barrier of time may be lessened creating further opportunities for using outdoor environments.

Figure 4.8 Relationship network model showing enabling relationships between themes



Note: Theme codes: CD = Child Development; CL = Collaboration; CM = Community; CU = Curriculum; EV = Evaluation; FN = Funding; GI = Green Infrastructure; MN = Management; OC = Outdoor Conditions; PD = Policy driver; OE = Schools outdoor engagement; SA = Staff attitude; TM = time; Sub-theme code: Pos = Positive, Relationship code: CO = Creating opportunities; Numbers in circles = the number of excerpts attributed to each theme from the combined sector coding analysis data (Table 3.28), Numbers on arrows = the number of excerpts attributed to the relationships between themes (Table 3.30).

The positive sub-theme green infrastructure had 892 excerpts, with 40% (n=360) of these creating opportunities to reduce barriers presented by time (Figure 4.8). This indicates that attributes of green infrastructure can contribute to the time taken for a school group to use it, i.e. accessibility and facilities. This could be because of time taken to walk to a site or if there is no toilet facility then time taken to plan an alternative

toileting solution. This could mean that identifying the aspects of green infrastructure that are costing schools time resource and reducing them, could help increase opportunities for schools use.

4.28 Creating opportunities for funding

Evaluation had the only sub-theme found to create opportunities for the theme funding. Evaluations positive sub-theme had 299 excerpts, with 69% (n=207) of these identified as creating opportunities to reduce barriers presented by funding (Figure 4.8). This indicates that critical evaluation of schools use of outdoor environments could help to create funding opportunities. This could be because it could promote the developmental benefits, whilst also allowing outdoor learning experiences to be developed and improved. In depth and comprehensive evaluation of schools' outdoor use could help develop the evidence base required to create influence at a policy level.

4.29 Creating opportunities for outdoor conditions

Funding was the only theme found to create opportunities for the theme outdoor conditions (Figure 4.8). In the case study examples, funding (n=749) presented few opportunities for outdoor conditions, with only 10% (n=76) of the excerpts attributed. This indicates that funding was not available to improve outdoor conditions. This could be due to local authorities funding cuts reducing their ability to provide maintenance and management services. This means that with no access to local authority funding, alternative solutions to improving green space is required to enable use. Increasing opportunities for funding through effective evaluation could have a cumulative effect to financing improvements relating to outdoor conditions i.e. health and safety hazards and all weather clothing.

4.30 Cross-sector relationships

Separating the relationship analysis results by sector enabled identification of cross-sector collaborative opportunities. The results established that for nearly every theme identified as a main barrier within one sector’s interviews, another sector presented the enabling theme with the potential to create opportunities. For example, outdoor education practitioners identified staff attitude as a major barrier to schools use of outdoor environments. The school interviewees identified management as very important for presenting opportunities (Table 4.10). The relationship analysis identified management as enabling outdoor use by motivating and encouraging staff attitude, hence enabling the potential for practitioners to engage with schools (Table 4.33). This indicates that cross-sector collaboration can overcome barriers associated with five of the major negative sub-themes identified across sectors, i.e. staff attitude, collaboration, green infrastructure, policy drivers and time (Table 4.33).

Table 4.33 Cross-sector enabling relationships, identified within the relationship analysis

Major opportunities identified in each sector that provide enabling relationships		Major barriers identified in each sector					
		OP		OP/LA	LA	LA/SC	SC
		SA	CL	FN	GI	PD	TM
SC	MN	X			X		
	SA						
SC/OP	CD	X					
LA/OP	CL						X
LA/OP	GI	X					X
LA	CM		X		X	X	

Note: Theme code key: CD = Child development, CL = Collaboration, CM = Community, FN = Funding, GI = Green infrastructure, MN = Management, PD = Policy drivers, SA = Staff attitude, TM = Time. Sector code key: SC = School, OP = Outdoor education practitioner, LA = Local authority; Blue squares represent a key opportunity identified within one sector’s interviews that has potential to enable opportunities within a theme presenting a major barrier in another sector; The red column highlights funding as the only major barrier identified that does not have an enabling theme

The only theme that did not have this enabling relationship identified within the case study examples was funding. This indicates that funding may be the biggest factor preventing opportunities for schools use of outdoor environments. This could be because the local authority cuts have affected all three sectors. This could mean that all three sectors are struggling to deliver on their own targets and objectives. A

collaborative, cross-sector approach to funding opportunities could help to develop a strategy that delivers aspects of each sectors objectives, e.g. educational attainment, improved community health and increased environmental awareness.

Within the relationship analysis, the theme evaluation identified as the only theme that could create opportunities within funding. The interviewees across all sectors identified evaluation as presenting more positive (73%, n=299) than negative (27%, n=109) excerpts (Table 4.32). Despite this, evaluation was represented as low importance across all sectors, with only 3% (n=408) of the total excerpts (Table 4.32). This indicates a lack of evaluation occurring across all three sectors, an issue reiterated within the sector interviews (Table 4.34). Evaluation identified as a positive process and a mechanism for change but due to lack of resources and no necessitated requirement, it often fell by the wayside. This could mean that a collaborative, mutually beneficial approach to evaluation is required. This could promote outdoor use across local authorities, encourage opportunities for schools use of outdoor environments and promote the practitioner’s services.

Table 4.34 Coding examples demonstrating a lack of evaluation across all sectors

Sub-theme	Code	Source	Excerpts
Negative	Lack of evaluation	Schools	<i>‘Whether we have got bright children that like being outside or whether they have become bright because they are going outside...you can’t prove anything can you?’</i>
			<i>‘I haven’t personally done any evaluation.’</i>
		Local authorities	<i>‘Some of our bigger sites will have 8 or 10 entrances and exits so you just can’t...you just physically can’t count them.’</i>
			<i>‘The last time that we developed a park strategy...there wasn’t much consultation that took place.’</i>
			<i>‘We don’t have that broad based information that we used to have. That is one of things that went.’</i>
		Outdoor education practitioners	<i>‘One of things we are not so good at is evaluating the impact of our work, I think it is challenging.’</i>
			<i>‘We are poor at that (evaluation) I think generally.’</i>
			<i>‘You finish one and you get straight on with the next. That is probably a failing on my part.’</i>

4. 31 Missing connections

In addition to the variant relationships between themes, there were seven instances where there was no connection identified between factors within the interview data (Table 4.35). These missing connections indicated areas where there appeared to be no cross-sector collaboration. For example, there were no relationships identified within the interview data that connected evaluation and either green infrastructure or outdoor conditions.

Table 4.35 Themes with no identifiable connection

Theme		Current interpretation	Potential connection
One	Two		
CD	CL	This missing connection suggests a lack of collaboration between local authority and schools surrounding children’s welfare and development. This reflects the diminished responsibilities of local authorities in regards to schools.	Local authority funding priorities include safeguarding vulnerable children, healthcare and social inequality. These are all issues that access to green space can benefit. There is potential for local authorities to collaborate with schools as part of the community, encouraging outdoor engagement whilst contributing to local authority objectives.
CM	CU	This suggests a lack of recognition of schools as part of the community and the potential for community contribution to education	By integrating school and community life, there is potential to increase educational opportunities whilst improving community cohesion and ownership. These factors are missing in many new and emerging urban communities.
	TM	This suggests that the local community is not utilised to help schools reduce time pressures associated with using outdoor environments.	Utilising members of the community within schools use of outdoor environments could alleviate time pressures of extra staffing needs, whilst gaining local knowledge and encouraging social inclusion.
CU	OC	The lack of connection between curriculum and outdoor conditions exhibits a lack of understanding of how the variations in outdoor conditions can be utilised to demonstrate aspects of the curriculum.	There is potential to develop outdoor conditions to improve educational opportunities for schools. Teacher training can help demonstrate ideas of utilising changing outdoor conditions to facilitate learning.
EV	GI and OC	This reflects the lack of evaluation of the use and benefits of using green space within local authority and schools.	This missing evaluation is the evidence required to help prioritise funding for green space protection and development.
OC	TM	The lack of connection between outdoor conditions and time suggests that one does not affect the other.	Implementing changes to a green space site or school can help to alleviate or eliminate barriers presented by time and outdoor conditions. For example, a permanent shelter on site can help to reduce the barriers caused by weather conditions and time taken to move resources to and from site.

Note: Theme codes: CD = Child Development; CL = Collaboration; CM = Community; CU = Curriculum; EV = Evaluation; GI = Green Infrastructure; OC = Outdoor Conditions; TM = time

This highlights a lack of evaluation across sectors in relation to the use of outdoor environments. By applying socio-ecological systems theory, addressing these issues as interrelated parts of the same system could present emergent concepts that could contribute to collective solutions. Exploration of this concept will be synthesised with the academic literature in the discussion chapter.

4.31 In the next chapter

Chapter five expands on the preliminary interpretation of the findings presented in this chapter with an in-depth discussion. Chapter five discusses the findings of this research in relation to theoretical perspectives set out in the literature review (Chapter 2). The synthesis of the findings culminates in the development of the conceptual framework (Figure 5.2) and the theoretical contribution to knowledge (Section 5.16D).

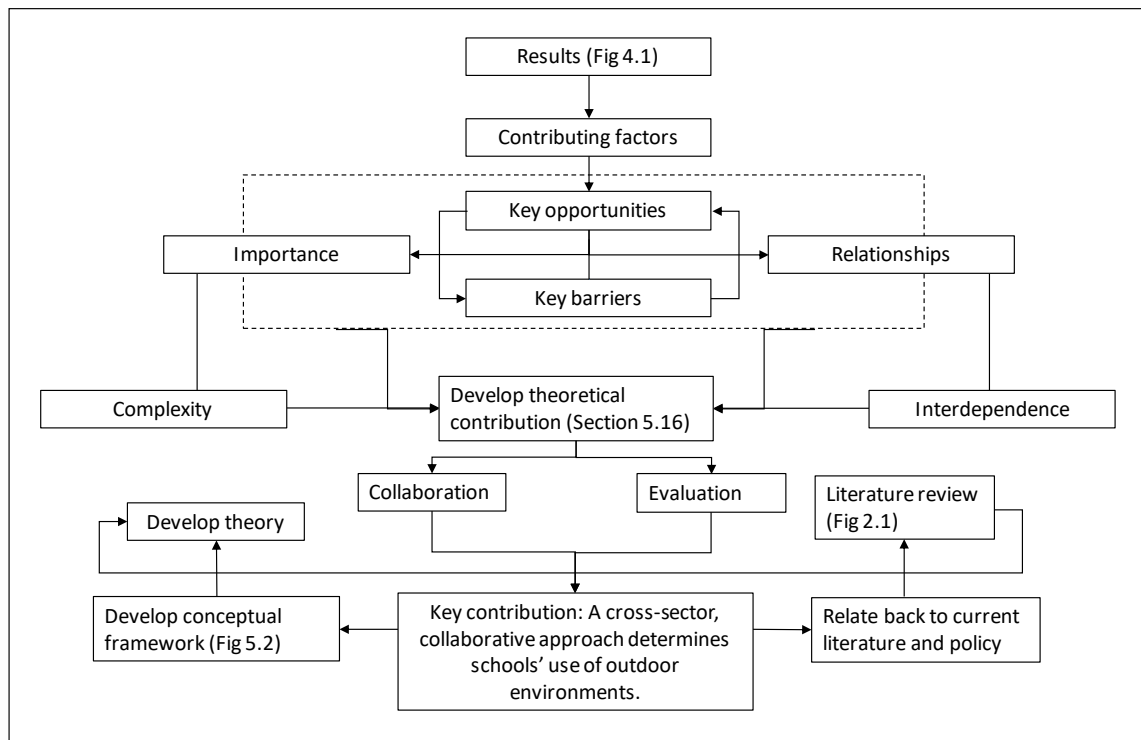
Chapter 5. Discussion

5.1 Synopsis

This chapter brings together the findings of the multiple case study research. These comprise the national and local policy contribution (Section 4.7 & 4.9), the attitudes and beliefs identified within the case study school interviews (Section 4.17), local authority interviews (Section 4.21) and outdoor education practitioner interviews (Section 4.25), and the relationship analysis outcomes (Section 4.26).

The synthesis of the findings culminates in the development of the conceptual framework (Section 5.16) and the theoretical contribution to knowledge. The theoretical contribution aims to address ways to improve outdoor use in mainstream primary education. To do this, the findings of the multiple case study research were synthesised with theoretical perspectives identified within the literature review (Chapter 2). The use of a grounded theory approach developed the theoretical contribution. The basic tenet of the theory is that a cross-sector, collaborative approach to both facilitation and evaluation is needed for the successful implementation of embedded outdoor use in schools'. Using outdoor environments as part of mainstream teaching practice could help provide important developmental opportunities through connection with nature, increase environmental awareness and contribute to local authority community objectives, e.g. community cohesion and health. The development of the conceptual framework (Figure 5.2) illustrates the potential for cross-sector collaboration.

Figure 5.1 Overview of the discussion chapter and the development of the key contribution.



5.2 Summary of findings

The literature review identified two key justifications for this research. Firstly, a gap was identified between the recognised benefits of outdoor use in schools' and its implementation. Secondly, it was identified that the major learning theories used within mainstream primary curriculum delivery can all be utilised in outdoor environments (Table 2.5). This justified both the need for, and feasibility of this research. The opportunities and barriers to schools' use of outdoor environments identified through the literature review (Table 2.9) and Ofsted good practice review (Table 3.2) developed the themes for the initial cases study framework (Figure 3.2). A dual positive / negative aspect was identified for each theme, meaning the associated factors could present both opportunities and barriers. This indicated the potential to manage these factors to increase opportunities. The emergence of new contributing factors at each stage indicated that the opportunities and barriers to schools' use of outdoor environments were more complex than initially identified within the literature review. In-depth multiple case study research was required to evaluate the opportunities and barriers within contextual examples and in order to include examples of schools' using urban

green space. The inclusion of urban green space use was necessary to determine if there were additional opportunities and barriers. It also improved the transferability of the conceptual framework to include schools' with limited school grounds. As previously stated, for the purpose of the case studies the term outdoor environment refers to school grounds and natural or semi-natural environments external to the school grounds. In this chapter, the findings have been explored in methodological stages. This helped determine cross-sector contributions and allowed for interpretation of the complex relationships between themes and sectors. Synthesising these findings then culminated in the development of the theoretical contribution, based on a grounded theory approach. The conceptual framework illustrates the synthesis of the findings (Figure 5.2).

5.3 National policy contribution

For the purpose of this discussion, the findings of the national policy analysis refer to the 2010 Education White Paper (DfE, 2010). The 2016 Education White Paper (DfE, 2016) is used as a reference to establish the most recent political paradigm at time of writing.

5.4 Inconsistency between departments

The results of the national policy review found a disparity in the government's support for schools' use of outdoor environments. A demonstration of this inconsistency was most prominent within the government White Papers. The natural environment White Paper (DEFRA, 2011l) advocated the use of outdoor environments in schools. DEFRA (2011L) established the need for children to connect with nature, drawing specifically on the educational benefits, e.g. *'There is a wide range of evidence showing that contact with nature enhances children's education, personal and social skills, health and wellbeing, leading to the development of responsible citizens'* (DEFRA, 2011l, pg. 12). The education White Paper (DfE, 2010) on the other hand, omits to mention the use of outdoor environments at all. The education White Paper (DfE 2010) aimed to give schools the autonomy to deliver curriculum objectives how they see appropriate e.g. *'It*

makes sense to devolve as much day-to-day decision-making as possible to the front line' (DFE, 2010, pg.11). DEFRA (2011) suggests this could pave the way for outdoor curriculum delivery, e.g. *"The Government's White Paper, The Importance of Teaching, will free teachers from unnecessary statutory duties creating more opportunities for different routes to learning, including learning outside the classroom. Schools should be able to teach outdoors when they wish to do so"* (DEFRA, 2011, pg.47). Whilst this statement suggests support of teaching in outdoor environments, the provision for teachers to do so is not present. The lack of education policy support undermines the premise that an autonomous curriculum promotes the use of outdoor environments. On the contrary, the autonomous curriculum may compromise schools' ability to embed outdoor use by creating pressure focused exclusively on core subjects (Craft et al, 2014). As the main guiding policy in education, the omission of schools' use of outdoor environments indicates that the use of outdoor environments for curriculum delivery is neither expected nor encouraged.

Further inconsistencies prevailed between the expectations laid out within the education policy and the guidance provided. Both the early years frameworks (DfE, 2017, pg.30; DCSF, 2008, pg.35), and the primary National Curriculum (DfE, 2013d) stipulated that some outdoor use was expected. The early years frameworks directly state that early years practitioners should provide daily outdoor engagement (Section 4.4). Despite this, there is no guidance given regarding facilitation, potential teaching and learning methods, or the benefits of using outdoor environments. The same scenario is present in the primary National Curriculum. There are three direct suggestions of the use of outdoor environments within the primary National Curriculum (Table 4.3; DfE, 2013d). These relate to physical education and the use of school gardens. Whilst this could be considered a positive inclusion, it ignores the breadth of possibilities provided by outdoor environments as a teaching resource (Wolsko & Lindberg, 2013; Bratman et al, 2012; Kellert, 2012). Further mention is given to the use of 'local environments' but the terminology used is vague and again there is no further guidance given (e.g. DfE, 2013d, pg.158). The omission of further guidance could be because the government is trying to maintain the assertion that they are non-prescriptive in relation to teaching and learning methods (DFE, 2010, pg.11). However, the implication of this is

that schools are not receiving any direct guidance through education policy in support of the use of outdoor environments. Therefore, teachers who are unaware of the varied benefits that come from teaching in outdoor environments would have little reason to do so.

5.5 Recommendations from external bodies (Non-ministerial response to national policy)

External organisations, e.g. Natural England and the Forestry Commission, have provided response to government policy recommending increased support for schools' use of outdoor environments. Examples of this include enhancing urban ecological networks (e.g. DEFRA, 2011e) and encouraging partnerships between schools and woodland owners (e.g. DEFRA, 2013f). The government response to these recommendations appears to agree with the proposed benefits but again without pledging any direct support, e.g. *'We agree that children should have the opportunity to learn about their natural environment, including about trees, woods and forests, though it is, of course for schools to decide on what is best for them and their pupils... Schools can choose to use their pupil premium funding to support disadvantaged children on school trips, including visits to woodlands and forests'* (DEFRA, 2013f, pg. 33). One explanation for this could be that the government wants to avoid discriminating against schools with less access to outdoor environments. Many schools' have limited school grounds, which can create issues with shared functionality (Dyment, 2005). Prioritisation of outdoor space for sports activity can mean that school grounds lack structural and ecological diversity (Grant et al, 2001). Use of green space could provide access to a diverse natural environment, which in turn could increase the available educational and developmental opportunities (Feltynowski et al, 2018; Bilton, 2014; Clements, 2004). This would be consistent with the environment White Paper's statement that the government's ambition is *'to see every child in England given the opportunity to experience and learn about the natural environment'* (DEFRA, 2011l, pg. 44). Therefore, in order to fulfil this objective, improved policy integration is required to help ensure that every school has access to a local outdoor environment, guaranteeing this possibility.

The Accessible Natural Greenspace Standard (ANGSt) recommends that all people should have a natural green space, of at least two hectares within a five-minute walk from home (Natural England, 2010). Pauliet et al (2003) found that despite such recommendations being in place for nearly a century there has not been a substantial or consistent implementation by local authorities. Distribution of green space is uneven, with the most affluent 20% of areas having five times more green space than the most disadvantaged 10% of areas (Public Health England, 2014). This means that children growing up in the most disadvantaged areas are also more likely to be the ones missing opportunities to gain the associated health and developmental benefits from increased access to green space. This could put them at even greater disadvantage when it comes to improving their socio-economic prospects (Gillborn & Mirza, 2000). Providing regular access to green space through schools could help to ensure all children receive a standard level of engagement with natural environments. This could be done through the introduction of a minimum standard provision, rather than prescriptive teaching and learning methods. A minimum standard could help deliver on two government objectives; firstly that every child has access to the natural environment (DEFRA, 2011, pg. 44); and secondly, the commitment to extending autonomy within schools (DFE, 2010, pg.54). Learning in outdoor environments can improve children's evaluative development, helping to improve self-belief and self-efficacy (Kellert, 2002; Korpela & Hartig, 1996; Bandura, 1993). Self-development is an important aspect in increasing social mobility, an important provision in the improvement of social justice (Cohen, 2006; DTLR, 2002; Gillborn & Mirza, 2000). Therefore, providing regular access to outdoor environments within schools could help work towards improving social justice, the aim of the 2016 Education White Paper, and much educational policy over the last thirty years (DfE, 2016, pg. 3; Hughes, 1997).

The lack of progress in reducing educational inequality is acknowledged within the 2016 education White Paper, e.g. *'there still remain too many pockets of educational underperformance – areas where too many young people miss out on the chance to benefit from the best possible education'* (DfE, 2016, pg.3). Many of the issues associated with the English education system have persisted throughout its history (Gillborn & Mirza, 2000). This could in part, be due to the continuous educational reform that has

occurred since the 1980s as a result of national economic pressure and shifting power between central government, local authority and schools'(Sandford, 2018; Spicker, 2018). The majority of these reforms occurred without evaluation of the effect they had on school management or teaching practices (Machin & Vignoles, 2006; Hughes, 1997). This has often negated attempts to reduce educational inequality (Webb, 2010). Therefore, in order to address issues of inequality and social justice within the education system a comprehensive understanding of the effects of educational reform is required.

5.6 Potential for inter departmental integration

The DfE policies reflected the least opportunities for inter departmental integration (Table 4.1). The lack of inter departmental integration could indicate a lack of insight on how education affects social issues. Research shows that socio-economic background can affect an individual's educational prospects (Sandford, 2018; Machin & Vignoles, 2006; Bandura 1993). Conversely, receiving a good standard of education could affect an individual's social mobility and ability to improve socioeconomic prospects (Cobbinah et al, 2014; Seo, 2002). This means that improving equality within education is central in addressing the wider social issues associated with inequality. The socio-ecological perspective intrinsically links societal and ecological issues (Folke et al, 2002; Bookchin, 1987). Therefore, using a social-ecological systems approach could help integrate the interdisciplinary objectives and gain a deeper understanding of the associated wicked problems, i.e. improving educational inequality, social justice and ecological health (Tietjen & Jørgensen, 2016; Folke et al., 2002).

To achieve this, a multi, transdisciplinary approach is required across sectors and stakeholders (Pauleit et al, 2017; Tietjen & Jørgensen, 2016). Of the three ministerial departments used for analysis, i.e. DfE, DEFRA and DCLG, the policies published by DEFRA reflected the widest range of opportunities for inter departmental integration and collaboration (Table 4.1). This indicates there may be a collaborative approach to addressing environmental issues. For example, the environment White Paper recognised the need for a collaborative effort from businesses and other stakeholders to protect natural environments, e.g. *'Government and industry have been working together for many years to develop and implement voluntary agreements to improve the*

environment'...'We want to extend this collaborative approach to natural capital' (DEFRA, 2011, pg.38). The policy sets out the benefits of conserving these environments for each potential stakeholder, e.g. economic benefits for businesses and health benefits for communities. Understanding of environmental issues and sub-sequential policymaking have transformed over the last three decades (Andresen et al, 2000). Originally developed as a consequence of economic integration, environmental policy has now become a global concern (Knill & Liefferink, 2013). The understanding of environmental issues as an international challenge has led to the development of long-term, international collaborations and European common environment policy (Knill & Liefferink, 2013). The long-term approach has enhanced the problem-solving capacity of environmental policy and created some progressive change in environmental legislation (Andresen et al, 2000). Therefore, a long term, transdisciplinary approach could be what is required to provide real and necessary change in the education system.

The national policy analysis identified that policies published by the MHLG (formerly DCLG) included issues relating to both environment and education (Section 4.6). However, there was no transdisciplinary discussion, with both treated as isolated issues with no links made between them. The major policy issues facing local government include health, waste management, environmental protection, social exclusion and climate change (Local Government Association, 2015). All of these issues have implicit links within both education and green space provision. Therefore, facilitating an integrated, transdisciplinary approach could help to address multiple, local government objectives.

5.7 Local authority contribution

Analysis of the local policy framework identified a complete omission of schools' use of outdoor environments within the authorities of Bolton and Tameside. Manchester City Council had one policy (Manchester City Council, 2012b) that included reference to schools' use of local green space. The policy recognised the importance of embedding knowledge and access to nature within education as a means to instil ecologically

friendly behaviours and increase environmental awareness (Manchester City Council, 2012b). The method with which the local authority aimed to engage children and schools was with the use of blanket initiatives, e.g. Eco-schools, or one off engagement events, such as biodiversity audits. Whilst these can be useful tools for engaging schools, they may not embed sustained use of outdoor environments (Cincera & Krajhanzl, 2013; Freedman, 1992). Encouraging the use of initiatives can even act as a barrier by inducing initiative fatigue and disempowering teachers (Nicol, 2014; McDougall, 2005; Nicol, 2002). The encouragement of initiatives, rather than bespoke school engagement programmes, could be due to a lack of local authority resources. Expectations that local authority budgets will be cut by a further 36% in 2019/20, brings the total budget losses up to 60% for some authorities (Local Government Association, 2017). The cuts have left local authorities struggling and basic statutory services are already suffering, e.g. services for children, young people and neighbourhood upkeep (Hastings, et al 2015). This means that non-statutory services, such as school engagement officers and park wardens, that in the past, facilitated schools' use of outdoor environments, have now gone (Local Government Association, 2017). With the concurrent pressure on schools to perform in league tables, the majority of schools' use of outdoor environment has greatly reduced (Kirkham & Kidd, 2017; Dillon et al, 2006).

The Urban Task Force report (DTLR; 2002) highlighted the multi-functionality of urban green space and the associated economic, social and environmental benefits (Belmeziti et al, 2018; McKinney, 2018; Niemelä, 2014; Pauliet et al, 2011; Tzoulas et al 2007). This has since begun to infiltrate mainstream urban planning, with local authorities developing green infrastructure strategies (Belmeziti et al, 2018). Green infrastructure strategy is an important step in maximising the potential benefits and contribution of ecosystem services from urban green spaces (Voigt et al, 2014). The analysis of policy from the Greater Manchester Combined Authority identified that the consideration of schools use of outdoor environments did not appear at sub-regional policy level (Table 4.8). The Manchester Green and Blue Infrastructure strategy (2015), published after the date stipulated in the policy selection process (Section 3.16), was developed based on the 11 key green space benefits identified within The Natural Economy North West (2008) programme (Section 2.14). The suggested key benefits did not include education.

Education was barely mentioned, appearing only once within the main document (twice in the annex) in relation to the potential for an educational focus to improve economic activity of land management projects (NENW, 2008, pg. 29). The Manchester Green and Blue Infrastructure strategy (MCC, 2015) reflects this structure providing an example of vertical policy integration. However, education is given more consideration than within the North West Natural Economy North West (2008) programme, appearing in several contexts. One of the objectives even includes the action to *'enhance school grounds for environmental education and biodiversity'* (MCC, 2015, pg. 4). However, examination of the details of this action reveal the statement that *'actions by schools, colleges, registered housing providers, and cemeteries have the opportunity to make change at a significant scale'* (MCC, 2015, pg.25). This statement indicates that the intention is for schools to contribute to green infrastructure benefits rather than a two-way integrated approach. There is further inclusion of education in a variety of contexts, e.g. as an attraction to the city (MCC, 2015, pg.14), an example of investment in an education facility (MCC, 2015, pg.17) and in terms of wider communication strategies (MCC, 2015, pg.17). The Manchester Green and Blue Infrastructure strategy (MCC, 2015) signposts the Manchester A Certain Future (MACF) Update (2013) as providing wider communication with schools. However, there is little evidence of this within the document. Any mention of engaging schools in relation to environmental education is in relation to the Eco-schools initiative (MACF, 2013, pg. 17 & 33). This demonstrates a lack of horizontal policy integration at local authority level. Neither Tameside nor Bolton local authorities had developed a separate green infrastructure strategy. Instead, they had included green infrastructure improvement as part of their core strategy, neither of which considered schools' use of green space (Tameside Council, 2013a; Bolton Council, 2011). Tameside council did have a separate topic paper discussing green infrastructure but this did not include schools' use (Tameside Council, 2013b). There was evidence that schools' use had previously been considered. Bolton's Open space, sport and recreation study had several examples of site-specific encouragement of schools' use (e.g. Bolton Council, 2007, pg.48,49,51). Therefore, this could mean that opportunities for schools' use of local green spaces has diminished due to local authority cuts.

5.8 Sector perspectives

The classification and synthesis of the interview data determined that the themes contributing opportunities and barriers to schools' use of outdoor environments were more complex than identified in the initial case study framework. The underlying complexity may explain why outdoor use in education is not yet utilised as a mainstream teaching practice. The next six sections (Section 5.8–5.13) will explore the opportunities and barriers identified as predominant in each sector. The potential for overcoming these barriers through cross-sector collaboration will then be explored (Section 5.18) using the findings of the relationship analysis (Table 4.33).

5.9 Significant barriers from the school interviews

During the case study interviews, it was determined that the best practice schools' use of outdoor environments was low in relation to its potential. This indicates that even when schools are committed to the use of outdoor curriculum delivery there are still many barriers to facilitation.

Thematic classification of the school interviews identified time as the main theme presenting barriers to the case study schools' use of outdoor environments (Table 4.10). Time had previously been identified as a barrier within both the literature review (Table 2.9) and the Ofsted good practice review (Table 3.2). This indicates that time, as a barrier to schools outdoor use, is a well-established and previously documented perception. Time was also one of only three themes within the school interviews to have more negative associations than positive, reinforcing it as a major barrier to schools use of outdoor environments. Barriers associated with the theme time, e.g. curriculum priorities and additional planning time (Table 4.11), indicated that even within the best practice schools, the use of outdoor environments was perceived as extra-curricular. Any observed educational benefits were unexpected, e.g. *“We didn't realise the impact it would have on their writing”* (Teacher interview, 2013). Traditionally outdoor use in education was perceived as an extra-curricular subject, not linked to academic

performance (Kruse & Louis, 2008; Nicol, 2002). The prevalence of this perception could mean that the link between the psychological benefits of engaging with natural environments and the potential for improving academic development has not been fully realised within schools. Engaging with natural environments provides opportunities for cognitive, evaluative and affective development (Wolsko & Lindberg, 2013; Bratman et al, 2012; Kellert, 2012; Cervinka et al, 2011; Hinds & Sparks, 2008). Schools need to provide these developmental opportunities as part of children's social and academic development (Grahm & Stigsdotter, 2010; Mårtensson et al, 2009). If explicit links were made between the psychological theories associated with connection to nature and schools intended outcomes for pupil development, it could help teachers realise the potential contribution to curriculum subjects. Therefore, a clearer understanding of the benefits of engaging with natural environments could help to explicitly link outdoor use with academic performance, helping to reduce the perceived time pressures (Waite, 2010).

The school interviewees identified policy drivers as the second most important theme presenting barriers to schools use of outdoor environments (Table 4.18). The barriers identified within policy drivers stemmed from a lack of policy support for learning in outdoor environments and unpredictable changes within educational policy. The autonomy afforded to schools through the 2010 education White Paper (DfE, 2010), and reiterated within the 2016 White Paper (DfE, 2016) was designed to provide schools with more flexibility in terms of teaching practices (Wilkins, 2015). The subsequent curriculum provided a pared down syllabus intended to enable this (DfE, 2013). Instead, the school interviewees identified the reduced focus as a move away from supporting practices, such as learning outdoors, e.g. *"since Conservatives came into government, they got rid of it all"* (Teacher interview, 2013). Marketisation of the education system has promoted competition between schools (Wilkins, 2015; Morrison, 1998). This has increased pressure on teachers' and school managers to improve performance in league tables (Brown, 1990). With the reduced syllabus, increased performance pressure provides the temptation for teachers' to focus solely on the core academic subjects, e.g. *"the temptation is to chuck more time with the children at literacy, at maths and at the*

expense of...(Outdoor learning)" (Teacher interview, 2013). Therefore, the autonomy presented within the curriculum may have served to restrict teaching practices rather than enhance them.

The other main cause of barriers categorised under policy drivers was the constant reformation of education policy (Machin & Vignoles, 2006). Teaching staff were constantly pushing to keep up with new guidelines, e.g. *"I've got more and more things to do in terms of school improvement. I think the barrier is the amount of stuff that comes from government that is new that you have to do"* (Teacher interview, 2013). Increased pressure on schools and the prediction of further change had instilled a sense of disillusionment with education policy, e.g. *"there needs to be a level of accountability for governments not to be able to just go, 'let's do this, this, this and this' and then 'oh, we've been voted out now, let's do something else!' It would be nice to see some of the aspects of the curriculum, taken out of that political, football arena and made more, this is national policy and it can't be fiddled with"* (Teacher interview, 2013). Constant educational reform is a result of the governments market driven governing structure (McDougall, 2005). Despite the increased reform, there has been little evaluation of the impacts on school management or teaching practices, achieving a perception that policy change is ineffective, with the majority of policy inaccessible for localised governance. (Wilkins, 2015; Machin & Vignoles, 2006). Therefore, schools' have effectively been alienated from national policy whilst still being held accountable for failures within the system (Wilkins, 2015).

Outdoor conditions and funding identified as important themes for presenting barriers, with school interviewees attributing a higher negative connotation than positive, to both (Table 4.10). When discussing the barriers associated with outdoor conditions, school participants also identified ways in which to overcome them, e.g. *"It is just making sure that all of your risk assessments are in place"* (Teacher interview, 2013). This indicates that the barriers relating to outdoor conditions are seen as surmountable. This could mean that teachers had awareness of how to overcome conditions, but were not always willing or confident to do so (Waite et al, 2016). Therefore, the barriers associated with outdoor conditions may be diminishable with increased experience.

Funding as a barrier to schools' use of outdoor environments is traditionally associated with cost of educational visits and appropriate equipment (Wattchow & Brown, 2011; Martin, 1993). In the case of the best practice schools, funding received little attention as presenting either barriers or opportunities (Table 4.10). Despite this, it was one of only three themes that had higher percentage of barriers (73%, n= 71) than opportunities (27%, n=26). This indicates that best practice schools were facilitating use of outdoor environments despite a lack of funding. This could be because they had already embedded outdoor use within their school, meaning that outlaying costs were minimum. If this were the case, then it would suggest that schools only require a funding resource for initial facilitation of outdoor use before it can be self-sustaining (Wattchow & Brown, 2011). Therefore, the traditional association of funding as a barrier to schools may not apply to schools that are utilising their local green spaces.

5.10 Significant opportunities from the school interviews

School interview participants' identified child development, management and staff attitude as the most important themes for presenting opportunities for schools' use of outdoor environments. The concept of using child development for furthering opportunities was based on the observable benefits providing motivation for increasing further opportunities, e.g. *"You can just see the benefits of doing it when you do it with the children"* (Teacher interview, 2013). This is indicative of the associated psychological and social benefits of engaging with outdoor environments (Wolsko & Lindberg, 2013; Bratman et al, 2012; Kellert, 2012; Cervinka et al, 2011; Hinds & Sparks, 2008). There was also reference to the recognised improvements in educational attainment, e.g. *"Those little things that we often don't think about in a child's learning, their motivation to come to school, their attendance and behaviour in class"* (Teacher interview, 2014). However, missing throughout the school interviews was the explicit links between the psychological benefits and the potential they could have for academic performance, e.g. improved cognitive function increased attention, stress reduction (Capaldi et al, 2015; Grahn & Stigsdotter, 2010). This indicates the need for further integration of academic research within education policy. Therefore, if explicit links were made between schools'

use of outdoor environments and improved academic performance it may help to encourage teachers to utilise outdoor environments more often in their teaching practice.

The participants from the case study schools identified management as important in providing opportunities for schools' use of outdoor environments. Due to the hierarchical structure of school governance, school management can have an influential impact on the running of a school (Waite, 2010; Deacon, 2006). In a reflection of a government or corporate structure, schools have an internal management team, e.g. head teacher, deputy head and heads of year, as well as external stakeholders, e.g. governors, parents, and pupils who can influence management decisions (Wilkins, 2015; Brown, 1990). The results of the interview analysis suggest that for best practice schools, having unanimous support from management positively influenced the success of the schools' outdoor use, e.g. *"I think there is a drive and an ethos within school"* (Teacher interview, 2014). Within the school interviews, it was identified that initial management support had originated from policy initiatives under the previous Labour government, i.e. Learning Outside the Classroom Manifesto (Department for Education and Skills, 2006) and The National Framework for Sustainable Schools (Department for Children, Schools and Families, 2006). Once initiated, the observable benefits within the school had motivated them to continue developing a holistic ethos to child development, including the use of outdoor environments. This indicates that an initial policy drive may be important in encouraging school managers to facilitate outdoor use within their schools. Therefore, the increasing pressure on schools to perform, and the lack of current policy drive may act as a barrier to acquiring management support for schools not currently engaging with outdoor environments.

Staff attitude was also identified as a key theme presenting opportunities. In all three schools, having a key member of staff responsible for facilitating and encouraging use of outdoor environments was perceived as fundamental, e.g. *"It is having that member of staff as that key person"* (Teacher interview, 2014). The key staff member in all cases had a personal interest in the natural environment and understood the benefits of connecting with nature e.g. *"I am obviously interested in it personally, I work for a conservation, volunteering group in Bolton"* (Teacher interview, December 2013). The

presence of a key staff member can help to encourage and facilitate outdoor use within a school (Waite et al, 2016; Waite, 2010). However, attaching all of the responsibility to one member of staff could affect the longevity of a schools' outdoor use, as staff turnover in schools tends to be quite high (Ingersoll, 2001). Within each best practice school, the key staff member was passionate about being outdoors and the benefits of engaging children with outdoor environments, e.g. *"our eco lead is very passionate about it"* (Teacher interview, 2013). This understanding of the benefits to child development was the driving force behind their motivation. Therefore, sharing best practice between teachers and schools could help to promote the benefits and motivate others to facilitate schools' use of outdoor environments.

5.11 Significant barriers from the Local authority interviews

The local authority participants identified more barriers to schools use of outdoor environments than either the school or the practitioner participants. This indicates that the major barriers to schools' use of outdoor environments may originate within this sector. The use of best practice case studies meant that the local authority participants had already helped facilitate at least one schools' use of outdoor environments. This indicates that it was possible to overcome some of the barriers to facilitation.

The local authority interviewees identified funding as the barrier most effecting schools' use of outdoor environments. This was associated with the local authority budget cuts, which have effected school and community engagement services (Local Government Association, 2017; Hastings, et al 2015). Evidence of this was present across all three authorities, for example, *"we used to have quite a pro-active ranger service that worked with voluntary groups, worked with community groups, worked with schools...they have all gone. The whole lot have gone"* (Local authority interview, 2015). These engagement services, normally associated with large public parks and nature reserves have been essential for some users, particularly dependent users, such as schools and vulnerable members of society (Local Government Association, 2017). Without these services, schools' use of outdoor environments is still possible but without the support of an experienced staff member, e.g. park warden, teachers may be less confident to do so. Local authority budget cuts have also meant many authorities have been forced to

reduced green space maintenance and management services, e.g. *“we have basically got to the point where we can’t cut the grass any less often than we do, without it being a real problem”* (Local authority interview, 2015). The reduction in services has led to the degradation of many green spaces (Local Government Association, 2017). This could accentuate users associated fears of anti-social behaviours (Kaźmierczak, 2013; Burdette & Whitaker, 2005a; Carver et al, 2008; Clements, 2004). This was evidenced within the local authority interviews, where gang use was a problem, e.g. *“anti-social behaviour, (in parks) we have sort of hit the bottom of it”* (Local authority interview, 2016). Parks and green spaces are highly valued within communities and are an important resource for the economic, social and environmental benefits that they contribute (Belmeziti et al, 2018; McKinney, 2018; Niemelä, 2014; Pauliet et al, 2011; Tzoulas et al 2007). Therefore, consideration of these benefits and the impact of their loss ought to be integrated within local authorities’ strategic approach from the perspective of both communities and green infrastructure (Feltynowski et al, 2018).

The local authority interviewees also identified policy drivers as a major barrier to their ability to help facilitate schools’ use of outdoor environments. The last decades (2009-2019), austerity goals to reduce public spending have meant major restructure and loss of public services (Local Government Association, 2015). With public services driven by market forces, non-statutory services, such as public parks, have borne the brunt (Local Government Association, 2017). Reduced green space services were identified across all three local authorities, e.g. *“I think very quickly some of the...what people see as the softer things are put to one side”* (Local authority interview, 2016). This indicates that the multi-functionality of green space, inclusive of public parks is not an integrated policy subject. The development of green infrastructure strategy at sub-regional and local level may provide welcome opportunities for policy integration of green space benefits (Natural Economy North West, 2008). However, at present education is only included in passing and not as a key benefit of green space (Section 2.14). This suggests that horizontal policy integration is lacking across local authority departments. Therefore, employing an integrated approach to planning may help local authorities avoid having to mitigate some of the further impacts that loss of green space could have (Everard, 2017; Local Government Association, 2017).

5.12 Significant opportunities from the Local authority interviews

Local authority participants identified green infrastructure as a theme important for providing both opportunities and barriers for schools' use of outdoor environments. The majority of these were in relation to green space rather than the broader ecological network and multi-functionality inferred by green infrastructure. Although, local authority interviewees associated many barriers with schools' potential use of green space, overall they associated more opportunities (Table 4.21). Many of the barriers attributed to green infrastructure reflected the pressure that local authorities were under to maintain or even protect smaller areas of green space, e.g. *"There is increasing pressure on those pocket urban green spaces"* and *"Small plots than we can build on, we may lose those"* (Local authority interviews, 2015 & 2016). All three local authorities had collaborated with the case study schools' to facilitate the use of a particular green space. This meant that schools shared part responsibility for maintenance and management of the green space with the local authority, and in the case of the Manchester school, with the local residents. Evaluation of community managed or informally managed green spaces have supported this participatory approach as a means to improving the multi-functional aspects of green infrastructure within urban areas (Dennis & James, 2016). Therefore, potential for including schools' on a wider scale within this participatory community approach could help share community responsibility, reduce pressure on local authority and create opportunities for schools' engagement with local green spaces.

The local authority interviews identified community and collaboration as key to providing opportunities, reinforcing the idea of a participatory approach to schools' use of green space. This may be indicative of community influence in regards to urban green space matters (Local Government Association, 2017). Local authorities' objectives relate to the social, economic and environmental prosperity of the communities within their jurisdiction (Local Government Association, 2015). Recognising schools' and education, as an integrated part of community policy could help contribute to local authority objectives (Pandit et al, 2017). The strain on local authority budgets means that community objectives, e.g. local economic growth, social exclusion, climate change, must be tackled using innovative methods (Local Government Association, 2015).

Engaging children as part of this process using a participatory community approach could help involve them in the decision-making processes affecting their communities (Simpson, 1997). Therefore, collaboration between schools' and communities could help children grow up in communities where they feel valued, supported and a sense of ownership, improving opportunities for social mobility (Roe et al, 2013; Tuan, 1974).

5.13 Significant barriers from outdoor education practitioner interviews

Similarly, to the local authority interviewees, practitioners' identified funding as a major barrier to schools' use of outdoor environments. This was related to the local authority budget cuts but also the reduction in school budgets, e.g. *"funding is very tight out there under the Tories"* and *"Obviously schools have had their budgets cut, they will not be able to fund anything"* (Practitioner interview, 2015). Overall, this has reduced practitioners' workload, meaning they have to work harder to pursue funding opportunities in order to generate income, e.g. *"we are just having to look at different ways of work and funding"* (Practitioner interview, 2016). One practitioner identified that despite reduced budgets, some schools' had been easier to engage with services they would have to pay for, than services that were previously externally funded, i.e. free to the school, e.g. *"I think they value our paid stuff more than they ever did our free stuff"* (Practitioner interview, 2015). This may indicate that the increased time pressures felt by schools has meant they have become particular about how they engage with external organisations. This could be an indicator that schools' attribute value to services that cost, e.g. *"in reality if they value something then they will pay for it"* (Practitioner interview, 2016). However, as schools are on increasingly small budgets, there may be a need to assess schools' economic capabilities and ensure opportunities for engaging with outdoor environments through practitioner services are available for all schools' (Bruce et al, 2014).

Staff attitude was also presented as an important barrier that hindered the practitioners' ability to work with schools' in outdoor environments. This related to issues with engaging teaching staff. Practitioners' identified two main reason for this, firstly staff who lack interest, e.g. *"Others just let us do our bit if you like and don't*

necessarily get in to it too much" (Practitioner interview, 2016). Staff showing disinterest may not be aware of the benefits that using outdoor environments could have for their teaching and pupils. This relates back to the findings in the school interviews that outdoor use was still perceived as something external to curriculum objectives (Section 5.8). Secondly, the practitioners' identified staffs' lack of confidence to teach outdoors as obstructing the longevity of projects, e.g. *"a lot of the enrichment stuff really that could and should be done by teachers...there is an element of them not having the confidence to do it"* (Practitioner interview, 2015). This was a major finding in the Natural Connections pilot project, where staffs' lack of knowledge and confidence increased the time taken to embed schools' outdoor use (Waite et al, 2016). Therefore, incorporating the use of outdoors in initial teacher training programmes could help to increase teachers' confidence and ability to utilise outdoor environments in their teaching (Wolsko & Lindberg, 2013; Bratman et al, 2012).

5.14 Significant opportunities from the outdoor education practitioner interviews

The practitioners' identified collaboration as important for presenting both barriers and opportunities to schools' use of outdoor environments, associating more opportunities overall. The practitioners' identified a reduced level of collaboration between sectors, e.g. *"The cluster group for Manchester, it is not as strong as it was"* (Practitioner interview, 2015). This is another indication of the effects of the government's austerity measures (Hastings, et al 2015). Opportunities for engaging schools' with outdoor environments arose from cross sector collaborations between stakeholders, including local authorities, community groups and private land owners, e.g. *"One of the ways I work to get permission to use a site is looking up the management plan for a site and identifying areas that we can help them with"* (Practitioner interview, 2015). The practitioners' identified that working towards mutual or shared interest benefits was key to successful collaboration. Reduced collaboration identified as a barrier by practitioners', is indicative of the upheaval that has occurred across sectors e.g. local authority, schools', voluntary and third sector, due to reduced public funding (Hastings,

et al 2015). The potential benefits gained from redeveloping these collaborative relationships could provide opportunities for an integrated approach to the social, economic and environmental issues effecting urban communities (Dennis & James, 2016; James et al, 2009). Therefore, developing an integrated understanding of each sectors' desired outcomes could be an important step toward redeveloping cross-sector collaboration.

The practitioners' identified green infrastructure as the second most important theme for presenting opportunities, although they also identified many associated barriers. The practitioners' identified the multitude of learning opportunities associated with green infrastructure as the key to providing opportunities for schools' outdoor use, e.g. *"accessing a really high quality space outdoors...it has got a lot of stimulus"* (Practitioner interview, 2016). The practitioners' everyday work revolves around green space and infrastructure, dealing with the associated issues on a daily basis. The practitioners' perception of the opportunities presented by green infrastructure indicates that their experience working in outdoor environments facilitates their ability to overcome the associated barriers (Waite et al, 2016).

The practitioners' identified child development as the third most important theme contributing to opportunities. Similarly to the school interviewees, practitioners' associated the observable benefits of child development as their motivation to continue working to increase schools' use of outdoor environments. As well as benefits to the psychological and physical development, identified within the school interviews, practitioners' also emphasised the associated opportunities for children's holistic development (O'Brien & Murray, 2007; Clements, 2004). This holistic view is representative of a social constructivist approach to learning (Palincsar, 1998). The emphasis on different developmental opportunities through holistic learning could be indicative of the practitioners' freedom to deliver outdoor learning from outside the constructs of the curriculum (Palmer & Birch, 2003). Therefore, collaboration between schools' and practitioners could help evaluate the different developmental benefits gained through schools' use of outdoor environments. Comprehensive evaluation could help provide an evidence base demonstrating the benefits for children's health, well-being and education (Jabareen, 2012; Grahn & Stigsdotter, 2010; Dawe et al, 2005;

Palmer & Birch, 2003). This evaluative evidence could potentially be used to help integrate education as a key objective of future green infrastructure strategy.

5.15 Summary of case study contribution

Synthesis and interpretation of the best practice case studies identified three key outcomes. Firstly, that across national, sub-regional and local policy frameworks there was no direct guidance for schools' use of outdoor environments. The inclusion of support and understanding of benefits shown within the environmental policy demonstrates there is a lack of horizontal policy integration at national policy level. Vertical policy integration is demonstrated at sub-regional to local policy level within the Manchester Green and Blue Strategy (MCC, 2015). Unfortunately, this did not cover schools' use of outdoor environments. Secondly, providing a standard minimum provision for schools' use of outdoor environments could help deliver on three national policy objectives. These objectives comprise providing opportunities for every child to experience nature (DEFRA, 2011, pg.44), extension of autonomy in schools (DfE, 2010, pg.54) and to provide evaluative development opportunities helping to increase social mobility and work toward social justice (DfE, 2016, pg.3). Thirdly, developing an integrated approach to schools' use of outdoor environments could contribute to local authority objectives, e.g. community cohesion, social inclusion, educational attainment and community health.

The theoretical contribution aimed to address ways to improve opportunities for outdoor use in mainstream primary education. To do this, the findings of the multiple case study research were synthesised with theoretical perspectives identified within the literature review (Figure 2.1). The grounded theory approach culminated in the development of the theoretical contribution. The basic tenet of the theory is that a cross-sector, collaborative approach to both facilitation and evaluation is needed for the successful implementation of embedded outdoor use in schools. This could help provide important developmental opportunities through connection with nature, raise environmental awareness and contribute to local authority community objectives. A systems-thinking approach to policy making within all ministerial departments would help allow for mitigation of emergent issues resulting from austerity measures

(Feltynowski et al, 2018). This approach could assess the economic, social and environmental impact that loss of green infrastructure, including public parks, could have (Everard, 2017).

These outcomes determined the need for a collaborative approach to improving schools' use of outdoor environments. The next stage was to determine how a collaborative approach could work and what the mutual benefits could be for all sectors involved. To do this, the major opportunities and barriers identified within the sector interviews (Sections 5.7-5.13) and the findings of the relationship analysis (Sections 4.26-4.30) were synthesised to develop the conceptual framework.

5.16 Developing the conceptual framework

A. Initial case study framework

Initial factors contributing to schools' use of outdoor environments were identified with a review of literature (Table 2.9) and Ofsted good practice (Table 3.2). The thematic classification of these factors developed the initial case study framework with the identification of eight initial themes (Figure 3.2). A dual positive, negative aspect was identified for each theme, meaning themes had the potential to contribute both opportunities and barriers to schools' use of outdoor environments. The dual aspect indicated the potential to manage factors to overcome barriers.

B. Thematic classification of sector perspectives

Thematic classification of the semi-structured interviews identified 13 themes contributing to schools' use of outdoor environments. Each sector had different perspectives on what constituted the main opportunities and barriers to schools' use of outdoor environments. The different perspectives reflected the separate sector roles in both the implementation and facilitation of schools' use of outdoor environments. Overall, all of the interview participants identified more opportunities than barriers. This

could be a result of using best practice case studies, as all participants had prior experience with enabling schools' use of outdoor environments. The participants' prior involvement provided contextual examples of how schools had previously managed to overcome the associated barriers to enable facilitation. Overall, the best practice schools' use of outdoor environments was identified as low in relation to its potential. The relatively low use indicated that even within schools identified as best practice there were still many barriers to overcome.

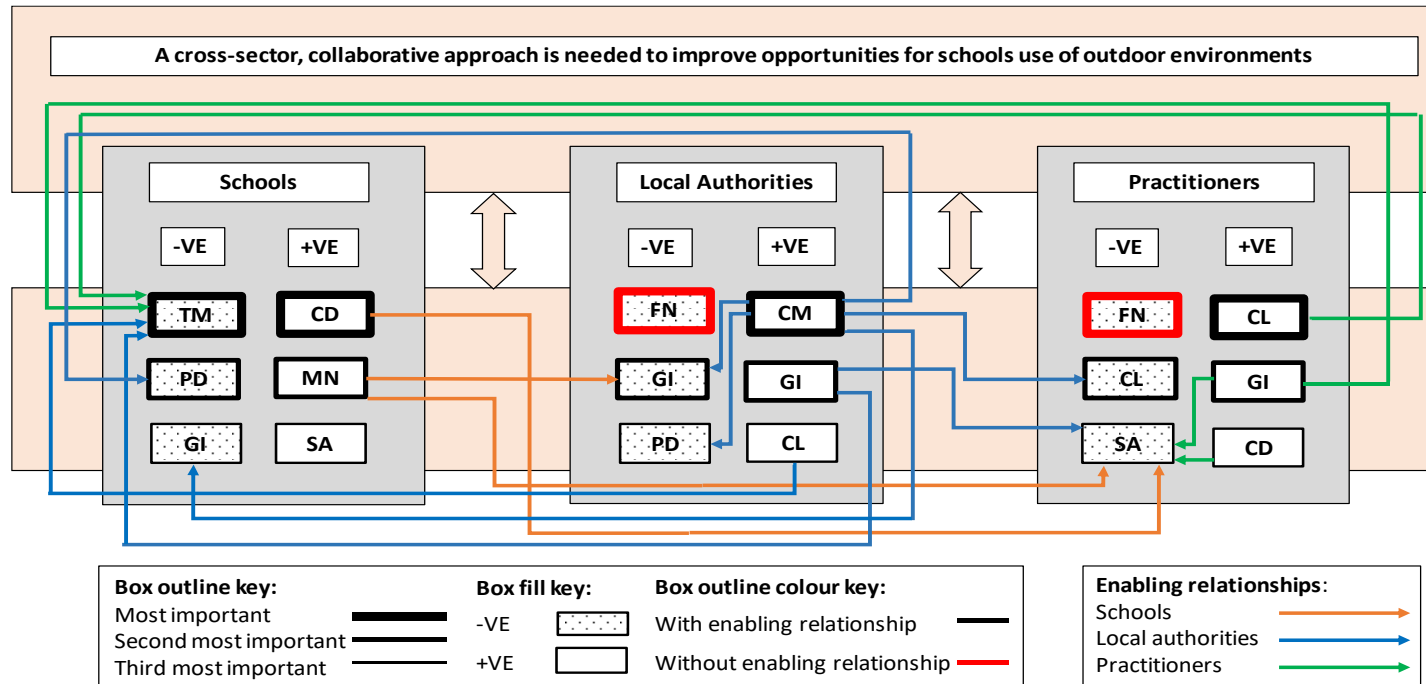
C. Relationship analysis of cross-sector themes

Reaffirmation of the dual positive, negative aspect identified within the initial framework (Figure 3.2) occurred during thematic classification of the sector interviews. It was identified that the positive and negative relationships between these themes could determine whether an opportunity or a barrier was presented. The relationship analysis found that each theme had at least one inter-theme relationship, enabling an opportunity (Figure 4.8). It was determined that for almost every theme identified as a key barrier by one sector, another sector had identified the theme able to provide an enabling relationship as a key opportunity (Table 4.33).

D. Developing the theoretical contribution

The development of the conceptual framework helped illustrate the potential of the collaborative cross-sector approach (Figure 5.2). The synthesis of the findings from the case study research then developed the key theoretical contribution. The theory developed by this research asserts that a cross-sector, collaborative approach determines schools' use of outdoor environments.

Figure 5.2 Conceptual framework highlighting the potential for cross-sector collaboration to help overcome barriers to schools' use of outdoor environments



Note: Theme codes in order left to right (repeats are not explained twice): TM = Time, CD = Child development, FN = Funding, CM = Community, CL = Collaboration, PD = Policy drivers, MN = Management, GI = Green infrastructure, SA = Staff attitude; Enabling relationships refers to the inter-theme relationships creating opportunities between themes (Table 4.33). These themes occur across sectors. Every theme had an inter-theme relationship with the potential to contribute to the creation of opportunities. Within the best practice case studies the major themes presenting opportunities in one sector, provided enabling relationships for the major barriers within another sector. The only theme without a strong enabling relationship was funding.

5.17 Understanding the conceptual framework

The conceptual framework illustrates the potential for enabling relationships across sectors (Figure 5.2). Thematic classification of the sector interviews identified the themes presenting the major barriers (-VE, depicted using boxes with a spotted background) and opportunities (+VE, plain white background) within each sector (Sections 5.9–5.14). The importance of the themes were portrayed using the thickness of the box outline, i.e. the thicker the outline the more important the opportunity or barrier (Figure 5.2). The relationship analysis determined the inter-theme relationships, specifically those with potential to enable opportunities for the barriers identified as key within each sector (Table 4.33). These relationships were represented using orange arrows for schools, blue arrows for local authorities and green arrows for the outdoor education practitioners (Figure 5.2). The conceptual framework demonstrates that there is potential for a cross sector enabling relationship for each major barrier identified, except for the theme funding. The lack of this enabling relationship is illustrated using a red box outline (Figure 5.2).

5.18 Barriers overcome through cross-sector collaboration

The school participants identified time, as the theme presenting the most important barrier limiting their use of outdoor environments (Figure 5.2, schools section, top box in left column). The relationship analysis identified green infrastructure and collaboration as the two themes with potential to provide an enabling relationship to time (Table 4.33). Both the local authority participants and the outdoor education practitioners had identified green infrastructure and collaboration as key themes effecting their ability to provide opportunities for schools' use of outdoor environments (Sections 5.12 & 5.14; Figure 5.2, local authority section, bottom box in right column; practitioner section, top box in right column). The practitioners had identified green infrastructure as presenting opportunities due to the many educational opportunities provided by the diversity of green infrastructure (Figure 5.2, practitioner section, green arrow from top box in right column). The practitioners experience and knowledge of working within these environments gave them the confidence and ability to facilitate these developmental opportunities. One of the main barriers relating to time was the

perception that the use of outdoor environments was extra-curricular. This perception indicated that schools had not made the link between the developmental opportunities of engaging with outdoor environments and the potential benefits to academic performance (Bratman et al, 2012; Grahn & Stigsdotter, 2010; Mårtensson et al, 2009). Practitioners collaborating with schools could help teachers make the explicit links between outdoor engagement and academic performance. This could help to provide motivation, improving staff attitude and opportunities for collaboration between schools and practitioners, two barriers also identified as effecting practitioners work with schools (Figure 5.2, practitioner section, middle and bottom box in left column). Providing explicit links could motivate teachers to utilise outdoor environments for curriculum delivery, enabling practitioners to move away from curriculum objectives and focus on holistic or environmental aspects of schools' outdoor use. Therefore, facilitating collaboration between practitioners and schools' could help reduce time and staff attitude as barriers by promoting the educational benefits as justification for schools' embedded use of outdoor environments.

Local authority interviewees had identified green infrastructure as one of the key themes presenting both opportunities and barriers to the facilitation of schools' use of green space (Figure 5.2, local authority section, second boxes down in both left and right column). Local authority participants demonstrated some understanding of the importance of green infrastructure for social, environmental and economic benefits, e.g. health, flood regulation and tourism. However, without the resources to maintain, let alone enhance green infrastructure, these multi-functional benefits are under threat (Local government association, 2017). School interviewees also identified major barriers associated with green infrastructure (Figure 5.2, schools section, bottom box in left column). There were some links made between schools perception of time and green infrastructure as barriers. For example, the school interviewees had attributed additional planning time as a key aspect of time as a barrier. The participants' perspective was that additional planning time was needed to enable access to particular green spaces, based on factors such as additional risk assessments and pre-visit site checks. In order to alleviate barriers presented by time and green infrastructure the case study schools had collaborated with local authorities to gain regular access to specific

sites (Figure 5.2, local authority section, blue arrows from middle and bottom boxes in right column). In return, the schools had taken on shared management and maintenance responsibilities (Figure 5.2, schools section, orange arrow from middle box in right column). The case studies provided three different examples of this integrated approach, i.e. sole responsibility for maintenance, shared responsibility with community, and shared responsibility with local authority. This integrated approach allowed schools to reduce time and green infrastructure barriers by having dynamic risk assessments in place onsite resources and experience of a particular site. Local authorities also reduced barriers relating to green infrastructure, e.g. reduction of maintenance responsibilities. Therefore, a participatory approach to green space maintenance helped to reduce cross-sector barriers to schools' use of green space.

School and local authority participants' also shared the perspective of policy drivers as a major barrier (Figure 5.2, schools section second box down in left hand column; local authority section, third box down in left column). School participants' perceived policy drivers as a barrier due to the lack of support from national and local policy for schools' use of outdoor environments. The lack of support combined with the reduced focus of the 'autonomous curriculum' encouraged schools' to concentrate their focus on the core academic subjects. Local authority participants' perceived policy drivers as a barrier due to the pressure to deliver on their key objectives, e.g. community health, child welfare and social inclusion. The perception that these objectives inhibited them from encouraging schools' use of green space indicates that the local authorities did not perceive schools' use of outdoor environments as contributing to local authority objectives.

The local authority participants' identified community as one of the key themes presenting opportunities for schools' use of green space (Figure 5.2, local authority section, top box in right column). The relationship analysis identified community as enabling opportunities within policy drivers, green infrastructure and collaboration (Figure 5.2, local authority section, blue arrows from top box in right column). These three themes had been identified as presenting major barriers across all three sectors. The enabling relationships presented by community is indicative of community influence and the potential effect it could have on schools' use of green space. Local authority

objectives revolve around the social, economic and environmental prosperity of the communities within their jurisdiction. An understanding of the impact that the loss of green space could have on these communities is needed in order to align local authority objectives within green infrastructure strategy. Integrating schools and educational equality as part of both of these policy drives would help provide further evidence for enhancing the multi-functional capacity of green infrastructure. Therefore, the conceptual framework demonstrates the potential for developing a cross-sector, collaborative approach to overcoming barriers to schools' use of outdoor environments, that delivers on transdisciplinary objectives, e.g. improved developmental opportunities, community health and increased environmental awareness.

5.19 Potential for overcoming funding as a barrier

Even with a cross-sector approach, funding presented the biggest barrier to schools' use of outdoor environments (Figure 5.2, local authority section, top box in left column; practitioner section, top box in left column). Funding was not identified as a barrier in the traditional sense i.e. schools lack of funding for facilitating outdoor educational visits. Rather, funding was identified as a barrier effecting the resources needed to maintain green space and the associated engagement opportunities for both local authorities and practitioners (Sections 5.11 & 5.13). The relationship analysis identified funding as creating barriers for seven of the other themes (Figure 4.8). This is indicative of the complex and far-reaching consequences caused by local authority budget cuts.

Evaluation was the one theme identified as having the potential to enable opportunities for funding (Figure 4.8). Within the case studies, there was a distinct lack of evaluation across all sectors (Section 4.30 & Table 4.34). The lack of evaluation was due to a lack of resources and current requirement. Any evaluation that had occurred in the past was in relation to evidence of work for schools, footfall data for local authorities and engagement statistics for practitioners. These types of evaluation do not provide evidence of developmental or societal benefits that could help to influence funding opportunities. The relationship analysis reiterated this issue as there was a missing connection between evaluation and both green infrastructure and outdoor conditions

across all sectors (Table 4.35). This could be the key issue hindering funding opportunities and ultimately preventing the facilitation of schools' use of outdoor environments on a larger scale. Therefore, developing a comprehensive evaluation system as part of the cross-sector, collaborative approach could help to develop a definitive evidence base to promote best practice.

5.20 Summary of framework contribution

The synthesis of the findings from the case study research developed the key theoretical contribution. The theory developed by this research asserts that a cross-sector, collaborative approach determines schools' use of outdoor environments. The development of the conceptual framework illustrates the potential of this collaborative cross-sector approach as demonstrated in the case study research (Figure 5.2). The conceptual framework demonstrates that collaboration between schools, practitioners and local authorities can help reduce barriers to schools' use of outdoor environments across all sectors. An integrated approach to delivering cross-sector collaboration was reached through the alignment of transdisciplinary objectives e.g. child development, green space maintenance and increased environmental awareness. Evaluation was identified as having the potential to enable opportunities for funding. However, a current lack of evaluation was hindering this possibility. Therefore, developing an integrated approach to evaluating the benefits of schools' use of outdoor environments could help to provide funding opportunities for further facilitation. This could help to provide evidence for the transdisciplinary benefits of schools' use of outdoor environments.

5.21 Implications and recommendations for field of study

The conceptual framework illustrates the theory developed from the case study research, asserting that a cross-sector, collaborative approach determines schools' use of outdoor environments. The theoretical contribution provides a framework for

researchers to explore the complex factors contributing to schools' use of outdoor environments.

The conceptual framework illustrates the emergent concept of community influence as important in overcoming barriers to schools use of outdoor environments (Figure 5.2, local authority section, blue arrows from top box in right column). Further case study research could help determine community perspectives and potential contribution to schools' use of outdoor environments. Integrating issues related with educational inequality and local authority community objectives, e.g. social mobility, could help to co-develop opportunities for interdisciplinary solutions.

There was need for a conceptual framework to address the factors contributing to schools' use of outdoor environments. Other conceptual frameworks exist within the field of outdoor education that have highlighted the scope of outdoor education based on a traditional, outdoor activity based perspective, e.g. Higgins & Loynes, 1997 (Figure 2.5) and Beames et al, 2012 (Figure 2.6). These frameworks provide insight into the potential social and environmental benefits gained from visiting wilder, natural environments. However, they neither recognise the potential for using environments within a schools locality nor the range of educational benefits that are available. Other outdoor education frameworks have focused on the urban environment e.g. Tidball & Krasny, 2011 (Figure 2.7) and Cole et al, 2017 (Figure 2.8). These frameworks included the potential for both socio-cultural and bio-physical contribution and the potential environmental educational benefits (Cole et al, 2017; Tidball & Krasny, 2011). However, none of the existing outdoor education frameworks provide insights into the potential for overcoming barriers to facilitation and the cross-sector benefits this could have. Therefore, this research provides a unique theoretical contribution to the field of study, using a socio-ecological systems approach to address cross-sector issues.

This research provides a conceptual framework (Figure 5.2) which could be used across sectors, i.e. practitioners, schools and local authorities, to identify opportunities for developing a collaborative approach to facilitating schools' use of outdoor environments. The framework determines the need to align cross-sector objectives by implementing a participatory process throughout. Facilitating a participatory approach to co-defining, i.e. identifying the problem, co-developing, i.e. determining the solution,

and co-managing, i.e. tackling emergent concepts, provides the potential to deliver transdisciplinary objectives (Nesshöver et al, 2017). The implication of the findings highlights the importance of producing comprehensive evaluation of schools' use of outdoor environments. Developing a collaborative evaluation framework as part of best practice could provide further opportunities for facilitating schools' use of outdoor environments.

5.22 Reflection on methods

Use of a multiple, best practice case study design was appropriate for this research. Use of naturalistic, exploratory case studies allowed exploration of the relationships between the factors contributing to schools' use of outdoor environments (Zucker, 2001; Yin, 2013). Using a combination of reductionist principles, holism and systems thinking allowed for consideration of each case study component as interrelated aspects in conjunction with one another (Pandit et al, 2017). Applied systems thinking allowed for consideration of emergent concepts arising due to the iterative process of thematic classification (Saldaña, 2009). This helped give clarity to the complex factors associated with schools' embedded use of outdoor environments (Charmaz & Belgrave, 2007). Employing a grounded theory approach synthesised and interpreted patterns enabling the development of the theoretical contribution.

Chapter 6. Conclusion

Cities are central to human development, providing focused opportunity for social and cultural integration (Portney, 2013; Capello, 2001). However, rapid urbanisation over the 20th century has led to many social, economic and environmental problems, e.g. loss of public space, inflated living costs and depletion of natural cycles (McPhearson et al., 2016; Ceccarelli et al, 2014; DTLR, 2002). Rapid urban growth and industrialisation have been key drivers in the separation of Western culture from nature (Capaldi et al, 2014; Mackerron & Mourato, 2013; Vining et al, 2008). This societal move, away from nature is having detrimental effects on both environmental and social health (Wolch et al, 2014; Bookchin, 1987). The need to address both social and ecological issues is key to addressing the wicked problems associated with developing sustainable urbanisation (Tietjen & Jørgensen, 2016; Folke et al, 2002). This will require an interdisciplinary approach to gain an understanding of the complex systems interacting within cities (Pandit et al, 2017). Therefore, governments may need to adopt a socio-ecological, interdisciplinary approach to strategic planning (McPhearson et al, 2016; Gómez-Baggethun & Barton, 2013; Pickett et al. 2004).

One impact of society's separation from nature is the effect on human development (Soga & Gaston, 2016; Judkins et al, 2008; Kellert, 2002). Connection with nature is fundamental to human development and well-being (Voigt et al, 2014; Kellert, 2002; Wilson, 1984). In children especially, connection with nature stimulates psychological development, e.g. cognitive, evaluative and affective (Wolsko & Lindberg, 2013; Bratman et al, 2012; Kellert, 2012; Cervinka et al, 2011; Hinds & Sparks, 2008). Despite this, many children do not have regular access to natural, outdoor environments meaning they are missing important developmental opportunities (Bento & Dias, 2017; Rickinson et al, 2004; Clements, 2004). Many of the developmental benefits of connecting with nature have implications within schools, e.g. cognitive development, stress reduction and attention restoration (Van den Berg et al, 2014; Bilton, 2014; Kaplan & Kaplan, 1989; Ulrich, 1984). The use of outdoor environments is also conducive to mainstream learning theories, meaning teaching practice could easily be adapted for this purpose. Therefore, there is feasibility to introduce mainstream use of outdoor

environments within schools that could have profound implications for children's academic development.

As well as the psychological benefits, there are other associated benefits of children's connection with nature. There are physical benefits that can influence health in adulthood, helping reduce the burden on health services (Bento & Dias, 2017; Tamosiunas et al, 2014; Wolch et al, 2014; Diez Roux et al, 2007). Environmental benefits gained from enabling children to have regular contact with nature can encourage an empathetic relationship and raise environmental awareness, inciting the desire to conserve it (Mustapa et al, 2015). Connecting with nature in local environments is important for maintaining cultural identity and knowledge, contributing to community cohesion and influencing social mobility (Hernández-Morcillo et al, 2014; DTLR, 2002; Korpela & Hartig, 1996; Tuan, 1974). Developing a sense of place and ownership are important aspects for social mobility and well-being (Cohen, 2006). Local authority objectives include health, environmental prosperity and social cohesion within their communities (Local Government Association, 2015). Therefore, facilitating schools' use of outdoor environments could help to contribute to local authority objectives.

Despite the known benefits, the use of outdoor environments throughout primary education in England is lacking. There have been attempts to embed outdoor use within education, historically through the use of environment or nature based education (Ross et al, 2014; Scott et al, 2013; Rickinson et al, 2004; Nicol, 2002). Other attempts have included the use of initiatives with a range of objectives including physical health, ecological behaviours and social development (Cincera and Krajhanzl, 2013; Knight, 2013; Keyte et al, 2012; Kadji-Beltran et al, 2013). Both of these approaches, i.e. environmental based and use of initiatives, serve to exclude outdoor use from the mainstream curriculum (Kuh & Hutchings, 2015). In Scottish schools, the use of outdoor environments is more prevalent, due to its use as a cross-curricular teaching tool, opposed to subject specific (Christie et al, 2016; Beames et al, 2012). The success of this has been the result of consistent and unified support across Scotland's educational and political agenda (Christie et al, 2016). Adverse to this, the Department for Education offer little current guidance or support for schools' use of outdoor environments (DfE, 2010; DfE, 2016). Therefore, national policy support may be needed in order to embed the use of outdoor environments across schools in England.

The current drive for autonomy within English schools means that there is potential for teachers to utilise outdoor environments as part of the curriculum. However, with no current training or guidance, the support for facilitation is not there. The introduction of a standard minimum provision for schools' use of outdoor environments could help provide this support. In doing so, it could help deliver on national policy objectives, comprising provision of opportunities for every child to experience nature (DEFRA, 2011l, pg.44), extension of autonomy in schools (DfE, 2010, pg.54) and provision of opportunities for evaluative development helping to increase social mobility and work toward social justice (DfE, 2016, pg.3). Therefore, understanding the transdisciplinary benefits of schools' outdoor use is key to promoting an integrated approach to embed it within mainstream primary education.

This research used schools identified for their best practice in the use of outdoor environments to identify the actual barriers and opportunities to facilitation. The research incorporated the different sectors involved with both facilitation and implementation of schools' use of outdoor environments, i.e. schools, local authorities and outdoor education practitioners. The findings of the research revealed that each sector contributed different opportunities, and presented different barriers. Enabling relationships identified between cross-sector themes developed the premise for the theoretical contribution. For example, the school interviewees identified time as the theme presenting major barriers to their use of outdoor environments. This was due to a combination of the reduced focus of the National Curriculum on academic subjects, and increasing pressure on schools to perform within league tables. This increased transparency has pushed schools to focus their concentration on the targeted, academic subjects (Wilkins, 2015; Craft et al, 2014). The perception that use of outdoor environments would reduce time spent focusing on academic subjects demonstrated that, even within the best practice schools, the use of outdoor environments was perceived as extra-curricular. The relationship analysis identified green infrastructure and collaboration as the two themes that could present opportunities for reducing time barriers (Table 4.33). Collaboration and green infrastructure were both identified as themes providing major opportunities within the local authority and outdoor education practitioner sectors. This indicated that both local authorities and practitioners had the potential to provide cross-sector enabling relationships, reducing schools time barriers

to using outdoor environments. The development of the conceptual framework illustrated opportunities for these cross-sector enabling relationships for the majority of major barriers identified within each sector (Figure 5.2). This developed the key theoretical contribution, that a cross-sector, collaborative approach determines schools' use of outdoor environments.

Outdoor education, like much of educational reform in England, has occurred with little evaluation of practice or outcomes (Wilkins, 2015; Rickinson et al, 2004; Nicol, 2002). This has left theoretical gaps in the supporting research for outdoor education that could have contributed to the lack of mainstream schools' use of outdoor environments. The gaps in knowledge relate to the educational benefits of using outdoor environments for education and how opportunities for outdoor use could be improved.

This research presents a unique approach to identifying opportunities to embed schools' use of outdoor environments. The conceptual framework provides a contextualised example of how a collaborative, cross-sector approach can work to alleviate the barriers to schools' outdoor use. The collaborative approach requires an integrated understanding of cross-sector objectives. By applying socio-ecological systems theory, addressing cross-sector issues as interrelated parts of the same system could present emergent concepts contributing to collective solutions. This goes some way to addressing the theoretical gap in outdoor education research. The conceptual framework provides the basis to improve opportunities for schools' use of outdoor environments. Improving opportunities could allow for further research into the mechanisms of how educational benefits can occur. Therefore, providing the evidence needed to inform future policy frameworks at national, sub-regional and local level.

This research provides a conceptual framework, which could be used in practice to identify opportunity for future cross-sector collaborations. The framework could be used as a tool for co-defining multi-disciplinary priorities, co-developing interdisciplinary solutions and co-managing delivery of transdisciplinary objectives through schools' use of outdoor environments.

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