Farm Visits:
Interdisciplinary outdoor learning for Primary School Pupils and Scotland's Curriculum for Excellence

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Abstract

There is concern around children's lack of knowledge and understanding of food sources and production, and more broadly around their apparent disconnection from nature. Spending time in the outdoors has been shown to yield a range of benefits, although the mechanisms underpinning these are not well understood. Studies have suggested, however, that there has been a decline in time spent outdoors by children.

The introduction of the 'Curriculum for Excellence' guidelines in Scotland was heralded as an opportunity to address this decline. Although the guidelines advocate the use of outdoor environments, little research has been conducted, and little guidance is available, on how teachers can and do use outdoor learning in relation to the guidelines, particularly beyond 'adventure' activities.

Farms are utilised as an educational resource around the world. This research explored the use of educational farm visits, as an example of outdoor learning, in the context of Curriculum for Excellence. A qualitatively driven, mixed methods study, comprising survey and case study methodologies, was undertaken. A questionnaire for teachers informed subsequent interviews with teachers and farmers, and 'group discussions' with primary school pupils.

The study found that teachers can link farm visits and associated topics with the Curriculum for Excellence guidelines in a range of ways, covering all curriculum areas. There was a tendency however for farm visits to be associated with food and farming topics at Primary 2-3 (age 6-7), rather than used more widely. Issues to consider in the planning and conduct of farm visits were identified, and barriers and motivations for teachers, and for farmers volunteering to host visits, were explored.

As well as practical examples of the use of farm visiting, this research offers a perspective on some of the theoretical literature which seeks to explain the benefits of spending time outdoors. Furthermore, five main recommendations for farm visiting in the context of Curriculum for Excellence are given. These relate to the type of visit appropriate to different age groups, opportunities for teachers to become more familiar with what farms visits can offer, and raising awareness of the organisations and networks which can support volunteer farmers to host visits.

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This thesis is dedicated to my gran, Ina McIver (1925-2011).

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"Bloody Thesis? Isn't that one of the trade federation from the Phantom Menace?"

- Ash Loydon

Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or at any other institution.

Signed:

Leanne McIver Mattu

1. Introduction

> "Milk comes from the supermarket (I have been told so by a bright 11 year old)".
> - Watson (2008)

The above quote comes from the blog of an experienced teacher in the UK, who discusses his pupils' disconnection from nature, and the value of taking children to visit a local farm. Blane (2013, p.20), in an article for the *Times Educational Supplement Scotland*, similarly describes one child's awareness of the connection between milk and cows; "He had absolutely no idea. A lot of children nowadays don't know where their food comes from."

Survey findings over a number of years support the perception illustrated in these anecdotes, that children's knowledge about where their food comes from is poor. A study for the National Farmers Union (Ipsos Mori, 1999), for example, showed that almost a fifth of children aged 8-11 in England who were questioned about food sources were unable to identify the animal which provides ham. A similar proportion did not know that cheese is made from cows' milk, while almost half incorrectly believed that this is an ingredient of margarine. PFA Research (2010) carried out a study in South West England for the Cornish Mutual insurance company, and found that amongst 6-8 year olds, only 38% could identify which animal a beef burger was sourced from. More recently, a UK-wide survey by the British Nutrition Foundation found that almost a third of children believed cheese to come from a plant, while similar numbers reported that pasta is made from an animal source (BNF, 2013).

These reports suggest however that the majority of children are able to identify common food sources. The Cornish Mutual report, for example, found that most children could correctly identify common animals and vegetables (PFA Research, 2010). Furthermore, high proportions of children involved in the BNF (2013) study could correctly identify that chicken comes from an animal. Nevertheless, the surveys indicate that significant knowledge gaps and misconceptions around food remain amongst large numbers of primary-age children.

While these survey findings give an interesting insight into children's food knowledge, statistics produced by commercial research companies, whose methods may not meet standards of academic rigour, must be treated with caution (Mullin, 2015). It is generally beyond the scope of such commercially commissioned research to offer commentary, explanation, or in-depth analysis.

There is limited academic research in this area; one significant academic review on the topic, however, supports the view that "young people's knowledge of how their food is produced and how it gets to their plate seems to be very restricted" (Dillon *et al.*, 2003, p.1). This systematic review of literature on children's knowledge of food, farming and agriculture found that much of the published research focused on teenagers, rather than younger children. Furthermore, many of the studies identified for the review focused on respondents' knowledge of issues related to farming, such as the use of pesticides, rather than specifically about knowledge of food sources. Nevertheless, the authors felt able to state that "[i]n terms of children's knowledge of food, farming and land management issues, this report indicates low levels of knowledge" (p.10).

Children's lack of food source knowledge is not only a UK problem; "the US and many other countries [are] faced with similar issues and concerns" (Dillon *et al.*, 2003, p.4). Recent literature from beyond the UK has reinforced this; Canavari *et al.* (2011), for example, discuss a survey of 6-11 year olds conducted by the European Council for Young Farmers, which found that while many children had some basic understanding of food sources, there were also many who lacked knowledge of farm produce or who had "mistaken factual beliefs about the food they consume" (p.76). A study with four-year-olds in Slovenia found that children identified foods as coming from the supermarket (Kos & Jerman, 2012). Similarly, Hillman and Buckley (2011) surveyed young people in Australia on their knowledge of 'primary industries'. They found some evidence of a lack of knowledge, or the existence of misconceptions, amongst respondents, but reported mainly positive results on participants' ability to identify products as coming from plants or animals, and their attitudes towards farming.

Attitudes towards farmers and farming were also explored in some of the UK research identified above. A lack of understanding of farmers' lives and work,

and assumptions and stereotypes about farmers, were found to exist amongst adults as well as children (e.g. Childwise, 2011; LEAF, 2015). This too is an issue beyond the UK, and similar misconceptions and misunderstandings around farm life and the work of farmers has been identified in countries such as the USA (Ruth *et al.*, 2005) and Germany (Fröhlich *et al.*, 2013).

Dillon *et al.* (2003) recognise, importantly, that this lack of knowledge around food and farming may result from a lack of understanding and contextual relevance for children, rather than from a lack of teaching. This lack of contextual understanding relates to a broader phenomenon; the general 'disconnection' of people from their natural environments. According to Louv (2005), as a society we are becoming increasingly disconnected from nature, and as a result have developed what he terms 'nature deficit disorder'. This condition, he explains, "describes the human costs of alienation from nature [including] attention difficulties, and higher rates of physical and emotional illnesses" (p.36). Risku-Norja and Korpela (2010, p.177) discuss this in relation to young people in Finland, and suggest that "children and the young especially are losing their ties to rural areas and rural culture, and to agriculture. The route of food from field to fork and back to field is blurred".

Research in the UK has also highlighted the decline in time spent in natural environments. A study for government advisory body Natural England, for example, found that only 10% of children nowadays play in natural locations, whereas 40% of their parents' generation did so (England Marketing, 2009). Subsequent research found that 82% of adults in Britain believe that schools should be involved in providing nature-based experiences for children (RSPB, 2012).

1.1. The outdoors in Scottish education

The importance of the outdoors to the health, wellbeing and learning abilities of young people has long been recognised within the Scottish education system. Higgins (2002, p.149) identified Scotland as "one of the first countries in the world to formalise outdoor education", but noted that the use of the outdoors as part of the standard school experience in Scotland had been in decline from a peak of activity in the 1960s. The recently revised Scottish curriculum

guidelines, however, contain specific emphasis on outdoor learning, and have the potential to increase the use of the outdoors within the Scottish education system (e.g. Beames *et al.*, 2009).

These 'Curriculum for Excellence' (CfE) guidelines have been issued and incrementally implemented since 2004. The previous guidelines had been subject to a number of criticisms, for example that the guidance for different age groups had been developed at different times and lacked coherence (Carr *et al.*, 2006). The '5-14 guidelines' were regarded as overloaded, distanced from their original aims of flexibility and interdisciplinarity, and increasingly interpreted in a fragmented and rigidly subject-based way (Reid, 2008). A review of the curriculum, which took place in 2002, was intended to identify the strengths of the existing Scottish education system, and to highlight the areas in which the system could be improved to ensure its quality and relevance in the future (Scottish Executive, 2002). The 'Curriculum for Excellence' (CfE) guidelines were developed in response to the review's findings, and represented "a major national curriculum innovation that has the potential to change the landscape of schooling in Scotland" (Priestley & Humes, 2010, p.346).

An initial series of documents outlined the purposes, values and principles which would underpin the new curriculum guidance, and a range of further publications subsequently provided additional detail on content and implementation. The substantive guidance was published as a series of 'Experiences and Outcomes' (Scottish Government, 2009, p.3), and a number of other features and emphases are detailed within the suite of publications (see Appendix 1). An illustration of the key features of the curriculum structure, such as the cross-curricular themes and 'Approaches to Learning', is shown in Appendix 2; it should be recognised however that the guidelines are continually evolving, and some of the terminology and structural components may vary.

Curriculum for Excellence through Outdoor Learning (LTS, 2010) clearly demonstrated that the use of the outdoors as a context for learning was encouraged as part of the new guidance. That publication explicitly stated that multiple planned outdoor learning experiences should be part of the education experience for all children in Scotland. Ideally, this would include experiences in the school grounds, as well as day trips and residential activities. The

document highlights the value of outdoor learning experiences, and advises that no outdoor location should be discounted on the basis of its distance from the school; all children should be given opportunities to experience new contexts, such as urban children visiting rural locations and vice versa.

1.2. Farm visits for outdoor learning

Since agricultural holdings constitute 73% of the land area in Scotland (Scottish Government, 2015a), farms are a highly relevant context for learning. The need to ensure that learning is relevant and that pupils understand the relationship between what they learn in school and their lives in general is one of the key principles of curriculum design within 'Curriculum for Excellence' (see: The Curriculum Review Group, 2004). Farm visits may also contribute more specifically to improving children's food and farming knowledge. Dillon *et al.* (2003, p.iii) suggest that the evidence from their review "highlights the potential of school visits to farms – which offer a wide range of learning opportunities in the affective and the cognitive domains". They note that the 2002 Policy Commission on the Future of Food and Farming identified a need for closer links between schools and farms. Although that commission had a remit for England only, and was criticised by Scottish farmers for overstepping that (Adams & Robinson, 2002), it seems reasonable to assume that this point was similarly true in Scotland as in England. 'Curriculum for Excellence' also promotes interdisciplinary and experiential learning, both of which approaches can be utilised through educational farm visits.

1.3. The 'problem'

The drive to encourage the use of outdoor learning as part of CfE represents an important step in addressing the decline in children's outdoor experiences, and their disconnection from nature. Although CfE has been a 'work in progress' for over a decade, however, there remains little research on how it is being utilised in and beyond the classroom. Concerns around the lack of academic research and systematic evaluation relating to the guidelines and their implementation have been highlighted within Scotland (e.g. RSE Education Committee, 2012; Commission on School Reform, 2013), as well as beyond. A recent report by an

international organisation noted that "[t]here does not appear to be any large scale research or evaluation projects (sic) by either the universities or independent agencies with specific responsibility to provide advice to Education Scotland on what is working well […] and what areas need to be addressed" (OECD, 2015, p.151).

Reflecting the perceived importance of the outdoors in Scottish education, one area which has had a degree of recent academic attention is outdoor learning. Research has explored, for example, the use of particular models of outdoor learning (e.g. Beames & Ross, 2010; Mannion *et al.*, 2011) and the potential alignment of outdoor learning with the new guidelines (e.g. Allison *et al.*, 2012). Nevertheless, there is a need for examples of how outdoor learning can take place (Thorburn & Allison, 2010), and for further research with schools successfully using this approach (Thorburn & Allison, 2013). This study seeks to explore the ways in which teachers in Scotland are using farm visits for educational purposes in the context of Curriculum for Excellence, the barriers and facilitators they encounter in doing so, and the perspectives of farmers on hosting such visits. The specific questions addressed in this research can be found in *3.4.1 Research questions*.

1.4. Thesis outline

The present chapter has highlighted the gaps and misconceptions which many children hold about food sources and agriculture, and suggested that these are related to a wider phenomenon of declining outdoor experience and engagement. Although outdoor learning is promoted within the current Scottish curriculum guidelines, little research to date has explored how teachers can and do utilise outdoor learning environments.

Chapter Two explores the literature on the use of farms as contexts for outdoor learning. While this area has not received a great deal of attention in the British academic literature, internationally a number of perspectives are available. The chapter relates the model of farm visiting relevant to this study to those described in that international literature.

Chapter Three situates this study within the context of outdoor learning by examining the relevant literature on that topic and the relationship of outdoor

learning to the Curriculum for Excellence guidelines. While outdoor learning is largely regarded as worthwhile, some of the evidence for the perceived benefits of this approach to education is less than emphatic. Relatedly, the literature on field trips also offers some insight into the potential of farm visiting. Chapter Three concludes by specifying the research questions which underpin this study.

Chapter Four is concerned with the methods and methodology employed in this study. The survey and case study methodologies are discussed, and the questionnaire and interview methods are explained in turn, along with the procedure through which each was employed and analysed. The latter part of the chapter discusses the theoretical and philosophical issues associated with mixed methods research as they relate to this study, and aligns the research with a pragmatic, qualitatively-driven mixed methods approach.

The fifth chapter provides a profile of the participants in this study, including the teachers who responded to the questionnaire, and the teachers, pupils and farmers who participated in case studies. The fourteen case studies are not described in detail as part of this report, as this would have compromised the anonymity and confidentiality of those involved. Instead, case study vignettes drawn from key features of the case studies illustrate the farm visits at the centre of the case studies, and give a 'flavour' of the case study context.

Chapters Six to Ten focus on the main findings from the study, relating to the four research questions, and drawn from the combination of research methods. These findings are discussed in the context of existing literature. Although each of these chapters relates broadly to one specific research question, many of the findings reported in Chapters Six to Ten are inter-related; the main connections are indicated within the text, but these chapters should be read within this broader context rather than as stand-alone responses to individual research questions.

Finally, in Chapter Eleven, the conclusions which can be drawn from these findings are related to the four main research questions. Furthermore, three overarching themes emerging from the study are reported, and the related recommendations for educational farm visiting are presented.

2. The Farm as a Learning Resource

Academic research on farms as a resource for education is limited (Dyg, 2014). Much of the literature yielded by searches on 'farm visits' focuses on the risks associated with visiting a farm (e.g. Shield *et al.*, 1990; Evans *et al.*, 1996; Kassenborg *et al.*, 2004), rather than on practical or pedagogical issues. Some studies (e.g. Hawking *et al.*, 2013) may seek to bridge this gap using lesson plans which focus on hygiene and infection control, which can be linked with visits to farms. There are few studies, however, which focus on other areas of learning, or the curriculum links and other teaching-related aspects of farm visiting.

A major international review of the literature on children's understanding of farming, land management and food production was conducted by Dillon *et al.* (2003). Amongst English-language literature published between 1960 and 2002, they found fewer than 200 research reports which focused on this broad topic area, and noted in particular the small number of articles on contemporary food and farming education in Britain. In relation to farm visiting specifically, only around 12 research reports were identified, almost half of which discussed residential farm experiences. Dillon *et al.* (2003) found that much of this literature relied on anecdote, and was not based on robust research. There was little detail given on the ways in which farms were used as a learning opportunity, and the sorts of pre- and post-visit activity that might be worthwhile, as well as a lack of long term follow up on impact and retention of educational activity.

One unfortunate limitation of the review was its exclusion of literature in languages other than English. There is extensive evidence that farms are widely utilised for educational purposes in countries where English is not the primary language. Two German-language websites, for example, list papers on farm visiting research; one from an 'expert workshop' held in 2003 (Forum Lernort Bauernhof, n.d.), and the other, a directory of international literature published from 1999 to 2011 (BAGLOB, n.d.). Clearly, Dillon *et al.*'s (2003) review pre-dates much of that literature, but this demonstrates the existence of potentially relevant primary research in other languages.

Access to the detail of these reports would require extensive professional translation, but an overview is available by utilising online translation services. A brief review of these articles (and where appropriate, their related websites) suggested that few contained critical, comparative or evaluative research. Instead, reflecting the findings of Dillon *et al*. (2003), the tendency seemed to be towards descriptive accounts[1]. International contributors to the 2010 conference 'Academic foundations of learning on farms' similarly provided description and discussion of farm visit use in their own countries. These included researchers from Germany, Norway, Sweden and the Netherlands, whose contributions to the conference are also available in English as part of the conference proceedings (Schockemöhle, 2011).

An overview of this international literature yielded a number of common themes, with articles referring to particular countries, localities, and curricula. The main themes included:

- Approaches to farm-based learning (e.g. Demuth, 2003; Haubenhofer *et al.*, 2010)
    - Types of Farm
    - Duration (day visits, residentials)
    - Level of children's involvement (observation or hands-on activity)
    - Specific programmes and initiatives
- Practical guidance around planning, health and safety, teacher training, insurance (e.g. Pfau & Brandes, 2003; Janitzki & Roeckl, 2003)
- Linking (various aspects of) agriculture with the curriculum generally or specific curriculum areas (e.g. Schlagheck, 2010; Jolly & Krogh, 2011).

Several of these themes are also reflected in the English-language literature, including that published since Dillon *et al.*'s (2003) review, demonstrating the diverse range of ways in which farms are used to contribute to children's learning. This chapter discusses the variety of ways in which farms are shown in the literature to be utilised as a learning resource.

[1] Article titles were translated into English using Google Translate. In some instances, further translation was also carried out to provide a greater sense of the article content. This superficial method cannot however substitute for professional translation, particularly in the case of academic writing.

2.1. Educational engagement with farms

Risku-Norja and Korpela (2010) discuss a pilot study in Finland, which involved children aged 10-13 working hands-on at local farms, for a half or full school day, on two, three, or four occasions. The programmes of activity were developed in advance by the teacher and farmer working in close collaboration, and had the purpose of giving the children a realistic experience of farm life. Teachers reported that the programme fitted well into school life in those classes with one main teacher who was able to adjust the timetable accordingly, but noted a range of logistical challenges around, for example, transport and mealtimes. Nevertheless, "all the participating teachers felt that taking part to the program was worth the trouble as the farm and its surroundings offered the pupils a new learning environment which was considered as realistic and genuine and which brought a welcome change to the normal school routines both for the pupils and the teacher" (p.179).

A discussion of three models of farm-related learning in Norway is offered by Jolly and Krogh (2011). They outline 'The Agriculture Game', a one-day programme for 14-15 year olds through which a farmer visits the class and leads them through a series of accounts-based activities to increase their understanding of the work of farmers. Another model for this age group is the two-week residential visit to a farm, which integrated hands-on farm work with time to reflect on learning. The third model is the 'Living School' programme, a university-led interdisciplinary initiative for 12-14 year olds in state schools, in which the young people are integrated into the working routine of a local farm for a week during the school year. This is linked with the course 'The Farm as a Pedagogical Resource', which offers resources and training to teachers and farmers (Jolly & Krogh, 2007). Lundström and Ljung (2011, p.3) describe this programme as one in which "school and farms interact, and students spend part of their school time on a farm, participating in daily practice and the work is connected to classroom education … The time on the farm varies, but it is always several times and sometimes up to four weeks." Krogh and Jolly (2011, p.311) elaborate on this description, explaining that:

> "[i]n contrast to what school-farm connections have been in the past, this effort was not seen as an opportunity to disseminate information about farming. Nor was the goal to let the children see a demonstration of agricultural work and life. The emphasis

> was on participation over time to allow for greater connection to the work, and to provide an alternative arena for children with differing capabilities to use their talents."

Jolly and Krogh (2011) did not seek to determine whether one model was better than another, but noted that the school-based day programme was regarded by participants as having too much of a mathematical focus, although it was welcomed as a break from routine. There was a better response to the practical, outdoor programmes in terms of both enjoyment, and learning about farming.

Canavari *et al.* (2011) identify Scandinavian countries such as Norway as having influenced the development of educational farms in Italy in recent years. These Italian farms are located in urban or suburban areas, for the purpose of promoting knowledge about food amongst consumers, including children. Educational input usually takes the form of a guided tour with a focus on a specific topic, which is then followed up with further related activity in school. Canavari *et al.* (2011) discuss the role of these farms as an educational resource and as an opportunity for economic diversification, with a focus on the use of marketing strategies.

In the US, 'Farm-to-School' programmes link schools with local farms. The main focus of these programmes is on securing suppliers for school kitchens, with the aim of improving nutrition and providing a stable market for local farmers (Allen & Guthman, 2006), as well as providing educational opportunities (Scherr *et al.*, 2013). Some states enact laws promoting the development of such programmes (Schneider *et al.*, 2012), but the programmes themselves are variable between areas and states. Joshi *et al.* (2008) found that some schools offered field trips to their linked farm, while others developed more sustained connections, and some degree of student involvement in the life of the farm. School involvement with farms as part of these programmes was found to improve children's knowledge and attitudes around healthy foods and farming, but financial constraints limited the extent to which the educational potential of these links could be realised.

Farms have been used as a focus for intergenerational activity in Canada (Peterat & Mayer-Smith, 2006). Mayer-Smith *et al.* (2009) discuss the

development of an environmental education programme in which children in Grades 4-7 (around 9-12 years old) spent 12 one-day sessions at the university farm. In the morning, the children worked in small intergenerational teams with classmates and adult volunteers (including students and local people), to grow food. Each session began with an educational presentation focusing on the day's tasks, and at each visit, one group worked in the kitchen, using foods grown on the farm. The afternoons were spent on other educational activities, and free outdoor time. Although the focus of their report is on programme development over a number of years, Mayer-Smith *et al.* (2009, p.115) also recognise that "children, regardless of social class, gender, or culture, experienced the farm as a special place where they could learn and play at the same time; they gained understanding about farms, food, and planting, and developed strong bonds of friendship with their adult farm friend."

Another approach to farm-based learning comes from the school farm, "a teaching facility within school grounds or directly managed by a school" which may include, for example, animals, facilities and equipment, and horticultural activity (Saunders *et al.*, 2011). Instead of travelling to a local agricultural site to experience the farm environment, pupils (and often the wider community) have the opportunity to engage with farming activity on-site as a matter of routine. A range of advantages of school farms are identified in the report, including the role of the farm in meeting individual children's needs, the opportunity for community involvement, and the value of practical tasks to enhance learning about food and the environment. The costs, in terms of finance as well as time to maintain the farm over school holidays, are highlighted as disadvantages. Dillon *et al.* (2003, p.30) noted that school farms are "proportionately more common in the US than in the UK", although Saunders *et al.* (2011) report an increase in UK school farms since 2006. Many of the research findings on school farms parallel those in the 'school garden' literature (Dillon *et al.*, 2003), and although there is more research on school gardens than on school farms, in terms of setting and engagement in activity, the benefits are likely to be similar (Dyg, 2014).

These examples demonstrate the wide range of ways in which farms are used internationally as an educational resource. The specifics of the programmes are determined by the educational context in each country, including:

- the design of the curriculum / what children are expected to learn;
- operational aspects of schooling (age groups, format of school day, autonomy of teachers);
- the availability of programmes and organisations to assist teachers with planning and running visits/programmes, and their usefulness;
- the ways in which trips and events are funded.

The main differences between the various approaches discussed here are the time spent by pupils on the farm, and the level of engagement that the children are expected to have with the life and work of the farm. These range from single day or half-day visits to sustained practical participation.

2.1.1. School time spent on farms

In the UK the predominant model of educational (school-mediated) farm visiting seems to be individual day visits, and little evidence was found on any longer-term programmes of engagement. The now discontinued Farmlink programme in England had encouraged schools to make multiple visits to the same farm in a single school year, and recommended this approach in their publication on learning from the programme (Groundwork UK, 2002). Furthermore, the increasing interest in the development of school farms (Saunders *et al.*, 2011) as mentioned above, may indicate a move towards more sustained engagement. It is therefore possible that programmes of repeat visiting and ongoing engagement do take place, but are not formally promoted in that way by organisers, or researched and reported from that perspective. Similarly, although no significant evidence of residential farm experiences was found, some may still take place. Dillon *et al.* (2003) found five studies from the 1980s and 1990s reporting residential experiences on farms, but current research literature on residential trips for pupils tends to focus on adventure activities (e.g. Williams, 2013; Scrutton, 2015).

A number of studies have attempted to capture information about the time spent on farms by children in Scotland and the wider UK. Childwise (2008, 2011) surveyed children in Wales, England and Scotland, and asked whether they had visited a farm in the past three years. They found that amongst 7-11 year olds, a high proportion reported having visited a farm in that time, predominantly with family. There is no suggestion that these family visits had any educational

purpose, although children may have had new experiences and learned from the visit regardless. As Table 2.1 shows, however, many children also reported visiting a farm with their school.

Table 2.1: Farm visits by 7-11 year olds in 2007, 2008 and 2011 (Childwise, 2011)

	2006/7 (n=1216)	**2008** (n=844)	**2011** (n=1315)
Reported visiting a farm at least once in past 3 years	79%	84%	80%
Visited with Family	51%	47%	53%
Visited with School	42%	40%	36%
Visited with 'other'	22%	14%	25%

Adapted from Childwise (2011)

The British Nutrition Foundation more recently surveyed young people about their farm visiting experiences, and reported similar results to the earlier Childwise (2008; 2011) findings. Seventy-three percent of 5-8 year olds, and 85% of 8-11 year olds in the study reported having visited a farm at least once in their lifetime (BNF, 2015). This study did not however explore whether these visits had been with school, family, or other groups. Neither does the British Nutrition Foundation report provide information about the backgrounds of the pupils participating in the survey.

In contrast to this, Childwise (2008) reports on variations in reported farm visiting between children from urban, suburban, and rural backgrounds. As Table 2.2 shows, more children from urban areas reported a farm visit in the previous three years than children from either suburban or rural backgrounds.

Table 2.2: Farm visits by urban, rural and suburban 7-11 year olds (Childwise, 2008)

	Urban (n=107)	**Suburban** (n=487)	**Rural** (n=250)
Reported visiting a farm at least once in past 3 years	97%	81%	87%
Visited with Family	8%	48%	62%
Visited with School	93%	34%	28%
Visited with 'other'	4%	14%	17%

Adapted from Childwise (2008)

Childwise (2008) note that the high proportion of urban children reporting a farm visit is a significant increase from their 2007 survey, and suggest that the

change “can be almost exclusively attributed to the considerable rise in the number of children visiting with their school… [t]his highlights the important role that schools have in introducing and maintaining children’s relationship with farming and the countryside” (Childwise, 2008, p.29).

The important role of schools as facilitators of farm visits, particularly for children in urban areas, was also emphasised in a more recent report (Childwise, 2011). The Childwise (2008; 2011) data (see Table 2.1) nevertheless indicate an overall decline in farm visits undertaken through schools since 2007. This is reflected by the findings of research in Scottish primary schools, which indicated that time spent on farms (as a proportion of school time spent outdoors) decreased between 2006 and 2015, despite overall increases in outdoor learning time (Mannion *et al.*, 2006; 2015). This is in contrast, however, to figures from the Royal Highland Education Trust, which indicate increasing demand for their farm visiting services, from around 400 in school year 2007-8, to almost 800 more recently (RHET, 2015, personal communication).

2.1.2. Farms, farm parks, and ‘circus farms’

One of the main difficulties in interpreting the surveys discussed above is the potentially wide variation in participants’ understanding of the term ‘farm’. Child respondents in one report discussed their likes and dislikes of farm visits, and mentioned “go-carts” and “a lama” (sic) (Childwise, 2011), demonstrating the variety of features that children may associate with farms. This broad interpretation of the terminology is not limited to children, however. The Italian ‘educational farms’ described by Canavari *et al.* (2011) are reported to contain classroom facilities and designated areas for playing and eating. Ghafouri (2014) similarly describes a visit by Canadian kindergarten pupils to “a local farm”. The activities undertaken by the children included:

- a pony ride
- watching a donkey perform tricks
- petting the donkey
- milking a cow
- free exploration of the farm

The children’s sensory engagement with the location is highlighted with a vivid description of their activity:

> "The children found big rocks to climb on and jump off. They challenged each other to jump higher and faster. They danced on the fall leaves throwing them up and catching them. They walked on the dry leaves listening to the sound their shoes were making. They also played hide and seek in the maze." (Ghafouri, 2014, p.64)

These examples suggest that the farm locations in those studies contain features unlikely to be associated with a traditional working farm, such as the go-carts and maze. The farm described by Ghafouri (2014) is furthermore regarded as a place where kindergarten children can safely engage in free play. Locations of this type are at one end of the conceptual spectrum of farms; 'farm park' locations may be designed with visitors in mind, and offer attractions such as go-carts, unusual animals, petting zoos, and cafes. In contrast, on traditional working farms the main focus is the farm produce, such as milk, beef, or wheat, and the presence of visitors is a secondary consideration.

A similar contrast is described by van Elsen (2011), who discusses the concept of 'Social Farming' (also known as 'Green Care', 'Care Farming' and 'Farming for Health'); that is, farming activity which takes place for the purpose of health and social welfare. This is contrasted with the type of farming which offers a play area or petting zoo, which van Elsen (2011) refers to as 'circus farming'.

In his report into an outbreak of disease at an 'open farm', Griffin (2010, p.54) provides a list of different types of "[s]ituations where the general public may be brought into direct contact with agricultural animals". He acknowledges that some of these have no standardised or widely accepted definition, but includes:

- Open farms
- City farms
- Working farms
- Farms hosting school visits
- Zoos

The descriptions offered by Griffin (2010) vary in terms of scale, management, primary purpose, degree of public access, facilities available, and licencing/ regulatory requirements.

The variety of interpretations shows that in surveys and other research, caution is required around respondents' understanding of the term 'farm'. Pupils who report having visited a farm with their family, for example, may have visited a 'farm park' rather than an authentic traditional working farm. Discussion of educational farm visits must acknowledge this spectrum of individual understanding. In the present study, my discussions with teachers, pupils and farmers mainly focused on the type of farm utilised by the Royal Highland Education Trust for visits; that is, a working farm which had not been designed specifically for educational or visitor needs. Some teachers and pupils, however, also discussed their experiences of other types of farm, and the survey element of the present study used a broad interpretation of the term.

2.2. Benefits of farm visits

As an outdoor location, the farm is likely to offer the broad range of benefits common to other types of outdoor learning, often relating to general health and wellbeing, which are discussed in more detail in Chapter 3. Hine and Pretty (2008), for example, reported improved overall mood in 91% of farm visitors in their study. Additional benefits specific to farms have also been identified, however, including improved dietary intake relating to the type of farm. A number of studies suggest that 'Farm-to-School' programmes in the US can encourage students to consume more fruit and vegetables (Conner *et al.*, 2012). The study by Joshi *et al.* (2008), for example, reviews articles on 15 such programmes, and reports that several, though not all, indicated improved dietary behaviours. Conner *et al.* (2012, p.322) caution however that that "empirical evidence for this connection is scant", and that much of the evidence is gathered from school staff, rather than young people themselves.

In their study of the dairy consumption in Japan, Seo *et al.* (2013) similarly gathered information from adults about children's dietary habits. Using a pre- and post-intervention approach, they found that parents reported an increase in children's consumption of milk and other dairy produce following a visit to a dairy farm. Bevan *et al.* (2012) also used a pre- and post-trip approach, through a questionnaire with fifth-grade pupils themselves, in Utah, USA. Their small pilot study aimed to explore whether a farm field-trip could represent an alternative to a school garden experience, by encouraging children to eat more

fruit and vegetables, and improving their knowledge. Children reported eating and enjoying unfamiliar produce at the farm, but Bevan *et al.* (2012, p.279) conclude that "a single experience is unlikely to result in sustainable change to attitude or behavior". Although children's knowledge was reported to have increased, this was not a statistically significant increase for most questions.

Other studies have also explored the contribution of farm visiting to improving or increasing children's knowledge and understanding of agricultural and related concepts. Similarly to Bevan *et al.* (2012), Hess and Trexler (2011) suggested that field trips may not significantly influence young people's knowledge of food and farming concepts. Amongst urban children of around 11 years old in California, USA, they found a "large number of informants having agricultural experiences related to a school–based farm field trip or a home–based interaction in a relative's garden" (p.8). They reported that these young people could vividly discuss their own personal experiences, but that those experiences did not appear to have impacted on the young people's agricultural literacy.

'Agricultural literacy' is an umbrella term for "the agricultural concepts that every US citizen should know", the identification of which was initially developed by Frick *et al.* (1991) as a list of 11 key areas. The term is now widely used in the US literature particularly, as a shorthand for measureable knowledge and understanding of food and fibre sources, production methods, and other related concepts. Knobloch and Martin (2000), however, propose the broader term 'agricultural awareness'.

The contribution of farm visits to agricultural awareness generally has also been explored. Examples include research by Kos and Jerman (2012), who found that four year olds who took part in a hands-on farm or garden-based learning experience showed significant improvement in their knowledge of where foods come from, compared to the control group children who had not taken part in the activity. Smeds *et al.* (2015) found that a farm visit could address agricultural misconceptions held by urban pupils in Finland. Lewis (2013) examined a one-day agricultural education programme for third and fourth grade children in Oklahoma, USA, and similarly found that students' knowledge improved. The short programme did not however render the students 'agriculturally literate', and Lewis (2013) concludes that such a programme

could provide a foundation for further learning, but that more sustained educational input is required.

The need for farm visits and field trips to be more than single instances is highlighted in the findings of Dillon *et al.*'s (2003, p.39) review. They suggest that farm visits:

> "…can offer a wide range of learning opportunities in different domains. In the affective domain, students have been seen to show greater enthusiasm, self-confidence, motivation, discipline, self-respect, respect for other people's property and tenderness toward the environment as a result of farm visits. Within the cognitive domain, students have developed their understanding of farm and countryside life, made connections between foods and their sources, improved their scientific and numeracy skills, made connections between different subject areas and reflected on their own knowledge."

Dillon *et al.* (2003) emphasise however that these benefits are more likely to be realised when related and appropriate classroom activity takes place before and after the visit.

2.3. Farm based learning: the context for this study

The literature on farm visiting suggests that evidence for specific learning or behaviour change is minimal, particularly when the visit is not supplemented by classroom activity. In some instances, however, the goal of the programme is not to generate specific learning or behaviour change, but to provide participants with hands-on, sensory, or intergenerational experiences.

The literature further demonstrates that farm visits are used in a range of formats, in which the degree of practical and ongoing engagement can vary. In the present study, the main focus was on single short visits to local farm locations. Most were of the traditional working farm type, with few if any adaptations for visiting pupils, although some were to a farm on a country estate which featured established facilities for visitors.

Many of the benefits of farm visiting identified by Dillon *et al.* (2003) are also benefits of learning in outdoor environments more broadly. The relationship of

this study to the literature on outdoor learning is further discussed in the following chapter.

3. Outdoor Learning and Field Trips

This research situated farm visits within the broader context of outdoor learning. International literature clearly demonstrates the contribution that outdoor experiences can make to children's learning, health and wellbeing (e.g. Rickinson *et al.*, 2004; Malone, 2008). Furthermore, there is an extensive body of literature around fieldwork and out-of-school learning, which identifies the benefits of such trips (DeWitt & Storksdieck, 2008). Although some of this literature relates to field trips to indoor locations away from the classroom, much is also relevant to the practice of outdoor learning.

As mentioned in Chapter One, the Curriculum for Excellence guidelines place a strong emphasis on the outdoors as part of the learning experience for pupils in Scotland. Other elements of the curriculum guidelines, however, such as interdisciplinarity and sustainability, are also aligned with farm visiting. Although outdoor learning has historically been an important feature in Scottish education, the contemporary relevance of the approach is assumed, but rarely explicitly articulated, in the official CfE documentation. This chapter explains the decision to focus on outdoor learning as the overarching context for the study, by aligning the literature on outdoor learning and field trips with other high-level features of the CfE guidelines, such as the 'four capacities' and 'Learning Across the Curriculum'. Exploring educational farm visits from an outdoor learning perspective demonstrates their relevance to the Scottish curriculum as a whole.

3.1. Conceptualising 'Outdoor Learning'

The term 'outdoor learning' does not have a consistent meaning in the literature, and its use in the context of this study therefore requires explanation. Thorburn and Allison (2010) suggest that there is significant confusion around the concepts of 'outdoor learning' and 'outdoor education', and challenge the use of these terms as synonymous. They furthermore reject the idea that 'outdoor education' and 'environmental education' are the same. Although they object to the "narrowing of conceptual understanding of the role, purpose and philosophies of outdoor education as unnecessary, unhelpful and

historically inaccurate" (p.99), they do not provide distinct definitions for the terms they dispute.

In contrast, Allison *et al.* (2012) clearly identify 'outdoor learning' as a term which, in the contemporary Scottish educational context, is broadly synonymous with 'outdoor education'. This is reflected by Christie *et al.* (2014a), whose article is titled *Outdoor Education Provision in Scottish Schools*, yet uses the term 'outdoor learning' throughout. Allison *et al.* (2012, p.46) provide a definition of outdoor learning as "an educational approach that aims to explore and develop understanding of different subject topics and also, thereby, of connections between them". They identify three broad conceptions of outdoor learning and education in the UK; acquisition of practical skills; environmental/ sustainability education; and Personal and Social Development/ moral education.

Allison *et al.* (2012) are also explicit in noting that their definition includes both residential and non-residential approaches, reflecting a criticism of other conceptualisations of outdoor learning which focus primarily on residential experiences and adventure activities. Thorburn and Allison (2010, p.99), for example, believe that one result of the confusion of terminology is that "there is limited recognition of outdoor education in curriculum discussions, and that when it does emerge it is typically associated with a week-long multi-activity residential programme at a local education authority centre". One example of this view is reported by Thorburn and Allison (2013, p.430), in a comment from a stakeholder interview: "if you mention outdoor education to most people they would think of climbing, skiing and whatever". Beames *et al.* (2009) also discuss this misconception, and instead promote a view of outdoor learning as learning which takes place "in, through, and about" the outdoors, and which includes activities beyond the residential and adventure types.

A slightly narrower view is offered in *Curriculum for Excellence through Outdoor Learning* (LTS, 2010), the key CfE document on outdoor learning. The terms 'outdoor learning' and 'learning in the outdoors' are used interchangeably, indicating an understanding of outdoor learning which is focused mainly on the use of outdoor environments (school grounds, local areas, and further afield) for learning 'in' or 'through' the outdoors. Clearly this does not preclude learning

'about' the outdoors whilst in either an outdoor or indoor location, but acknowledges that learning 'about' nature and outdoor issues can be a classroom-based activity.

A further debate around the concept of outdoor learning is concerned with its status as a subject in its own right. Thorburn and Allison (2010, p.101) note that "there remains a distinct absence of agreement on the ideals of outdoor education and whether it ought to be a subject and treated as such…or whether it ought to be an approach that benefits from cross-disciplinary teaching interventions". Dyment and Potter (2015, p.196) offer the distinction that as a subject, outdoor education should have defined content, in common with other subject areas; but as an educational "methodology", it should focus more on "process, pedagogy and approaches". Allison *et al.* (2012, p.47) acknowledge this debate, explaining that:

> "while some have in the past considered outdoor learning to be a distinct area of non-academic expertise – so that students might be said to 'do' outdoor learning in much the same way as they might 'do' geography or history – others have conceived it as a route to understanding or insights that precisely resist reduction to any discrete (either academic or practical) approach or discipline."

They note that the conceptualisation of outdoor learning as an approach, rather than as a discrete subject, is currently dominant in Scottish education. Similarly, Christie *et al.* (2014a, p.48) explain that, in Scotland, outdoor learning "is explicitly positioned as a pedagogical approach to delivering 'experiences and outcomes' from all eight curricular areas".

In this study, I recognise outdoor learning as an overarching term referring to an approach to learning, rather than as a discrete subject area. The term 'outdoor learning' refers to time spent outdoors for educational purposes, no matter what learning is taking place. This understanding excludes any learning about nature and the outdoors which takes place in an indoor location. Although it is acknowledged that this conceptualisation of outdoor learning does not encompass the range of understandings in the literature, it is the view promoted in the Scottish curriculum documentation, and is therefore the most relevant to the context of the study.

3.1.1. Explaining the benefits of time spent outdoors

Although the CfE documentation articulates a specific understanding of 'outdoor learning', there is little focus on the theory underpinning the approach, or the mechanisms through which spending time outdoors is thought to benefit learners. This lack of attention to theory has been identified as a feature across the CfE guidance (Priestley, 2010), but in the case of outdoor learning may relate to a particular lack of theoretical work in this area. Kahn and Kellert (2002, p.viii) note that a range of scholars, from a variety of disciplinary backgrounds, have "argued that a child's experience of nature extorted a crucial and irreplaceable effect on physical, cognitive, and emotional development", but that there is a reliance on anecdote rather than robust theory or research to support this idea. Similarly, and more recently, Andersson and Öhman (2015) have noted an ongoing lack of research to understand the influence of nature experiences, and thereby to improve outdoor pedagogy. In their report on the use of farm visiting for socially excluded groups in England, however, Mills *et al*. (2014) identify three prominent theories which attempt to explain the health, wellbeing, and other benefits of spending time in nature; the biophilia hypothesis, the Psycho-Evolutionary Theory of stress recovery, and Attention Restoration Theory (ART).

Biophilia is described as "an innate evolutionary basis to the positive relationship between humans and nature derived from peoples' fundamental dependence on nature and conscious and unconscious desire to connect with it" (Mills *et al*., 2014, p.5). Kahn (1997) explains the basis of the theory, initially proposed by E.O. Wilson, as an evolutionary imperative amongst humans to connect with nature, and thereby to increase the likelihood of survival. He outlines a broad range of evidence from a variety of contexts in support of the theory, but notes that none of the cited studies was conducted with the purpose of confirming or rejecting the biophilia hypothesis.

Verbeek and de Waal (2002) explain that the concept of biophilia is contested by some, such as those who suggest that 'nature' is a human construct, rather than something that exists independently of us and with which we have an innate connection. Nevertheless, several alternative theories have also linked an affinity or connection with nature with evolutionary concepts. Chawla (2007) utilises two theoretical perspectives to explain findings that adult naturalists

frequently cite childhood experiences in nature as motivators for their attitude to the natural environment. Ecological psychology, which "is grounded in evolutionary theory and a realist philosophy" (Chawla, 2007, p.149), suggests that human beings are part of a natural world, and that we are inherently motivated to understand and pay attention to our environments so that we can survive and adapt to them. The role of adult caregivers in the nature-based childhood memories of environmentalists is also recognised, however; Chawla (2007) suggests that attachment theory (see Bretherton, 1992) can provide an explanation for this, both in the function of an adult caregiver as a 'secure base' from which a child may explore the natural environment, and through caregivers directing a child's attention to interesting environmental features.

The concept of attachment has also been discussed in relation to significant places in childhood, including natural places; attachments with which may influence adult pro-nature attitudes. Morgan (2010, p.12), for example, suggests that "[f]or many individuals, childhood place experience plays an important role in adult identity", and note that "middle childhood" is a key life stage for developing place attachments. Rathunde (2009, p.78) explains that "[p]lace-based education promotes learning that is rooted in a student's immediate natural and cultural environment", while Mannion *et al.* (2013) highlight a need for greater understanding of place-based education in relation to environmental and outdoor learning.

Mannion *et al.* (2013) go on to develop a theory of place-responsive pedagogy, which "involves the explicit efforts to teach by means of an environment with the aim of understanding and improving human–environment relations" (Mannion *et al.*, 2013, p.792). Elements of this type of pedagogy are found within the CfE guidance, which encourages teachers to use Scottish, as well as local, contexts for teaching and learning. In the 'Broad General Education' phase, for example, "it is expected there will be an emphasis on Scottish contexts, Scottish cultures and Scotland's history and place in the world" (Scottish Government, 2008, p.5). One means of learning in these contexts is "outdoor learning through engaging with places and spaces of local and national significance, including local heritage, history, monuments and green areas" (Education Scotland, 2013, p.2).

Mills *et al.* (2014) also discuss the Psycho-Evolutionary Theory of stress recovery as a means of explaining the benefits of experiences in nature. They describe this as the theory that observable signs of stress, such as blood pressure and heart rate, are reduced in natural environments as a result of evolutionary mechanisms through which those animals (including humans) most likely to survive are those which can recover quickly from stress and remain alert. This theory is also described as 'Stress Recovery Theory' (SRT) by Berto (2014), who explains that the "evolutionary perspective contends that because humans evolved over a long period in natural environments, people are to some extent physiologically and perhaps psychologically adapted to natural, as opposed to urban settings" (Berto, 2014, p.396).

The third theory discussed by Mills *et al.* (2014) is Attention Restoration Theory (ART), which Berto (2014) describes as complementary to the 'Stress Recovery Theory' outlined above. ART is based on the concept that in daily life, humans must utilise 'directed attention' to navigate and participate in the world around them. Directed attention is characterised as intentional and effortful focus, requiring a purposeful disregard of competing stimuli (Mills *et al.*, 2014).

One main proponent of ART, Kaplan (1995, p.170), explains that "any prolonged mental effort leads to directed attention fatigue", and that spending time in 'restorative environments' allows us an opportunity to recuperate from this fatigue. He describes the four key elements of a 'restorative environment' as:

- Being away – mental detachment from activity which requires directed attention.
- Fascination – personal motivation to give attention; does not require the same degree of effort as directed attention, and is derived from an earlier concept of 'involuntary attention'
- Extent – a sense of broader perspective, being part of a larger world
- Compatibility – alignment between the place, and personal interests or desires

(Kaplan, 1995)

Some authors suggest that restorative environments need not be natural environments, and that 'man-made' places or structures can also provide these

four elements (e.g. Pearson & Craig, 2014); Kaplan (1995) also recognises this point, but contends nevertheless that natural environments are particularly suited to the provision of restorative opportunities.

A number of empirical studies have supported Kaplan's ideas around attention restoration (Rathunde, 2009), although some have done so through experiments using photographs of natural environments (e.g. Berto, 2005; Berto *et al.*, 2008), suggesting that direct personal immersion in those environment is not necessary for attention restoration, but that simply indirect viewing may be sufficient.

Kellert (2002) includes indirect experience among three categories of nature experience:

- Direct – informal or unstructured personal contact with natural environments which are generally not subject to human management
- Indirect – personal contact, but in more structured or directed ways, or with environments designed or controlled by humans
- Symbolic/vicarious – no direct physical contact; instead, contact through representations such as pictures, videos.

He recognises that all three may have a contribution to make to children's learning and development, but believes that "direct experience of nature plays a significant, vital, and perhaps irreplaceable role in affective, cognitive, and evaluative development" (Kellert, 2002, p.139). This is in contrast to the implications of studies which used photographs of natural settings to elicit attention restoration.

Kellert (2002) acknowledges that further research is needed before his assertions can be strongly supported; other authors have however similarly emphasised the importance of direct personal contact with nature. Chawla (2007, p.153), for example, explains that direct contact may help to explain the role of childhood experiences to adult environmentalists. She notes:

> "the importance of learning about the world first hand through one's own actions in it, rather than second hand as others represent it... Outdoors especially, a person encounters a dynamic, dense, multi-sensory flow of diversely structured

> information, but some places are richer in this regard than others... Primary experience is also necessary because it occurs in the real world of full-bodied experiences, where people form personal relationships and place attachments".

As discussed previously, the CfE documentation places an emphasis on direct personal experiences as a feature of outdoor learning. As part of the rationale for the outdoor learning approach, for example, *Curriculum for Excellence through Outdoor Learning* explains that learners in Scotland should have "opportunities… to enjoy first-hand experience outdoors, whether within the school grounds, in urban green spaces, in Scotland's countryside or in wilder environments" (LTS, 2010, p.7). The importance of direct, first-hand contact also resonates with the concept of experiential learning. Although rarely explicitly articulated in the CfE documentation, the importance of experience is implied in a number of ways, including through provision of detailed guidance in the format of 'experiences and outcomes'.

Ewert (1995) notes that much of the research on experiential learning is focused on outcomes, and that it is therefore difficult to explain why such an approach leads to the benefits which have been identified. One prominent theory, however, is Kolb's experiential learning theory (Schenck & Cruickshank, 2015). This theory explains that "[e]xperiential learning is authentic, first-hand, sensory-based learning. Experiential activities explore, touch, listen to, watch, move things, dissemble and reassemble. Learning consists of grasping an experience and then transforming it into an application or result" (Behrendt & Franklin, 2014, p.237). Kolb originally described experiential learning as a cycle, including the experience, reflection, generalising, and then testing the new learning through further direct experience (Schenck & Cruickshank, 2015).

A number of other authors have also emphasised the importance of the reflective process as part of experiential learning. Joplin (1995, p.15), for example, suggests that "experience alone is insufficient to be called experiential education, and it is the reflection process which turns experience into experiential education". Furthermore, Itin (1999, p.98) asserts the belief that 'experiential learning' takes place within individuals, as a consequence of their personal reflection on experience.

Although two reviews in the 1990s showed support for Kolb's experiential learning theory, and the theory has subsequently been further developed and updated (Kolb, 2015), more recent considerations of the model have highlighted areas which do not align with developments in the fields of psychology and neuroscience (e.g. Houge Mackenzie *et al.*, 2014; Schenck & Cruickshank, 2015). Furthermore, the concept of learning from experience implied in the CfE guidelines seems to take a broader view of 'experience' than that offered by Kolb's theory. *Building the Curriculum 3* (Scottish Government, 2008, p.23), for example gives the following description:

> 'Experiences' set expectations for the kinds of activities which will promote learning and development.
> 'Outcomes' set out what the child or young person will be able to explain, apply or demonstrate.

The focus in CfE is on experience as a broad range of direct, first-hand activities, as a means of improving understanding of context; a view which aligns more closely with that of Beard and Wilson (2006, p.19), who explain that "the foundation of much learning is the interaction between self and the external environment, in other words the experience". Bentley (1998) similarly advocates for the value of interdisciplinary direct experiences as important features of learning, and suggests that formal education often encourages young people to inappropriately categorise what they learn, rather than helping them to make connection with other learning and the wider world. He suggests that "[o]vercoming this failure is partly a question of good teaching, but it also depends on direct experience: the chance to… observe other people using such knowledge in varied and valuable ways" (Bentley, 1998, p.6).

Rathunde (2009, p.73) emphasises the importance of direct experience and sensory engagement for embodied learning, which "suggests that conceptual thought is grounded in our sensorimotor experience and aesthetic grasp of a situation". He believes that experiences in natural environments are particularly relevant to this approach, and notes:

> "Although it is not the only source of active engagement with relevant objects and processes, the direct experience of nature

> through school field trips, or a greater integration of nature to school campuses, would seem to afford essential opportunities for intrinsically motivated meaning making that has lasting impact and force." (Rathunde, 2009, p.74)

Similarly, Behrendt and Franklin (2014, p.236) emphasise the importance of field trips as direct experience, not only for the opportunity to visit authentic environments which are not available in the classroom, but for the "multidimensional activity in which all their sense are involved" and the chance to personally engage in new ways with unfamiliar natural environments. Schenck and Cruickshank (2015) offer a helpful explanation of the importance of sensory engagement for learning. They suggest that while modern neuroscience contradicts much of Kolb's early theorising on experiential learning, it supports some elements of his work, including "in the areas of novelty…holistic learning, active learning, and emotional connection". They further explain that a variety of neural pathways and networks within the brain are involved in experiential learning, and that an experience which elicits an emotional response "triggers a release of dopamine, significant to memory formation" (Schenck & Cruickshank, 2015, p.76).

These theories may help to explain the idea of a human connection with nature, which enables us to experience benefits to our wellbeing by spending time in natural environments, and facilitates broader or more effective learning and understanding. Mills *et al.* (2014, p.5) suggest that the three theories they describe "focus on the restorative effects of the natural environment, suggesting that some level of contact with nature contributes to enhanced well-being, mental development and personal fulfilment". Similarly, Rathunde (2009, p.70) highlights the contributions that embodied learning, which is "in tune with the intimate connection of the body and the mind", can make through outdoor environments, sensorimotor engagement, and place-based education, to children's learning and development. While the contribution made by spending time in outdoor environments is not explicitly examined from a theoretical perspective in the CfE documentation, the above discussion outlines a number of theories which contribute to explaining why such an approach may support and enhance learning. Furthermore, health and wellbeing are clearly stated as a

priority, and the 'responsibility of all' as part of CfE (e.g. Scottish Government, 2009), and these theoretical perspectives on the outdoor learning approach demonstrate the ways in which time spent outdoors can contribute to this. The connections between outdoor learning and specific elements of the curriculum guidance are further discussed in *3.3 Resonance with Curriculum for Excellence*.

3.2. The status of outdoor learning in Scotland

3.2.1. Historical importance and declining provision

Scotland has a long tradition of using the outdoors for educational purposes (Higgins, 2002, p.149). Ross *et al.* (2007) note that the Scottish curriculum guidelines have historically recognised and encouraged the contribution of natural environments to learning, while Beames *et al.* (2009, p.36) suggest that "in the late 1970s, the former Scottish regions of Lothian and Strathclyde were at the global forefront of formalised outdoor education provision".

Despite this historical support and practice of outdoor learning, in recent years the extent to which schools provide opportunities for outdoor learning has been in decline in Scotland, and in the UK more widely (e.g. Ross *et al.*, 2007; McArdle, 2011; Scott *et al.*, 2012). This may reflect a wider societal decline in the time spent by children (and adults) in outdoor environments (e.g. Louv, 2005), as discussed in Chapter One. The decline in outdoor experiences provided specifically by schools, however, has been attributed to a number of reasons, and several studies have identified barriers and constraints which prevent or discourage teachers from taking their pupils outdoors.

These barriers include cost, adult/child ratios, concerns around risk, and travel time (e.g. Higgins *et al.* 2006; Waite, 2009). Rickinson *et al.* (2004) suggest that even where there is support for outdoor learning, perceived risks and curricular time pressures influence teachers' prioritisation of outdoor experiences. In deciding to take pupils outdoors, teachers must consider the balance of barriers and costs against the perceived benefits and curricular relevance (Ross *et al.*, 2007). Consequently, if there is no obligation to offer outdoor experiences, they are at risk of neglect; Ross *et al.* (2007) imply that the decline in outdoor provision in Scotland is therefore attributable to the non-statutory nature of the curriculum guidelines. Similarly, while recognising that the curriculum

guidelines have traditionally supported outdoor learning, some believe that this support has been weakened by a lack of prescription (Thorburn & Allison, 2010; Allison *et al.*, 2012). The non-statutory nature of the curriculum guidelines is not unique to outdoor learning, however. In contrast to other areas of the UK, Scotland has no statutory curriculum (Humes & Bryce, 2008), but instead has curriculum guidelines, which are traditionally less prescriptive than the curricula of other UK countries, and are not legally enforceable. Nevertheless, teachers in Scotland generally adhere to the guidelines (e.g. Higgins *et al.*, 2006; Grant & Matemba, 2013). In a study undertaken in the early stages of CfE implementation, Ross *et al.* (2007) found that curricular content was one of the main drivers influencing teachers' decisions to undertake outdoor learning; similarly, Higgins *et al.* (2006, p.i) found that "[d]espite the lack of curricular imperative, teachers made a remarkable effort to get their pupils outdoors, often citing curricular justification as a major reason for doing so."

Other suggested reasons for the decline in school provision of outdoor learning include the lack of outdoor learning specialists (Higgins, 2002), and of a specialist teaching qualification in outdoor learning (Higgins *et al.*, 2006). The continuing constraints on education budgets (Higgins, 2002; Nicol *et al.*, 2007), and perhaps relatedly, the variability and decline of support at a local authority and national level (Taylor *et al.*, 2010; Thorburn & Allison, 2013), are also thought to have contributed. The need for financial prioritisation is highlighted by Thorburn and Allison (2010, p.100), who suggest that the decline in outdoor learning provision came about for "financial rather than philosophical or ideological reasons".

As well as the overall decline in outdoor opportunities for children, marked declines have been found in time spent outdoors as children progress through their education. Children in formal nursery or pre-school settings in the UK tend to spend a greater proportion of their time outdoors than those in the first year of primary school and beyond (Mannion *et al.*, 2006, 2015; Waite, 2010).

The curriculum review and subsequent development of CfE were seen as a timely opportunity to address some of the problems that had emerged in the existing curriculum guidelines, including the fragmented nature of the guidelines and the overcrowded content (The Curriculum Review Group, 2004). The emergence of

the new guidelines also had the potential to address the decline in schools' provision of outdoor learning experiences. In a report for Scottish Natural Heritage (SNH), Higgins *et al.* (2006, p.ii) suggested that the "current curricular reform programme (A Curriculum for Excellence) represents an opportunity for SNH to pursue greater use of the outdoor natural heritage for study".

3.2.2. The potential of Curriculum for Excellence

A number of commentators identified a resonance between the stated purposes and tone of CfE, and learning out-of-doors (Beames *et al.*, 2009). The new guidelines were seen by teachers and local authorities as having great potential to develop and promote outdoor learning (Nicol *et al.*, 2007), but as in previous guidelines, outdoor learning was not a statutory requirement in CfE (Beames *et al.*, 2009). The possibility therefore remained that those teachers who were less keen on the outdoors, or who did not accept the benefits of outdoor learning, could still choose to avoid taking their pupils outside: "teachers whose beliefs are not inclined toward learning outdoors might use the continuing lack of support on curriculum and pedagogical matters as a justification to continue learning predominantly indoors" (Thorburn & Allison, 2010, p.104). Additionally, although Thorburn and Allison (2010) noted the favourable conditions and political support for outdoor learning, they expressed concern that the existing model of provision (which they described as largely based on residential adventure activities) did not fit well with the new guidance. Similarly, Beames *et al.* (2009, p.35) acknowledged that "outdoor learning and CfE are exceptionally well related", but suggested that there was a continued failure to "explicitly legitimise the use of what many teachers see as the significant resources needed for learning out of doors".

Although the initial CfE document did not specifically mention outdoor learning (Higgins *et al.*, 2006), the publication of *Taking Learning Outdoors* (Outdoor Connections Advisory Group, 2007) discussed the potential links between outdoor learning and CfE. The report was informed by research which took place as part of the 'Outdoor Connections' initiative, "the biggest research programme ever undertaken on outdoor education in Scotland" (p.1). It emphasised that access to outdoor experiences should be embedded in CfE, and highlighted the need to encourage and promote the use of outdoor learning in

the new guidelines. The Scottish Executive subsequently initiated an Outdoor Learning Strategic Advisory Group, which produced CfE guidance specifically on outdoor learning (Thorburn & Allison, 2013), entitled *Curriculum for Excellence through Outdoor Learning* (LTS, 2010).

The publication *Curriculum for Excellence through Outdoor Learning* (CfEtOL) identified the "integral role outdoor learning has in the new curriculum", and the cross-curricular opportunities of outdoor learning environments (LTS, 2010, p.5). The document used "stronger language than has been seen before in outdoor learning policy, arguably anywhere in the world" (Christie *et al.*, 2014a, p.49), and explicitly stated that "[t]he journey through education for any child in Scotland must include opportunities for a series of planned, quality outdoor learning experiences" (LTS, 2010, p.5). Awareness of the document amongst teachers was high; in their 2011 survey, Christie *et al.* (2014a) found that 81% of responding primary school teachers were aware of CfEtOL, and most felt positively about it. Amongst a range of relevant stakeholders, Thorburn and Allison (2013, p.431) found that "CfEtOL was predominantly considered to offer the best prospect for achieving sustained change for outdoor learning in many years".

Some commentators, however, felt that CfEtOL fell short of its potential in promoting outdoor learning, by failing to address the issues which prevented teachers from making greater use of the outdoors (such as safety concerns), and through a lack of specific guidance and concrete examples (Thorburn & Allison, 2013). More broadly, CfE itself had also failed to realise its potential; there remained no formal teaching qualification in outdoor learning, and teacher education provision on outdoor learning was still lacking (Higgins & Nicol, 2008; Thorburn & Allison, 2010). Furthermore, a report on the future of teacher education in Scotland made no mention of outdoor learning (Thorburn & Allison, 2013).

That report, *Teaching Scotland's Future* (Donaldson, 2010), however, led to the revision of the professional registration standards for teachers in Scotland. The new standards came into effect in August 2013, and contained specific requirements on the use of outdoor learning environments (GTCS, 2012). These changes "can be expected to further influence teacher attitudes and provision"

(Christie *et al.*, 2014a, p.61). Indeed, the changes to the Standards for Registration represent a close alternative to mandating outdoor learning in the curriculum guidelines, since all teachers will now be required to demonstrate use of the outdoors to retain their registered teacher status. This is likely to influence increased course content on outdoor learning within Scotland's Initial Teacher Education institutions, and subsequently the engagement of emerging teachers with outdoor learning. Higgins and Nicol (2013, p.622) furthermore note that in recent years, "more widespread research interest has developed amongst academics" around outdoor learning, and concurrently, there has been increased funding for research on "an increasingly diverse range of issues such as curricular relevance and educational attainment".

3.3. Resonance with Curriculum for Excellence

Despite the potential identified in CfE to engage with outdoor learning, in the initial suite of official CfE publications (to 2009; see Appendix 1) there was no explicit demonstration of why the outdoors might be a relevant environment for developing the 'four capacities' or engaging with any of the other structural elements of CfE. It seemed that "the character of many of the claims made about CfE and outdoor learning [is] that the relationship is 'just obvious'" (Beames *et al.*, 2009, p.38).

The *Taking Learning Outdoors* report by the Outdoor Connections Advisory Group (2007) demonstrated some of the links between outdoor learning and various elements of the CfE structure, and related these to research evidence on outdoor learning. Similarly, in their discussion of the 'Outdoor Journeys' programme, Beames *et al.* (2009) explain to some extent the connection between CfE and outdoor learning. They suggest that CfE offers opportunities for curriculum links, interdisciplinarity, and teacher autonomy, which relate well to outdoor learning. Although both of these documents discuss the connections between outdoor learning and specific elements of the CfE guidelines, both were written at an early stage of CfE implementation, and relate to the guidelines as they were understood at that time. Subsequently, Education Scotland (2011a) published *Outdoor Learning: Practical guidance, ideas and support for teachers and practitioners in Scotland*, which gave examples of how outdoor learning might be used in relation to various curriculum areas. That document discussed

in more depth the research evidence for the benefits of taking children outdoors, but did not relate this directly to the examples given, or to the curriculum structure.

More recent literature, as well as further detail on the structure and content of the Curriculum for Excellence guidance, demonstrates resonance with various aspects of the current structure and content of CfE[2].

3.3.1. The Four Capacities

The development of the 'four capacities' was identified in one of the earliest CfE publications as the overarching purpose of the curriculum for 3-18 year olds in Scotland. Through their schooling, Scotland's children and young people would be enabled to become Successful Learners, Confident Individuals, Responsible Citizens, and Effective Contributors (The Curriculum Review Group, 2004). This approach to defining curriculum purpose, as the development of personal characteristics or qualities, is not uncommon: "the aim of fostering positive 'dispositions' or 'capacities' is now prevalent in the curricula of many countries" (Christie *et al.*, 2014b, p.1).

A summary of the links made in *Taking Learning Outdoors* (Outdoor Connections Advisory Group, 2007) between research evidence and the four capacities, is shown below in Table 3.1.

[2] CfE continues to evolve. Variations in the representation of curriculum structures on the Education Scotland website were apparent across the course of the present research study. This chapter is based on the structure at February 2015 (see Appendix 2).

Table 3.1: Summary of evidence linking outdoor learning and the four capacities in *Taking Learning Outdoors* (Outdoor Connections Advisory Group, 2007)

Evidence shows impact on	Successful Learners	Confident Individuals	Responsible Citizens	Effective contributors
	Engagement, achievement, motivation	Benefits to attitudes, beliefs, self-perception	Community pride and responsibility	Communication
	Added value to classroom experience	Behaviour	Knowledge and understanding of nature	Teamwork
	Potential to raise attainment	Fitness	Responsible attitudes	Group cohesion
	Improved attitudes	Physical self-image	Social development	
	Development of academic skills			

Despite being described as "a substantial base of national and international evidence" (Education Scotland, 2011a), the links demonstrated in *Taking Learning Outdoors* are mainly based on evidence from a review by Rickinson *et al.* (2004). Although it remains the "most authoritative survey of research into learning outside the classroom" (Dillon & Dickie, 2012, p.3), it shares one main limitation with the review by Dillon *et al.* (2003), discussed in Chapter 2, in that only English-language literature was included. Rickinson *et al.* (2004) furthermore found limitations within the literature they reviewed, in that much was methodologically weak, based on small-scale studies, and related mostly to secondary-school age children (Rickinson *et al.*, 2004). Additionally, most studies were not UK-based, "despite the importance of understanding such issues in local political and historical contexts" (Ross *et al.*, 2007, p.161).

Nevertheless, Rickinson *et al.* (2004) found that outdoor adventure education could enhance personal and social development in the long term, while school grounds-based activities could impact on confidence, and promote a sense of pride in the community, belonging and responsibility. Evidence for the impact of other types of outdoor experience, such as day trips, was found to be minimal.

More recent evidence has however reinforced the claims in *Taking Learning Outdoors* for the existence of links between the four capacities and outdoor learning. These potential links have been discussed with adult stakeholders in

Scottish education. Allison *et al.* (2012) report on their focus groups with teachers and outdoor education centre staff, in which discussions centred around three research article 'case studies' demonstrating different international approaches to outdoor learning. The findings from these focus groups indicated that "the philosophical rationales presented are strikingly consonant with the Scottish Curriculum for Excellence and appear to regard outdoor learning as particularly concerned with the achievement of good character in the young and with the general contribution of this to society" (Allison *et al.*, 2012, p.49). Similarly, Thorburn and Allison (2013) interviewed national, local authority, and school-level stakeholders in Scotland (including teachers, although none were Primary teachers). They found that respondents understood outdoor learning as something which enabled young people to go beyond superficial skills development; these stakeholders "considered that outdoor learning was a holistic process which was capable of engaging with pupils' deeper motivations and as something which was more profound than mastering the basic skills of a few adventurous activities" (Thorburn & Allison, 2013, p.429).

Christie *et al.* (2014b) discuss the benefits of outdoor adventure education in relation to the precursor to CfE[3], as well as to the 'four capacities'. They suggest that the capacities "perhaps align even more closely with the claims made for outdoor learning", which are identified as "developing a respect and care for self, others and the environment" (p.9). Scrutton and Beames (2015) also focus on outdoor adventure education, and note the connections which have been drawn historically between this, personal and social development (PSD), and 'character building'. Furthermore, Scrutton (2015, p.123) discusses outdoor adventure education in the context of Curriculum for Excellence, suggesting that "it would appear to articulate well with many parts of the four 'capacities'".

Evidence from beyond Scotland also suggests a connection between outdoor learning and the development of personal qualities relating to the 'four capacities'. An evaluation of good practice by OFSTED (the body which regulates and inspects education and children's services in England) found that well-planned and implemented instances of learning outside the classroom

[3] Prior to CfE, the curriculum guidelines comprised a range of documents for different age groups (3-5, 5-14, 14+). Christie *et al.* (2014b) discuss the '5-14 Guidelines', which have greatest relevance to Primary schools.

contributed to “improving pupils’ personal, social and emotional development” (OFSTED, 2008, p.5). Similarly, Sandseter *et al.* (2012) found that pre-school teachers in Norway and Australia valued outdoor learning opportunities, even when these seemed ‘risky’, as an opportunity for children to develop their self-confidence.

Christie *et al.* (2014b, p.17) conclude that "it is evident that carefully constructed outdoor learning experiences can articulate with the core values of the CfE”, but note that effects may be subtle and require careful examination. Although the focus of much of the recent Scottish literature is on residential adventure experiences, rather than using the broader understanding of ‘outdoor learning’ discussed previously, the studies discussed above illustrate the genuine connection between spending time outdoors and the development of the ‘four capacities’.

3.3.2. Learning across the curriculum

‘Learning across the curriculum’ is a feature of CfE which “allows practitioners to make links between subjects, drawing on a range of themes and topics” (Education Scotland, 2015a). It focuses on the relationships between different elements of the curriculum structure, and has three subdivisions: Responsibility of All (Health and Wellbeing, Literacy, and Numeracy); Themes Across Learning (Enterprise, Global Citizenship, and Learning for Sustainability); and Interdisciplinarity.

Responsibility of All: Health & Wellbeing, Literacy, and Numeracy

All teachers in Scotland, regardless of their own disciplinary affiliations, career stage, or the age group(s) they teach, are responsible for including certain elements of CfE in their teaching. These areas, identified as the ‘Responsibility of All’, are clearly highlighted in the detailed Experiences and Outcomes document as Health and Wellbeing, Literacy, and Numeracy (Scottish Government, 2009).

Curriculum for Excellence through Outdoor Learning (CfEtOL) clearly links outdoor learning with these three curriculum areas:

> "Learning in the outdoors can make significant contributions to literacy, numeracy and health and wellbeing. In literacy there are opportunities to use different texts: the spoken word, charts, maps, timetables and instructions. In numeracy there are opportunities to measure angles and calculate bearings and journey times. In health and wellbeing there are opportunities to become physically active in alternative ways and to improve emotional wellbeing and mental health." (LTS, 2010, p.9)

While these examples undeniably demonstrate the opportunities for learning described in that statement, however, CfEtOL offers no evidence to demonstrate wider links between these curriculum elements and outdoor learning.

There is an extensive literature on the benefits to health and wellbeing of spending time outdoors. Munoz (2009), for example, reviews the literature on children's health and outdoor experiences, and although she does not explain her selection strategy in detail, she cites around 250 references on the topic. The review highlights research findings for a range of physical and mental health benefits for children and adults, including the potential to address obesity and osteoporosis, and to alleviate the symptoms of ADHD, anxiety and depression. She also notes the benefits of time outdoors on children's physical development, for example in relation to motor skills and immunity. Similarly, Hartig *et al.* (2014) offer a 'review of reviews', focusing on four aspects of the relationship between nature and health in urban societies (air quality, physical activity, social cohesion, stress reduction). They examine 59 reviews, and conclude that "contact with nature can promote health. The evidence for some benefits, such as short-term restorative effects, is already quite strong" (Hartig *et al.*, 2014, p222). They caution however that their review is a general one which does not thoroughly examine, for example, wilderness locations or the use of nature experiences for physical and mental illnesses. They also note that further research is needed, particularly through rigorous primary studies, to explore causality in the relationship between nature and health. Nevertheless, these reviews suggest that the contribution of outdoor experiences to the maintenance of both physical and mental health are extensively researched and reasonably well-established. The Curriculum for Excellence guidelines on Health and Wellbeing across the curriculum emphasise, for example, the social, emotional, and physical wellbeing of young people (Scottish Government, 2009), and

providing outdoor experiences will allow teachers to promote and discuss the benefits of such locations with their pupil, as well as contributing directly to their health and wellbeing.

Research on the benefits of outdoor learning to literacy and numeracy, is less emphatic, and fewer studies have examined this specifically. One study found that outdoor adventure activities contributed to the academic development of 9-10 year olds in maths and literacy by demonstrating connections with practical tasks (Dismore & Bailey, 2005). Waite (2010, p.121) notes the "support that outdoor experiences offer in terms of speaking and listening", particularly in allowing children to question, discuss, and develop their vocabulary. Several studies have found improvements in children's literacy, and particularly ecological writing ability, following a field trip (Scott *et al.*, 2012; Scott & Boyd, 2014a; Scott & Boyd, 2014b). Similarly, improvements in literacy were identified in a US narrative study by Eick (2012), who discussed a third grade class which made regular use of an outdoor teaching space. He noted that in standardised literacy testing, grades and pass rates exceeded those of the children in other third grade classes within the same school (whose use of outdoor environments was not known). Despite the study class having a higher proportion of children in receipt of subsidised school meals, grades and pass rates also paralleled national rates. Rickinson *et al.* (2004) made no reference to literacy as a broad concept, but identified some studies which found improvements in reading after outdoor experiences. A small number of studies in which outdoor experiences positively influenced numeracy were also identified in that review. In relation to field trips more generally, Ward (2014) reports that secondary school pupils "who went on memorable day trips followed by sessions writing about their experiences made nine months more progress than would be expected over a year". The research on which that statement is based, however, emphasises the feedback model used to encourage pupils to improve their writing (Torgerson *et al.*, 2014), more than the field trip element of the intervention.

Although few studies focus on the contribution of the outdoors to literacy and numeracy, the use of outdoor environments has been found to contribute to learning in other subject areas and more generally (e.g. Dillon *et al.*, 2006; Higgins *et al.*, 2006; Fägerstam & Blom, 2013). Morag and Tal (2012, p.746)

suggest that "all out-of-school learning environments have a variety of cognitive, affective, social and behavioural effects that can make a significant contribution to learning", while Ballantyne and Packer (2009) emphasise the importance of outdoor experiences for environmental learning in particular.

Hamilton-Ekeke (2007) used a pre- and post-test design to explore the ecological learning of young people in Nigeria. She found that those who had been on an outdoor field trip showed a greater improvement in results, compared to those who had been taught solely in the classroom and those who had received no formal teaching in the topic. In her review on learning outside the classroom, Malone (2008, p.5) similarly found that by learning outside the classroom, children could "[a]chieve higher results in the knowledge and skill acquisition", although this review considered all non-classroom learning, including indoor locations. Fägerstam (2014) found that high school teachers in Sweden identified practical and sensory benefits of learning outdoors, reported that outdoor experiences were more memorable, and felt that such experiences provided a "mutual point of departure for further learning indoors" (p.76).

The literature on specific learning from field trips is limited, but "the evidence generally suggests that such trips can have a positive impact on learning of facts and concepts" (DeWitt & Storksdieck, 2008, p.182). The effects reported in research are often small, and evidence on the endurance of such learning is difficult to collect. Consequently, DeWitt and Storksdieck (2008, p.183) suggest that the other impacts of field trips may be more important, or may be more readily measured: "…affective outcomes - such as increased motivation or interest, sparking curiosity, or improved attitudes towards a topic - may be more reasonable for school trips than specific factual or concept learning outcomes, since the short-term nature of most field trip experiences may not be best suited to create lasting cognitive effects." Nevertheless, the literature does suggest that outdoor learning and field trips to outdoor locations can have a positive influence on learning. While evidence on the contribution to literacy and numeracy is limited, outdoor environments have been found to contribute to learning more generally, reflecting the goal of developing 'Successful Learners' as part of the Curriculum for Excellence 'four capacities'.

Themes Across Learning

The 'Themes Across Learning' category is also part of Learning Across the Curriculum. The themes are Enterprise, Global Citizenship (which includes Education for Citizenship, International Education, and Education for Sustainable Development), and Learning for Sustainability. Some overlap is evident within these themes, particularly between Learning for Sustainability (LfS) and Education for Sustainable Development (ESD). Learning for Sustainability is described by Education Scotland as an emerging term which incorporates a range of areas often associated with Global Citizenship, including education for sustainable development, citizenship education, children's rights, and outdoor learning (Education Scotland, 2015b). While this overlap makes it difficult to describe a definitive curriculum structure, it also demonstrates the ongoing development of CfE structures, and the inter-connectedness and integration of various CfE concepts.

The connection between outdoor learning and the Themes Across Learning is most apparent in Learning for Sustainability (and/or Education for Sustainable Development). This theme is largely influenced by the work of the One Planet Schools Working Group (OPSWG). Their report, *Learning for Sustainability*, stated that "outdoor learning is a key aspect of learning for sustainability and should be a core pedagogical approach in its delivery" (OPSWG, 2012, p.12) and repeatedly made clear that outdoor experiences were expected to play a key part in children's learning in this area. These statements reinforced earlier Scottish curriculum guidance, such as the 5-14 Environmental Studies[4] guidelines, which similarly emphasised that "fieldwork for pupils is central to the methodology of environmental studies" (McNaughton, 2007, p.625).

Christie and Higgins (2012b) reviewed the literature on the contribution of outdoor learning to young people's attitudes around sustainability. They found that "despite the limited amount of literature available the potential contribution that outdoor learning can make to the development of attitudes towards sustainability and a broader ethic of care for the environment is clear and significant" (p.1). Similarly, the World Wide Fund for Nature (WWF UK, 2010) explored what might constitute effective pedagogy for school-based

[4] The 5-14 Curriculum Guidelines comprised a series of subject-based documents.

sustainability education, and concluded that outdoor learning was a common approach in schools which delivered effectively on sustainability.

Interdisciplinarity

Interdisciplinarity is the final category within 'Learning Across the Curriculum', and is the subject of a 'CfE Briefing'. This ongoing series of briefing documents, on topics such as assessment, planning, and progression, is intended to support teachers' implementation of CfE. The briefing on Interdisciplinary Learning (Education Scotland, 2012) outlines two distinct approaches to interdisciplinarity, and offers guidance on planning, but does not mention outdoor learning. In contrast, two main CfE resources on outdoor learning explicitly refer to the interdisciplinarity inherent in learning outdoors (Education Scotland, 2011a, 2011b), one stating for example that "[o]utdoor environments provide firm contexts for interdisciplinary learning" (Education Scotland, 2011b, p.43).

Neither of these documents offer evidence to support their claims around the interdisciplinarity of outdoor learning; indeed, research exploring the use of the outdoors as a context for specifically interdisciplinary learning is limited. Zink and Boyes (2006) asked teachers in New Zealand to rate statements on outdoor learning and found high levels of agreement with the statement 'outdoor education can enrich all curriculum areas'. Similarly, Mannion *et al.* (2006) found that teachers in Scotland used the outdoors with a wide range of educational foci. These reports demonstrate the connection of outdoor learning with a wide range of curriculum areas; however, this does not necessarily indicate use of the outdoors in an interdisciplinary way.

A small number of recent Scottish studies have emphasised the interdisciplinarity of outdoor learning. Beames *et al.* (2009, p.42) describe their 'Outdoor Journeys' model of outdoor learning as one which is "rooted in interdisciplinary study of pupils' place, [which] is deeply connected to CfE and is also made possible by it". They advocate interdisciplinary activity as a means of addressing teachers' concerns about the cost and legitimacy of outdoor learning. Additionally, in work with teachers utilising National Nature Reserves (NNRs) as contexts for outdoor learning, Mannion *et al.* (2011, p.ii) found that "[e]xcursions in NNRs helped with meeting formal curricular demands of

Curriculum for Excellence and provided opportunities for teaching in both an inter-disciplinary and a single–subject manner".

Allison *et al*. (2012, p.47) suggest that outdoor learning "lends itself well to an interdisciplinary approach to education". They further explain:

> "Given current policy trends towards interdisciplinary learning we should also recognise that outdoor learning might be conceived in either of two broad ways. First, students may be initiated into discrete subjects or disciplines and be then presented with outdoor experiences or contexts that invite meaningful interdisciplinary treatment. Alternatively, however, learners may be presented with experiences or encouraged to undertake projects that from the outset resist any piecemeal separate subject analysis".

This is a clear description of the link between outdoor learning and interdisciplinarity, and the examples of practical applications by Beames *et al*. (2009) and Mannion *et al*. (2011) outlined above clearly demonstrate the utility of outdoor locations as a context for interdisciplinary learning within the 'Themes Across Learning' in CfE.

3.4. An overarching perspective

As discussed in Chapter One, children are increasingly disconnected from nature, and many lack knowledge about where their food comes from. A period of curriculum change in Scotland, and the introduction of *Curriculum for Excellence,* is an opportunity to address some of the concerns around children's knowledge, with specific curriculum content, approaches and themes.

Outdoor learning is an important feature of CfE. New curriculum and other policy documents strongly promote the use of the outdoors by teachers in Scotland, and changes to teacher registration standards are a close equivalent to mandating use of the outdoors in a country with no statutory curriculum. Although structurally, 'Outdoor Learning' is only one of several available 'Approaches to Learning' in the new curriculum, the foregoing discussion of outdoor learning literature demonstrates connections between the outdoors and other aspects of the new curriculum guidance. This highlights the integrated nature of CfE, particularly in relation to the outdoors. Conducting research

within the outdoor learning context therefore offers an overarching perspective on Curriculum for Excellence, and can show how specific examples of learning outdoors, such as educational farm visits, are relevant to the wider curriculum. It also acknowledges the important role that the outdoors has traditionally played in Scottish education.

Nicol *et al.* (2007) highlight a "clear belief" in the links between outdoor learning generally and Curriculum for Excellence, but suggest that research evidence is minimal and should therefore be priority area for future studies. Similarly, Thorburn and Allison (2010, p.104) discuss the interdisciplinarity of outdoor learning, and suggest that by using interdisciplinary teaching:

> "outdoor education could become of central rather than peripheral curriculum importance. Therefore, viable exemplification of how experiential learning in the outdoors can feasibly occur is necessary both in terms of articulation with curriculum arrangements and pedagogically in terms of how the learning process can be enacted."

Curriculum for Excellence has clear links with outdoor learning, but there is a lack of research and specific examples of how the potential of such links can be realised.

3.4.1. Research questions

The purpose of this study was to explore the farm visiting activity already taking place in Scotland's primary schools; the ways in which teachers use farm visits as an opportunity for outdoor learning in the context of Curriculum for Excellence (CfE), and the perspectives of farmers on providing these opportunities. The aims of my study are to provide concrete examples of practice, which can be used by teachers seeking to undertake farm visits as part of their outdoor learning repertoire; to demonstrate to teachers and farmers how farm visits can be linked with CfE; to highlight issues which those involved in educational farm visiting may wish to consider in planning visits; and to provide guidance on farm visiting for teachers and farmers. No known previous research has explored the use of farms in this Scottish curriculum context.

The study focused on four key research questions:

> **Q1.** How can teachers use educational farm visits, and link them with Curriculum for Excellence?
>
> **Q2.** How do farm visits contribute to children's learning?
>
> **Q3.** What are farmers' experiences of hosting farm visits and engaging with pupils?
>
> **Q4.** What are the barriers to undertaking educational farm visits, and how can they be addressed?

These questions formed the basis of a qualitatively-driven, mixed-methods approach to research. This included a survey of primary school teachers in Scotland, and a series of farm visit case studies through which teachers, farmers and children contributed to face-to-face discussions of their farm visiting experiences.

The focus of the research was on farm visits for primary school children (aged 4.5-11.5 years) and their teachers, in state-run ('public'), mainstream day schools. Grant maintained and fee-paying ('private') schools were excluded, as were those identified as boarding or residential schools, and those identified as 'special schools' (i.e. schools for children whose additional support needs require a specialist setting). It was felt that the experience of farm visiting for pupils and staff in those schools was likely to be substantially different, but that the limitations and constraints of this study made it impractical to attempt to fully and adequately explore these differences as part of this research.

This study was undertaken with support from the Royal Highland Education Trust (RHET), a charitable organisation which promotes learning about agriculture, rural life, and the environment. One main function of RHET is to act as an intermediary organisation in the provision of educational farm visits to schools, and most of the farm visits which formed the case studies in this research were mediated through RHET local project co-ordinators. The findings from this research should be read and understood in that context, but are intended to be useful beyond that specific organisation. Other case studies involved the Royal

Northern Countryside Initiative (RNCI), a partner of RHET based in the North-East of Scotland, and the Co-op Farm-to-Fork programme[5].

The purpose of this study is not to evaluate or critique the farm visit provision by RHET/RNCI or Co-op Farms (and their subsequent or related providers). Instead the research addresses the curriculum links and contribution to learning that farm visits can provide, and suggests perspectives which teachers, farmers and organisations' representatives may wish to consider in planning such visits.

[5] The Co-op Group sold its farm business to the Wellcome Trust in August 2014. The Trust intimated its intention to continue farming under the name 'Farmcare', and to maintain an education programme, possibly under a different model (Wellcome Trust, 2014; Kidd, 2014)

4. Mixed Methods Research: methods, methodology and ethics

This study utilised a qualitatively-driven mixed methods approach to researching the use of educational farm visits for primary school children in Scotland. An initial survey of primary school teachers was undertaken using a postal questionnaire (see Appendix 3), designed to gather information on teachers' opinions and experiences of farm visiting and outdoor learning generally. Teachers' perspectives were also sought in face-to-face interviews, as part of a series of case studies. The case studies were framed around individual farm visits by groups of pupils as part of their school experience; host farmers also took part in interviews, while some of the children who attended the farm visits were asked to contribute their views in 'group discussions', based on group interview and focus group methods.

These three methods (questionnaire, interview, and group discussion) are traditionally associated with each of the two dominant research paradigms in social sciences research. Survey questionnaires are generally regarded as a quantitative method, while face-to-face interviews and focus groups are associated with the qualitative tradition (e.g. Yilmaz, 2013). The use of multiple methods from different theoretical traditions in this integrated way is known as the Mixed Methods approach to research (Johnson & Onwuegbuzie, 2004).

As a result of this integrated approach, it was anticipated that data collected from any of the methods might contribute to answering the research questions. Certain methods were however more pertinent to specific questions. Table 4.1 provides an overview of the intended main contribution of each research method.

Table 4.1: Contribution of methods to answering the research questions

Research Question	Survey of teachers	Case Studies		
		Teacher interviews	Pupils' group discussions	Farmer interviews
How can teachers use educational farm visits, and link them with Curriculum for Excellence?	X	X	X	X
How do farm visits contribute to children's learning?	X	X	X	
What are farmers' experiences of hosting farm visits and engaging with pupils?		X	X	X
What are the barriers to undertaking educational farm visits, and how can they be addressed?	X	X		X

This chapter explains each of the methods in turn, including the reason for the selection of that method, any associated difficulties or drawbacks, and the procedures for the use and analysis of each method. The ways in which the methods are combined are then discussed, along with the theoretical and philosophical background to the mixed methods approach. The latter part of the chapter outlines the main ethical issues associated with each method, and the steps taken to address these issues.

4.1 Survey

An important consideration in the design of this study was the inclusion of teachers from a wide range of backgrounds. This meant ensuring that the research covered a wide geographic area across Scotland, including different local authorities and a range of urban and rurally located schools, as well as teachers in schools in differing socioeconomic contexts. Survey questionnaires are a useful means of collecting data from a large number of people in a relatively straightforward way (Munn & Drever, 1990; Gillham, 2000b). The postal questionnaire method was primarily chosen in this study as a means of eliciting responses from a wide range of teachers, in a manner which would not

place a substantial time burden on respondents, but which would give a broad general picture of teachers' experiences and opinions. The results of the survey were intended to inform the later stages of the research, particularly in generating questions and discussion points for interviews with teachers and farmers.

The survey was not intended to be representative in the statistical sense, but instead to function as a means of giving many more teachers the opportunity to contribute to the study than would be possible through other methods, providing a 'snapshot' of the experiences and opinions of a wide range of teachers. The focus was therefore on making the questionnaire available as widely as possible, rather than on ensuring that the respondents represented a statistically robust sample. The demographic profile and further information on the questionnaire respondents is available in Chapter 5.

4.1.1 Survey development, design and piloting

Content

The content of the questionnaire was initially developed in response to the research questions, background knowledge of pertinent issues, and issues raised in the relevant Scottish research literature (see Chapter 3). Additional questions relating to broader issues were developed from further reading of the existing literature on outdoor education, and on the development and introduction of Curriculum for Excellence.

Section One of the questionnaire asked respondents to provide some general information about themselves and the school in which they were currently employed. Information on the job title or role of the respondent was collected as a means of ensuring that information was gathered only from qualified teachers, and not, for example, from Classroom Assistants, whose experience of and involvement in planning and conducting farm visits was likely to be different from that of teachers. It also provided a means of determining whether teachers with a range of experience had contributed to the survey, by identifying those in 'promoted posts' (such as Principal Teacher, Depute Head and Head Teacher). Teachers were also asked to indicate whether they had any

formal remit for outdoor learning, as an indicator of the existence of this type of role within primary schools.

Respondents were also asked to provide the postcode of the school in which they were based. This was used to identify general information about the location of the school (e.g. socio-economics, local authority, urban/rural). This information does not relate directly to any characteristics of the responding teacher, nor of the children attending the school, but was used as a further indicator that teachers in a wide variety of contexts were reached by the survey.

In Section Two, teachers were asked to indicate their agreement with a series of statements using a Likert rating scale (Cohen *et al.*, 2007). Some statements were generated in response to the research questions and existing knowledge. One local authority, for example, had indicated as part of the consent process that educational farm visits were forbidden in their schools. This prompted the inclusion of a statement on the supportiveness of the local authority. Other statements in this section were drawn from previous research. Higgins *et al.* (2006), for example, suggested that 'teacher disposition' towards the outdoors generally, and outdoor learning, were more likely to take their pupils outdoors despite other perceived barriers. Statements such as 'I enjoy spending my current leisure time outdoors' were therefore included in the survey as an indicator of teachers' personal engagement with outdoor environments. Other literature (e.g. Nicol *et al.*, 2007; Thorburn & Allison, 2013) highlighted the importance of training for teachers in using outdoor settings, and consequently statements were included in Section Two which addressed teachers' opinions on the training they had received. A range of other literature on farms and outdoor learning (e.g. Harris, 2009; Taylor *et al.*, 2010) was also influential in the statements and questions included in the survey. Questions relating to barriers to outdoor learning, in Section Three of the questionnaire, were informed particularly by discussions in Rickinson *et al.* (2004).

In the penultimate section, questionnaire respondents were asked to reflect on any educational farm visit in which they had been involved in the previous year (i.e. since May 2012). Only those teachers who had participated in such a visit were asked to complete this section. The questions were intended to collect data on 'real life' examples of the ways in which teachers were using farm visits

to contribute to or support their teaching, including the curriculum areas to which the visits related, and any relevant classroom-based activity. The final part of the questionnaire explicitly asked teachers' opinions on the content and format of any guidance on educational farm visits which might result from this study, to increase the usefulness and relevance of any such guidance.

Visual Design

In order to maximise the rate of response to the survey, one of the main goals of the visual design was that the questionnaire should not appear onerous or time-consuming, but would be convenient, straightforward, and simple for busy teachers to complete. The logistics of recording and handling of returned data were also a consideration. Most of the questions were therefore formulated in such a way that tick-box response options and simple rating scales could be used. Where ratings scales were used, the scale contained six points, meaning that there was no mid-point or 'neutral' answer. In some instances, free-text boxes were also included, to ensure that those teachers who wished to provide an alternative response or explanation would have that opportunity, and that the survey could elicit richer and more detailed information than with the simpler response options alone (Gillham, 2000b).

At an early stage, comment on the draft questionnaire was invited from a group of undergraduate students, including student teachers, who were undertaking a farming-related module as part of their studies. Some elements of the students' feedback on the wording and layout were incorporated into later drafts.

Piloting

The questionnaire was piloted with teachers in two schools; one small rural school, and one in a large urban area. The main purpose of the pilot was to ensure that the questions were clear, the response options were appropriate, and the survey was not unduly time consuming. A total of 10 surveys were returned as part of the pilot. In the small school, informal conversations with two class teachers yielded feedback on the available space for free text comments, general layout, and number of 'tick box' response options. Those teachers with whom I was unable to meet face-to-face were invited to make notes and comments on the survey document itself. This opportunity was not

widely utilised, but a number of inferences about the layout of the survey were drawn from the ways in which these teachers had responded to the survey (for example, lack of clarity in selecting one response or several). The final questionnaire incorporated changes to layout and wording in response to feedback from the pilot.

4.1.2 Survey procedure

Sample Selection

Primary schools in Scotland were identified using the Scottish Government's September 2011 database of school contact details, which was the most recent available at the time. The database was downloaded as an Excel spreadsheet (Scottish Government, 2012), and used to identify state-run mainstream day schools for primary-age children. As discussed previously, grant maintained and private fee-paying schools were excluded, as were those identified as boarding or residential schools, and those identified as 'special schools'. A total of 2075 schools across the 32 Local Authorities were identified as potential survey recipients.

Since a number of Local Authorities had refused consent for case studies to take place in their schools as part of this research, it was decided that the survey element of the study should also exclude those local authorities. As a result, the distribution of the survey was limited to schools in 24 of the 32 Scottish local authorities, a total of 1645 schools.

Table 4.2 shows the number of schools in the included local authorities, totalling 1645 schools. The two schools which had participated in the pilot were excluded, meaning that the questionnaire was sent to a total of 1643 primary schools.

Table 4.2: Number of state primary schools in each surveyed local authority

Local Authority	No. of schools
Aberdeenshire	151
Aberdeen City	48
Angus	53
Argyll & Bute	77
Clackmannanshire	19
Dumfries & Galloway	103
East Ayrshire	43
East Lothian	35
East Renfrewshire	24
Edinburgh City	87
Eilean Siar	32
Falkirk	49
Fife	142
Highland	182
Midlothian	30
North Ayrshire	53
North Lanarkshire	122
Orkney	20
Renfrewshire	49
Scottish Borders	64
Shetland	32
South Lanarkshire	124
Stirling	40
West Lothian	66
TOTAL = 24	**1645**

Conducting the Survey

The 4-page survey document was sent by post on 9th May 2013 to the Head Teachers of 1643 primary schools in Scotland, with a covering letter requesting that they nominate one member of their teaching staff to complete and return it. The survey was paper-based to allow portability, giving the teachers some flexibility over where and when they could complete it. The covering letter to Head Teachers made it clear that the questionnaire could be completed by any

member of teaching staff, regardless of their level of experience as a teacher, or of their familiarity with farm visiting or outdoor learning. A Royal Mail Freepost envelope was supplied for the return of the questionnaire, which allowed postal returns without cost to the respondent. A link to an online downloadable version of the survey was provided for those who wished to respond electronically, and to give the teachers the opportunity to invite their colleagues to participate. A three-week deadline was given, and no reminder or follow-up communication was sent.

A total of 264 teachers responded to the survey by post, and none electronically. Similarly to another study which distributed questionnaires via Head Teachers in Scottish schools (Priestley & Minty, 2012), it was not possible to determine the precise number of teachers to whom the survey was made available; a precise response rate could not therefore be determined. The 264 returns in the present study however represent a response from one teacher (as requested) in 16% of the schools to which the survey was sent.

In the past, postal surveys of primary schools in Scottish local authorities have achieved more favourable response rates. Higgins *et al*. (2006) surveyed two local authorities, with response rates of 34% and 48%. In another study, in which a response to the survey was actively encouraged by the education department, a response rate of 39% was achieved, and was described as "very high for an unsolicited postal survey" (Barnard *et al.*, 2002, p.10). The contemporary context may however have influenced the response rate in the present study. Hepburn (2013) reported that teachers in Scotland were being discouraged by local authorities from expressing personal opinions in relation to their work; this may have influenced potential survey respondents' choice not to participate. A more recent online survey of teachers in Scotland, conducted in 2014 on behalf of the Educational Institute for Scotland (EIS), achieved only a 12.8% response rate (Scott Porter Research & Marketing, 2014). In that context, the response rate of the present study, which included no reminder or explicit local authority encouragement, was considered acceptable.

4.1.3 Approach to analysis

Questionnaire data were entered into an Excel spreadsheet in advance of analysis, with numerical responses in one sheet, and text responses in another. References in this thesis to 'Survey Respondent number' indicate the order in which returned questionnaires were input into the database. The numerical data were then sorted, or had Excel functions applied, to determine counts and to generate graphs and tables.

The quantitative survey data were analysed descriptively using counts and frequencies to illustrate, for example, the strength of response or the number of teachers selecting particular options. The survey was intended only to give an overview of teachers' opinions and to inform the development of case studies, and statistical analyses were therefore not carried out.

The qualitative survey responses were analysed in a thematic way, based on the Framework Approach for the analysis of the qualitative case study data (Ritchie & Spencer, 1994). This is further discussed in *4.2.4 Approach to case study analysis*.

4.2 Case studies

The choice to conduct case studies as part of this research project was driven by two main factors. Firstly, identifying case studies in a range of schools around Scotland would again help to ensure that a wide variety of perspectives was included in the study, by involving teachers, pupils and farmers from different backgrounds and contexts. Secondly, case studies would enable a more in-depth consideration of genuine lived experiences of farm visiting than was possible through the survey.

Case studies involve an examination of a particular event or phenomenon in its naturally occurring context (Cohen *et al.*, 2007). In experimental research designs, which seek to control particular variables, the actions of participants may be influenced by their awareness of the controlled setting, and may not reflect their truly natural behaviour. Gillham (2000a) discusses one main advantage of the case study; that it allows the researcher to observe or examine what happens in the 'real world', free from the direct controlling influence of

the researcher, while acknowledging the possible influence of the researcher's presence and activities. In the naturalistic case study, he explains:

> "[the researcher] is not a detached 'scientist' but a participant observer who acknowledges (and looks out for) their role in what they discover. A research investigation is not neutral; it has its own dynamic and there will be effects (on individuals, on institutions) precisely because there is someone there asking questions, clarifying procedures, collecting data".
>
> (Gillham, 2000a, p.7)

Another advantage is that case studies can provide detailed "fine-grain" description and interpretation, which can complement other methods providing "more coarsely grained" information (Cohen *et al.*, 2007. p.255). Hodkinson and Hodkinson (2001, p.4-5) also highlight the advantages of flexibility in case study research, which can allow pursuit of "the unexpected and unusual" as well as "the idiosyncratic". This is in contrast to controlled-variable experimental designs, which are often unable to incorporate data from unanticipated situations that could highlight important features and deepen understanding of the topic or phenomenon in question.

The main goal of the case studies in this project was to explore the 'real life' use of educational farm visits, and to complement the broader survey data with additional detail on genuine experiences of farm visiting as planned and conducted by Primary teachers, independently of the study. Since the teachers in the case studies had already planned the farm visit and associated classroom teaching and activity before agreeing to participate in the research, the influence of the researcher on the planning and conduct of the farm visits in this study is likely to have been minimal. In their research with teachers and outdoor learning centre staff, Allison *et al.* (2012, p.50) found that "those who participated appeared to regard the opportunities that this research presented for serious reflection on educational issues as professionally worthwhile." Similarly, this study may have provided participating teachers with an extended opportunity for reflection and discussion, which could potentially influence their future planning and use of farm visits.

Many of the criticisms of case study research parallel criticisms of qualitative research generally. These include the inability to represent case study research numerically, the lack of generalizability, concerns around 'objectivity', and the volume and complexity of data to be managed and analysed (Hodkinson & Hodkinson, 2001). These criticisms reflect an assumption amongst some researchers that case studies are necessarily qualitative, although others (e.g. Crowe *et al.*, 2011; Gillham, 2000a) recognise the inclusion of quantitative elements in case studies as a potential, if less common, feature. Tight (2010) regards case study research as an entirely qualitative endeavour, and further queries the meaning and significance of the term 'case study', rejecting it in favour of 'small-scale, in-depth study'. While he acknowledges the ubiquity of case studies within education, he also highlights a lack of clarity: "Is it a method, a methodology, a strategy, a design or what?" (p.329). In this project, the 'case study' is a design feature, indicating the collection of data from several sources, within a particular context which has pre-defined boundaries.

4.2.1. Case study development, design and piloting

The case studies were focused around individual farm visits by groups of children from the same school class, arranged by the class teacher or other member of school staff. Each case comprised a number of elements; the accompanied farm visit, interviews with the teacher and farmer, and 'group discussions' with some of the children who had visited the farm. These elements of the case studies from which data were collected are illustrated in Figure 4.1.

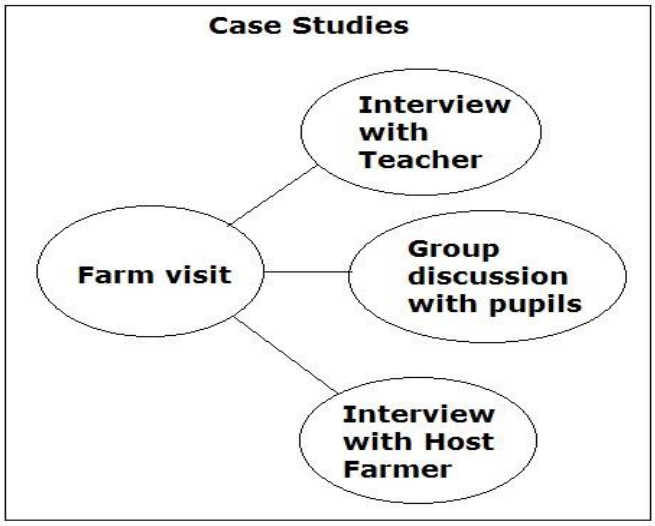

Figure 4.1: Case study design

The accompanied farm visit was not a research method in itself. Although some observational notes were recorded, these were not made in a systematic way or with the goal of conducting any formal analysis. Instead, attending the farm visit with the children fulfilled two main purposes. Firstly, this enabled me to increase the relevance of questions in later group discussions by relating them to the specific farm visit that the participants had attended. Secondly, it provided a further opportunity for the children to meet me. The opportunity for building rapport is an important feature of research with children (Greig & Taylor, 1999; Punch, 2002) and this second purpose was therefore of particular relevance to those children who would later participate in group discussions.

Interviews with Teachers and Farmers

Interviews with the teachers responsible for organising or leading the class visit to the farm, and with the farmer hosting the visit, were conducted as a means of eliciting information about the experiences and opinions of these groups in relation to educational farm visits. Gillham (2000b, p.12) advocates the use of interviews in "research which aims to achieve an understanding of people in a real-world context", while Drever (2003) suggests that semi-structured interviews are particularly suitable within case studies, and can enable deeper understanding of the topic than, for example, a questionnaire. Semi-structured interviews were utilised in this study to enable a responsive discussion in which

interesting and relevant emerging issues could be pursued immediately, with a minimal time burden on participants and without the need for repeat visits.

The time burden of research interviews on researchers themselves is a concern of Gillham (2000b), who cautions that while interviews themselves might be brief, the development, travel, transcription and analysis can be time-consuming. Ensuring the flexibility in this study to prevent any undue time burden on the participants was an important feature in the present study. Although the use of interviews (with children, as well as adults) in this study required a substantial time commitment, this was regarded as worthwhile to ensure that teachers and farmers from a range of contexts had opportunities to contribute to the study in a significant way.

Hammersley (2003, p.120) expresses concern about the use of interviews as a research method, since participants' responses may be "driven by a preoccupation with self-presentation and/or with persuasion of others, rather than being concerned primarily with presenting facts about the world or about the informant him or herself". While is it recognised that the teachers and farmers in this study may have wished to present themselves and their teaching or farming practices in a favourable way, they had been reassured in advance of participation that the goal of the project was exploration rather than evaluation. The interviews sought to uncover their thoughts and opinions about farm visits, rather than necessarily factual information. Furthermore, my position as a non-expert in either teaching or farming was made explicit to participants as a means of indicating that there was no pre-conception of a 'good' or 'right' answer.

Topic guides for the interviews with farmers and teachers were developed in response to the research questions, issues arising from the literature, and relevant themes identified from the earlier survey (see Appendix 4). These were intended to guide informal semi-structured interviews, lasting around an hour, which would be responsive to the participant's own 'train of thought', as well as to issues emerging from previous interviews. Areas for discussion with teachers included the intended purpose of the farm visit, classroom activity related to the visit or wider topic, and the teacher's own prior experiences of farm visiting and outdoor learning generally. Topics in the farmer interviews included their

motivation for offering farm visits, the advance preparation for a school visit and any disruption this caused to the normal functioning of the farm, and their own level of comfort in interacting with primary-age children. The topic guides were used flexibly between respondent groups. Some of the teachers had come from farming backgrounds, and were asked to discuss topics from the 'Farmer Interview topic guide'. Conversely, the Co-op Farm to Fork staff were categorised as farmers for case study purposes, but had come from a teaching background[6], and some topic areas from the 'Teacher Interview topic guide' were therefore discussed in their interview.

'Group Discussions' with Pupils

The purpose of this method, similarly to the interviews with teachers and farmers, was to find out about the children's own thoughts about their experiences at the farm. There is an increasing, if controversial, recognition that children and young people should have opportunities to contribute their own voices to research (see Hammersley, 2015). In contrast to Harris (2009), who sought to access pupils' experiences through parental questionnaires, this study attempted to engage directly with children, while recognising that the 'group discussion' method is some way short of a fully participatory approach.

The use of a single-instance, face-to-face method was intended to be responsive to pupils' contributions, but without placing an undue time burden on them or causing extended disruption to their school day. The decision to use a group method instead of individual interviews was partly practical, and partly ethical. As well as ensuring that the opinions of several children could be sought at once, the use of this method was guided by literature suggesting that children taking part in adult-led research would feel more comfortable in a group setting. The use of group methods with children is recommended by Clark (2005), who notes that the use of individual interviews is often regarded as an inappropriate method of carrying out research with children, due to the likelihood that children will feel uncomfortable, or will respond in a way they assume the adult expects. Although her discussion centres on children under the age of 5, the points raised are pertinent to research with older children too. Clark (2005, p.493) further suggests that group interviews, which she describes as

[6] These individuals were not directly involved in farm work. For clarity, in the Findings chapters (6-10), they are referred to as 'Visit Leaders'.

"conversational encounters with a research purpose", have advantages over one-to-one interviews in that they can be less intimidating for young children and can help to address balance of power issues between the interviewer and the child interviewees. She makes a number of suggestions for conducting interview research with children, including having the interview take place in a familiar location, building rapport between the interviewer and the child, and monitoring the child's level of comfort throughout. She warns that despite these precautions, some children may feel *less* able to contribute in a group discussion due to lack of confidence or fluency, but conversely Lewis (1992) implies that the group setting may encourage contributions of more reticent children, as they have greater opportunities for 'thinking time' and opportunities to question and seek clarification of uncertainties, which can lead to a better quality interview.

A review of several studies which utilised group methods with children, conducted by Heary and Hennessy (2002), found little empirical evidence on which to base practical recommendations, but outlined the advice of those who had previously used this technique. Some of this advice, along with learning from previous experience of conducting research with children, informed the selection characteristics of participants in the present study.

Teachers were advised that five was the optimal group size in this study, and in practice, discussion groups sizes ranged from four to seven participants. Personal experience had suggested that a group of more than five children, particularly in the younger age range, would be difficult to manage, in terms of ensuring that all the children had opportunity to contribute. Greig and Taylor (1999, p.132) advise that with children, "optimal group size is five or six", while Heary and Hennessy (2002) similarly found that group sizes of between 4 and 6 participants were recommended. Their main concern was that too small a group might preclude the interactive and dynamic discussion necessary for focus group research. The focus group is one type of group research method, and relies strongly on the interaction between the participants, while in a 'group interview' the question-and-answer process between the researcher and the participants is the main feature (Cohen *et al.*, 2007). In this study, the research method was presented to the children as a 'group discussion', a concept with which most were familiar through their normal school experiences. This terminology is retained in this thesis as an umbrella term for this part of the

study, since in practice, some of the discussions functioned as focus groups, while most conformed more to a group interview format. The age of the children appeared to be an important factor in this, with younger children responding better to a more structured group interview format, and older ones more capable of the peer interaction required in a focus group.

Issues around age groups were also discussed in Heary and Hennessy's (2002) review, and broad homogeneity of age groups was recommended. In the present study, children were in the same class at school and therefore similar in age; even in the composite classes (e.g. Primary 2/3), the age range was only around two years. Although some authors (e.g. Kellett & Ding, 2004) suggest that very young children (under approximately 8 years of age) are unsuitable for this type of research, children of that age generally participated well in the group-interview style discussions on farm visits, but for shorter durations than their older counterparts.

In terms of the gender mix of children, Heary and Hennessy (2002) found that most studies also advised homogeneity. The reasons cited for this, however, seem to be based on stereotyped and heteronormative foundations, such as the idea that in "older children and teenagers, there is high interest in the opposite sex that can…negatively affect group productivity" (p.52). Furthermore, Gibson (2007) notes that mixed-gender focus groups can also be successful. All potential group discussion participants in the present study were part of mixed gender school classes, and were therefore accustomed to mixed-group discussions. The teachers selecting children to participate in the group discussions were therefore advised that mixed groups were preferred. In practice, although most case study groups were mixed, a few were homogenous due to the cohort of children who were available to participate on the day.

The consent process, accompanied visit, and group discussion elements of the case study were piloted with a Primary 2 class in June 2013 to ensure that the procedure worked as expected. No significant changes were required following this pilot, and the topic guide used in discussions with pupils is available in Appendix 5.

4.2.2 Case study sampling and selection

The main principle underpinning the sampling of cases was the commitment to ensuring that a wide variety of perspectives was included in the study, and in particular a good geographical spread of cases from different areas of Scotland. The lack of consent from some local authorities for their schools to be included was a significant limitation to this. Other practical limitations included the timing of the farm visits, and the associated logistics, such as ensuring that the introductory visit could take place in good time for parents and guardians to raise queries and return consent forms ahead of the visit.

Although each potential case study had distinguishing features which could have resulted in interesting new perspectives, multiple cases within each local authority were limited to ensure that the commitment to a good geographic spread of cases could be met within the single school year (2013-14) in which fieldwork took place. Some potential case studies were therefore excluded if they shared a local authority with two or more existing cases.

The principle of 'thematic saturation' is often used to guide the number of cases or individuals included in qualitative research. Using this approach, a researcher continues to access cases until saturation is reached, that is, until no new themes or information seem to emerge from further cases (Francis *et al.*, 2010). This approach can be problematic, however, since there is little practical guidance on how to recognise that saturation is reached, and few researchers have the resources to continue indefinitely (O'Reilly & Parker, 2013). In the present study, I regarded the pursuit of saturation as less important than the involvement of cases from different areas of Scotland. As the Findings chapters (6-10) show, however, there was generally a great deal of agreement within each of the three participant groups (teachers, children, and farmers). Furthermore, no significant new themes seemed to emerge in the later few cases, suggesting that data saturation was achieved to some degree within the 14 case studies which took place.

4.2.3 Case study procedure

Local Authority Consent

Concurrently with the development of the survey, in January 2013 letters were sent to the Directors of Education (or equivalent) in each of Scotland's 32 local

authorities (councils), as identified through their websites, requesting permission to conduct case studies in primary schools within each council area. The information sent included a covering letter, a copy of the Plain Language Statement (Appendix 6), a consent form, and a return envelope. The letter asked that responses should be returned within a month, and a follow-up email was subsequently sent to those who had not responded.

A number of Directors returned the forms in the reply-paid envelopes, while others emailed a response or sent a letter. In some cases, the completion of the Local Authority's standard research application form was requested; these were completed and returned as requested. In total, eight local authorities declined permission to conduct case studies, and a further eight offered no response to the request. Permission to conduct case studies was received from the Director of Education (or other appropriate person) of 16 local authorities. These are shown in Table 4.3, and a map of Scottish Local Authorities is available in Appendix 7.

Table 4.3: Local Authorities consent for case studies

Local Authority	Consented to Case Studies
Aberdeen City	-
Aberdeenshire	Yes
Angus	-
Argyll & Bute	Yes
Clackmannanshire	Yes
Dumfries & Galloway	Yes
Dundee City	No
East Ayrshire	Yes
East Dunbartonshire	No
East Lothian	-
East Renfrewshire	Yes
Edinburgh (City of)	Yes
Eilean Siar	-
Falkirk	-
Fife	Yes
Glasgow City	No

Local Authority	Consented to Case Studies
Highland	Yes
Inverclyde	No
Midlothian	-
Moray	No
North Ayrshire	Yes
North Lanarkshire	Yes
Orkney Islands	-
Perth & Kinross	No
Renfrewshire	-
Scottish Borders	Yes
Shetland Islands	Yes
South Ayrshire	No
South Lanarkshire	Yes
Stirling	Yes
West Dunbartonshire	No
West Lothian	Yes

Access to Case Studies

Twelve of the case study farm visits were accessed through the Royal Highland Education Trust (RHET) and its equivalent in North East Scotland, the Royal Northern Countryside Initiative (RNCI). A further two were accessed through the Co-op Farms 'Farm to Fork' programme.

One main role of the RHET and RNCI representatives is to organise visits to farms, and the regional project co-ordinators were asked that when any teachers in appropriate categories (i.e. from state primary schools in consenting local authorities) approached them to ask for a visit to be arranged, the co-ordinator should make the teacher aware of the research and seek permission to forward the teacher's contact details to the researcher. The contact details of teachers who had used the current (2013-14) version of the RHET farm visit booking form, available via the RHET website, were in some cases forwarded without further discussion with the teacher, as that form contained a statement indicating that teachers may be contacted regarding the study; however, many teachers are 'repeat customers' of RHET, and used older versions of the booking form which did not contain this statement. Similarly, the teachers in the two cases which were organised through Co-op Farms were made aware of the study in the first instance by the Co-op Farms staff, who with permission then passed on contact information. A written protocol for the teacher contact procedure, developed and distributed to relevant individuals RHET and RNCI in autumn 2012, is available in Appendix 8. The procedures outlined in that document were, in the main, adhered to, although there was a need for a degree of flexibility to meet the requirements of the teachers and co-ordinators themselves.

A small number of teachers declined to pass on their contact details, and a few were unable to participate due to timing difficulties and other factors. There was therefore an unavoidable degree of self-selection amongst case studies. Furthermore, there may have been a degree of unconscious or unintentional selection in the teachers to whom the case study information was initially given by local co-ordinators.

Those teachers who expressed an interest in participation were contacted by email, with a brief outline of the project and the procedures for case studies,

and an invitation to ask questions, or to visit the project website for further information. Teachers were also asked to ensure that they had the support of the Head Teacher of their school before agreeing to participate in the study. A pack of explanatory information was developed specifically for this group, which included a Head Teacher's consent form. Most teachers who responded to this initial email agreed to take part; a few did not respond to the email, and one replied to decline the opportunity.

A total of 14 case studies were conducted as part of this study. This resulted in 11 accompanied visits to 9 different farms. I was unable to attend three of the farm visits, although in two of those cases I was able to attend the risk assessment pre-visit which is standard RHET procedure. Some case study classes also visited the same farms.

Conducting Case Studies

Once teachers had agreed to participate and had sought agreement from the Head Teacher of their school, a date was arranged for the 'Introductory Visit' to the class. This brief visit during the school day served a number of purposes, including allowing the teacher and myself as the researcher to meet in person for the first time, and allowing me to introduce myself to the children ahead of their farm visit. This was another step in the important process of rapport-building. The main purpose of the visit was to outline the research to the children, and to explain that they did not have to take part in a group discussion, but that in order to take part, they would need permission from their parent or guardian. The children were then offered the opportunity to take home a 'consent pack' with information for parents[7] about the study. This included explanatory information, a copy of the plain language statement, and a parental consent form (see Appendix 9). This model of seeking parental consent was intended to give a degree of control to the pupils, by allowing them to decide whether to take a consent pack and whether to give it to their parent, in an attempt to address some of the ethical issues associated with children's consent in school-based research. These concerns are explored in *4.5 Ethical*

[7] Where the terms 'parent', 'parent(s)' or 'parental' appear in this thesis, they are used as umbrella terms, including parent(s), guardian(s), and other responsible adults in potential child participants' homes. In presentations to children, inclusive language such as 'your grownups at home' was used.

issues. In most cases, I subsequently accompanied the class on their visit to the farm and functioned as an observer or as an additional adult helper. As indicated previously, this was not a formal research method.

The group discussions with children took place in schools between 3 and 17 days after the farm visit, while some teacher interviews took place on the afternoon of the farm visit and others up to 84 days later. All took place between March and June 2014.

Table 4.4 shows the number of days between each of the school-based stages of the case studies, from the day on which the Introductory Visit took place (Day 0). Most Introductory Visits took place between four and ten days before the farm visit; the exception was Case Study 1, where logistical issues prevented the originally scheduled farm visit from taking place.

Table 4.4: Time between stages of case study (days)

Case Study	Farm Visit (FV) Day	Group Discussion Day (Days after FV)	Teacher Interview Day (Days after FV)
1	106	112 (6)	176 (70)
2	7	24 (17)	91 (84)
3	4	14 (10)	14 (10)
4	5	21 (16)	51 (30)
5	6	21 (15)	21 (15)
6	6	20 (14)	20 (14)
7	9	28 (19)	28 (19)
8	8	20 (12)	20 (12)
9	4	14 (10)	14 (10)
10	4	19 (15)	19 (15)
11	5	10 (5)	5 (0)
12	5	10 (5)	5 (0)
13	10	13 (3)	13 (3)
14	9	15 (6)	15 (6)

Note: Day 0 in all cases is the day of the Introductory Visit to the class.

The dates and times for the fourteen group discussions with children were negotiated with teachers, either at the farm visit or later by email. The

emphasis was very much on ensuring that participation would not cause undue disruption to the individual children, or to the usual workings of the class or school. Teachers were advised that the ideal location would be a quiet but visible area which would allow the group to be seen but would not interfere with audio recording. In most cases this was achievable, and audio recordings were for the most part sufficiently clear to allow full transcription. The teachers were asked to select 5 children of mixed gender and ability from those who had returned parental consent forms to participate in the discussion group. Teachers were also asked to ensure that the children selected would be comfortable in discussion with one another. Further information on case study participants is available in Chapter 5.

In most cases, the discussion was conducted with all participants seated around a table and the audio recorder placed centrally. All groups began with a reminder of the purpose of the discussion and an explanation of the 'ground rules' for not talking over one another and being accepting of others' opinions. Children were also reminded that they could withdraw at any time by indicating that they wished to return to the classroom. I then asked the pupils whether they were happy to proceed. I guided the discussion by asking questions from the topic guide and related follow-up questions, and attempting to ensure that all participants had an opportunity to contribute their opinion. Audio recordings ranged from 16 to 36 minutes.

Teacher interviews also took place on school premises, either in the teacher's own classroom, or in a staff or resource room. Thirteen interviews took place, and fourteen teachers contributed. One teacher who had been responsible for two of the case study visits took part in a single interview covering both cases, and in one case study, both job-sharing teachers took part in the interview, as they had worked closely on the planning of the class topic and related farm trip. The interviews were informal and semi-structured, and were therefore conducted in a conversational style. Questions were based on the topic guide but were not asked in order, and not all questions were asked of all teachers. Rather this depended on the discussions which emerged, and taking the opportunity to pursue interesting points raised, while ensuring that all of the broad topics from the guide were discussed. Teacher interviews ranged from 27 to 74 minutes.

Interviews with farmers took place after the school-based elements of the study, between July and September 2014. This was partly due to the need to prioritise school-based elements towards the end of the school year, and partly for the convenience of farmers at a busy time in their calendars. The timing of the interviews was arranged by phone and email, and most took place at the farm location, usually within the farmers' own homes. The exception to this was the interview with the members of staff from Co-op Farms' 'Farm-to-Fork' project, which for the purpose of the study was identified as a 'farmer interview'; the staff leading that project are however based within an educational space dedicated to the project, and it was there that their interview was conducted.

As with the teacher interviews, the farmer interviews were informal and conversational, based on the pre-prepared topic guide, and audio recorded. In most instances, the sole participant was the farmer who had led the school visit, but due to the location of many of the interviews (e.g. farmhouse kitchens), informal contributions from other family members also featured in a small number of interviews. Where this occurred, verbal consent was subsequently sought from these additional participants to use their contributions as part of the research. A total of 9 interviews were conducted; one farmer had hosted three case study visits, and the two Co-op Farms visits were discussed in a single interview with the two project staff. One farmer declined to take part in an interview, and another was unable to participate within the required time frame of the study. The interviews with farmers ranged from 23 to 50 minutes, and further information about the participants is given in Chapter 5.

The audio files from all the interviews and group discussions were subsequently transcribed verbatim for analysis.

4.2.4 Approach to case study analysis

Transcripts from the interviews and group discussions were analysed thematically. There are numerous ways to approach the analysis of qualitative data, but a common feature is the need to organise and manage what is often a large amount of (usually textual) information, in order to identify themes and patterns (Cohen *et al.*, 2007). Specialist software is available which can assist with this and allow complex coding schemes to be developed (Richards, 2005),

but in a study of this scale, software of that type is unnecessarily cumbersome. The Framework Approach (Ritchie & Spencer, 1994) is a means of sorting and categorising data, and can be undertaken without specialist software. It is "most commonly used for the thematic analysis of semi-structured interview transcripts" (Gale *et al.*, 2013, p.2). Although developed originally in the field of policy research, the Framework approach has more recently been used for qualitative data analysis in other fields such as health (e.g. Smith & Firth, 2011; Deas *et al.*, 2013), and in synthesis of evidence (Dixon-Woods, 2011). Gale *et al.* (2013) note that the approach "is not aligned with a particular epistemological viewpoint or theoretical approach and therefore can be adopted for use in inductive or deductive analysis or a combination of the two". Similarly, Srivastava and Thomson (2009) suggest that it shares similarities with the 'grounded' approach to thematic analysis, but allows the use of *a priori* issues as a starting point.

The five stages of the process, as described by its original developers, are Familiarisation, Identifying a Thematic Framework, Indexing, Charting, and Mapping and Interpretation (Ritchie & Spencer, 1994). In this study, the first two stages were ongoing alongside data collection, through reflecting on each interview and group discussion, and making notes on areas of interest emerging from these. This process continued as the audio files were transcribed; most audio files I transcribed in person, allowing greater familiarity to develop. Twelve interviews were transcribed by an external agency, and familiarity with these was aided by listening to the audio files on two additional occasions, once with focused note-taking, and subsequently to check the accuracy of the transcripts.

Initial themes based on the research questions, as well as those emerging during the interview and transcription process, formed the initial framework, which expanded to include additional themes as these were identified in the more in-depth analysis stage. The framework was represented visually in Microsoft Excel, using rows for each case, tabs for overarching themes (such as 'Children's learning') and columns for sub-themes (such as 'urban children'). An example is available in Appendix 10.

The third stage of the Framework process, Indexing, requires a systematic application of the thematic framework to the transcripts, while the fourth stage, Charting, involves organising the data, in a synthesised form, into a chart or framework. Much of the discussion of this approach to analysis assumes or involves a team of researchers working together on analysis (e.g. Ritchie & Spencer, 1994). Since this study involved one analyst, however, it was possible to conflate these two stages of the analysis. Transcripts were read line-by-line and immediately summarised or quoted in the relevant cells of the framework matrix in Excel. The final stage involved examining the matrix outputs, sometimes in a printed format, and annotating these with text and colour to identify commonalities and contrasts within and between cases and respondents, in response to the research questions and other emergent themes.

4.3 Methodology: mixed methods research

The qualitative analysis of the transcripts from the case study interviews and group discussions was used in combination with the quantitative and qualitative data from the earlier survey to answer the research questions and identify other areas of interest. Literature on this 'Mixed Methods' approach to research guided and underpinned the present study.

The use of mixed methods research is an attempt to combine the two traditional paradigms in a way which can harness the strengths of each, and in which the advantages of one can mitigate against the disadvantages of the other (Johnson & Onwuegbuzie, 2004). Discussing mixed methods approaches in health services research, Wisdom *et al*. (2012, p.722) explain that:

> "Mixed methods can be a better approach to research than either quantitative-only or qualitative-only methods when a single data source is not sufficient to understand the topic, when results need additional explanation, exploratory findings need to be generalized, or when the complexity of research objectives are best addressed with multiple phases or types of data."

The mixed methods approach was therefore identified as appropriate for this study, which sought to gather data from a wide range of contexts, as well as to explore specific instances of farm visiting in some detail. The survey method

has greater value when used in combination with other methods (Gillham, 2000b), and in this study the general information collected in the survey was complemented by in-depth case study methods.

Hesse-Biber (2010) notes that mixed methods research is a distinctive approach which is increasingly utilised by researchers. Despite its long history (Creswell, 2009; Torrance, 2012), this approach to research is still subject to criticisms and concerns around its worth and legitimacy.

One significant concern is whether the two traditional paradigms can ever genuinely be mixed. Some researchers regard these as fundamentally incompatible and entirely resistant to any sort of combination or integration with one another; what Howe (1988) terms the 'incompatibility thesis'. The quantitative and qualitative paradigms are based on contrasting understandings of, and assumptions about, how the world works (Cumming & Moore, 1984; Wiggins, 2011). Cohen *et al.* (2007) identify these as the 'positivist/ objectivists' and 'subjectivist' viewpoints. The objectivist stance explains the social world as comparable to the natural world, external to us as human beings, and governed by identifiable rules. These rules can be determined through research, which usually involves the measurement of variables and attempts to describe the relationship between them. In contrast, subjectivists see the world as being created and understood by human consciousness. Research is less concerned with identifying rules, and more with understanding human experience, and "the interest is in a subjective, relativistic social world rather than an absolutist, external reality" (Cohen *et al.*, 2007, p.8).

Greene (2008) questions whether it is desirable, or even possible, for researchers simultaneously to hold both of these philosophical standpoints, while Hesse-Biber and Johnson (2013, p.105) caution against the potential "philosophical dissonance" that may result from teaching students about mixed methods research. These authors' concerns reveal an assumption that individual researchers are inherently aligned with one or other of the two approaches and will identify as either a 'qualitative researcher' or a 'quantitative researcher'. Similarly, in stating that "ideological differences between qualitative and quantitative researchers have existed for almost a century", Evans *et al.*, (2011, p.277) clearly distinguish between two researcher types. Consequently,

research students aspiring to work in research or academia may be "left with the impression that they have to pledge allegiance to one research school of thought or the other" (Johnson & Onwuegbuzie, 2004, p.14).

In contrast, Bracken (2010) argues that emerging researchers should be taught about the range of epistemologies, methodologies and methods that are available, in order that they may adopt the perspectives that are best suited to their research. Dillon and Wals (2006) similarly suggest that researchers should have an awareness and understanding of a range of methodologies, to enable them to communicate with others and to articulate their own positions. They also question, however, whether the apparently incompatible philosophies and worldviews behind the two traditional research paradigms genuinely can be mixed. Whether alignment with a single philosophical position is inherent, or a matter of conscious choice, guidance for researchers on how to negotiate these philosophical difficulties is limited (Howe, 1988; Mason, 2006). Nevertheless, Dillon and Wals (2006, p.554) note that "Johnson and Onwuegbuzie seem to have no trouble blending methodologies".

Johnson and Onwuegbuzie (2004) themselves accept that there remains work to be done around the 'philosophical positionings' of the mixed methods approach, but nevertheless clearly regard mixed methods research as a distinctive third research paradigm. This paradigm is located in the middle ground of a quantitative-qualitative continuum and recognises the value of both, functioning as a "third research movement… offering a logical and practical alternative" (Johnson & Onwuegbuzie, 2004, p.17). The question of whether mixed methods research can be regarded as a paradigm in its own right has also been discussed by Greene (2008), who examines the issue at length and concludes that "the mixed methods approach to social inquiry has the potential to be a distinctive methodology within the honored traditions of social science" (p.20). Torrance (2012), however, explains that the status of mixed methods research as a paradigm in its own right has been challenged even from within the mixed methods research community.

In this study, the status of mixed methods research as a third paradigm is accepted. The question of paradigmatic status is not regarded as a central concern of this study, since many of the authors discussed above have

demonstrated that mixed methods is a feasible and useful approach to research, regardless of its position as a third paradigm or otherwise. The use of multiple methods in an integrated way was selected as an appropriate and achievable approach for responding to the research questions in this study. Despite the lack of clarity on "how methods based on such divergent philosophies of science can be meaningfully integrated" (Wiggins, 2011, p.44), an extensive literature on the *practical* undertaking of mixed methods research has guided the design and conduct of this study.

4.3.1 Models of mixed methods

The ways in which methods might be 'meaningfully integrated' are demonstrated in models and typologies which focus on the practicalities of combining methods, rather than on the integration of differing philosophies. Nastasi *et al.* (2010) highlight the challenges of developing a typology of mixed methods designs, citing the wide range of dimensions on which research designs vary. An outline of these is provided by Creswell *et al.(*2011):

- The timing of the different elements of the study, e.g. sequential or concurrent;
- Which element is given priority, or whether qualitative and quantitative elements are equal;
- The point in the study at which mixing occurs;
- Whether data are merged for analysis, or whether one dataset builds on another;
- Whether the research questions are addressed in a single study, or several discrete studies all contributing to the response.

Several of these dimensions have received attention from other commentators. Guest (2012) offers a non-exhaustive list of six 'dimensions' representing those commonly found in the literature, which broadly concur with those outlined by Creswell *et al.* (2011), but include the influence of theoretical perspectives, and the purpose of the research and the use of mixed methods. Guest (2012) is clear, however, that his proposed 'Points of Interface' model, which focuses on the stage of the study at which integration of data occurs, is an approach to *describing* mixed methods research, rather than a framework for planning. He

further questions the value of typologies in a field as complex as mixed methods research.

Onwuegbuzie and Johnson (2006), discuss types of mixed methods research from the perspective of integration, and identify five alternative models of the stage of the research process at which integration of approaches takes place; concurrent, sequential, conversion, parallel, or fully mixed. Table 4.5 summarises the main features of these.

Table 4.5: Types of integration in mixed methods research (from Johnson & Onwuegbuzie, 2006)

Integration type	Features
Concurrent	Collection and analysis of both types of data (qualitative and quantitative) take place independently of one another, at around the same time. Overarching inferences are subsequently drawn, incorporating the findings from both approaches.
Sequential	Research is undertaken in phases, in which the findings of an initial phase inform the conduct of a subsequent phase. Each phase may utilise qualitative, quantitative, or mixed approaches.
Conversion	Data are transformed into the alternate type (for example, qualitative data are converted into quantitative) and analysed using appropriate techniques for the resulting type. Inferences are drawn from analysis of the original and converted data.
Parallel	Data on a particular research topic are collected and analysed independently, as in the 'Concurrent' model, but no attempt is made to draw overarching inferences. Findings are reported from each 'strand' separately. Some researchers dispute that this approach constitutes genuinely 'mixed methods' research.
Fully Mixed	Qualitative and quantitative approaches are mixed at all stages of the research design, data collection, and analysis.

Adapted from Johnson & Onwuegbuzie, 2006

Greene *et al*. (1989) similarly refer to the stage at which integration of methods might occur, and aligns this with the explicit recognition of the researcher's purpose in utilising a mixed methods approach. They propose a conceptual framework for mixed methods research, comprising five 'purposes of mixing', which is summarised in Table 4.6.

Table 4.6: Purposes of mixing methods (from Greene *et al.*, 1989).

Purpose of Mixing	Summary Description
Triangulation	Data from one method will provide corroboration for data from other methods
Complementarity	Data from one method will illustrate or elaborate on data from other methods
Development	Data from one method will inform or develop other methods
Initiation	Using combined methods will surface new perspectives
Expansion	Using combined methods will expand the breadth or depth of the study

Adapted from Greene *et al.*, 1989

Although there are numerous models of how mixed methods research might be approached, and these vary on a range of different dimensions, these examples illustrate the common theme that mixed methods research must be approached in a purposeful and thoughtful way, considering the reasons for its use and the practicalities and intricacies of its design. This approach will help to guard against one danger of mixed methods research, highlighted by Yin (2006), who cautions that a mixed methods study can inadvertently 'decompose' into two individual studies, and warns researchers to ensure that their methods are genuinely mixed, and not 'merely parallel'. Where the use of multiple methods are not properly mixed, he argues, the study cannot be identified as genuine mixed methods research. A similar view about what constitutes mixed methods research is held by Teddlie and Tashakkori (2006, p.15), who believe that "studies in which two types of data are collected, but no integration of the findings/inferences occurs [are] quasi-mixed designs".

In this study, the survey and case study elements of the research took place sequentially, with the survey taking place at the end of the 2012-13 school year, and case studies in the 2013-14 school year. In contrast to many mixed methods designs, the study was based on the principles of qualitatively driven mixed methods research, such as flexibility, reflexivity, and recognising the value of complexity and different approaches (Mason, 2006). Data were mixed at several points. Firstly, in the survey, quantitative and qualitative data were collected simultaneously through a combination of tick-box and rating-scale response options, and free-text boxes. Early analysis of these survey data then informed some of the content of the face-to-face methods with teachers, farmers and children. Finally, the qualitative analysis of the transcripts prompted some additional quantitative survey analysis as a means of further exploring issues which had been raised. All the data collected as part of the study were utilised in responding to the research questions, and all were analysed with openness to the emergence of new themes and ideas from all methods.

The goals of mixing methods in this study, then, aligned strongly with 4 of the recognised 'Purposes of Mixing' (Greene *et al*. 1989; Greene, 2008); triangulation, complementarity, development, and expansion. Corroboration (or contrast) between findings from the survey and from the case studies was explored, while examples from the case studies were also sought to illustrate findings from the survey. The main purpose of the survey was to contribute to the development of the case study protocols, while the use of both approaches was intended to expand the study beyond what would have been achieved using the survey or case studies alone. The fifth of Greene's (2008) purposes, initiation, also emerged as a possibility of this study, but was not an intentional goal at the outset.

4.3.2 Assessment of research quality

Another point of debate which stems from the apparent incompatibility of the qualitative and quantitative methodologies is the assessment of research quality. As in other areas, each of the traditional approaches has its own means of assessing the quality of research, and use of the mixed methods approach invites the question of how these traditions can be recognised and combined. In quantitative research, the concepts of reliability and validity are used, which

broadly indicate whether the research is accurate and consistent. These concepts are related to the positivist worldview, and are therefore meaningless in the judgement of qualitative data. Instead, qualitative research uses concepts such as authenticity, credibility and dependability, which help to determine whether the context and social experiences have been appropriately represented (Yilmaz, 2013). Greene (2008, p.15) summarises the difficulty associated with judgements of research quality in mixed methods research, stating: "the quality of inferences to be drawn from a study that includes methods from both of these traditions must be judged on something that somehow incorporates as well as respects and honors both validity and authenticity".

Heyvaert *et al*. (2013) conducted a comprehensive investigation into the available models for judging the quality of mixed methods research, and identified 13 'critical appraisal frameworks' (CAFs) from literature published by the end of 2009. They reported that these 13 frameworks contained a wide range of different criteria on which mixed methods studies could be judged, many of which overlapped between frameworks and used ambiguous terminology. They recognised, however, that many of these frameworks are subject to ongoing revision, and that any developments since the start of 2010 will be missing or not fully explored in their report. Heyvaert *et al*. (2013, p. 322) highlight in particular the work of O'Cathain (2010), which "presents a promising attempt towards a comprehensive CAF for primary MMR [mixed methods research] studies". Mertens (2010, pp.4-5) similarly advises:

> "Researchers are aware of the criteria for quality typically associated with quantitative data, such as reliability and validity; they are also aware of the criteria for quality associated with qualitative data, such as credibility and trustworthiness. Researchers should be prepared to describe how they addressed both types of criteria. In addition, they should be aware of criteria that are unique to mixed methods studies. O'Cathain (2010) provides a framework for judging the quality of mixed methods research."

O'Cathain's (2010) framework, then, is widely regarded as a useful and worthwhile contribution to the judgement of quality in mixed methods research.

It synthesises the earlier work of a wide range of authors, and identifies 44 criteria organised into eight domains (Planning quality, Design quality, Data quality, Interpretive rigor, Inference transferability, Reporting quality, Synthesizability, and Utility), although not all of the 44 criteria are applicable to every study. An overview of these criteria for the assessment of mixed methods research quality is available in Appendix 11.

Although O'Cathain (2010) recognises the limitations of her framework, including the large number of criteria, the proposed Delphi study[8] to identify the most important criteria within these has not yet taken place (O'Cathain, 2014, personal communication). More recent publications on the topic (e.g. Pace *et al.*, 2012; Wisdom *et al.*, 2012; Bryman, 2014) have discussed the quality standards relating to qualitative and quantitative studies, and the need for awareness of potential biases and threats in research. Researchers are expected to be explicit in articulating how and why they have conducted mixed methods research. Similarly, Collins *et al.* (2012) identify additional areas to consider, including the need for clarity on the philosophical positioning of a study.

In this study, my main focus has been on the detailed and explicit articulation of the philosophical stance, planning, and conduct of the research. The need to clearly explain the rationale for the selection and combination of methods, the points at which methods have been integrated, and the ways in which data have been analysed and reported, is a recurring feature in discussions of mixed methods quality criteria (e.g. O'Cathain, 2010; Collins *et al.*, 2012; Heyvaert *et al.*, 2013).

4.3.3 Reporting

Qualitative and quantitative methodologies also have their own traditions for the reporting of research, which are informed by the worldview associated with each. The reporting of quantitative research is expected to utilise a detached, neutral viewpoint, and written reports usually use a formal, passive style. Conversely, the reporting of qualitative research usually involves detailed accounts of the context and the researcher's position within that (Johnson & Onwuegbuzie, 2004). Yilmaz (2013, p.315) notes that:

[8] A method of seeking consensus from a group of experts. See, for example, Clayton (1997).

> "quantitative researchers use mathematical models and statistics to analyse the data and report their findings in impersonal, third-person prose by using numbers. In contrast, qualitative research uses participants' observation, in-depth interviews, document analysis, and focus groups. The data are usually in textual, sometimes graphical or pictorial form."

The ways in which mixed methods research can and should be reported, and the style and tone which might be appropriate for written reports, is an ongoing discussion amongst mixed methodologists, and one which has not received a great deal of attention (Greene, 2008). Wisdom *et al.* (2012, p.739) explain that "researchers face challenges writing and publishing mixed methods articles, including communicating with diverse audiences who are familiar with only one methodological approach (i.e. quantitative research or qualitative research), determining the most appropriate language and terminology to use". In this thesis I have sought to integrate the reporting styles of both approaches by combining a detached scientific tone with a more informal discursive tone, including an element of creativity in describing the case study farm visits, and framing this around a standard scientific reporting structure.

4.3.4 Another perspective on mixed methods

Much of the foregoing discussion on mixed methods research relates to the difficulties of combining the traditional qualitative and quantitative paradigms and the assumption that individual researchers are inherently aligned with one or other and will therefore experience difficulties in attempting to combine the two. Similarly, individual research methods are also commonly described as either qualitative or quantitative (Dillon & Wals, 2006). An alternative perspective on mixed methods research rejects the assumption that individuals or methods are naturally aligned with one or other paradigm. Biesta (2010), for example, explains that the terms qualitative and quantitative refer to types of data, rather than to types of research. Similarly, Axinn and Pearce (2006, p.3) suggest that the categorisation of methods as qualitative or quantitative is unhelpful "because it ultimately refers only to whether the data were coded into numbers or into text".

Crotty (1998), too, challenges the assumption that methods of data collection are in themselves either qualitative or quantitative. Rather he believes that any one data collection method might be identified as either qualitative or quantitative, depending on how the resulting data are analysed. He offers a model with four levels: methods, methodology, theoretical perspective, and epistemology. These are connected together in a hierarchical structure, within which there is great flexibility and few limitations on the possible connections between levels. The limitations are mainly found between the levels of epistemology and theoretical perspective; for example, no link can be made between a constructionist epistemology and a positivist theoretical perspective, since "[w]ithout a thoroughly objectivist epistemology, positivism would not be positivism as we understand it" (Crotty, 1998, p.12). It is at these levels that the 'incompatibility thesis' is relevant. Importantly, though, an incompatibility at this level in this model does not preclude the wide range of alternative connections that might be made at other levels, and mixed methods researchers are not at risk of 'philosophical dissonance' because they are not expected simultaneously to hold two different worldviews. As Fugard and Potts (2015, p.3) explain, "tensions between quantitative and qualitative methods can reflect more on academic politics than on epistemology. Qualitative approaches are generally associated with an interpretivist position, and quantitative approaches with a positivist one, but the methods are not uniquely tied to the epistemologies."

In Crotty's (1998) model, particular methods are not unequivocally linked to specific methodologies, theoretical perspectives, or epistemologies. Linkages depend on the ways in which the methods are used and resulting data are analysed, in response to the questions the research is attempting to answer. The focus on research questions as the 'driving force' behind the selection of research methods is in contrast to the view that individual researchers see themselves as aligned with either qualitative or quantitative approaches (Siegel, 2006), and that their methodological choices will be influenced by this more than other factors. Crotty (1998, p.13) contends that "[n]ot too many of us embark on a piece of social research with epistemology as our starting point". Torrance (2012, p.112) furthermore explains that "MMR [mixed methods research] advocates have criticized the whole notion of paradigms somehow

driving and determining research methods and have argued instead for a more grounded and pragmatic approach to understanding what researchers actually do, and how different approaches are actually combined in action".

4.3.5 The pragmatic approach

Greene (2008) advises that the choice of research methods within a study is based on the questions to be answered, and that in a mixed methods study, the way in which the methods are mixed should also be driven by this, since different approaches will be appropriate for different types of study. She suggests that "pragmatism is a leading contender for the philosophical champion of the mixed methods arena" (Greene, 2008, p.8).

As prominent advocates of the approach, Johnson and Onwuegbuzie (2004) suggest that pragmatism is a useful way for researchers to engage with the difficulties of the 'paradigm wars', and that "research approaches should be mixed in ways that offer the best opportunities for answering important research questions" (Johnson & Onwuegbuzie, 2004, p.16). The focus of the pragmatic approach, then, is on selecting and combining methods in ways which will most usefully answer the research questions. Researchers' personal epistemological beliefs and methodological preferences should not be considered, a position reflected by the proposal of Onwuegbuzie and Leech (2005) that research students should have the opportunity to develop into 'pragmatic researchers' through learning to use and value both qualitative and quantitative approaches.

A number of commentators challenge the use of pragmatism as a philosophical paradigm underpinning mixed methods research. Denzin (2012) contends that mixed methods researchers misinterpret the pragmatic philosophy, relying instead on a 'cheap' version of pragmatism with a focus on 'what works'. This distinction is also reflected by Biesta (2010), who discusses 'philosophical pragmatism' in contrast to 'everyday pragmatism'. He notes that "the pragmatic justification for mixed methods research is fairly unproblematic – it simply relies on an argument for the utility of research means for research ends" (Biesta, 2010, p.96), but suggests that the issue is more complicated when pragmatism as a philosophy is discussed. These issues are however recognised by Johnson and Onwuegbuzie (2004, p19), who note that "many current

philosophers have rejected pragmatism because of its logical (as contrasted with practical) failing as a solution to many philosophical disputes". They recognise the distinction between the "basic pragmatic method or maxim", which they identify in mixed methods research as selecting those methods which will best answer the research question, and the "full philosophical system of pragmatism" (Johnson & Onwuegbuzie, 2004, p.17). Although they provide an outline of 'philosophical pragmatism' in their article, they make clear that they "do not aim to solve the …methodological differences between the purist positions", nor do they accept that mixed methods research can currently offer "perfect solutions" (Johnson & Onwuegbuzie, 2004, p.16). Instead, they advocate the use of a pragmatic approach which offers a 'workable solution' to integrating qualitative and quantitative traditions.

An example of how the pragmatic approach might be utilized is offered by Feilzer (2010), who acknowledges the opinions of those who reject pragmatism as a philosophical paradigm underpinning of mixed methods research, while clearly asserting her own opinion that pragmatism can fill precisely that role. In her discussion of pragmatic, mixed methods research, Feilzer (2010) focuses on the flexibility to respond to different types of data, and the importance of usefulness in pragmatic research. Her example demonstrates that "[p]ragmatism as a rationale for mixed methods research has proven to be a great tool to go beyond testing a particular idea and describing a status quo" (Feilzer, 2010, p.13). As discussed previously, in this study I adopt a pragmatic approach to the selection of research methods, utilising those most appropriate to answering the research questions. While acknowledging the concerns around issues of philosophical incompatibility, I accept Crotty's (1998) belief that these concerns do not preclude the practical use of any particular combination of methods.

4.4 Interdisciplinarity: researcher positioning and perspective

The clear articulation of the researcher's own positioning and relationship to the context of the study is regarded by some in the mixed methods community as an important feature in the reporting of mixed methods research (Tashakkori & Teddlie, 2010). Similarly, self-awareness, reflexivity, and recognition of the researcher's own context are important in feminist research (Brooks & Hesse-

Biber, 2007), the principles of which have influenced the design and conduct of this study.

I have indicated above my acceptance of Crotty's (1998) model of theoretical positionings and their relationship to methods and methodology. In this section, I further explain my own beliefs in terms of philosophy and the selection of research methods, how these have been driven by my experiences of research, and the interdisciplinarity of my work.

My own worldview, as it relates to human social behaviour, is primarily constructivist. It is my personal belief that we as humans have an instinctive drive to categorise and explain the world; to impose some form of order, so that we feel we understand and to some extent control it. Conversely, my understanding of the natural world tends more towards the positivist, since I believe the natural world is full of patterns, which can be called 'rules', and which we as humans can discover and learn about. Our desire to discover these rules is similarly driven by a human need to categorise and reduce phenomena to (relatively) simple explanations.

I believe that to some extent, however, this identification of patterns can *also* be applied to social behaviour on a large scale. A quantitative approach to research may count how many individuals choose Option A or Option B under various controlled and manipulated conditions, and derive a rule which predicts how other individuals will respond in similar circumstances. What such a model cannot tell us is why groups of individuals selected each option, or the feelings, motivations and thought processes that led to their decision. In order to fully explain and understand the behaviour, both approaches must be used. It is for this reason that I align myself with the mixed methods approach to research, which is an interdisciplinary endeavour (Evans *et al.*, 2011; Feilzer, 2010); I hold, to some extent, both worldviews, and do not find myself suffering from the 'philosophical dissonance' that Hesse-Biber and Johnson (2013) caution against.

Mason (2006, p.13) expresses concern that "social scientists may repeatedly miss whole dimensions of social experience because their methodological repertoire or tradition limits their view". She attributes this risk in part to the potential influence of researchers' own philosophical positions and beliefs, but regards it

also as a result of the discrete disciplinary ways in which researchers are educated. In my own experiences as a Psychology undergraduate, I recall a much greater emphasis on quantitative research, and a personal sense that it was inadequate for the type of questions I wanted to explore. It was only in my later work as a research assistant, in both education and health services research, that I became aware of the possibility of selecting those methods which would best serve to answer the research questions, independently of philosophical underpinnings and constraints.

Since my working life has been as a researcher, and not as a teacher or farmer, my position within the context of this research is as an outsider, and very much as a non-expert. Much of my working and volunteering life has been with children and in schools, however, and I aspired to an education-related career from an early age. Although I am not a qualified teacher, I spent some time as a teaching student, and my knowledge and understanding of the school and curriculum context is therefore far greater than my farming knowledge. These factors are likely to have influenced my interactions with children, teachers and farmers; however, many of the farmers in the study highlighted the lack of farming knowledge and experience amongst teachers. They were made aware that my own background was more education-related, and are therefore unlikely to have been surprised or perturbed by my farming ignorance.

I have identified this project as a qualitatively-driven, pragmatic, mixed-methods study, as these terms best illustrate my approach to the selection and use of methods to answer my research questions. The design and conduct has also been guided by my personal feminist principles, mainly with respect to reflexivity and awareness of power relationships. Feminist research includes a concern for issues of power, authority, and the "hierarchy between researcher and researched" (Hesse-Biber & Leavy, 2007), which is especially relevant in the context of research with children. Throughout this study, I have endeavoured to recognise and address such issues, and to be cognisant of potential heterosexism and cisnormativity, for example through the use of mixed-gender group methods with children, as discussed in *4.2.1. Case study development, design, and piloting*. I have also sought to use inclusive or neutral language (such as 'adult at home' instead of 'parent') as far as possible.

4.5 Ethical issues

The conduct of this study was in compliance with the British Educational Research Association's most recent ethics guidelines (BERA, 2011). Ethical approval was granted by the University of Glasgow's College of Social Science Ethics Committee for Non-Clinical Research Involving Human Subjects on 7th December 2012. A copy of the approval document is available in Appendix 12.

The main foci of ethical concern for research with the adults in this study were the ongoing, informed, voluntary consent of all participants, and ensuring that participation did not place an undue time burden on participants or significantly disrupt their normal routines. In order to ensure that all participants fully understood what was being asked of them, a suite of documents was produced. The overarching Plain Language Statement was available to all participants, and further information and consent documentation specific to each particular group (teachers, farmers, and pupils) was also distributed. These documents emphasised the voluntary nature of the research, and made clear that a decision to participate or not would have no impact on the visit which was being planned, any future visit, or the relationship of the farmer or teacher with RHET or other relevant organisations. Potential participants were encouraged to read the documents at their leisure, and to use the project website and contact the researcher with any questions, ahead of their decision on whether to participate.

Most farmers had the opportunity to chat informally about the project during the accompanied farm visit, and to give initial verbal consent at that stage. All were then sent the information and consent forms by email, or provided with these at the start of the interview and given a further opportunity to ask questions or to withdraw. This was a straightforward process with most farmers. The process for teachers was slightly more complex, as they had to consider not only their own personal circumstances, but also the potential impact of the research on the children in their class. Teachers also had to seek permission from the Head Teacher of their school before consenting to participate. There were no instances of a Head Teacher refusing permission to a class teacher who was keen to participate, although a few Head Teachers requested further information or direct contact with the researcher before giving agreement. A suite of information documents for Head Teachers was also available, and all

were asked to complete a consent form giving permission for the research to take place in their school.

The issue of disruption and time constraints was addressed from the outset by a commitment to flexibility, and ensuring that as far as possible, teachers and farmers could choose for themselves the time and location of their interview. This approach worked well in most cases; farmers chose to be interviewed at the time of day that fit best with their own daily schedule, while some teachers chose to be interviewed during the school day, and others after the children had left.

The ethical issues relating to the child participants were similar to those for adults in terms of consent and ensuring minimal disruption, but involved a number of additional elements relating to the ethical conduct of research with children, particularly in a school setting. Graham *et al.* (2015), for example, note that a difficult balance exists between seeking children's own consent, insofar as that is possible, and acknowledging the parental role in safeguarding children's wellbeing. Similarly, David *et al.* (2001) discuss the need for researchers to negotiate with 'gatekeepers' in seeking child participants, regardless of the researchers' own intention to give agency to the children themselves. There is also the risk that research consent by children in a school context is not genuinely freely given, as children may perceive the research as something they are expected to do as part of their schoolwork (Denscombe & Aubrook, 1992).

As mentioned previously, the first stage of accessing children who were visiting a farm with their school was through the class teacher and Head Teacher. Although this can be seen as a form of 'gatekeeping', neither of these adults was providing consent on behalf of any individual child, since it was clear from the outset that only around 5 participants would be needed for the group discussions. The consent from school staff allowed the researcher access to the class, to explain the research in an age-appropriate way, and to offer the children the opportunity to take a consent pack home. At this introductory visit, the main focus was on explaining the study, emphasising the voluntary nature of participation and the ongoing right to withdraw, and highlighting that only 5 children would be asked to participate. Children were advised that they would

need parental permission to take part, and the next step in the consent process was therefore the individual decision of each child whether to take a consent pack, and consequently whether to ask a parent to return the consent form. This model of seeking consent was based on one used previously by the researcher as part of a Medical Research Council study in primary schools (see Ferguson, 2014).

Most of the documents in the consent pack were aimed at the adults with parental roles in the children's homes, rather than at the children themselves, although an information sheet for children was included. The main format for informing the children about the research was the class presentation at the introductory visit, at which time the children were also able to ask questions of the researcher. The parent information sheets outlined the study and ethical procedures, and encouraged parents to discuss the research with their children before going ahead. The main perceived difficulty with seeking permission in this way is the possibility of low literacy levels amongst parent, as a result of which some may have been discouraged by the volume of paper and the density of the text. Contact information was also provided, and highlighted to the children as means through which verbal discussion with their responsible adult would be available, but no parents made use of this.

The class teachers selected the children for the discussion groups from those who had parental consent and were willing to participate on the day. This was partly to take advantage of the teacher's existing knowledge of the children in identifying those who would be comfortable working together, and also helped to ensure that any child whose learning might be unduly disrupted by participating was not included. The monitoring of ongoing consent from each of the children was a priority during the discussion, with all participants reminded at the outset that they could withdraw at any time and the procedure for doing this. I also informally monitored participation and body language, and directly reminded individual children of their right to withdraw during the group session, if this seemed relevant. Only one child took this opportunity to return to class before the conclusion of the discussion.

Another main ethical concern in this study was the maintenance of anonymity for participants. Clearly within individual cases this was not possible, but this

was not seen as a concern, since the farm visit was a part of normal school experience. Similarly, case study participants were at liberty to tell colleagues and friends that they had taken part. Anonymity was however considered in a number of ways, such as between elements of individual cases. In a number of teacher interviews for example, participants asked what the children from their classes had said during the group discussions. They were advised of general themes or topics, but not which children had brought up specific points. Anonymity between cases was guarded with the use of vague language (such as 'one of the farmers said to me…') to obscure the identification of individuals or schools. In the wider education context and beyond, caution has been used in reporting, ensuring that details of individual schools and farms are given in such a way as to hamper any attempt to identify locations or individuals; for example, the information gathered through the school postcodes is not reported on a case-by-case basis. In a small country such as Scotland, it may be possible that very few, or only one school would fit a particular profile or urban/rural, socio-economic and Local Authority categorisations, enabling the retrospective identification of the postcode and consequently the school. Although in qualitative research, a detailed description of any case studies is usual, this is not offered in this report, as a means of safeguarding the identities of schools, farms and participants. Additionally, since the farm visits themselves were not a formal part of the research analysis, detailed reporting is less important. In order to use the visits in this way, parental consent for all children attending the visit would have been required. The burden on parents, at a time when they were also being asked to complete the schools' own consent forms for the trip, was regarded as a significant potential barrier to accessing the case studies within the limited timeframe available. The illustrative vignettes in Chapter 5 are intended to give an indication of the main features of the case study farm visits.

4.6 A mixed methods approach to researching educational farm visits

This study utilises a mixed methods approach to research, in which qualitative and quantitative data from an initial survey informed the development of later qualitative interviews and group discussions, which subsequently suggested further analyses of the survey data. The methods selected for this study were

chosen for pragmatic reasons, as the best means of addressing the research questions with the available resources. The priorities of the study were to ensure that the perspectives of teachers, farmers and children from a broad range of backgrounds were included, and to explore 'real life' examples of educational farm visits for primary school children in Scotland.

Although some survey analysis was conducted quantitatively, using the data in a numerical way, this study was qualitatively driven, in recognition of the utility of such an approach in researching the complexities of lived experiences (Mason, 2006). The use of mixed methods in this way is consistent with a constructivist worldview, in that all methods sought to uncover and understand the range of perspectives and experiences of participants, rather than to identify a single independent truth. Concerns around the 'incompatibility thesis' and the prospect of 'philosophical dissonance' were rejected in the design of this study, as the integrated use of qualitative and quantitative data within a single study was regarded as both useful and feasible in this context.

The study was conducted in line with accepted ethical guidance, and placed particular emphasis on the ethical conduct of research with children in a school-based context. The consent process was designed to put the decision whether to participate in the hands of the children at the earliest possible stage, and there was continual reinforcement of the voluntary nature participation, with verbal examples of how children could withdraw from the study. There was also a focus on ensuring that child participants in 'group discussions' were comfortable, including multiple visits by the researcher to increase familiarity, and the selection of group participants by teachers who were familiar with the children and the social preferences of group participants.

The maintenance of anonymity and confidentiality of all research participants, whether teachers, farmers, or children, was also a significant consideration. The Scottish context is such that detailed descriptions of school or farm locations would make it possible for others to identify them. Caution has therefore been used in the reporting of this study to ensure that information about individual case studies cannot be aggregated and used for identification. Chapter 5 provides information about the study participants, and includes vignettes illustrating the main features of the case study farm visits.

5. Participant Information and Case Study Vignettes

A number of researchers have found that teachers' own experience, engagement, and enthusiasm in relation to the outdoors can have a significant influence on their use of this approach with their pupils (e.g. Waite, 2010; Thorburn & Allison, 2013). Furthermore, as discussed in the previous chapter, research transparency is hugely important, particularly in the context of qualitative and mixed methods research reports (e.g. O'Cathain, 2010). This chapter therefore provides a profile of the participants in each element of this research.

Information about the 264 teachers who completed the questionnaire includes their teaching experience, personal opinions on outdoor learning, and for a subset of respondents, their recent farm visiting experience. The chapter also gives additional details of the case study elements of this research. It furthers the information given in Chapter 4 on the ways in which case study farm visits were specifically accessed for this study, by providing a broader overview of the farm visiting context within which these visits took place. Two vignettes, comprising features from 14 case studies, are provided to give an overall sense of the case study context. Information of the characteristics of the case study participant groups (farmers, teachers, and pupils), are provided to further contextualise the case study findings.

As well as providing clarity on the characteristics of the study participants, this chapter demonstrates the extent to which the goal of including a wide range of perspectives in this research has been achieved.

5.1. Survey respondents

In Section One of the questionnaire, respondents were asked to provide information about their job role and any formal remit for outdoor learning. A free text area was provided, in which teachers could write their job title or role. An option to indicate 'student' or 'probationer' status by circling the appropriate term was provided, and a yes/no tick-box enabled teachers to identify any formal lead or remit for outdoor learning. Table 5.1 summarises teachers' responses.

Table 5.1: Profile of survey respondents' job roles

Job Role	Number	Additional Info	Formal lead/ remit for OL
Class Teacher	151	9 of whom were probationers	46 (2 probationers)
PT	31	1 of whom specified that they also had class contact	18
DHT or Acting DHT	10	4 of whom specified that they also had class contact	5
Head or Acting Head	63	6 of whom specified that they also had class contact	32
No response	5		-
Other	4		1
Total	**264**		**102**

Note: PT = 'Principal Teacher', DHT = Depute Head Teacher – these are 'promoted posts' i.e. more senior than 'Class Teacher'. Probationers are in their first year of teaching post-university, not yet fully qualified.

The 'Job Role' categories in the table above represent a condensed list of the given responses; for example, 'Class Teacher', 'Primary Teacher' and 'P5 Teacher' were all categorised as 'Class Teacher'. The four respondents categorised as having 'Other' roles included visiting and specialist teachers; the details of their roles, although provided by the respondents, are not reported here to avoid compromising their anonymity.

Teachers in promoted posts were not specifically asked to record whether they had class contact, but a number chose to make note of this in their response. The number of teachers in promoted posts who also have class contact is likely to be higher than shown above, as some respondents may have felt that this information was not required as part of their 'Job title or role'. The information provided by the respondents indicates that while some Head Teachers completed the survey themselves, others delegated this to members of teaching staff.

Respondents were also asked to note the number of years since their qualification as a teacher. This was intended as a proxy for their level of experience, although it should be noted that some may not have been continuously involved in teaching since qualification. The number of years since qualification reported by respondents ranged from 0 (probationer/newly qualified teachers) to 45+. The number of teachers who indicated that they had

qualified between 0 and 40 years previously is shown in Figure 5.1. Three teachers indicated having qualified more than 40 years previously, three provided an ambiguous response (e.g. 30+), and 11 declined to answer; they are excluded from Figure 5.1.

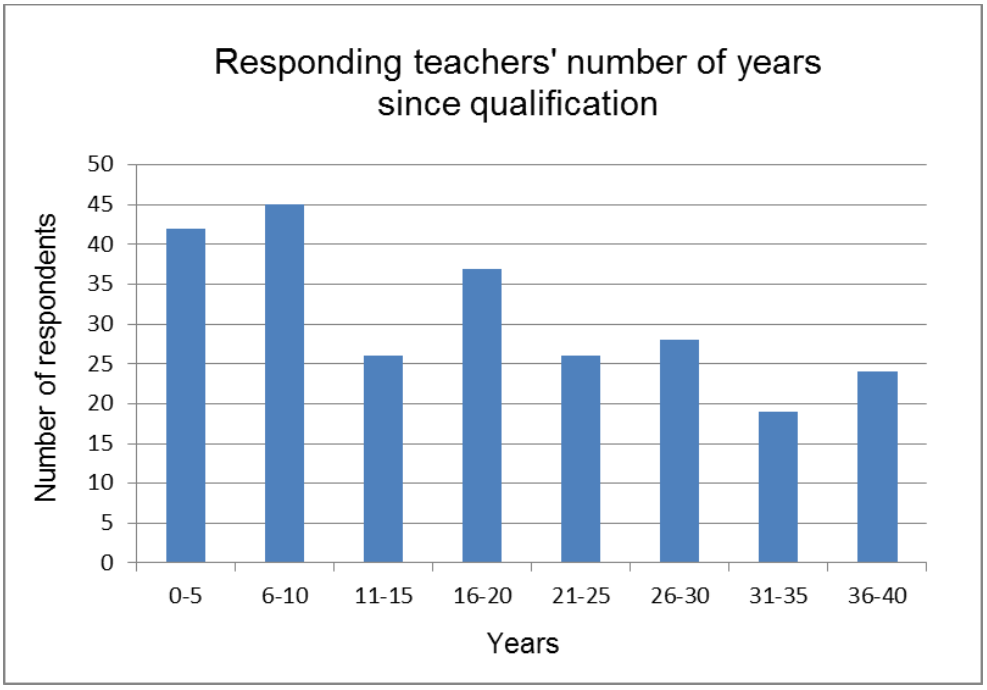

Figure 5.1: Survey respondents' number of years since qualification

The teachers who responded to the questionnaire were found to have a range of experience, from those who had qualified only recently to those with extensive teaching experience.

Respondents were also asked for the postcode of the school in which they were currently based, which was used to determine the local authority responsible for their school. Postcodes were also used to indicate the socio-economic status of the area in which the school is located, using the Scottish Index of Multiple Deprivation (SIMD), and the type of location in terms of rurality, using the 6-fold Urban/Rural categories[9]. A number of respondents did not provide the postcode of their school, or provided only a partial postcode, and consequently these indicators could not be determined for all respondents. In some instances it was possible to identify the local authority of the school from the partial postcode

[9] SIMD is measure of relative deprivation. The 6-fold urban/rural categorisation is a means by which the Scottish Government categorises areas of Scotland. Both can be identified by postcodes. Further information is available in Appendix 13.

provided, using a 'postcode lookup' document (General Register Office for Scotland, 2002). Some postcode areas relate to more than one local authority, however, and this approach could not therefore be used with precision for all instances in which only partial postcodes were given. The local authority of 25 respondents could not be identified. Furthermore, it was not possible to identify the SIMD or Urban/Rural category without a full postcode, and this information is therefore unknown for a total of 36 returned questionnaires.

Responses were received from teachers in all 24 of the local authorities to which the questionnaire was sent (see Chapter 4). Across Scotland, all 5 SIMD categories were represented, as were all 6 urban/rural categories, although this was not the case within each individual local authority. Figure 5.2 shows the proportion of schools in which survey respondent teachers were based, in each Urban/Rural category.

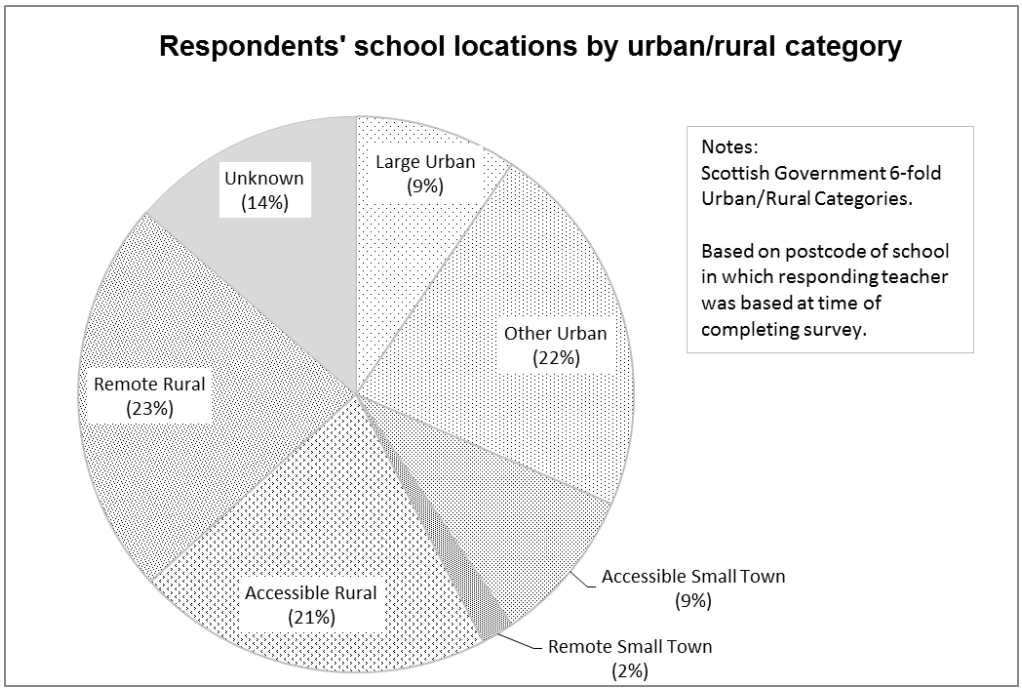

Figure 5.2: Urban/rural profile of survey respondent teachers' schools

Information from the Scottish Government's 2011 schools database (from which survey distribution information was drawn; see *4.1.2 Survey procedure*) shows that the proportion of state-run mainstream schools in each urban/rural category is as illustrated in Table 5.2.

Table 5.2: Urban/rural categories; state mainstream primary schools Scotland, Sep 2011

Urban/rural categories of all state-run, mainstream primary schools in Scotland, at September 2011			Survey respondents' schools
Remote Rural	406	20%	23%
Accessible Rural	437	21%	21%
Remote Small Town	69	3%	2%
Accessible Small Town	157	8%	9%
Other Urban	510	25%	22%
Large Urban	493	24%	9%
Total	**2072**		Unknown = 14%

The proportions of survey respondents teachers in most categories is broadly comparable to the national profile, but teachers from schools in Large Urban areas seem to have been under-represented amongst survey respondents. It should be recognised, however, that for many survey respondents (14%), the urban/rural category of their school could not be identified.

Similarly, the SIMD category of the school could not be identified for 14% of the teachers returning the questionnaire. The proportion of respondents from schools in each SIMD category is shown below in Figure 5.3.

There is no readily available database of SIMD categories for individual school locations, with which respondents' information could be compared. Although each SIMD quintile contains 20% of the overall population, it cannot be assumed that school locations are equally distributed, and it cannot therefore be determined whether the pattern of respondents' school locations reflects the national profile.

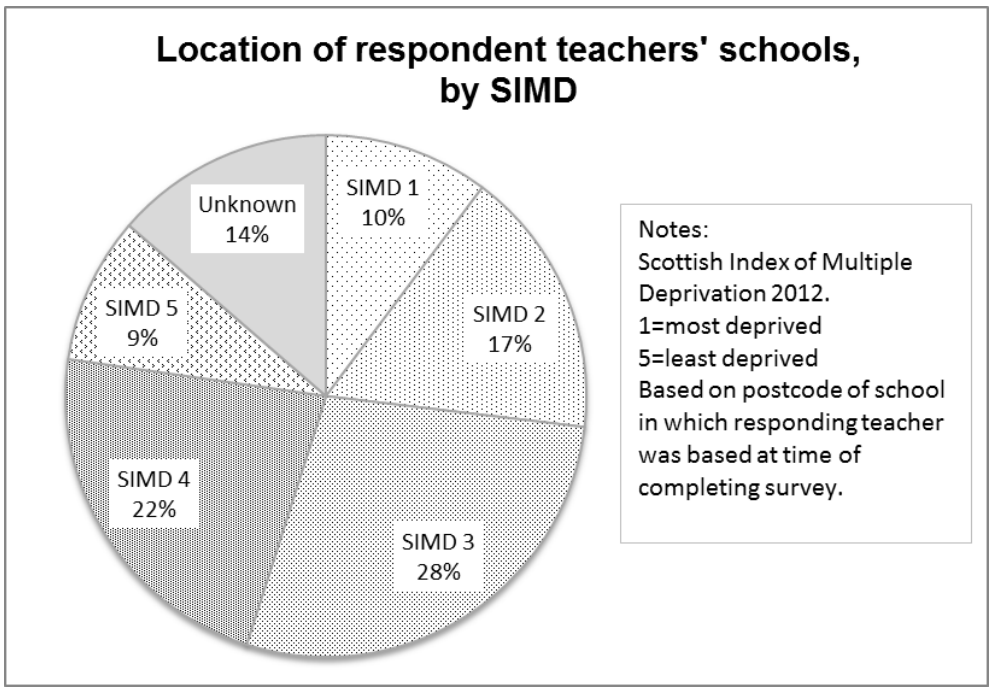

Figure 5.3: Location of respondent teachers' schools, by SIMD

5.1.1. Teachers' opinions on outdoor learning

In response to previous research which has indicated the importance of teachers' own enjoyment of the outdoors, and the influence of this on their engagement with outdoor learning, Section 2 of the questionnaire asked teachers about their personal opinions and experiences of the outdoors. Respondents were asked to rate their agreement, on a scale of 0 to 5, with a number of statements on their own enjoyment of the outdoors, and their perspectives on outdoor learning.

Figures 5.4 to 5.6 illustrate the responses to the following statements:

- I enjoyed spending time outdoors as a child.
- I enjoy spending my current leisure time outdoors.
- I enjoy teaching outdoors.

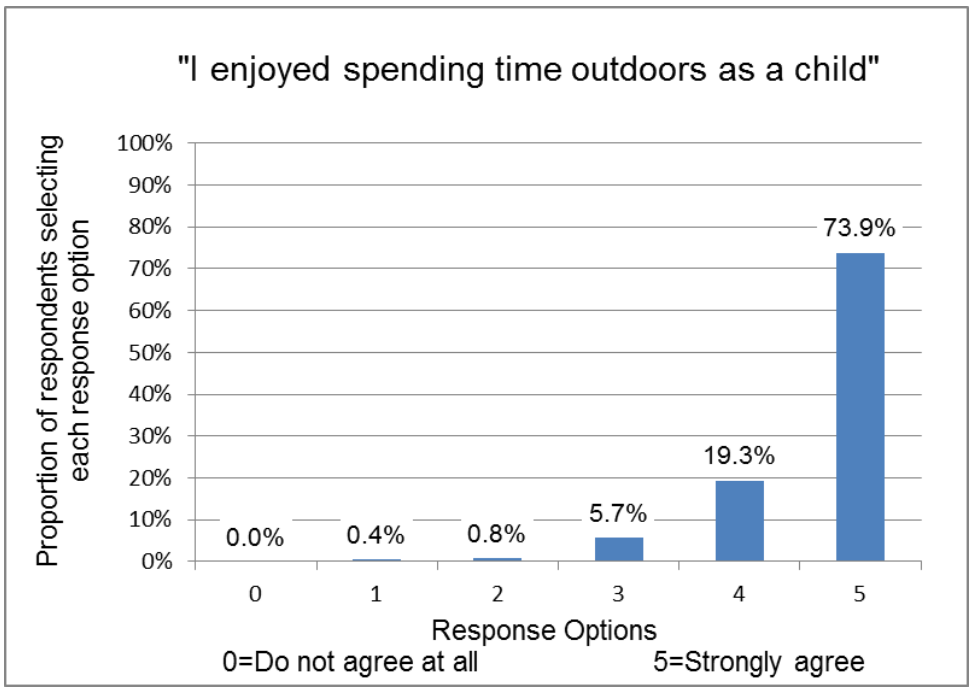

Figure 5.4: Teachers' agreement with the statement 'I enjoyed spending time outdoors as a child'

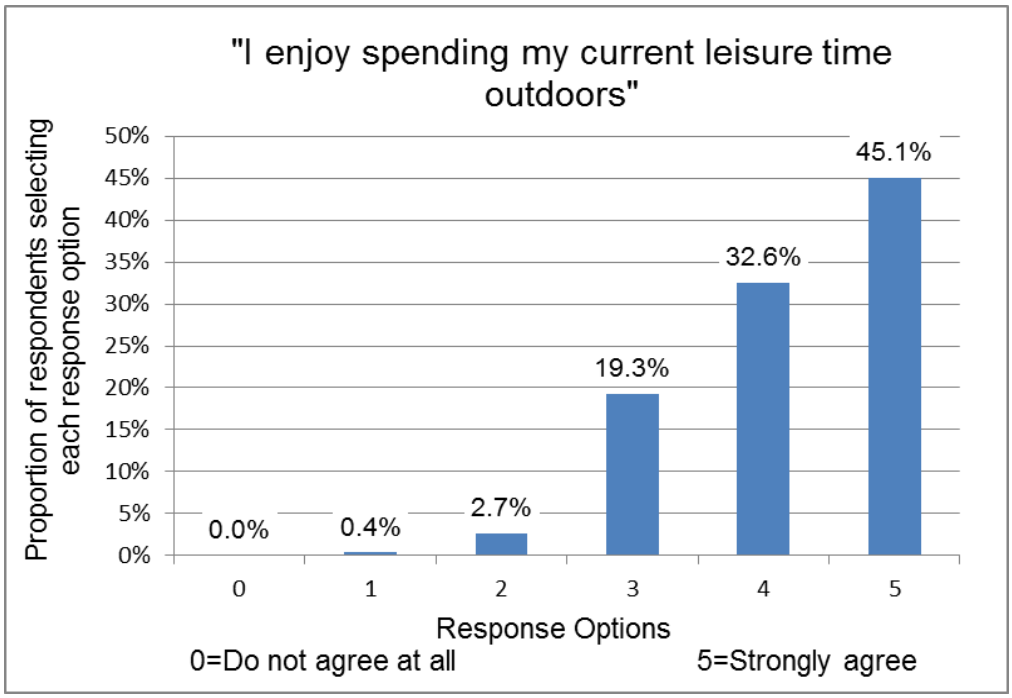

Figure 5.5: Teachers' agreement with the statement 'I enjoy spending my current leisure time outdoors'

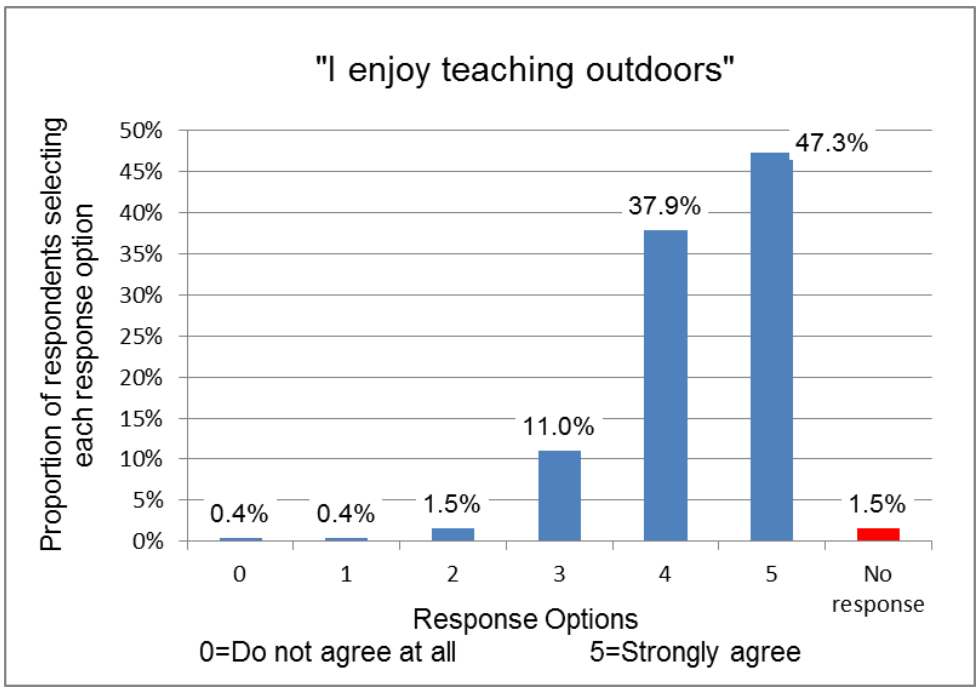

Figure 5.6: Teachers' agreement with the statement 'I enjoy teaching outdoors'

As these figures demonstrate, the teachers who responded to the questionnaire overwhelmingly agreed that they had enjoyed spending time outdoors in their own childhoods. Most also agreed they enjoyed spending current leisure time outdoors, and that they enjoy teaching outdoors.

Figure 5.7 and Figure 5.8 illustrate the responses to the statements:

- I think it's an important part of my role as a teacher, to give children opportunities to learn outdoors.
- I think *Curriculum for Excellence* will lead to teachers making greater use of the outdoors as a learning environment.

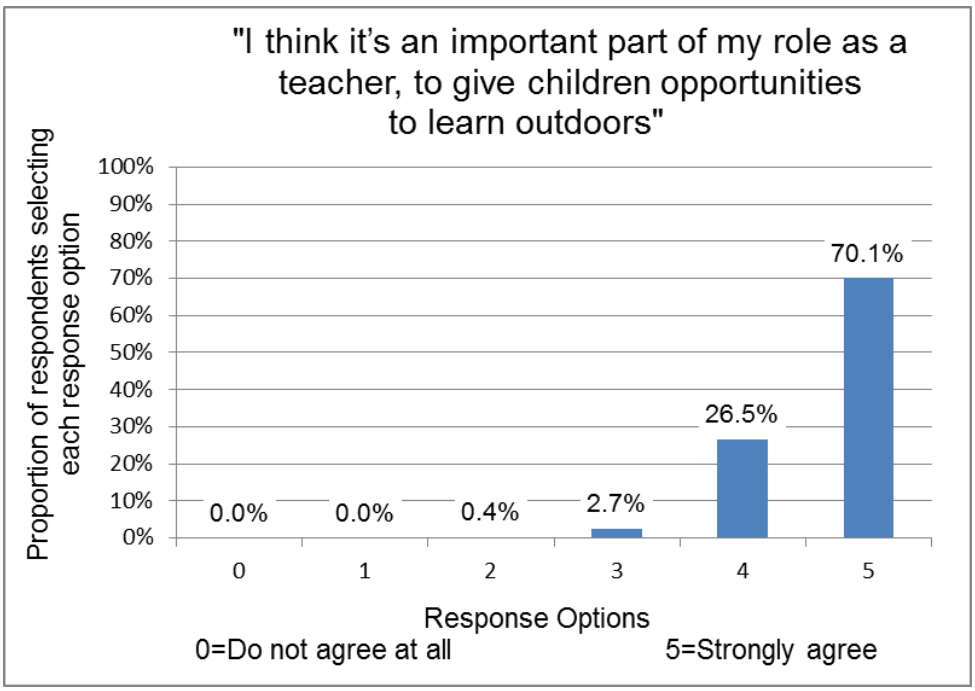

Figure 5.7: Teachers' agreement with a statement on their role in offering outdoor learning

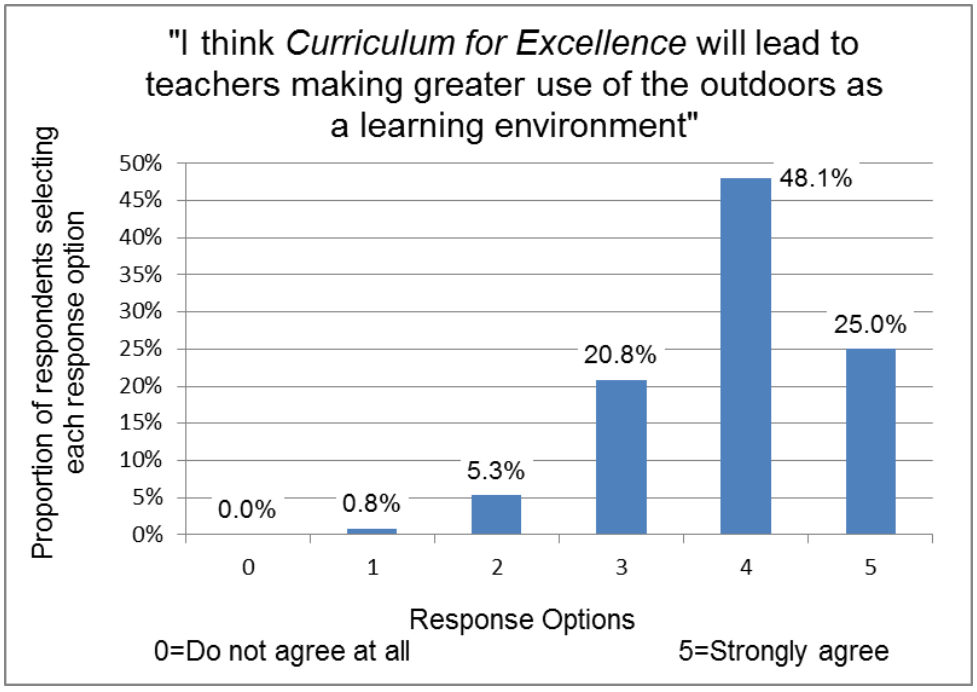

Figure 5.8: Teachers' agreement with a statement on the impact of CfE on outdoor learning

As Figure 5.7 shows, all respondents agreed, at least to some extent, that the provision of opportunities to learn outdoors was an important part of their role as a teacher. Most teachers also felt that the introduction of Curriculum for Excellence would lead to an increased use of the outdoors, although overall

agreement with this statement was less emphatic than for some other statements.

The vast majority of teachers who responded to the questionnaire expressed at least some level of agreement with the statements given. Too few teachers indicated disagreement to make meaningful or worthwhile comparisons between those who agreed and disagreed with these statements in relation to subsequent sections of the questionnaire. Recognition of the profile of the responding teachers, in terms of their own engagement with the outdoors and their largely positive opinions of their own role and that of Curriculum for Excellence, is nevertheless important in interpreting the remaining survey findings. The teachers who responded to the questionnaire, either through personal choice or selection by their Head Teacher, were clearly favourably inclined to the outdoors; a similar survey with teachers with lower levels of personal engagement could yield vastly different results.

5.1.2. Survey respondents with a recent farm visit

Teachers were asked to indicate whether they had been on a farm visit in the previous year (i.e. since May 2012). A subset of 90 respondents (34%) indicated that they had. All but one of the 24 local authorities in which the survey was distributed was represented amongst this subset. Unfortunately, almost half of these respondents did not provide sufficient postcode information to enable identification of their urban/rural location or SIMD category. Amongst those who did provide this information, however, all SIMD and urban/rural categories were included.

The respondents were also given the opportunity to identify the organisation or route through which they had arranged their farm visit. They were provided with tick-boxes offering the options; 'Co-op Farms', 'Crofting Connections'[10], 'RHET', 'Local farming contacts (e.g. families of children at the school)', 'Don't know', and 'Other'.

[10] An organisation which promotes crofting, and educational activity around crofting, in the north and west of Scotland. See www.croftingconnections.com. They were approached to participate in this study, but did not respond.

As Table 5.3 shows, visits were most commonly organised through RHET. A small number of respondents identified multiple contributors, including 4 who had worked with RHET alongside others. 'Other' organisations were most commonly identified as the National Trust[11], and the Museum of Rural Life[12].

Table 5.3: Organisations through which survey respondent teachers had arranged their recent farm visit

Response	Number
Co-op Farms	2
Crofting Connections	1
Local Contacts	10
RHET	54
Other	14
Combination /multiple	7
No response	1
Don't Know	1

Most of the teachers in this part of the survey were therefore drawing on their experiences of farm visits organised through RHET in their responses, although some perspectives on other organisations were included.

5.2. Case study explication

The case studies were also predominantly accessed through the Royal Highland Education Trust (RHET), and its equivalent in North-East Scotland, the Royal Northern Countryside Initiative (RNCI). These organisations work with volunteer farmers to organise educational farm visits, through linking teachers and farmers, conducting risk assessments, and providing guidance. Most of the farms available through these organisations are working farms, as described in *2.1.2 Farms, farm parks, and 'circus farms'* - that is, they have developed as sites where farming is the livelihood, main purpose and major source of income, rather than being designed or developed specifically to host visitors. As part of the process of accepting new volunteer farmers, the RHET/RNCI local co-ordinators assess the suitability of the farm for visitors, looking at features such

[11] www.nts.org.uk
[12] www.nms.ac.uk/national-museum-of-rural-life

as safe walking routes, before conducting a more formal standardised risk assessment. The co-ordinator, teacher and farmer meet together at the farm for a 'pre-visit' ahead of the pupils' trip, the main purpose of which is to discuss the risk assessment and complete the appropriate paperwork. Pupil visits to these farms usually involve a 'guided tour' of the farm by a pre-determined walking route, with commentary and explanation given by the farmer. Often the specific points made by the farmer will have been decided in discussion with the class teacher, based on what is of particular interest to the pupils, or relevance to their classroom activity.

Two of the case studies took place through the Co-op Farms' 'Farm to Fork' programme (now discontinued; see Chapter 4). The farm involved in these cases was part of a managed estate, which included a building specifically for school visits, a block of public toilets, and a playpark area. These visits lasted the whole school day and were led by two members of Co-op Farms staff. The visits began with a presentation and discussion, after which the pupils were split into two groups. One group toured the farm with one visit leader, while the other prepared foods based on the farm produce, guided by the other leader. Lunch was eaten on site, either inside the education building or in the grassy area outside. After lunch, the groups alternated their activity so that all pupils had the opportunity to tour the site and to prepare the food.

As discussed in Chapter 2, farms are used around the world as an educational resource, and in a wide range of ways. There are variations in aspects of farm-based education, including the use of multiple or repeat visits, and the degree to which pupils undertake practical tasks to contribute to the maintenance and productivity of the farm. In the present study, most of the case study farm visits involved a single visit to a farm location, lasting half a school day or less. Pupils sometimes had opportunities for tactile and other sensory engagement with plants and trees, and farm artefacts such as ear tags and animal feed. Some were permitted to touch or feed particular animals. The two Co-op Farm visits included a guided cooking activity, in an education room designed for that purpose. There was however no element of 'farm work' undertaken by pupils at any of the case study visits.

The purpose of this study was not to evaluate this approach, but to explore how teachers made use of such visits, and the curriculum links they identified and included. Teachers and farmers were however asked in interviews to discuss their opinions on the value and practicality of repeat and multiple visits (see chapter 8), and the sensory and tactile elements of the visit were referred to by all groups (see Chapter 7).

The following short vignettes illustrate some of the features of the individual case study visits.

5.2.1. Case study vignettes

St Peter's

Primary 2/3 at St Peter's primary have been learning about their local area. Their school is located in a reasonably affluent area, with a postcode which places it in the SIMD 4 category, and identifies the location as Accessible Rural. The school site is surrounded by fields and farms, and many children travel to school by private car or local authority transport, as only the children who live close by have a safe walking or cycling route. Although some of the children at the school belong to farming families, none of the current P2/3 pupils lives on a farm; some however have grandparents or cousins who do. A few of the P2/3 children have been to another local farm recently, as part of a youth group outing.

The children were nearing the end of their topic at the time of their farm visit. In class they had learned about the types of farms common to their area, and a little about other types of farm and the areas where those are more common. They had learned about some elements of local history, and had found out about local farming history with particular relation to technology.

The class teacher, Ms Coleman, found the visit easy to organise. She had been on a visit with RHET to the same farm two years previously with another class, and found the booking and risk assessment process straightforward. She communicated with Katie, the RHET Project Co-ordinator for the area, mainly by email. The farm Katie identified as suitable was only a ten minute drive from the school, and so Ms Coleman was able to conduct the pre-visit during her non-

contact time in the school day, the week before the trip. At the pre-visit, as well as discussing the risk management requirements, Ms Coleman was able to discuss the needs of an autistic pupil in her class, and develop a plan of action for if the child struggled to cope with the visit.

The 22 pupils travelled to the farm with Ms Coleman, a classroom assistant from their school, and a parent helper, using a hired bus paid for from school funds. They were met on arrival by John, the farmer, and Katie from RHET. John introduced himself to the children and told them a little bit about the history of his farm, which had been in his family for several generations. John himself had grown up at the farm and had attended the same school as the visiting pupils. After this brief introduction, the children were reminded of the hygiene and behaviour rules which they had discussed in school, and were helped through the 'wellie bath' to make sure they didn't bring 'outside germs' into the farm.

John led the group around the farm by the route he had agreed with Katie and Ms Coleman, commenting on what could be seen, heard, and smelled. He stopped at specific points to give the children more information, to point out particular features, or to give the children an opportunity to ask questions. The tour included a vantage point from which the children could see the whole area covered by the farm. They also visited the main shed which housed the cows, where John explained about the cows' eating and sleeping habits. He pointed out the cows' beds, and allowed the children to handle some feed in a bucket. John also explained about the cycle of collecting the cows' waste to make slurry, and using this as a nutrient for grass which would later be turned into silage and fed to the cows in the winter. The children had the opportunity to see the 'passports' which related to the cows' ear tags, and the device for applying the ear tags. The visit concluded in the milking parlour. John gave a demonstration of milking with one cow which had been held back from milking that morning for that purpose.

Throughout the visit, the pupils asked questions of John directly. This was his first experience of hosting primary school pupils, although he had previously had visits from the local secondary school, and he was somewhat nervous about answering the children's questions. Katie and Ms Coleman helped by guiding and

supplementing John's answers, and translating into age-appropriate terminology as necessary.

At the end of the visit, the children washed their hands with soap and water, and went through the disinfectant footbath once again. All had the opportunity to ask some final questions, and all thanked John for his hospitality before boarding the bus back to school. John thanked the children for their interesting questions, and invited them to get in touch again if there was anything else they wanted to know.

Davison Primary

Primary 6 at Davison Primary were doing a short topic about fertilisers, to address some of the Second Level science Experiences and Outcomes from Curriculum for Excellence. In school, they had experimented with growing flowers and vegetables under various conditions on the classroom window ledge, and were keen to find out about growing on a larger scale. Their teacher, Mr Gomez, was from a farming background and had shared his own childhood farming experiences with the class. This was the first time he had taken pupils on a farm visit, however, and although he found organising the trip relatively straightforward, he found the pre-visit hugely time-consuming.

The 30 pupils travelled with Mr Gomez and two parent helpers from their school in a large urban area to visit an arable farm. One pupil in the class, a wheelchair user, was unable to attend the trip because the farm paths were not suitable. They made the 45-minute journey from school by hired coach; each pupil had contributed £3 towards this, and the remaining cost was met by a donation from the school's fundraising group.

The farmer, Alan, had visited the pupils at school two weeks previously, to give them an introduction to his work. The pupils were pleased to see a familiar face on arrival. Alan greeted the children and introduced them to his neighbour, Mary, also a farmer. The pupils were split into two groups, and one went with Alan to tour the farm, see the crops, and discuss the use of fertilisers. Alan had examples of the produce that comes from various crops, such as rapeseed oil, bread, and whisky, for the children to identify, discuss, and where appropriate, handle.

The other group went with Mary to look at some vintage and modern farm equipment in the shed; Mary showed various pieces of equipment and asked the pupils to guess their purpose. She also shared some information and anecdotes about her own small dairy farm. Both groups had the opportunity to ask questions, and Alan and Mary were comfortable answering these, as both had previous experience of working with young people and hosting farm visits. The two groups subsequently swapped over so that all the pupils got to experience both parts of the visit.

5.2.2. Researcher role in the case study visits

My role at the farm visits I attended varied between case studies. In some instances I took a mainly observational role, and followed along behind the children, listening to their questions and the farmers' explanations. At other visits, I was more proactive, for example in helping a child with mobility difficulties to navigate the path. On a few of the trips, I was counted as part of the adult/child ratio. The opportunity to regard me as an additional adult may have functioned as an incentive for some teachers, but none explicitly articulated this.

At all visits, I offered my help where I felt I could be useful, with tasks such as 'wellie washing', ensuring children climbed into and out of tractors safely, and reminding children not to put their fingers in their mouths. I was comfortable with this role, and would have found it unnecessarily artificial to remain completely detached during the visits. Furthermore, the opportunity to engage with the pupils and build a rapport in advance of the group discussions was a main purpose of the accompanied visit. That the pupils had the opportunity to see me as a friendly and helpful person at the farm visit was therefore vital.

5.3. Case studies: profiles and participants

Consent to conduct case studies in schools was received from the Director of Education (or equivalent) in 16 of Scotland's 32 Local Authorities. Table 5.4 shows the Local Authorities from which consent was obtained, and the number of case studies which took place in each.

Table 5.4: Number of case studies in each consenting Local Authority

Consenting Local Authorities	No. of case studies
Aberdeenshire	2
Argyll & Bute	0
Clackmannanshire	0
Dumfries & Galloway	1
East Ayrshire	0
East Renfrewshire	2
Edinburgh City	2
Fife	0
Highland	0
North Ayrshire	2
North Lanarkshire	0
South Lanarkshire	2
Scottish Borders	2
Shetland	0
Stirling	0
West Lothian	1
TOTAL = 16	**14**

Although the ideal would have been to include at least one case study from each of the 16 consenting local authorities, the availability of primary-age classes from mainstream state schools was such that this was not possible. As far as possible, where multiple cases within a single local authority were included, these were from different schools or age groups.

5.3.1. Schools and classes (age groups)

As described in Chapter 4, case study groups were selected from those available to ensure the inclusion of a variety of school and class characteristics, including the location of the school (in terms of rurality and SIMD), and the age/stage of pupils.

The fourteen case studies involved 13 schools; two cases were different age groups from the same school. Table 5.5 shows the number of case studies in each SIMD and urban/rural category. No case study schools were located in 'Remote Small Town' areas, and none belonged to SIMD 2 postcode areas, but all other categories were included.

Table 5.5: SIMD and urban/rural profile of case study schools

	SIMD category				
Urban/rural category	**1**	**2**	**3**	**4**	**5**
Remote Rural				1	
Accessible Rural	1		1	2	2
Remote Small Town					
Accessible Small Town			2		
Other Urban	2		1	1	
Large Urban	1				

Case studies were also selected to include the whole primary school age range from Primary 1 through to Primary 7. No suitable Primary 6 classes were available to take part in the research, but pupils at all other stages of primary school were included. Table 5.6 shows the class and age group for each case.

Table 5.6: School class and age group of children attending case study farm visits

Case	Class	Approx. age range of pupils at visit (years)
1	P2	5½ to 6½
2	P1/2^	5* to 6½
3	P4	7½ to 8½
4	P5	8½ to 9½
5	P3	6½ to 7½
6	P3/4^	6½ to 8½
7	P2/3^	5½ to 7½
8	P3	6½ to 7½
9	P4	7½ to 8½
10	P7	10½ to 11½
11	P7	10½ to 11½
12	P2	5½ to 6½
13	P1/2^	5* to 6½
14	P3/4^	6½ to 8½
^ Composite classes contain pupils from multiple year groups. *Although children may start P1 aged 4½, they are not permitted to attend farm visits before the age of 5. It is therefore known that none of these children were younger than 5.		

Due to the greater availability of Primary 2-4 classes undertaking farm visits, this range represents the bulk of the case studies. The focus on this age range was not a planned feature of the research, but reflects and supports the finding that this is the age group for whom farm visits are most commonly arranged (see Chapter 8).

5.3.2. Teachers and pupils

As described in Chapter 4, teachers were advised that groups of pupils to participate in the 'group discussion' element of the study would ideally contain 5 pupils and a mix of genders. Table 5.7 shows the number of pupils in each group discussion, and the number of teachers who took part in interviews. Pupil numbers are given by gender, to demonstrate that the goal of mixed groups was broadly achieved. All but one of the teachers participating in an interview was female. The gender of teachers and pupils was not a factor in case study selection, but is relevant in demonstrating the participation of a broad range of individuals.

Table 5.7: Group discussion and teacher interview participants

Case Study	Girls	Boys	Total Pupils	Teachers
1	4	1	5	1
2	3	4	7	1
3	0	4	4	1
4	5	2	7	2
5	5	0	5	1
6	3	2	5	1
7	4	1	5	1
8	4	1	5	1
9	3	2	5	1
10	2	4	6	1
11	4	1	5	1
12	2	3	5	
13	3	2	5	1
14	3	2	5	1
Total	**45**	**29**	**74**	**14**

A small number of teacher participants reported having a personal background in farming. This was not systematically queried as part of the interviews, and is acknowledged within the Findings chapters where relevant.

5.3.3. Farmers

Nine 'farmer interviews' took place in total, including one interview with the two 'visit leaders' of the Co-op 'Farm to Fork' programme. Table 5.8 gives an overview of the participants, and the type of farm with which they were associated.

Table 5.8: Farmer interview participants

Farmer Interview	Interview Participants	Type of farm
A	2 (both female – 'Visit Leaders')	Arable
B	1 (male, + brief contribution from wife)	Mixed
C	1 (male)	Dairy
D	1 (male)	Mixed
E	1 (male)	Arable
F	1 (male)	Mixed
G	2 (one female, one male)	Beef
H	1 (female, + brief contributions from husband and teenage daughter)	Dairy
I	1 (male)	Dairy

In most cases, the main interview participant was the individual who had been responsible for organising the farm visit by liaising with the teacher or RHET/RNCI representative, and who had led the pupils on their tour around the farm. The types of farm included in this study reflect a spread of farm types in Scotland (see Scottish Government, 2015b), but were not selected as a representative sample.

5.4. Importance of participant profiles

An overarching goal in the selection of methodologies and methods for this research was to ensure that a broad range of perspectives on educational farm visiting could be gathered.

Survey participant teachers came from 24 different Local Authorities within Scotland. They had varying degrees of teaching experience, and taught in areas with a mix of rurality and deprivation categories. Most however held favourable attitudes to the outdoors, and were already engaged with outdoor learning, while around a third had recent farm visiting experience.

Case study groups were drawn from schools in a variety of locations, in terms of Local Authority as well as urban/rural and socioeconomic mix. The selection of case studies was carried out purposefully to ensure a mix of these characteristics, as well as to cover the whole primary school age range. The children who participated in the 'group discussions' mostly did so as part of a mixed group of around 5 children, as had been identified as optimal; group sizes varied between 4 and 7, however, and overall more girls participated in the discussions than boys. Similarly, most teacher participants were female.

Farmer participants represented a variety of farm types, demonstrating the different farm contexts which were made available to teachers and pupils as a learning experience. Case studies were not selected on the basis of the type of farm, and the relevance of different farm types is highlighted in the Findings chapters where appropriate.

The information provided in this chapter demonstrates that the goal of including a variety of perspectives within this study was largely achieved, although the opinions of teachers and farmers with no pre-existing connection to outdoor learning or farm visiting were absent. The findings from the questionnaire, interview, and 'group discussion' methods should be understood within this context.

6. Findings & Discussion I: Topics and Curriculum Links

*

> "I think such trips can tie in brilliantly with a topic, say on food and farming, and can make cross-curricular links everywhere."
> - Survey Respondent 6

*

Research Question 1 is concerned with the ways in which farm visits can be used, and the curriculum links which can be made. Although the focus of this research was on the experience of the farm visit itself, for many these visits take place within the context of a broader topic. In exploring the curriculum links and use of farm visits, the classroom-based and other learning associated with relevant topics was therefore also considered.

The main findings reported in this chapter are:

- Farm visits were most commonly undertaken as part of a topic on food and/or farming, although examples of other relevant topics at all stages were also found.
- Teachers' choice of topic was mainly influenced by the requirements of the Curriculum for Excellence (CfE) guidelines, although the degree of teacher autonomy in using these was variable between case study schools.
- Topics were used in a wide variety of ways, including timescales ranging from one week to the whole school year. Teachers gave numerous examples of relevant classroom activity and other trips/visits which can be used in the future by teachers planning their own farm visits and related topics.
- Even those teachers who reported that their farm visit was not part of a topic indicated some pre- and/or post-visit classroom activity.
- Farm visits and related topics could be linked with the CfE guidelines in many ways, and interdisciplinary learning was particularly emphasised, with some teachers suggesting that few other topics could offer the same scope for this as food and farming. Few teachers however discussed farm visiting opportunities using CfE terminology specifically.

These findings are mainly based on contributions from teachers who had recently participated in an educational farm visit, and therefore demonstrate real-life examples of how educational farm visits can be used within CfE and linked with various elements of the curriculum guidelines.

6.1. Topics and topic choices

There is a long history of topic-based learning in Scottish primary schools (Humes, 2013), and this approach is encouraged in the CfE guidelines (e.g. Scottish Executive, 2006; Scottish Government, 2008). Teacher participants in this research were asked about the topic, if any, which had prompted their visit to a farm, and about the relationship of the topic to the curriculum guidelines.

In the survey questionnaire, 90 respondents indicated having been on an educational farm visit recently (i.e. in the previous year, since May 2012), 66 of whom identified the topic to which their visit related. Twenty-one teachers reported that their visit had not been linked with a topic, while the remaining three answered ambiguously.

The most commonly reported topic amongst survey respondents was 'The Farm' or 'Farming', which was given as the topic by 38 teachers[13]. Six specified a focus on Scottish farming, and a further one noted that the focus was on farming in their local area. Other frequently reported topics included:

- 'Food', either in conjunction with farming or 'where food comes from', or in relation to other areas such as nutrition;
- 'Health' (e.g. healthy living, healthy choices, healthy minds and bodies);
- 'Scotland'.

Less frequently mentioned were topics such as:

- 'Seasons'
- 'Our Environment'
- 'When Gran Was a Girl' (relating to "tattie howkin", i.e. potato harvest)
- 'Water'

[13] Several respondents identified topics with multiple components, e.g. 'Food and Farming in Scotland', resulting in a degree of 'multiple counting'. For clarity, counts (not percentages) are reported.

- 'Living Things'
- 'Farmer Duck' materials[14].

Reflecting the questionnaire findings, the most common topics amongst case study classes were also farming and food (including Scotland and/or the local area). Alternatives included a short Science topic on 'Fertilisers', and a focus on the Commonwealth Games (which were due to be held in Scotland that summer). The focus of the farm visit relating to the Commonwealth Games topic was on athletes' healthy eating; however, the class also related the visit to a previous topic on farming. This had been their topic earlier in the school year, and they had also visited a farm at that time. The value of repeat or multiple visits is further discussed in Chapter 8.

All case study teachers reported visiting the farm as part of a topic, although ways in which topics were utilised varied widely. The case study methodology facilitated additional exploration of these. In interviews, teachers were asked to explain how they had come to decide on their topic. One main influence was the CfE Experiences and Outcomes (Es and Os). Some teachers were directed by school management to cover specific 'Es and Os' or topics, while others were given topic ideas, either in general terms, or as part of a pre-determined rolling programme of topics within the school. Some teachers had the opportunity to choose for themselves which topics or 'Es and Os' to cover, although one teacher suggested that this was more common in the lower primary years (e.g. P1-P3), where teachers were less constrained by a need to cover those which had not previously been addressed.

This study found that the most common age group undertaking educational farm visits was around 6-7 years old; that is, children in Primary 2 and 3 (see also Chapter 8). In the context of topic choices, this demonstrates that teachers tend to link farm visit-related topics with Experiences and Outcomes at the First Level[15] of CfE. Links with 'Es and O's' at the Second Level are less common. Nevertheless, teachers in the case studies were able to identify specific Experiences and Outcomes, as well as general topic areas, at both First and

[14] 'Farmer Duck' is a book by Martin Waddell (1995). Teaching resources are available online.
[15] 'First Level' is around Primary 2 to Primary 4; Second is around P4-P7. See also Appendix 2 for Education Scotland description of Levels.

Second Levels[16]. This suggests that some teachers may need further encouragement to recognise the relationship between farm visits and 'Es and Os' across the CfE levels.

That all of the case study teachers reported visiting a farm as part of a topic may reflect a degree of 'self-selection' of case study participants. Teachers undertaking a topic over a period of time may have been more willing to commit to research participation than those undertaking a 'stand-alone' farm visit. Amongst the questionnaire respondents, however, most of those who reported that their farm visit had not been part of a topic also reported undertaking related classroom activity pre- and/or post-visit. This is an encouraging finding in the context of RHET's aims as a provider of educational experiences rather than 'end of term outings' (RHET, 2012, personal communication), as it suggests that even those visits which teachers regarded as *not* part of a topic were rarely 'stand-alone' trips or simply a fun day out.

6.2. Topic-related activity

6.2.1. In the classroom

As well as discussing specific Experiences and Outcomes which they had sought to address with their choice of topic, teachers in the case study interviews spoke about the wide range of topic related activities which had taken place in class.

A variety of language activities were used, such as naming and matching animals and their young, learning about relevant collective nouns (e.g. 'flock' of sheep), and sequencing the milk production process. Although these types of activity were mainly described by teachers of younger children (P1 and P2, ages 4.5 to 6.5 years), one teacher noted the importance of these activities with her class of older (P5, age 9-10) children:

> "…it seems very infantile but then actually the things that these children didn't know was quite interesting, em, even simple names of animals and things, you know, and the male and the female, a lot of my children didn't have that information"
> - Teacher A, Case Study 4

[16] A list of the Experiences and Outcomes identified by study participants is available in Appendix 14.

A wide range of other language and literacy tasks was also mentioned by teachers at all stages of primary school, including reading topic books and farming stories (P3)[17], and a wide range of writing tasks such as poems and 'Who Am I?' riddles (P3), a story about their trip (P1 and P2), thank you letters to the farmers (P3 and P4), diary entries about the visit (P3 and P4), and a report of a classroom experiment (P7). The latter activity also involved the Primary 7 class utilising their skills in reading for information, in which they used written information to prepare for a class debate. Debating was also used in a Primary 3/4 class, in which the children argued for and against buying local produce from independent stores and large supermarkets.

In addition, the teachers identified a range of other classroom activities which formed part of their topic work. These included:

- Practical activities with food
    - Growing, peeling potatoes
    - Growing fruit and/or vegetables (and/or flowers)
    - Making butter, porridge, soup, bread
    - Tasting foods (e.g. raw carrots, unfamiliar fruits and vegetables)
    - Comparing the look and taste of organic vs 'conventional' produce
- Food-related class discussion
    - Where foods or ingredients originated (plants or animals; area of Scotland; country)
    - How people in the past bought and prepared their food
    - Health aspects (e.g. Food pyramid; Where do we get different types e.g. Carbohydrates?; How much should we eat?)
- Activity in preparation for the farm visit
    - Discussion (health, hygiene and farm safety)
    - 'Enterprise' work (fundraising to finance transport; respect for farmers' work and property)
    - Generating a list of questions for the farmer

One teacher felt that the pre-visit preparation of questions for the farmer had been particularly useful in helping the children to focus during the visit:

> "I think it helped that we had our questions before we went, so they weren't asking silly questions and we went through the questions at the end as you know and say 'well we've answered

[17] Specifically mentioned: 'Emma's Lamb' (1992) and 'Floss' (1993), by Kim Lewis (Walker Books Ltd.).

> this question, what was the answer' so onto the next one"
> - Teacher, Case Study 9

Case study teachers also reported the use of creative activities as a personal or group project, in which children were asked to produce or record advertisements for Scottish produce. Additionally, a number of teachers discussed having had a visiting speaker to the class ahead of their farm visit. These were regarded as particularly beneficial when the visit to school was made by the host farmer, as this allowed the children to get to know the farmer ahead of visiting the farm. One farmer expressed his pleasure at how much information the children had retained from his classroom visit:

> "I was quite surprised about how much information they had remembered from the school visit, cos I had went into the school, and I'm asking them questions about how many litres of milk, and they were shouting it out, so they had obviously been listening, which was quite good."
> - Farmer C

6.2.2. Other visits

As well as learning activity within the classroom, teachers reported a variety of other out-of-school visits which they had undertaken as part of their food and/or farming topic. These included visits to other farms, as well as the local agricultural mart, the Royal Highland Show[18], and local supermarkets.

A supermarket visit was undertaken by several case study classes, some of which visited on the same day as their trip to the farm. In some instances, this was organised with assistance from RHET, while in other cases, the teachers themselves arranged it. The barriers and logistical issues associated with farm visits and outdoor learning generally are further discussed in Chapter 10, but in the particular context of visiting another location directly after the farm, challenges included the availability of a location for children to eat lunch, since

[18] An annual agricultural and countryside showcase, organised by the Royal Highland and Agricultural Society of Scotland, and held in June each year.

risk assessment guidance specifies that food could not be consumed at the farm itself[19].

Teachers nevertheless felt that additional trips, whether or not they took place on the same day as the farm visit, had a number of benefits. They aided children's understanding of food production by demonstrating another aspect of the process, as highlighted by the teacher in Case Study 1:

> INT: So do you think they got a lot more out of it because the Tesco bit was there as well?
> Teacher: Yes, I would recommend that because I think it makes it meaningful, you know, this is milk and this is where it comes from […] That big cow that you saw this morning and then the package I would definitely say it's good having the two together, yeah."

Another teacher noted accessibility benefits. The visit to the farm itself had been inaccessible to a child in her class who used a wheelchair, due to the terrain and layout of the farm, but the supermarket offered an accessible location and ensured that the child was able to participate in a class trip as part of the topic.

6.3. Links with curriculum areas

Teachers described some examples of topic-related activity as being linked particularly with specific areas of the curriculum. Table 6.1 illustrates the activities which were discussed in this way, and the curriculum areas with which they were identified.

[19] As well as being RHET policy, this is specified in Education Scotland's online farm visit guidance.

Table 6.1: Classroom activity and curriculum links

Curriculum Areas*	Age groups	Activity examples
Art	P1-P4	Learning about landscapes; Looked at local artist who uses farm landscapes; Collages; Mixing paint colours for pink pigs and brown chickens.
Music	P1-2	Farm songs
Drama	P2-4	Children doing farm work before and after school (historical sketches); Acting out jobs on the farm.
Numeracy	P3-4	Prices; Costs to farmer; supermarket special offers; best before dates; shelf life.
Science	P3-P7	Plants/cultivation; bacteria; fungi; Experiments (making silage, using fertiliser)

*As identified by teachers in interviews, not necessarily CfE 'Curriculum Areas'.

Similarly, Harris (2009) found that teachers provided a range of related classroom activities after their visit to the farm, including writing thank you letters, discussions around diversity, and drama activities. Art activities such as printing with apples were also mentioned, but as Freeman and Swim (2003) point out, the use of foods in this way can communicate confusing and inappropriate messages as part of the hidden curriculum by teaching children "that it is acceptable to eat play materials and to play with food [and] that it is acceptable practice to waste limited resources" (p.83).

Table 6.1 further demonstrates that case study teachers were able to link their farm visit related topics to a range of curriculum areas. In the survey questionnaire, teachers who had been on an educational farm visit in the previous year were also asked to indicate which curricular areas, if any, their visit had been linked with. Nine response options were given in the questionnaire, reflecting the terminology of the 8 recognised CfE 'Curriculum Areas', but with one category expanded to separate 'Language and Literacy' from 'Modern Languages'.

One of the 90 respondents in this section indicated that no curricular areas had been linked with the visit; this individual commented that these had come into use *after* the visit. The remaining 89 respondents indicated at least one

curriculum area, and in two instances, respondents selected all but one of the possible nine response options, both excluding Modern Languages. Figure 6.1 shows the proportion of respondents identifying each curricular area as having been related to their recent farm visit.

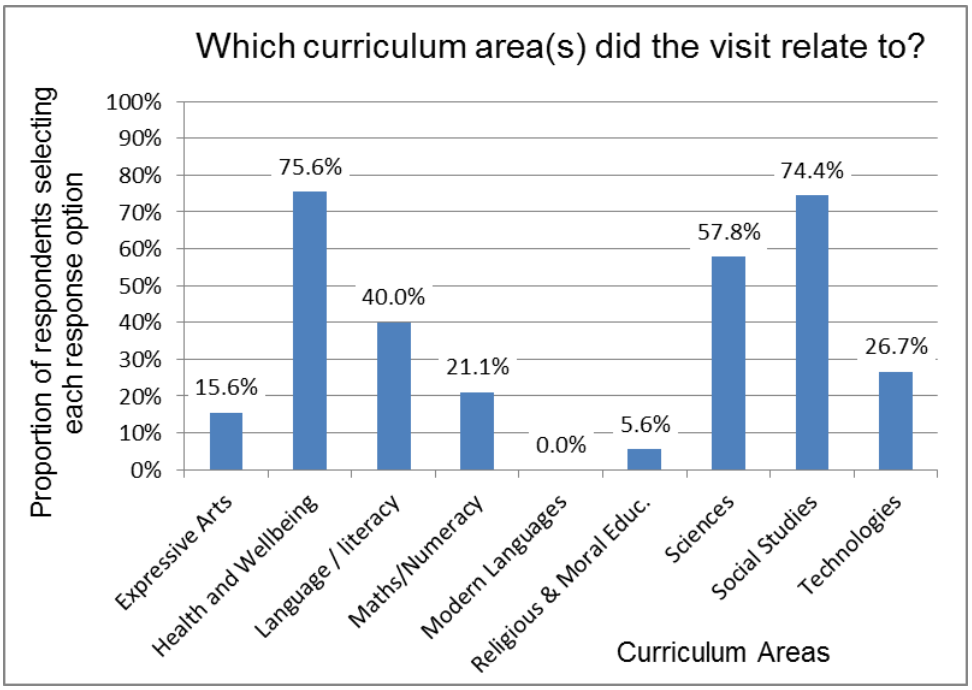

Figure 6.1: Curriculum areas relating to recent farm visits

The most commonly identified curriculum areas were 'Health and Wellbeing' and 'Social Studies', which were selected 68 and 67 times respectively. The next most commonly selected option was 'Sciences' (selected 52 times), but all response options apart from 'Modern Languages' were selected at least once.

A similar pattern was found in response to an earlier section of the questionnaire, in which all respondents were asked to identify the curriculum areas which they felt *could be* supported or enhanced by a farm visit, regardless of their own farm visiting experience. This question offered the same nine response options described above. As shown in Figure 6.2, some teachers felt that a farm visit could be related to 'Modern Languages', as well as the other 'Curriculum Areas'. Indeed, 12% (n=31) of respondents indicated that a farm visit could be linked with *all* curriculum areas, and no respondents indicated that they were unable to identify any curriculum links.

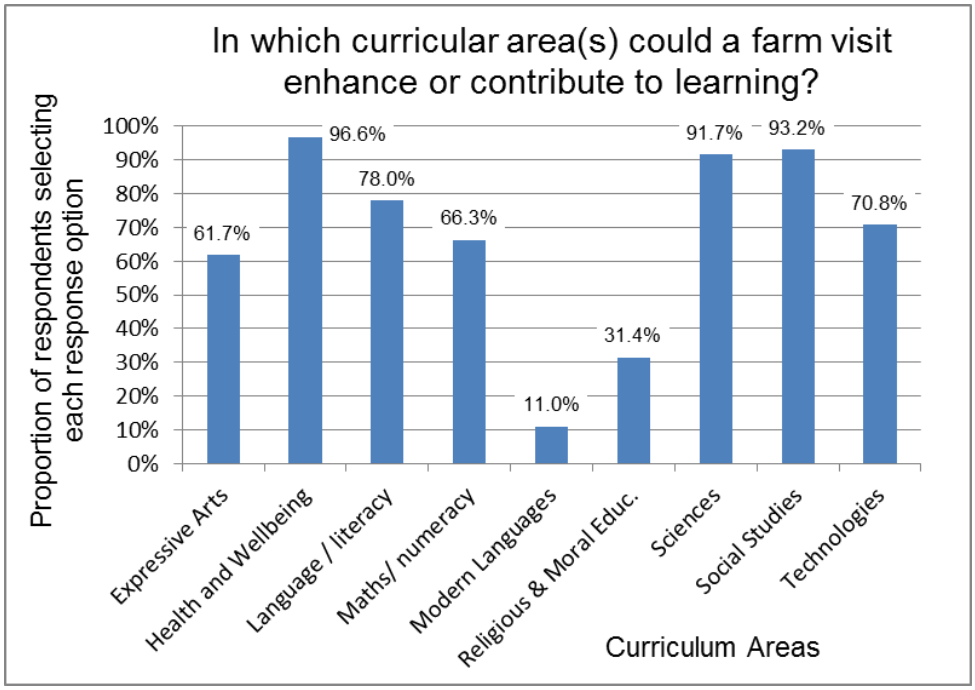

Figure 6.2: Teacher's responses to a statement on the curriculum areas potentially relating to a farm visit.

In the free-text area of the questionnaire, a number of survey respondents expanded on this idea, but commented that while farm visits could be related to all curriculum areas, this might require some imagination or creativity.

> "Many and probably all subject areas. Teachers and farmers are very creative!
> - Survey respondent 192

> "Can apply to any with imagination"
> - Survey respondent 237

Some teachers also commented that while they could envision links with all curricular areas, they had only ticked those which they felt had the strongest links, or with which they had personal experience.

A small number of comments implied that teachers had considered curriculum links relating specifically to time spent at the farm location, during the visit itself.

> "Farms can be good for all these things but are special in certain areas so doing RME on a farm is not a good use of time."
> - Survey respondent 191

This contrasted with the responses of most other teacher respondents, whose comments implied that they considered the question of curriculum links in a broader topic context. These teachers referred to curriculum links with classroom activity based around the visit to the farm, as well as activity at the farm itself.

> "A farm visit can also link into numeracy afterwards selling produce - money. Literacy as well - writing thank you letters/reports on the day."
> - Survey respondent 225

> "The farm is a stimulus for all."
> - Survey respondent 73

The potential of a farm visit related topic, if not necessarily the time spent on the farm itself, was clearly understood by teachers as having relevance to all eight CfE 'Curriculum Areas', although some area links were naturally regarded as easier to identify than others.

6.3.1. Interdisciplinarity

As well as identifying that a farm visit could be linked with all of the individual CfE curriculum areas, several survey respondents also highlighted the potential for cross- and interdisciplinary learning within a visit-related topic.

> "It [farm visit] covered almost every curricular area. Topic lends itself to cross curricular activities/planning."
> - Survey respondent 226

This perspective was very much supported by the responses of the case study teachers in interviews, who emphasised the interdisciplinary nature of a farming topic, and noted that this was an approach encouraged by CfE.

> "…we're supposed to be doing a lot more of that joining things together and saying, 'Well that relates to this because this happens' and not just taking a topic for six weeks and that's it, on its own and it doesn't join up with anything else that you already know."
> - Teacher, Case Study 6

While several participants noted the interdisciplinarity of a farming topic, in interviews some went further, to suggest that such topics were particularly appropriate to such an approach. In one case study, farming had been the class topic across the whole school year, with a focus on different aspects as the year progressed. Discussing this, the teacher suggested that very few other topics, with the possible exception of 'Space', could be used in that way and maintain the children's interest:

> "Well, I am not sure there would be that many topics that would lend themselves to it, I think farming works because of the seasons and the change and the variety."
> - Teacher, Case Study 6

Similarly, another teacher recognised that there were few other topics that could offer the same scope to link with a wide range of curriculum areas and link with relevant real-life contexts:

> "I can't think of another topic that if you covered it would have the same impact on children that farming does because farming encompasses everything, animals, food we eat, clothes we wear […] it just encompasses all areas of the curriculum I think, it's just... I can't think of any other area that does to be honest."
> - Teacher, Case Study 5

The importance of relevance to topic choice is highlighted by Humes (2013). He suggests that the concept of interdisciplinarity is not well defined in CfE discourse, and cautions that interdisciplinary topics must be carefully selected and planned to ensure that they are appropriate, worthwhile, and relevant to the curriculum. Humes (2013) proposes that guidance on how to identify suitable topic choices might be of benefit, and notes:

> "It is certainly the case that there is a requirement to relate interdisciplinary work to the experiences and outcomes as set out in the overall CfE structure […] but that raises some pedagogical issues about the extent to which [interdisciplinary learning] might be compromised by too much emphasis on predetermined outcomes" (Humes, 2013, p.88).

This concern over undue emphasis on outcomes relates to the spectrum of approaches to interdisciplinarity, which Humes (2013) described as ranging from those which are wholly topic-based, to those which take specific disciplines or outcomes as their starting point. The use of CfE Experiences and Outcomes as a starting point for planning is described in the CfE Briefing on Interdisciplinarity as an approach which "do[es] not necessarily provide the benefits of interdisciplinary learning" (Education Scotland, 2012), but which may be useful in some circumstances. The findings in the present study suggest that farming topics and related farm visits are particularly relevant to interdisciplinary learning; they relate to specific experiences and outcomes but also provide an opportunity for broader learning.

6.4. Other CfE components

Although the teacher respondents were clear that links could be made between farm visits and all of the 'Curriculum Areas', there were few explicit discussions of other elements of the CfE structure. Teachers in the case studies were not specifically asked about links between farm visits and other areas of the curriculum guidelines such as the 'Four Capacities' or 'Themes Across Learning', but some gave examples of other curricular links.

The opportunity to use 'real life' learning contexts was identified by some teachers as a motivating factor in their choice to visit the farm. In CfE terms, this could relate to 'Relevance', a Principle of Curriculum Design. Others gave examples of classroom and other activity which related to 'Approaches to Learning', such as designing advertisements for Scottish produce, which involved 'Creativity' and 'ICT'. Teachers in rural areas also briefly mentioned the presence of children in the class with experience of farming, who were able to share their existing knowledge with their peers as part of the topic.

Furthermore, most pupils were reported to have enjoyed their visit, partly aligning with the 'Challenge and Enjoyment' principle of curriculum design (see also Chapter 7). The teachers clearly demonstrated that farm visits and related topics could be linked with various elements of the Curriculum for Excellence guidelines; however, these were not specifically identified by the teachers themselves or discussed in relation to CfE terminology. Conspicuously absent was a spontaneous discussion of farm visiting and related topics in the context of 'Learning for Sustainability' or 'Education for Sustainable Development'. This may imply that these cross-curricular themes are already well integrated and that teachers do not feel the need to mention them specifically; or that teachers did not recognise the potential links in this area.

6.4.1. Outdoor learning

In the case studies, the teachers were aware that the research was situated within the context of Outdoor Learning, an 'Approach to Learning' in CfE. They were asked questions about their other outdoor learning experiences and how these compared with their experiences of farm visiting. Although much of this discussion related to practical issues and perceived barriers (see Chapter 10), two interesting perspectives on outdoor learning emerged. Some teachers suggested that their visit to the farm had not been motivated by any desire or requirement to undertake outdoor learning. Instead they chose to make a visit which was relevant to their topic, in the same way that they might visit a museum for a topic on Egypt, or an aquarium for a topic on sea life. In contrast, one teacher was very clear that her planning for the year had focused on outdoor learning, due to the presence in her class of a number of children with additional support needs, for whom she felt that a strong emphasis on the outdoors would be particularly beneficial. Despite the increased curricular emphasis on utilising outdoor environments, for most teachers in the case studies the status of the farm as an outdoor location did not seem to be a strongly influential factor in the choice to conduct the visit.

6.5. Curriculum linked resources

Teachers in the case studies discussed some of the resources they had used in planning and developing their topic. Resources identified through internet searches were commonly discussed, and for some the internet represented a starting point for planning. Teachers noted that many of the resources available online, while useful, were developed in other countries and therefore related to the curricula of those countries. This was an inconvenience, but teachers were nevertheless able to utilise ideas and make links with Curriculum for Excellence.

> "If you get a site which is exclusively Scottish they'll link it to the Scottish Curriculum, but most of it is linked to the English Curriculum and over the years, you know, we've had the experience of being able to work it out"
> - Teacher, Case Study 9

In both the survey questionnaire and case study interviews, teachers were asked what sort of guidance and information should be made available to aid teachers' planning and use of educational farm visits. Resources with links to the CfE guidelines were a frequent suggestion, although this was suggested in a generic way ('CfE links'); teachers rarely requested links with 'Es and Os', 'Curriculum Areas', or other components of CfE specifically.

The explicit linking of farm visits with CfE was described by one survey respondent as important in promoting farm visiting amongst teachers:

> "Personally I feel strongly that farm visits are a vital educational opportunity […] Unfortunately, not all teachers are convinced of the rationale and CfE links so this would be useful content."
> - Survey respondent 108

The need for resources with explicit links to elements of CfE was also identified by Allison (2009), in case study research on outdoor learning with Scottish secondary schools. The development of such resources was also important to teachers in this study; furthermore, study participants seemed to be largely unaware of the CfE-linked and other resources which are already available (see Chapter 10). A lack of awareness amongst teachers of the available online resources linking farming with the National Curriculum in England was also found by Harris (2009).

6.6. Related learning: other topics and out of school

As well as learning from the farm visit itself and in the classroom, a number of other relevant learning experiences were discussed by the teachers and pupils. These included links with other topics which the children had learned about previously, and learning in non-school settings.

The teacher in Case Study 9 reported having taught a topic on Vikings with her class earlier in the school year. As part of their Vikings topic, the children had made bread, and had discussed the availability of particular foods to Viking societies. In the food and farming topic, the teacher was able to refer the children back to their earlier learning and experiences, and to incorporate these into discussions of food sources and ingredients.

Another teacher (Case Studies 11 & 12) noted that the local farmer hosted visits for local youth groups as well as for schools, and that many the children therefore visited the farm on several occasions, with organisations such as Scouts as well as through school. The influence of youth organisations was also noted by the teacher in Case Study 6, who explained that some girls in the class had been learning about Fair Trade products at Brownies, and that this had influenced the classroom discussion on global food production.

Pupils themselves also reported relevant learning from a range of other sources, including farm visits and other activities with youth organisations and Church groups. They also referred to learning through family days out to farm parks, and to McDonalds fast food outlets, where they reported learning about the origin of beef burgers. Although some case study teachers clearly recognised these other sources of learning, the opportunity to harness and develop children's informal learning about plants and animals is often neglected by teachers (Patrick & Tunnicliffe, 2011). Teachers must ensure that children's learning from informal sources is appropriately recognised and utilised as part of their food and farming topics.

6.7. Chapter conclusion: Links across the primary curriculum

The recognition of the variety of curriculum links available through farm visits and related topics is not new. Over thirty years ago, in her discussion of city farms, Whitfield (1984, p.106) noted that:

> "…the possibilities for junior and lower secondary pupils are endless. Groups of children have grown, monitored, and compared ancient and modern varieties of wheat…grown and prepared vegetable dyes for their homespun wool…An imaginative teacher, however, will look wider than animal- and gardening-based topics. There are opportunities for surveys and graph-work, maps, art, language work, home economics, model-making, local history work, conservation…not to mention discussions on subjects as varied as battery-farming and the concerns of town-planners."

While some of the activity described by Whitfield (1984) would be regarded as inappropriate by modern standards, much of what she suggests remains relevant.

In the present study, teachers similarly identified a broad range of curriculum links and activities relating to farm visits in the context of Curriculum for Excellence. Unsurprisingly, the usual topics through which children undertook an educational farm visit were those looking at the origins of food, or at farming in a social context. The choice of such a topic tended to be driven by the need to address particular 'Experiences and Outcomes' from within the CfE guidelines; and those which were most closely linked to food and farming seemed to be at the First Level of the curriculum guidelines. These were most relevant therefore to children in Primary 2 to Primary 4 (4.5 to 8.5 years old). Nevertheless, topics on food and farming were also used with older children, and examples of other relevant topics in the Second Level (P5-P7) were also found. Teachers also provided numerous examples of classroom activities which they had undertaken with pupils as part of their topics. These descriptions of teachers' practice demonstrate the wide variety of learning experiences which are being used in Scottish schools, and provide 'real life' examples from which other teachers may develop their own plans, activities, and topics.

The wide range of available curriculum links, encompassing the whole range of 'Curriculum Areas', was noted by teachers in both the case study and survey elements of the study. As well as links with discrete curriculum areas, however, the interdisciplinarity of farm visits and their related topics was also emphasised. In interviews, teachers suggested that farm visit related topics hold a special place amongst potential interdisciplinary topics due to their high

level of 'real life' contextual and curriculum relevance. These topics offer a wider range of links to 'Curriculum Areas' and 'Experiences and Outcomes' than many other topic options. This finding suggests that farm visits and their related topics are useful and worthwhile within the context of CfE, addressing some of Humes' (2013) concerns around interdisciplinary topics.

Some teachers also valued the farm visit as an Outdoor Learning experience, while for others, spending time outdoors was not an important consideration in planning the visit. Despite the recognition of these curriculum links, there was less of an emphasis from teachers on other parts of the curriculum guidelines, such as cross-curricular themes and other 'Approaches to Learning'. This suggests that, in their planning and delivery of the curriculum guidelines, teachers' focus is on the curriculum areas and 'Es and Os', more than on other parts of CfE. As well as having implications for the ways in which farm visits and other outdoor learning opportunities are used, this raises questions around the implicit or explicit inclusion of various aspects of CfE in the classroom.

Teachers described a variety of resources which they had utilised in the planning and teaching of their topic. While they noted that a number of activity ideas were available online, they suggested that many of these were not based on the Scottish curriculum guidelines. This was not a significant problem, as teachers were able to identify curriculum links for themselves, but respondents suggested that the availability of resources with links to CfE would further facilitate their planning. Much of the guidance that was requested by teachers, in the survey as well as in case study interviews, is however already available. This suggests that there is an issue around teachers' awareness of these resources, and the ease with which the resources can be identified and accessed, which could impact on teachers' effective use of farm visit related topics. This is further discussed in Chapter 10.

7. Findings & Discussion II: Learning from Farm Visits

*

> "Well she wanted us to learn about some things about food and farming, and we did."
> - Pupil aged 8, Case Study 8

*

Teachers, pupils, and host farmers offered various perspectives on what visitors to farms would gain from the experience. This chapter focuses on the perceived purposes of visiting a farm, and the learning which was identified by participants as taking place there. These findings relate mainly to Research Question 2 (How do farm visits contribute to children's learning?), as well as to Research Question 1 (How can teachers use educational farm visits, and link them with CfE?).

The main findings reported in this chapter are:

- Teachers tended to describe farm visits primarily as an opportunity to contextualise and consolidate classroom learning.
- Pupils clearly identified 'new learning' from their farm visit, including a level of detail which they were unlikely to find out from their class teacher.
- Farm visits were regarded as important for adults' (e.g. teachers', wider families') learning, as well as pupils'.
- Pupils, teachers and farmers highlighted the contribution of sensory engagement at the farm, which cannot be replicated in the classroom.
- Some teachers would have preferred more interactive activity for pupils as part of the farm visit.

7.1. Contextualisation and consolidation

Teachers clearly felt that farm visits make an important contribution to children's knowledge and understanding of food production. As Figure 7.1 shows, most survey respondents agreed that children need to visit a farm to fully

understand where food comes from.

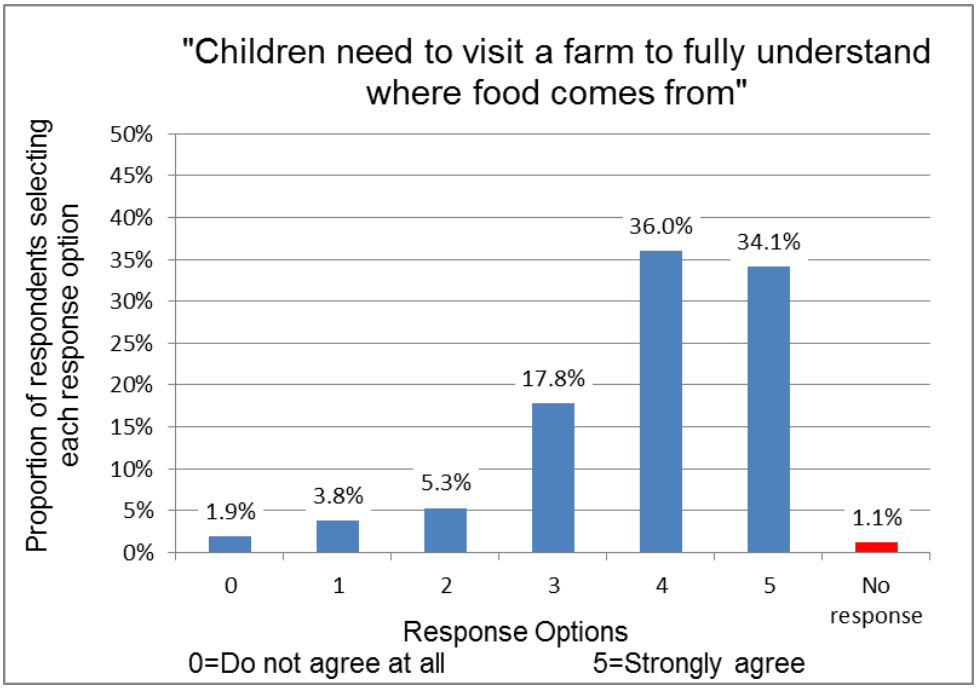

Figure 7.1: Survey respondent teachers' agreement that children need to visit a farm to fully understand where food comes from

Similarly, in interviews teachers suggested that children could not completely understand what was being taught in class about farming and food production until they had seen it in a 'real life' context.

Farm visits were predominantly described by teachers as an opportunity for contextualisation and consolidation of classroom learning, rather than as a place for new learning.

> "Not really to learn I think, just things to see, like see a cow being milked […] where the milk goes, how the milk is taken off the farm, how milk is produced […] What does it look like when it's milking? What does it do during the day? Just all things we learned in classroom but until you see it […], like most things you learn, until you see it you don't believe it."
> - Teacher, Case Study 5

Several teachers suggested that, rather than providing examples to support specific classroom teaching, the visit simply allowed children to better

understand the farming context and to develop an overall sense of the farm location and the work of farmers.

> "I don't know if I could pinpoint one thing that they learned massively but I just think they experienced things […] things like that, you can't get a video, I don't know, you wouldn't see that every day and it's just little things like that, that make the experience more important than just the teaching of it"
> - Teacher, Case Study 7

The main exception to this emphasis on contextualisation was the teacher in Case Studies 11 and 12, who was not a regular class teacher but taught various age groups during the regular class teachers' non-contact time[20]. As a result of her limited contact with pupils, this teacher could not spend a great deal of time on classroom-based teaching of the topic; instead the available time was largely taken up by the farm visit, through which the teacher expected the bulk of the children's learning to take place. The teacher felt that this was especially appropriate for the Primary 7 children, whom she considered more likely to be bored by the visit if they had already spent a great deal of class time learning about the topic (see also Chapter 8 on age factors).

Pupils discussed their perceptions of teachers' reasons for arranging a farm visit. The trips were frequently described as a means of helping the children to learn, or to understand their topic better or in more depth, reflecting teachers' descriptions of visits as an opportunity to contextualise classroom learning. Some children also felt that their teachers had been motivated by a desire to provide learning opportunities which were fun, out of the classroom, or exposed pupils to "a load of fresh air" (Pupil aged 6, Case Study 13).

The opportunity to see the 'real life' context of their classroom learning was also recognised and valued by pupils.

> CB: Well on the computer they only show you like five minutes of like something happening, not really important stuff, but at the farm you learn a lot of it […]

[20] In Scotland, teachers have a certain amount of 'non class contact' time for duties such as planning and marking. Pupils are taught by other qualified teachers at these times.

> CD: And cos it's real and the DVD's like fake and the farm is real
> - Pupils, aged 7, Case Study 3

> "I think it's different actually going to a farm, cos you can learn a lot just watching videos and writing stuff down but you sort of learn more by actually being there and seeing it, sort of more like realistic and it's just as beneficial"
> - Pupil aged 11, Case Study 11

Similarly, farmers recognised the importance of contextualising classroom learning with the real-life experience of visiting a farm. One host farmer suggested that other resources would not be able to convey the realities of the farm as well as a visit:

> "I suppose you could do it on a DVD, but it's not quite the same as being actually on a site […] actually seeing the milk going down all the pipes, you know, no matter how good you are with a DVD, I don't think you can capture all that in one go, and you know, to actually then link that through to the milk tank shed, the lorry that takes it away […] I think it ties everything together, that if it was to be on a DVD it would have to be a long one, and I don't think it would manage to pull it all together in the same respect as it does when they've been on the farm"
> - Farmer E

7.2. Learning at the farm

7.2.1. Recognising existing knowledge

The adults who contributed to this study identified a general lack of knowledge amongst children about rural life and the origins of their food.

> "Yeah, they thought beef comes from chickens, like beef burgers come from chickens, which… pains me"
> - Teacher, Case Study 2

> "…basically most of the kids to come out here, they're starting from a zero base"
> - Farmer E

Some teachers found that pupils did have basic food knowledge; for example,

they knew the origins of milk (Case Studies 2 and 7) and eggs (CS7), and could identify strawberries (CS3). The teacher in Case Study 9 found that the children in her class were "reasonably clued up" about milk products, but attributed this in part to the presence of a lactose-intolerant child in class, through whom the other children had become aware of milk-related foods. Teachers reported however that even amongst children with some basic knowledge of food sources, some pupils lacked wider knowledge, or held misconceptions. Although the pupils in Case Study 3 could identify strawberries, for example, their teacher found that they were unable to recognise asparagus. The children in Case Study 9 were reportedly unclear about which foods are grown in the UK, and which elsewhere.

The need to be aware of children's existing knowledge and understanding was highlighted by several teachers, who noted the implications of this for teaching and learning in the classroom. In Case Study 8, for example, the teacher planned to incorporate the children's own questions and interests into the topic. She encouraged the pupils to record at the outset what they wanted to learn, but explained in her interview that the children found this difficult: "if the children don't know much about it, then they don't really know what it is they want to learn".

The importance of a clear understanding of children's pre-existing knowledge was also emphasised by those teachers in the case studies who were themselves from a farming background, or had personal experience of farming. While they were able to teach the topic from a more knowledgeable perspective, some expressed concern that they may have false perceptions and assumptions about other people's knowledge, which could influence their teaching. One teacher described visiting the farm with a colleague, ahead of her visit with pupils. She noted the importance of her colleague's perspective to her own classroom practice:

> "I think I am lucky, I came from a farming background so I was able to guess what kind of things they would be seeing and things like that, but I took one of the other teachers with me, she is from [a city] and it was an experience just see her reactions to things, I mean she had been absolutely oblivious to so much and the questions that she was asking, it was actually quite good because it was actually half the questions that the kids would

have asked as well..."
- Teacher, Case Study 14

Study participants recognised that teachers with in-depth knowledge of farming are the minority. A few teachers alluded to their own lack of expertise as a motivator for undertaking a farm visit, and some pupils also recognised that their teachers were not farming experts and could also learn from the topic or farm visit.

CA: [The teacher]'s not a farmer so she might not know everything, she's not maybe an expert of it so she wants…
CB: She wants to know some stuff as well.
CA: Uh-uh, it's not just for us, she might want to know things.
- Pupils aged 7-8, Case Study 3

"… since [our teacher] doesn't live on a farm, it's quite good cos she, when we find out things out of the book she says, she normally says, 'Oh, I didn't know that' and eh, it's not just teaching us, it's actually teaching the actual teacher"
– Pupil aged 8, Case Study 6

Similarly, many of the host farmers identified a lack of knowledge about farming amongst teachers and other adults. Some farmers expressed surprise or disappointment at this, but others suggested that teachers could not be expected to know everything.

"…if it's not a natural interest of theirs then why should they [know about farming]? So I don't get offended by it, I just actually think, 'Well I'm really glad that they've come to speak to us and come to do it, because this is our speciality and expertise', it's the same as them going and visiting a police station, you wouldn't expect the teacher to know what's going on in a police station, so I think that's okay"
- Farmer H1

One teacher, who did not have a background in farming, recalled that information given by the host farmer had directly contradicted her teaching; the

book which had been used as a teaching resource was outdated, and not entirely relevant to farming practices in her part of the country. The case study teachers recognised the value and importance of having access to farmers' expertise when teaching a farming topic, even if this was just through a visiting speaker to the school, rather than a trip to the farm.

7.2.2. Adults' learning

As part of the survey questionnaire, those teachers who had been on a farm visit in the previous year were asked to respond to a statement on their own learning at the visit. As is shown in Figure 7.2, only 11% of respondents disagreed that they had learned new things at the farm visit, while 63% indicated the strongest possible agreement with the statement.

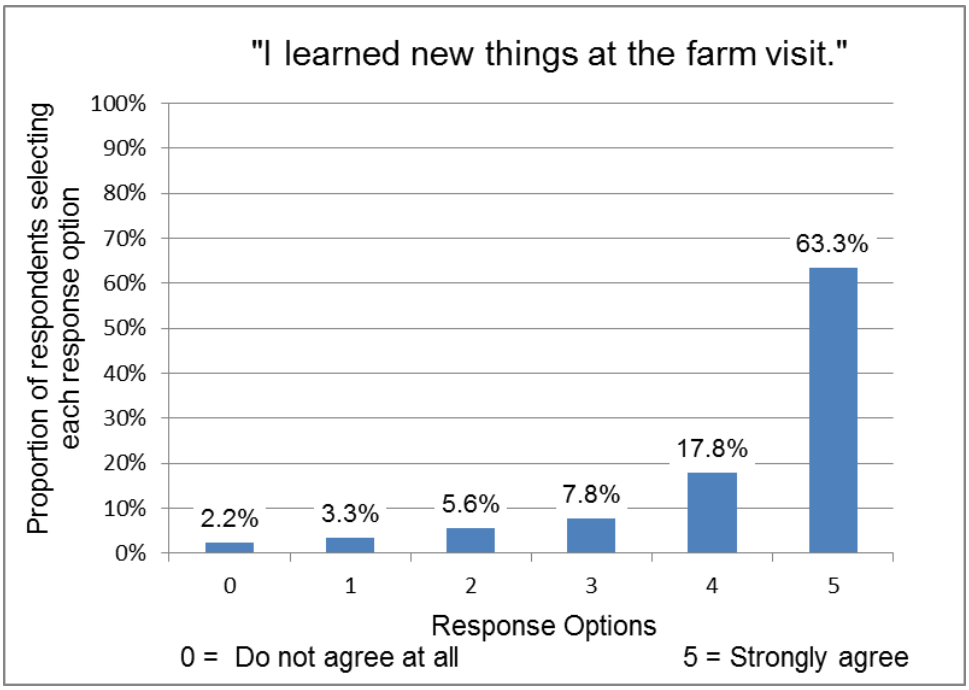

Figure 7.2: Survey respondents' learning at their recent farm visit

Written comments suggested that those who disagreed with the statement were from a farming background or had extensive previous farm visiting experience, meaning that they felt they did not learn anything new from their most recent visit. In contrast to this, one case study participant teacher who had grown up on a farm was clear that he had learned from the visit with his pupils:

> "I remember growing up on the farm and even though you work on the farm, you don't learn anything unless your dad actually says it to you […] when you're a farmer you just do it, you flick that switch, you flick that other switch and you do this, you fetch that and it's like 'just do that', and you don't explain why you just do it. [So at the farm visit] you're like 'oh, that's why we're doing it, oh I see'."
> - Teacher, Case Study 5

This teacher also recounted a conversation with a parent helper, who had attended the farm visit and had reported learning a great deal about farming from the experience.

Farmers also reported learning from the visits, mainly in relation to their interactions with pupils (e.g. use of technical language, identifying areas of interest; see Chapter 9). They recognised the important role that hosting school visits could play in educating teachers and other adults.

> "A lot of the teachers don't have a clue what's going on when they're out in the countryside, and that was, I get as much of a kick out of educating them, and even there's a lot of helpers come along, and even them, they're 'Oooh, didn't know that'
> - Farmer I

As well as contributing to the knowledge of the teachers and other adults attending the visit (such as other school staff and parent helpers), a few farmers suggested that children's learning from the visit would also be shared with parents and grandparents at home. Some felt that this had wider implications, including the potential to influence adults' purchasing habits (see also Chapter 9).

7.2.3. Children's learning

Pupil participants in several case studies clearly identified the farm visit as an opportunity for new learning about their topic. This was in addition to the consolidation and contextualisation of prior classroom learning, which had been emphasised by their teachers.

Many of the children were able to articulate their new learning from the farm visit. Children's self-reported learning included:

- Information about animals:
  - What and when they eat, and how they're fed
  - How and when ear tags are fitted; their link to 'passports'
  - The use of technology (e.g. monitoring milk output and how this can alert farmers to animal health issues; robotic milkers allowing cows to determine their own milking schedule)
  - When and how milking takes place; the process of milking, cooling the milk, and collection by the tanker
  - Animal behaviour (e.g. social/familial; when ill; when being milked or treated)
  - Different types/breeds of animals, and what they are used for
- The production and purpose of:
  - silage
  - slurry
- Details about farm machinery:
  - Purposes (e.g. planting, harvesting, removing stones from soil)
  - Size, visibility, safety
  - History; the development and use of technology such as GPS

Pupils tended to focus on small details of farm life or procedures in describing their learning at the farm. Several pupils emphasised the level of detail which was communicated at the visit, and recognised that this may not have been available from their class teacher.

> "…he gave us too much information but in a good way […] cos we were only there for three hours just in the farm and then we went over to the woods, and we were expecting just to, like him going round saying, 'This is this, this is this', but he like explained everything, like what kind of animals went in it, what he did as a farmer to make that happen"
> - Pupil aged 9, Case Study 4

> "We should have gone to the farm where there's professionals who know how to describe it in more detail than the teacher [rather than just learning in class]."
> - Pupil aged 7, Case Study 7

In one group discussion, the pupils spoke at length about their learning at the

farm, but when asked whether anything could have improved the visit, specified that they would have liked to find out even more detail. This emphasis on learning in detail was present in group discussions across the participant age range, in response to questions on what additional information they would have liked to learn at the farm. Many of the children were also clear that they had learned more from visiting the farm than would have been possible from wholly classroom-based learning. The pupils in Case Study 10 emphasised in particular the value of their visit being led by a farmer. They contrasted this with a previous educational trip to a different type of location, at which they had been allowed to freely explore the area rather than being led by an adult; they felt that they had learned less from that type of visit.

Teachers responding to the questionnaire were also clear that pupils had learned from the farm visit. Respondents were asked to rate their agreement with the statement 'The children learned new things at the farm visit', and as Figure 7.3 shows, most strongly agreed that this was the case.

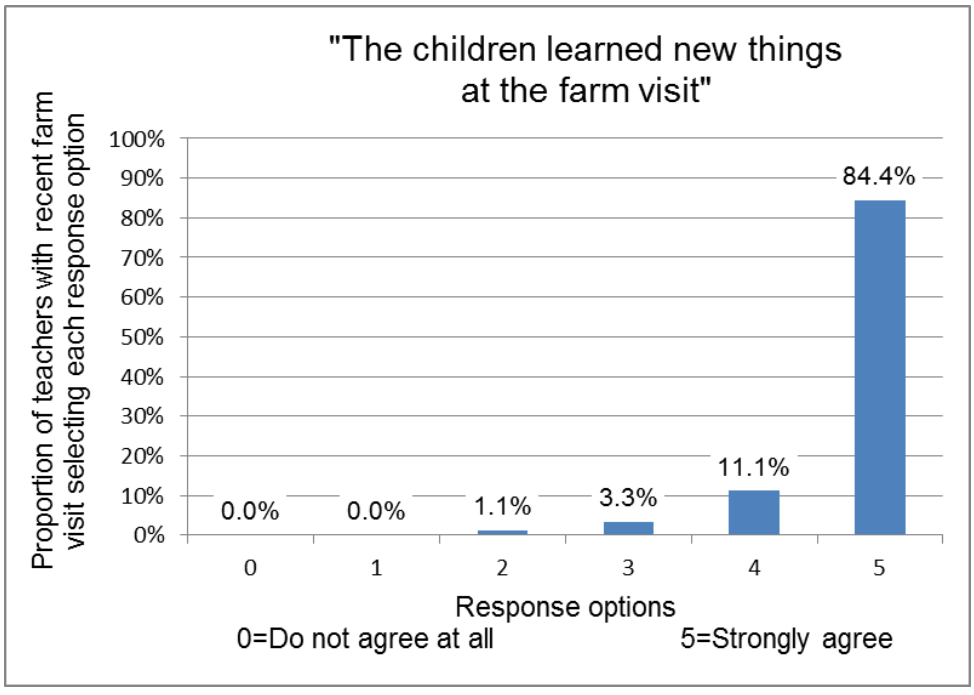

Figure 7.3: Survey respondents' agreement that 'children learned new things at the farm visit'

Teachers in the case studies, although tending not to describe the visit primarily as a place for new learning, often had clear expectations of what their pupils

had gained from the experience. A few teachers recognised that children were able to understand farm processes, such as milking, ear tagging of cows, in more depth than they had in class. More commonly, teachers expected pupils to gain a broad understanding of farmers' lifestyles and commitment to their work, and a sense of the size and scale of the farm.

> "I think what they might take away from it is possibly that, we were talking about the idea of commitment, that if you're a farmer you can't walk away from it, that you know, you have to be there every day […] And also, the size of the machines, just the general size of everything, but that was a big farm, I mean that steading was vast, but to a 5 or a 6 year old it must have seemed really huge."
> - Teacher, Case Study 13

The value of experiencing the size of a farm by viewing the boundary from a vantage point, rather than simply from a map or photograph, was recognised by farmers as well as by teachers for giving pupils a sense of the scale of a farming operation. A few teachers reported however that this could present difficulties for some children, who could be overawed by the experience and lose concentration.

> "…although the farmer's talking, their eyes, it's a new experience, their eyes and their mind is wandering, they're looking at everything else round about."
> - Teacher, Case study 8

In line with the topic-based approach, and consistent with CfE assessment principles (Scottish Government, 2011), none of the teachers in the case studies formally assessed children's learning specifically from the farm visit itself. Informal assessment methods included class discussions, some of which referred back to mind maps and questions of interest which the children had developed at the start of their topics. Other informal assessment included recount writing and thank you letters to the farmers. Some case study teachers indicated their intention to carry out a more formal assessment of the learning from the topic as a whole, but none had yet done so at the time of interview. A similar pattern

was found amongst the 90 questionnaire respondents who had been on a recent farm visit, 37 of whom reported no formal assessment of children's learning from the visit. Methods such as discussion, written work including thank you letters and information booklets, artwork, and giving presentations in a variety of formats and to a range of audiences, were used by those teachers who reported assessing learning from the visit.

7.3. Sensory, enjoyable and memorable experiences

In discussing what pupils had gained from the farm visit, case study participant teachers emphasised the opportunities for pupils' sensory engagement, such as the mud underfoot, the smells, sitting in a tractor, handling grain and feed, touching animals' fur, seeing cows react to being milked, and hearing animal noises. This echoed a sentiment expressed by some teachers in their questionnaire responses.

> "I particularly liked that the pupils could get first-hand experience and multisensory experiences of the farm. No books or DVDs are a substitute for this."
> - Survey respondent 261

Pupils similarly recalled a range of sensory experiences, including touching trees, stroking calves, smelling silage, and being outside in the fresh air. Many pupils reported a preference for visiting the farm as a means of learning, rather than wholly classroom-based topic work, because of these sensory experiences. They were often clear about the contribution of these experiences to their learning.

The pupils in Case Study 11 (aged 11-12) explained:

> KB: I think it really helps, going to the farm…
> KC: Yeah
> KB: … we learned physically and not just watching videos and we learnt the smell as well, we just learnt more from the farmer and what he actually [said], instead of learning from other [people]
> […]
> KE: Well you get the physical contact with the wee calves and

> you get to see them up close instead of just seeing them in a picture, so it feels more like you can get a grip on it

Amongst the few pupils who reported a preference for learning in the classroom rather than at the farm, a dislike of the smell, and the requirement to tour the farm on foot, were the main reasons cited for this.

The sensory aspects of visiting the farm were also recognised by farmers, and the farmer in Case Study 5 spoke particularly passionately about the importance of engaging the children's senses:

> "… farming is, it's an emotional thing, and it's a sensory thing […] it's nature, and nature is about sense, and you cannot get that until you go somewhere. You know, it's about the smell and it's about accepting the smell within five minutes of you being there, it's about livestock and it's about shit […] and it's about crops and, you know, growing […] I don't think you can ever get a feeling of the nature, the senses, the feeling, the smelling, the hearing, until they're there. So it just has to bring it alive because it's such a, it's such an alive thing, it's not like a lump of metal, and it's not like a room full of colour, it's, you know, it's a breathing thing"
> - Farmer H1

Teachers also emphasised the importance of trips and visits as a memorable experience for pupils. Farm visits were regarded as enjoyable experiences which the children would remember in the long-term.

> "…every teacher wants to make their pupils have that experience and be that, even if it's that one experience that, when you are 40, 'oh remember that time we went to…', and it is always 'when we went to', nine times out of ten they don't remember things that they do in class, it's always that experience outside"
> - Teacher, Case Study 2

The long-term memorability of the farm visit, and any potential contribution of this to children's learning, was beyond the scope of this study. At the start of

each group discussion, however, the children were asked to describe what they had seen and done at the farm. This task was intended to 'set the scene' for the subsequent conversation, and to encourage the children to think back to their farm visit. There were clear similarities across all case study 'group discussions' in the elements of the farm visits that immediately sprang to children's minds when asked to recall their visit. Animals featured strongly in the children's initial recollections, including from those pupils who had visited arable farms. Children who had visited one arable farm, for example, recalled the animals they had seen during their bus journey. In another group, the part of the trip reported first by the children was a detailed description of the farmer's elderly dog.

These initial recollections also reflect the common themes which arose when children were asked to identify the best part of the farm visit. Touching, feeding, and seeing calves and other animals was mentioned often; even amongst some of the children who saw the animals only incidentally to the main visit, this was identified as a favourite part. Other elements which children identified as their favourite or 'best bit' of the visit included seeing various types of farm machinery; at some visits, children were permitted to climb (with assistance) into the cab of a tractor to see the controls and experience the height and visibility. Several pupils mentioned their appreciation of being able to spend time in 'the fresh air', and food preparation, which was a part of the Co-Op Farm to Fork programme, was also identified as a favourite element by children who attended those visits. While most children in the group discussions could easily explain what they regarded as the best part of the visit, only a few were able to identify elements of the visit which they did not like. Several children felt that their visit could only be improved by making it longer and including more detailed information. Some children would have liked to see a wider variety of animals. Amongst children who expressed particular dislikes, the smell, the mud/dirt, and the distance they were expected to walk, were most commonly mentioned.

Although many of the teachers felt that simply being on the farm to experience and absorb the sounds, smells and atmosphere was important, some intimated that the visit had been more of a 'show and tell' experience than a hands-on learning opportunity. Some teachers suggested that a more interactive

experience would have been beneficial for those children who struggled to focus on verbal explanations alone. Teachers noted the value of 'props' and visual aids alongside verbal explanations, and examples included items that the children could handle, examine, and pass around the group, such as cows' ear tags, cow 'passports', and small tubs of grain or feed. Teachers also preferred practical demonstrations, such as milking or examining animals' feet, rather than verbal explanations alone. One teacher suggested that an observation sheet on a clipboard, with questions or notes, could be useful, but felt that she would not have had time to make up such a sheet following the pre-visit; neither would this be something that the farmer could be expected to produce. The risks of children carrying clipboards around the farm (including hygiene risks to the children, as well as to any farm animals) would also require consideration. The possibility of including interactive tasks and hands-on activity relates to the type and authenticity of farm locations used for educational visits, which are discussed in Chapter 8.

7.4. Chapter conclusion: Contribution to learning

Pupils in this study were reported to have variable levels of pre-existing knowledge of food and farming; teachers found that some pupils had a good understanding, while others had information gaps and misconceptions. This is consistent with the variation in children's knowledge described in Chapter 1. Smeds *et al.* (2015, p.10) cautioned teachers to be aware that in relation to farming practices and food production, "pupils might possess mental schemes that do not coincide perfectly with reality". This need for educators to have a clear understanding of children's existing knowledge was particularly emphasised by teachers in the present study who came from a farming background, who felt that their own levels of knowledge could result in an overestimation of pupils' awareness.

It was recognised by study participants that most class teachers have little or no personal farming experience. Several of the farmer participants in this research noted that many of the teachers and other members of school staff with whom they came into contact had only minimal understanding of farming. Previous studies have found that teachers' limited farming knowledge can hamper their ability to teach topics relating to agriculture (Dyg, 2014). Harris (2009, p.23)

suggested "that teachers who are not familiar with the countryside and farming are afraid to take their children to a farm in case they are shown up as knowing less than their pupils." In the present study, however, teachers seemed to be open with their pupils about their own level of expertise, and positioned themselves as learning alongside the children. Teachers valued the opportunity to visit the farm and learn directly from a farmer as a means of accessing expert knowledge. The role of farmers as experts is explored in Chapter 9, while the implications of low levels of farming knowledge amongst teachers are further discussed in Chapter 10.

Reflecting previous findings that outdoor experiences enhance and reinforce children's learning (Higgins *et al.*, 2006; Ross *et al.*, 2007), teachers in this study described farm visits primarily as an opportunity for consolidation and contextualisation of classroom learning. Pupils themselves, however, identified a range of new learning from their farm visit. In particular, pupils recalled small details of farm procedure and indicated their enthusiasm for detailed information. This emphasis on detailed learning parallels previous reports of children's acquisition of in-depth knowledge from farm visits. Parents in Harris's (2009) study, for example, reported a high level of detail in their children's recall of a farm visit. More recently, Smeds *et al.* (2015) assessed the farming perceptions of 11-year-old children using pre- and post-visit drawings, and reported that the later drawings contained substantially more detail. Detailed recall can suggest that effective learning from an experience has taken place (Waite, 2007).

In addition to the facts and details reported by the pupils themselves, some teachers felt that the children's learning had benefited from simply being on the farm, absorbing the atmosphere and experiencing their surroundings. Ballantyne and Packer (2009) found that experience-based learning is a useful pedagogical approach in outdoor environments; around half of the young people participating in that study attributed their learning to experience rather than direct adult-led teaching. Ballantyne and Packer (2009) also emphasised the contribution of sensory experience to learning, and sensory engagement has also been linked with learning by a number of other authors (e.g. Norðdahl & Jóhannesson, 2014; Smeds *et al.*, 2015). Dyg (2014) found that the opportunity to offer sensory experiences was a motivator for teachers in Denmark to take their pupils to a

farm, and in the present study, teachers suggested that the range of experiential and sensory elements of the visit had enabled the children to gain a broader understanding of the farm context.

Waite (2011) acknowledges the influence of sensory experience on memory, while Packer (2006) found that engagement of multiple senses contributed to an enjoyable learning experience for museum visitors. Teachers in the present study were keen to provide an enjoyable and memorable experience for pupils, and most pupils reported that the trip was fun, or that they had enjoyed particular aspects. Experiences of seeing or engaging with animals were frequently identified by pupils as a favourite element, and a survey by Childwise (2011) similarly found that seeing animals was the favourite element of a farm visit for 53% of 7 to 11-year-olds. Teachers in Harris' (2009) research highlighted pupils' enjoyment of sensory engagement at the visit, including walking around the farm. In contrast, some pupils in the present study identified the walking as a less enjoyable part of the experience; the broader sensory and tactile aspects of the visits were clearly an important feature of pupils' enjoyment, however, as evidenced by their identification of the 'best bits'.

Despite these opportunities for sensory engagement, some teachers suggested in interviews that the visits had lacked an interactive, hands-on element to engage the children. Bickel *et al.* (2015) noted in relation to farm visiting in Germany that "[i]n industrialized countries, most farms are specialized and mechanized … As a consequence, it can be assumed that children's experiences during farm visits are characterized by observation rather than by active engagement in arable farming activities." They suggested that "active involvement of children in garden work" could contribute more to children's interest in agriculture than could a passive visit to a farm (p.337). There is an extensive literature on the educational and other benefits of school-based gardening for pupils (see, for example, Blair, 2009; Williams & Dixon, 2013), and teachers in Scotland are being encouraged to utilise school grounds as part of the drive to increase outdoor learning (e.g. LTS, 2010; Education Scotland, 2015c). In the present study, several teachers made use of gardening-type activities, giving pupils direct experience of growing plants, in pots within the classroom if not outdoors. The use of this direct experience alongside the farm visit allows pupils to derive benefits from both approaches.

Although children's learning from the farm visit itself was not usually directly assessed, participants in the present study discussed the contribution of such visits to learning as part of a topic-based approach. Pupils, teachers, and host farmers identified several elements of the farm visit experience, which have been identified in previous studies as facilitating or relating to learning. These included the outdoor setting (e.g. Ross *et al.*, 2007), and the opportunity to learn in detail (e.g. Waite, 2011). Furthermore, a visit enables children to engage with the variety of sensory experiences (e.g. Ballantyne and Packer, 2009), in a way which wholly classroom-based learning about farms would not. These findings demonstrate the value of a visit to a farm as an opportunity to contextualise and support classroom teaching and learning, and to contribute more broadly to children's understanding of farming, food production, and other farm visit-related topics.

8. Findings & Discussion III: Influential Factors

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> "…it might have not been the first thing that would have sprung to my mind when I was planning it until I got there, you know, that certain children would have had a difficulty"
> - Teacher, Case Study 3

*

A number of factors likely to influence the conduct or educational value of a farm visit were identified in this study. These emerged from both the survey and case study elements of the project, and were distinct from factors specifically reported and discussed as barriers to farm visiting (see Chapter 10). The findings in this chapter mainly contribute to addressing the first two research questions: 'How can teachers use educational farm visits, and link them with CfE?' and 'How do farm visits contribute to children's learning?', but also have relevance for the questions on farmers' experiences, and potential barriers to farm visiting.

The main factors reported and discussed in this chapter are:

- Child age: Is the most common age for farm visiting the most appropriate?
- Urban/rural background of pupils (and teachers): The influence of this on teachers' perceptions of the importance of farm visiting.
- Additional support needs and other individual requirements.
- The visit venue / type of farm.
- The timing of the farm visit:
    - within the topic;
    - within the school year.
- The potential value of repeat or multiple visits.

8.1. Child age

In the survey, teachers who had been on an educational farm visit in the previous year were asked to identify which age group(s) had been on that visit. Figure 8.1 demonstrates that the groups most commonly visiting the farm were Primary 2 and Primary 3, that is, children around 6-7 years of age[21].

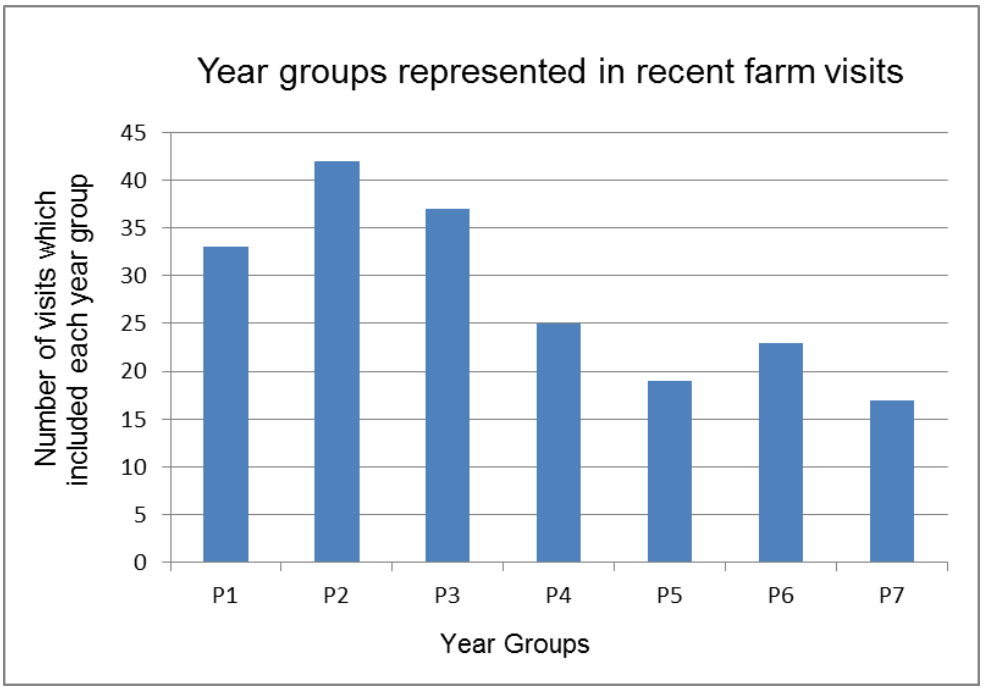

Figure 8.1: Year groups represented in recent farm visits

This profile of age groups was supported by information collected informally from RHET/RNCI. Although age group information was not collated centrally by those organisations, regional project co-ordinators responded to an email request with their own perceptions of the most common primary age groups for whom visits were arranged in their area. This varied slightly between regions, but overall the most common age group was identified as P2-P3 (RHET/RNCI Project Co-ordinators, 2014, personal communications). Similarly, some of the more experienced host farmers identified the P2-P3 age range as the more usual primary age group visiting their farms. The schools and farm visits which were available as potential case studies also reflected this finding; although cases were purposely selected to cover the whole primary school age range, upper

[21] Several responses indicated multiple year groups attending a single visit. The total number of age groups represented is therefore greater than the number of respondents reporting a recent visit.

primary farm visits (i.e. P4-7) were less frequently available for consideration, and consequently cases are not evenly spread across the stages of primary school (see also Chapter 5).

8.1.1. Preferred and most appropriate age group

Some teachers and farmers queried whether Primary 2 and 3 is the most appropriate age group for farm visiting, and some suggested that slightly older children would be more engaged and would gain more educational benefit from such visits. As discussed in Chapter 6, however, teachers' decision to visit the farm was influenced by their choice of topic and the need to address specific curricular 'Experiences and Outcomes', and some teachers felt that P2/3 was the stage of the curriculum guidelines at which farming topics were most appropriate.

> "…we have rough guidelines as to what topics you would study in each age group and food and farming does come into sort of primary three level"
> - Teacher, Case Study 8 (Primary 3)

Furthermore, there may be an assumption amongst some teachers that farm visits are something for children in lower primary, rather than for older pupils. This was highlighted by one teacher who had herself taken a group of older pupils to a farm.

> "…generally across most schools, farm topics are generally the younger ones, primary ones, twos and threes, and they're not often a topic for Primary 7"
> - Teacher, Case Study 10 (Primary 7)

Some teachers agreed that taking young children to a farm was important, as they could start to develop their understanding of food sources at an early age. Younger children were also thought to be more accepting, and less likely to become distressed by the realities of farm life and food production.

> "When you're younger that's when you form most of your opinions and then as you get older you just add on to those opinions […] they're very accepting of everything that's said and I think they process everything"
> - Teacher, Case Study 5 (Primary 3)

In contrast, several teachers felt that children in the Primary 1 to Primary 3 age range would be unable to fully appreciate the farm context; they would find the visit overwhelming, and struggle to focus. Similar sentiments were expressed by some farmers, who believed that younger children would not get as much out of the farm visit experience as those in older age groups.

> "…age 5 and 6 children really are almost, they're almost too wee to understand a lot of it, whereas [older children] maybe are a wee bit more kind of, right, can take more in. I have had one or two visits where it had been Primary 1 and 2, and eh, you've really got to tailor your talk totally differently […] when they're a wee bit bigger you can go into a wee bit more depth"
> - Farmer I

The teacher in Case Study 2 reported noticing a difference even between the Primary 1 and Primary 2 children in her class at the visit.

> "…there is a big difference, the primary twos can rein themselves in a wee bit more and are a bit more willing to listen […] whereas my [primary] ones just see and go, they see, they've seen it and they just go because they can't quite rein themselves in. Not all of them, but I did notice it with quite a few of my primary ones."
> - Teacher, Case Study 2 (Primary 1/2)

Nevertheless, the teacher felt that the visit was valuable for both age groups.

Some of the teachers indicated that their reluctance to take younger children to a farm was based on their perception of the risks.

> "I certainly wouldn't go younger than the Primary 3s […] I can see the benefits of taking younger children there I just don't know personally if I would, knowing that there are risks on a

> farm, take them to a farm specifically."
> - Teacher, Case Study 14 (Primary 3/4)

The teacher in Case Study 7 however felt that these risks could be mitigated by having a high ratio of adults to children, to ensure that the pupils were carefully monitored at the visit.

The teachers in Case Study 4 both had previous experience of taking Primary 1 children to the local farm park, and noted the difference between the experience offered by RHET, and these "more commercial… visit farms" (Teacher B, Case Study 4). The farm visit with RHET showed the farm as "just a way of life" (Teacher A) where everything is there for a purpose. These teachers felt that, in contrast to their P5 class which was part of the case study, it would be more difficult to maintain younger children's interest in that type of farm.

> A: I think taking Primary 1s or 2s to the working farm, I don't know how much it would've kept their interest, because, I mean there was cows, and that's what they saw, there was other bits but it was mainly cows, whereas at sort of [farm park type] farm there's all your animals, and that's lovely for little children, it's like, 'And this is…'
> B: And they have wee classrooms where they can do
> A: Yeah, hands-on things
> B: Touching, hands-on and there's a play areas and things

One of the teachers later commented:

> "[P1s] don't want to be learning about the life of a farmer, they want to go and play, they want to feel the animal fur"
> - Teacher B, Case Study 4 (Primary 5)

These teachers concluded that the authentic farm location they had visited with their Primary 5 pupils through RHET would not be sufficiently engaging for Primary Ones. They would not consider taking younger children to that type of visit, and instead they would visit a farm park with younger children, and the type of farm offered by RHET with older children.

Conversely, a few teachers expressed the view that a RHET-style visit would not engage older primary children.

> "I think if they were older I don't know if they'd appreciate it as much, would they find this kind of boring or something?"
> - Teacher, Case Study 5 (Primary 3)

Although the question of age was not included in most groups discussions with children, the topic arose with one group of Primary 7 pupils. They reported that, while some pupils in their class had disliked the farm visit experience (due to, for example, the smell), none had found it boring. One pupil suggested that children in Primary 2 might be bored by a visit to an arable farm, but another suggested that his younger sister (in Primary 1 at that time) would very much enjoy the visit. The group participants generally felt that farm visits would be enjoyable and beneficial for younger pupils, but reflected the suggestion of some teachers that a 'farm park' visit might be more appropriate for the younger age group.

Amongst teachers and farmers, the predominant view was that the type of farm visits offered by RHET were most appropriate at the Primary 4 and Primary 5 stages (around 8-9 years old). Children at this stage were regarded as more likely to be engaged with the sights around the farm and explanation of processes, rather than to feel overwhelmed or disinterested.

> "I think Primary 4 is quite a good age because they are still quite innocent […] they are very inquisitive, whereas I think actually the further up the school you go, they then start to become silly with what happens on a farm, whereas the younger ones […] they absorb so much more information rather than just being like, 'oh well, I've have seen that on the telly, I know what that looks like'"
> - Teacher, Case Study 14 (Primary 3/4)

> "I have always said that it's a pity we couldn't get, if they were going to put farming in the curriculum, put it in at P4"
> - Farmer E

The views of some case study participants, that older children may be less

engaged by a farm visit, are supported by previous research. Childwise (2008) conducted a study with children in England and Wales, and found that 65% of children in Years 3-4 (around 8 years old) reported that they 'really liked' visiting a farm. Amongst slightly older children (Year 5 and 6), this was only 44%. Similarly, Risku-Norja and Korpela (2010) reported the belief of teachers in Finland that the younger pupils in their study had better attitudes to farming and farm visits, and were less reserved about the prospective visit, than older pupils. The British Nutrition Foundation found that 81% of primary-age children in the UK reported that they would like to visit a farm, whilst amongst secondary-age children, this was only 54% (BNF, 2015). Although these findings seem to indicate that farm visits are better suited to younger children, however, the age groups included in the studies are not consistent. The 'younger children' in Risku-Norja and Korpela's (2010) study, for example, were 10-11 years old; the age group reported in the Childwise (2008) study as the older cohort. The broad implication from these studies is of a continuum of decreasing farm visit interest and engagement as children progress through school, which reflects the findings from the present study. While this may suggest that visits should take place most appropriately with younger, more interested pupils, it does not however address concerns around the suitability of farm visits for the youngest primary school children, and their potential to learn from such visits. Furthermore, Larson *et al*. (2010) identified a similar age-related decline in measures of environmental relationships amongst pupils in Georgia, USA. They suggest that environmental education activity should "focus on maintaining positive eco-affinity and environmental knowledge in 10-year-old children before they progress into the teenage years" (p.44). The perceived decline in pupils' interest and engagement with farm visiting as they progress through primary school, rather than indicating that the visits should be aimed at younger pupils, may highlight the even greater importance of such visits for older pupils.

8.2. Urban and rural influences

The life experiences of pupils growing up in urban or rural areas, and teachers' own personal backgrounds, were also identified as an important factor

contributing to the conduct and value of farm visits. Furthermore, the location of the school was found to be influential.

8.2.1. Children's and teachers' backgrounds

There were mixed opinions amongst teachers of the importance or necessity of farm visits for children from rural background, as compared with those from urban areas. Some teachers emphasised the need for urban children to visit these locations, of which they would otherwise have no experience. One teacher, herself from a farming background and still involved in farming, but teaching in an urban school, emphasised the need to provide these sorts of experiences for urban children, as many have "no idea about rural life at all" (Teacher, Case study 2). Similar sentiments were expressed by some survey respondents in written comments:

> "Farm visits are particularly beneficial for city/town children who have little or no experience of a rural environment"
> - Survey respondent 63

One case study teacher noted that in her previous rural school, she might not have considered taking the children on a farm visit, but in her present urban school, a visit to a rural outdoor location was important:

> "Living where we were [before, in a rural area], I don't know whether I would've taken a class on a farm visit because so many of them lived on farms, you know, being in a rural school. Okay, a town school's different and a city school, I think it's even more important to take the children out."
> – Teacher, Case Study 8

In contrast, some teachers were clear that farm visiting was equally important for children in rural schools. They suggested that, although children who live in rural locations may see farms around them, many don't have direct experience of a farm, or any understanding of what happens there. Children may visit friends who live on farms, but are unlikely to play and socialise in working areas.

> "…the whole idea of getting them to a farm is so important since they live in a farm area. But they don't actually know the first

> thing about it".
> - Teacher, Case Studies 11 & 12

Even children who live on a farm, although they may know something of their own farm's processes, may lack understanding of other farm types. Speaking about a child in class who belongs to a sheep farming family, one teacher explained:

> "Well she's very knowledgeable about certain things but there's other stuff she'll come away with and you'll think, 'how come you don't know that?' She is very specific about her knowledge to do with sheep, but the whole general, stuff about cereals and seasons, and the sort of sequential stuff about why happens when, she didn't have much of a clue about"
> - Teacher, Case Study 6

The teachers' comments on this reflect the perspective of Kos and Jerman (2012, p.329), who expressed surprise at their findings around four year olds' increased knowledge of food sources following a farm and garden-based activity:

> "The results of our experiment are nevertheless surprising to a certain extent, as the tested children come from a partly rural environment, where farms can be found close to their homes. We asked their parents about the options children had had prior to the experiment for coming into contact with farming and vegetable gardening. As many as 53 per cent answered that either their relatives or their neighbours had farms, while 68 per cent said they had a vegetable garden at home. It is our assumption that parents had previously not devoted much consideration to taking advantage of their environment in order to enable their children to come into direct contact with food production and experience it themselves."

Similarly, the knowledge and understanding of children living in rural areas was explained by the teachers in the present study as resulting from the input of adults, and whether these adults had the knowledge and motivation to explain the surroundings and activities to the children.

The lack of experience that even rural children have with farms was also reflected in the group discussions with pupils. Amongst the urban schoolchildren, several reported first-hand experience on farms; one had come from a farming family in Ireland before moving to Scotland, and others had visited farms previously with other schools, with family, or with youth organisations (e.g. Scouts, church group). Many of these pupils seemed aware of the distinction between farm parks and the "proper farm" (Pupil aged 11, Case Study 10). Although several reported having visited a farm park previously, for many the visit with school was their first to a more authentic farm location.

While children from rural schools[22] often described having friends and family who lived on farms, this did not necessarily mean that they had visited those farms, or had learned anything much about the farm if they did visit. Those few children in this study who were themselves from a farming background tended to see themselves as experts with no need to visit a farm, although one reported that he enjoyed the opportunity to learn about animals with which he was less familiar. Most of the children in this category were however in the younger age groups, and may lack self-awareness, and understanding of the wider farming world, purely as a consequence of their age. One interesting point raised by the older pupils with personal farming experience (on their own farm or helping at a local farm) was that the visit with their school seemed somewhat artificial to them. They were unused to the strict handwashing and footbath procedures, and had to restrain themselves from getting as close to the animals as they were used to (see also Chapter 10). This contrasts with the sense of authenticity identified in other areas of this study.

Farmer interviewees were generally consistent in the view that farm visits were valuable to rural children as well as urban ones, although a few suggested that visits were *more* valuable to urban children. Children from rural areas were characterised as potentially slightly more familiar or knowledgeable than others, (due to seeing farms in the surrounding areas), but nevertheless lacking understanding of what they see. A few farmers suggested that the exception to this may be children growing up on a farm, but noted their perception that there were fewer 'farm children' now than in the past.

[22] Using the six-fold urban/rural classification system described previously, one school (two cases) belonged to the 'Accessible Small Town' category. This school was next to a farm and many of the children had farm experience. It is therefore included here as a 'rural school'.

> "…touching base with my children's friends, I realised that even though we live in a fairly rural location, most of them actually have very little understanding or idea as to what goes on, on a farm"
> - Farmer H1

Another farmer expressed similar sentiments, and also alluded to the possible relevance of teachers' own backgrounds.

> "I would say in rural schools they have probably got more understanding, although I think, I'm not sure what the situation is in our own local school at the moment, a lot of the rural schools don't actually have any farming kids in them, and the teachers aren't necessarily country teachers, although they are working in the country"
> - Farmer E

Broadly, adults in this study concurred with the findings of Harris (2009, p.18), who reported that amongst farmers there was a "general concensus [sic] … that most rural children are not aware of farming." Farm visits were identified in the present study as important for children from rural backgrounds as well as urban ones. As discussed in Chapter 2, Childwise (2008, 2011) found that more children from urban areas had visited a farm in the previous three years than those from suburban and rural areas, and attributed this to the influence of school trips as an important facilitator of farm visits for urban pupils. While those studies did not collect data on teachers' motivations, they may reflect an assumption amongst teachers that special efforts should be made to take urban children to a farm. Teachers in the present study who had personal experience of farming seemed particularly aligned with this viewpoint.

8.2.2. School location

Several teachers regarded the location of their school as important for the opportunities which could be offered to pupils, and those in rural schools felt fortunate to have access to spontaneous 'visits' and experiences of farming.

> "We live in the middle of an active crofting community and regularly use opportunities offered by our neighbours or just take opportunities when out walking from school as well as making planned visits."
> - Survey respondent 220

In Case Study 6, both the teacher and farmer emphasised the value of their locations and the opportunities for pupils to see routine farm work as part of their normal school day.

> "… we just go out down the fields to watch a combine working in the field or just for a wander, cos you know we've got that right on our doorstep. Or they're planting tatties or something like that, we are lucky we can just, we can look out the window and say 'right, what are they are doing today, right we'll go down'
> - Teacher, Case Study 6

> "…when I was combining next to the school last year, both [teachers] came down with their classes, they must have just come down on the spur of the moment, when the combine was going […] the combine two yards away from them, two metres away from them, as I turned at the end […] it's a great way for them to learn"
> - Farmer, Case Study 6

This appreciation of the advantages of particular school locations reflects the findings of a previous Scottish study, in which teacher participants reportedly viewed themselves as fortunate to teach in particular areas due to the opportunities for local visits afforded by their school locations (Higgins *et al.*, 2006; Ross *et al.*, 2007).

In the present study, one teacher in an urban school recognised that children in rural schools would have additional spontaneous opportunities to learn about farming, but implied that rural children might consequently find less excitement in a farm visit than her own pupils.

> "…if you were in more of a rural or farming area, you would actually be able to go out and have a bit more experience, you know see the farmers harvesting the land, cutting the grass, seeing when the cows go out, seeing, you know, just the observations of that, whereas in this [urban] area, when they see the tractor on the fields cutting the grass they're like beside themselves, because they don't ever get to see that."
> - Teacher, Case Study 2

A similar sentiment was expressed by one farmer who noted a difference in the response of children from urban areas to a farm visit, compared to those from rural areas.

> "…you get a bigger reaction from kids from the middle of [the city] on a farm. The people from, the children from [the local school], they're living in a village surrounded by countryside and they've seen a cow, and they've seen a sheep. When the people, the children from the middle of [the city] come out it's... they've got a bigger wow factor."
> - Farmer D

In relation to the advantages of particular school locations, several teacher participants from urban schools also recognised that their own school locations provided easier access to other local facilities and learning opportunities than might be available to rural schools. Their comments on school location in the context of farm visiting tended to focus on transport issues, which are discussed in Chapter 10.

The influence of school location was also explored using survey data. The school postcodes of those teachers who reported a recent farm visit were analysed to provide a profile of school locations using the six-fold urban/rural categories. Table 8.1 shows the school location for the survey respondent teachers who had been on a recent farm visit, as a proportion of all the respondents in that category.

Table 8.1: Teachers with recent farm visit, as a proportion of all respondents in urban/rural category

Urban/rural category	Recent farm visit	Total Respondents	Recent visit as a % of all in category
Large Urban	7	25	28.0%
Other Urban	21	58	36.2%
Accessible Small Towns	11	24	45.8%
Remote Small Towns	2	5	40.0%
Accessible Rural	16	55	29.1%
Remote Rural	16	61	26.2%
Unknown Category	17	36	47.2%
Total	**90**	**264**	**34.0%**

The table demonstrates that, amongst survey respondents, the lowest relative proportions of teachers with a recent farm visit were based in schools at the extremes of the urban-rural spectrum; remote rural (26.2%) and large urban (28.0%). The highest proportion was based in schools in Accessible Small Towns (45.8%). There are several potential explanations for this, including the possibility that teachers in rural areas attach less importance to farm visiting, and those in larger urban areas. These figures should be interpreted with caution, however, due to the small sample size and degree of self-selection of respondents. Furthermore, due to the timing of the survey, it may be that some responding teachers had worked in a different school at the time of their farm visit than the one indicated by the postcode provided in the questionnaire response.

8.3. Other individual factors

Other factors relating to individual children's backgrounds and requirements (e.g. religious and cultural; additional support needs) were also discussed in some of the teacher interviews. In many cases, these discussions were hypothetical, and the teachers reported having no personal experience of the situations that were considered.

The relevance of children's religious and cultural backgrounds was discussed in relation to farm visiting because some faiths and traditions forbid certain types

of foods, or have particular approaches to the slaughter of animals for food. One teacher reported the concern of a parent in a Muslim family that her child would come into contact with pigs at the farm; the teacher spoke with the parent to explain what the children would see and do on their trip to a dairy farm, and the parent was reassured. No other teachers reported experiencing any religious or cultural issues around farm visiting, either from parents or from pupils. Several teachers however indicated their reluctance to explicitly discuss the killing of animals at all (see Chapter 9). This suggests that for many, the potential for concern around religious and cultural sensitivities in such discussions was avoided. The Co-op Farms staff were similarly asked to discuss any religious or cultural issues they had encountered, but felt that there were no specific issues as the cookery elements of the visit only used vegetables.

Teachers were also asked to discuss any accessibility issues that they had encountered in planning their visit. As mentioned in Chapter 6, one teacher reported that a pupil in her class who used a motorised wheelchair was unable to attend the farm visit. Other teachers discussed children who had visited the farm while recovering from leg injuries; these were regarded as manageable with adult support, and paved walkways (such as those at the Co-op Farm) were identified as especially useful in these cases.

Accessibility for children with other additional support needs was also discussed briefly with some teachers. One teacher noted her concern, prior to the farm visit, that a child in her class with sensory processing difficulties would struggle with the smells, but in practice this was not a problem. Other teachers discussed the need for extra preparation time and the availability of a predetermined 'Plan B' for children on the autism spectrum. These considerations were regarded by teachers as part of the normal planning process for any out-of-school trip, and were not specific to the farm visit. It should be emphasised however that this research focused on mainstream schools, and did not explore farm visits for children attending special schools, or for those with more complex needs. Rickinson *et al.* (2004, p.50) found that there are "many barriers that disabled students can face to participating fully in fieldwork" and highlighted "the need for accessibility to be placed 'at the heart of curriculum design' as opposed to simply offering disabled students surrogate or different field experiences." In Scotland, there is a 'presumption of mainstreaming' (see,

for example, Pirrie, 2008), resulting in a broad range of pupils' needs within one class, which teachers are required to take account of in their planning. In relation to farm visiting, this has implications for the authenticity and type of locations which can be visited (see below).

8.4. Timing of the visit

8.4.1. Within the school year

The school year in Scotland runs from around mid-August until the end of June or early July, with some variations between individual local authorities. Although educational farm visits are available throughout the year, both the survey and case study elements of this research indicated that the most common time for visits to take place is between the end of the spring holiday (usually April) and the start of the summer holiday (end of June/early July).

Figure 8.2 shows the month in which the farm visit took place for the 90 survey respondents who had been on an educational farm visit in the previous calendar year (May 2012 – May 2013).

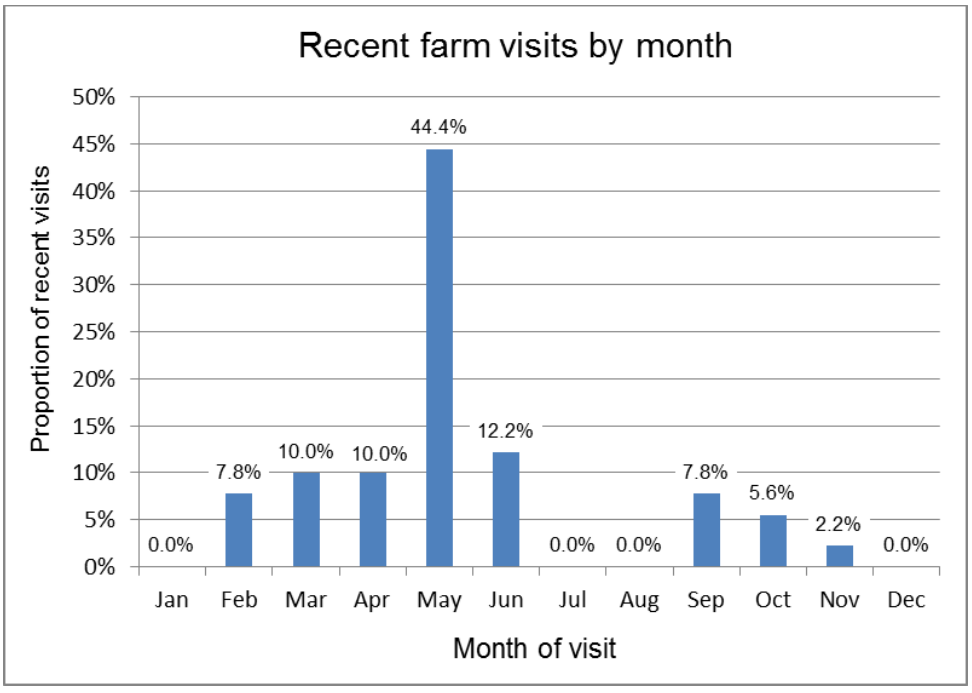

Figure 8.2: Month of recent farm visit

While the whole school year 2013-14 had been made available for case studies, very few visits which met the criteria for inclusion took place in the early part of the school year. The visit which was part of the first case study was originally arranged for November 2013, but this was rearranged by the school and instead took place the following February. All the subsequent case study farm visits took place between February and June 2014. Table 8.2 shows the timing of the farm visits which were part of case studies, and demonstrates a similar pattern to the visits reported by questionnaire respondents.

Table 8.2: Month of farm visit – case studies

Month	Case Study visits
January	0
February	2
March	3
April	0
May	4
June	5
July	0
August	0
September	0
October	0
November	0
December	0
Total	**14**

In interviews, teachers indicated that there were two main reasons for these visits taking place towards the end of the school year. Perhaps unsurprisingly, given Scotland's reputation for unpredictable weather conditions, the likelihood of good weather for the visit was an important consideration for teachers. Despite having experienced poor weather on the day of her own farm visit in June, the teacher in Case Study 7 noted that "either side of the summer holidays" is a good time for a farming topic, since there is more likelihood of good weather for a farm visit. Another teacher expressed a similar sentiment:

> "I wouldn't think of doing [a visit] in the winter, because of weather… if you had a wet day a farm visit actually could be quite difficult because it's mainly outdoors."
> - Teacher, Case Study 8

In contrast, one farmer indicated that the best time for pupils to visit would be in the winter, since animals which would be out in the fields in the summer months would be indoors, and children would be able to see them 'up close'.

Another farmer recognised the concerns about the weather, but balanced these with the operational requirements of the farm.

> "I think Spring to Summer is the right time, Easter time, cos it can be too cold earlier on, not always, but you know, from the end of March to the end of summer term is about right, because from now [August] til October, the farm can be too busy harvesting, in our case"
> - Farmer G2

One teacher similarly noted the conflict between these operational issues, and what she perceived as the most interesting time to visit the farm.

> "…it'd be really good to go to a sheep farm, but then the best time is during lambing and that's when farmers are really too busy to see you!"
> - Teacher, Case Study 8

This comment also illustrates a second influential factor on the timing of the visit; teachers' perceptions of the most interesting time for a visit and the important seasonal links which could be made. In general, the focus was on harvest time in the autumn, or on the emergence of new life in spring. One participant highlighted the potential impact of a visit in spring, to see new-born animals, on engaging children's interest:

> "I think that's a good thing for the younger children and slightly older children as well, when there's new born animals there, I think that's a real pull for them"
> - Teacher, Case Study 3

The seasonal availability of practical activities such as growing plants in class was also noted as valuable by one teacher.

> "…it seemed like a good time to do the topic in this term four because we could actually grow things in the school and we could go to farms and new life was beginning; so it really tied in with the Curriculum for Excellence for us."
> - Teacher, Case Study 9

Unusually, the class in Case Study 6 had taken 'Farming' as their topic for the whole school year, and had focused on different aspects (such as science, geography, and history) at different times throughout the year. Reflecting other teachers' comments on the interdisciplinarity of farming topics (see Chapter 6), the teacher felt that few other topics would have the variety to encompass the whole curriculum and maintain the children's interest across the year.

8.4.2. Within the topic

In a few of the case studies, the teacher participants discussed the timing of the farm visit within the broader classroom topic. One teacher had particularly chosen to visit a farm early in the topic, since she felt that the children had little background knowledge and that the visit would be a good starting point. Others, for logistical reasons, were unable to conduct the visit until after the topic was complete, but felt that this gave the children an opportunity to recall and consolidate the earlier classroom learning. Nevertheless, most would have preferred to undertake the farm visit at the time of the topic.

In one case study, the teacher of a Primary 1/2 class had chosen to cover the farming topic early in the new school year, in order to align with and incorporate whole-school harvest festival celebrations. She was however required to delay the related farm visit until later in the school year, when all the pupils in the class had turned five[23]. As a consequence, this teacher was considering waiting until the final term, when all the children would be at least 5 years old, to teach farming to future classes, although this would mean the loss of the connection to harvest-related activities in school. She explained:

[23] RHET policy states that children cannot attend a farm visit before the age of 5.

> "I think it would maybe broaden their knowledge just that wee bit more, make their learning a wee bit more coherent if [the visit] was at the same time"
> - Teacher, Case Study 2

In one case study, pupils had been on their farm visit several months after their work on food and farming. They noticeably struggled in the group discussion to connect their visit to their earlier topic, and at first attempted to link the visit with their current topic, until one pupil recalled their previous topic. This indicates the value of conducting the visit alongside the topic where possible.

Farmers expressed differing views on the timing of the visit within the topic, but tended to agree that the visit should not be the pupils' first introduction to the topic. Visits to the farm were thought to be more valuable if pupils already had some knowledge of what they would see, and some background information on what the farmer would explain. This initial introduction could take place in class through the class teacher, supported by a 'topic box' of farm items (ideally from the farm the class was due to visit), or through a visiting speaker (ideally from the host farm; see also Chapter 9).

> "…they definitely would get more out of a visit from the farmer at the start [of the topic] and then the visit [to the farm] at the end, even if it's just ten, fifteen minutes at the start. One of the schools […] I put in a box at the start of their project, so it was all things relevant to our farm, so within the box I gave them one of our passports, I gave them one of our cow collars […] I gave them stuff that was relevant to their particular visit rather than general farming ones"
> - Farmer H

Several farmers emphasised the importance of being able to find out what the children had done in class and their level of background knowledge, which allowed farmers to think in advance of the visit about what they would show and say to the group. The opportunity for discussion with teachers was highlighted as a benefit of the pre-visit process required by RHET (see Chapter 10). In one case, however, the farmer cautioned against *too much* preparation, which he felt resulted in children being coached on specific questions to ask at the visit, rather than identifying their own areas of interest.

8.5. Multiple visits

The prospects and practicalities of undertaking multiple farm visits were also discussed with some teachers as part of the case study interviews. A few teachers felt that there was little educational benefit in taking pupils to the same type of farm more than once within a single school year; one suggested that it was "probably not worth" taking pupils to the same local dairy farm twice within the same school year. She noted however that many of the children at her school visited that same farm multiple times throughout their childhoods, with organisations such as Brownies and Beavers[24], as well as with school, and gained additional benefit from this:

> "…there are certain children there that are going back to the same thing again and again and again, but they still love it because there's something new to see every time"
> - Teacher, Case Studies 11 & 12

Although she queried the value of multiple visits within the same school year, this teacher had recently instigated a programme of taking pupils to the local farm in Primary 2 and Primary 7, in relation to different topics (although the current P7, i.e. Case Study 11, had not been to the farm in P2). She explained:

> "Every time they go, and that's the same trip they're doing in Primary 2 and Primary 7, but they get different things out of it. Because they're older and they're able to understand a little bit more about what they're doing"
> - Teacher, Case Studies 11 & 12

Similarly, the other teachers who had expressed uncertainty around the value of multiple visits to the same farm type within a single academic year suggested that they would be more likely to consider an additional farm visit beneficial if it was to a different type of farm, or a few years later when children's understanding would be different.

In contrast, several teachers clearly felt that multiple visits within the same school year were a valuable learning opportunity. Interestingly, the teachers who were most emphatic about this seemed to be those from a farming background or with personal experience of farm life, although the Case Study 6

[24] 'Brownies' and 'Beavers' are subsections within the Scout and Guide movements in the UK.

teacher who conducted multiple visits as part of a year-long topic did not report a personal background in farming. The main valuable features of multiple visits were identified as the opportunity to demonstrate seasonal changes, and the prospect of developing a deeper understanding of a more familiar place than would be likely at a first visit.

The pupils in Case Study 7 had visited a farm at the start of the school year in relation to a farming topic, and their second visit (which was the focus of the case study) was linked to their topic on the Commonwealth Games and athletes' healthy lifestyles. Their visits were organised through the 'Co-op Farm to Fork' programme, which actively promoted a model of multiple visits within the same school year.

> "…that was something that from the very beginning that Farm to Fork actually […] suggested they should come four times a year […] 'cause the idea was to come once a season, but em, it works quite well them coming in the autumn and then in the spring/summer"
> - Visit Leader 1, Co-op 'Farm to Fork'

The teacher in Case Study 7 recognised the value of a second visit, even although it was not perhaps an obvious fit with their topic at the time, for developing the children's knowledge.

> "… it was good really just to let them see the whole cycle, and the way you do a farm topic at one point in the year, it's nice to be able to bring it back up again, it doesn't fit with your topics but it fits just with the kids' knowledge"
> - Teacher, Case Study 7

Other teachers similarly noted the benefits of building on previous learning with additional visits. The Co-op Farm to Fork staff however highlighted the challenges in encouraging teachers to undertake and see the value of multiple visits.

> "It is something that sometimes you have to get over with the staff, because the staff, the teachers maybe say, you know, 'Oh, we've done it already', so to get over that, and they feel they're coming and they're doing more or less the same thing, but it's

> this, seeing how things are changing"
> - Visit Leader 1, Co-op 'Farm to Fork'

A similar perception of the farm experience was found amongst children in a study by Smeds *et al.* (2015), who reported that pupils "did not experience farms as a dynamic environment where every season offers a new aspect of learning" (p.10) and believed "that farms were static and unchanging environments and that they had learnt everything about them during one or two visits" (p.11).

The importance of demonstrating the seasonal changes in the environment and the day-to-day tasks on the farm was recognised in the present study amongst the host farmers, some of whom aimed to develop ongoing links with local schools rather than simply hosting one-off visits. One farmer, for example, maintained a commitment as a classroom volunteer at a local school, and considered himself fortunate to have the time to do so. He felt that this impacted on the engagement of the children from that school when visiting his farm (see also Chapter 9), but recognised that this was not something that could be done with every school or by every host farmer.

> "…they know me, so they're willing to talk and ask questions […] they're not frightened to ask because they know me, they all know me well enough, you know and I think that's very good but there's no way we can do that with every school, it's not practical. I mean, I'm very lucky because of the type of farming I do, I've got time. Not many farmers do."
> - Farmer E

The development of ongoing links between a school and local farm, as demonstrated in Case Studies 11 and 12, was described by this farmer as "perfect…ideal" (Farmer E), and "excellent" (Farmer G). Several farmers recognised, however, that the practicalities of such a scheme would make it difficult to utilise in a widespread way.

The importance and value of repeat and multiple visits is clearly featured within Curriculum for Excellence documentation. *Curriculum for Excellence through Outdoor Learning* states that "a visit to a local farm in P3 will have very

different outcomes from a visit to the same farm in P7" (LTS, 2010, p.10), while a subsequent document offering practical guidance emphasises that:

> "A 5-year-old child is likely to have a very different experience when going for a walk in their local area from that of a 15-year-old. When planning a progression of outdoor experiences, practitioners can use these natural cycles and changes advantageously, adding value to the curriculum at every level" (Education Scotland, 2011a, p.6).

The educational value of repeat visits as an opportunity to develop familiarity and a sense of relationship with a particular place are also supported by the research literature. Multiple visits to a single location can improve, for example, memorability (Wolins *et al.*, 1992) and attitudes (Powers, 2004). Furthermore, multiple visits can contribute to developing a sense of place, which in turn can foster a feeling of community belonging, personal development, and learning (Cumming & Nash, 2015). In addition to the direct educational benefits, Harris (2009, p.26) found that "[r]epeat visits also present added value to the teacher, as returning to the same location is easier than trips to new locations, in terms of risk assessments and travel arrangements."

Lundström and Ljung (2011, p.3) recognise that:

> "[a]gricultural organizations around the world offer study visits for school children to learn about agriculture and food production. Often it is short visits, where students may passively watch and are informed of different activities. […] The students often only have a snap-shot of a complex situation. Probably a deeper understanding requires more time and work with interconnected issues to be able to set agriculture in a broader context."

Similarly, DeWitt and Storksdieck (2008, p.183) suggest that "repeat visits are rarely possible" but suggest that the value of a trip can be enhanced by supporting classroom activity. In the context of farm visiting as part of Curriculum for Excellence, multiple visits are clearly the ideal for enabling pupils to develop a broader understanding; however, where repeat or multiple visits are not possible, other opportunities such as inviting farmers to speak in the classroom may contribute to pupils' understanding.

8.6. Farm facilities and authenticity

The type of farm selected for the visit is another factor which has the potential to influence the conduct and outcomes of the trip. Whether the farm is dairy, arable, beef, or another type of farm, is clearly relevant to the class topic, classroom teaching, and the teacher's intended purpose of the visit. Teacher participants in this study who had arranged their visits through RHET/RNCI were content that the type of farm had been appropriate for their requirements.

The type of farm may also relate to what children can gain from the visit. One farmer suggested that farms with animals would be of interest to all ages, but that those without would be less engaging for younger children.

> "When you've got somewhere like a dairy you've got baby calves, baby calves appeal to anybody, of all ages, you've got the big huge cows with massive udders that they just are aghast at, you know, how big they are and how much milk they give, that appeals to all ages […] if you take them on to an arable farm […] or something like that, then I would expect you'll lose younger ones"
> - Farmer H1

This aligns with findings from farmers in a previous study, many of whom reported children's enjoyment of seeing animals, and suggested that arable farms "had less to immediately engage children" (Harris, 2009, p.18). Furthermore, the view of the farmer in the present study is clearly relevant to the discussion above, of child age at the time of the farm visit.

Another distinction discussed by teachers, farmers and pupils was between the 'real farm' and 'farm park'. There was a clear recognition of the farms used by RHET/RNCI, which had usually developed solely as farms and had not been designed initially for visitors[25], as different from 'farm parks' and the Co-op Farms' location in a country estate. Although questionnaire respondents were not specifically asked questions around this, one stated a clear preference, with a comment about a previous visit:

> "Used [a local city/community farm] - but this was not a true farm experience. Feel a working farm is what would best

[25] Some had subsequently diversified, for example into the provision of holiday accommodation, and had been adapted for that purpose.

> enhance pupil understanding - broaden their experience."
> - Survey respondent 177

Several case study teachers were familiar from past experience with both the Co-op Farms model of farm visiting on a "managed estate" (Teacher, Case Study 6), and that provided by RHET/RNCI. These teachers felt that both types were useful and worthwhile, but that one or other might be more appropriate for a particular class context.

The Co-op Farms location, which features designated paths and visitor facilities, was considered a more controlled and less risky environment (see Chapter 10), and potentially more suitable for younger children, or groups containing children with behavioural difficulties. One teacher indicated that she would be more comfortable taking her large class into that type of environment than to a RHET/RNCI-style visit, although she had previous experience of successful RHET visits with smaller groups.

The country estate was also highlighted as more appropriate for those with mobility issues; a perspective emphasised by the Co-op Farms visit leaders.

> A: …sometimes you have to adapt how much of a walk you're doing, or where you're going so that you're maybe on the smoother path or whatever
> B: We're lucky there's quite a bit of paths and…
> A: Yes, uh-huh, I mean we are, it is a slightly different situation here because it's not a 'farm' farm as such […] It's like a country park, and that comes into the whole health and safety things as well, that it's a, it's set up here for members of the public to visit anyway, so things like the toilets, there's disabled toilets, we have a ramp coming in here…

Several teachers felt however that the RHET/RNCI farm locations they had visited gave the children an opportunity for a more authentic farm experience.

> "…there was no technology, no shop, no games, it was like a real farm, it was much more beneficial than going to one of the commercial farms that you would go to, em, cos they really saw the nitty gritty part of it"
> - Teacher, Case Study 3

> "I think they got a lot out of it today, they really did. And I think the fact that they just got to see a working dairy farm. That it's not like a farm park, where it's set up. It's a real working dairy farm with the real farmer"
> - Teacher, Case Studies 11 & 12

In contrast, however, one teacher noted in response to a survey question on barriers to farm visiting:

> "Prefer farm in a trailer - comes to you"
> - Survey respondent 80

Smeds *et al.* (2015, p.2) describe an 'authentic' environment as one which is:

> "…truthful to its origins; it is not made up, developed or invented to fulfil a secondary purpose. For example, the farm is a place for primary production, agriculture, has its own culture and traditions and is the home of the farmer and his or her family. This is the truthful origin of a farm and its principal purpose. A farm that keeps animals for show is merely a zoo".

The importance of an authentic farm environment for learning, and for addressing pupils' misconceptions about modern agriculture, was highlighted in a study with children in Germany (Fröhlich *et al.*, 2013). Amongst school pupils in Scotland, authenticity of outdoor learning environments was found to be highly valued (Mannion *et al.*, 2006). The findings of the present study suggest that teachers value authenticity, but that factors such as accessibility (in terms of location, as well as individual children's requirements) may influence the extent to which truly authentic locations can be utilised.

8.7. Chapter conclusion: Responding to influential factors

This chapter outlines a range of factors, identified through the research, which can influence the planning and development, purpose, and educational value of farm visits. Many of these are related to, or interactive with, each other and the findings discussed in other chapters (such as topic choice and planning, and

barriers to farm visiting). They should therefore be considered within the wider context of this study.

The study found that children from both urban and rural backgrounds can benefit from a farm visit. Furthermore, multiple farm visits (either within the school year, or at different stages of progress through school) provide an opportunity for pupils to reflect on their learning, to recognise the seasonality and variety of farm life, and to develop a sense of relationship with the farm environment. The development of ongoing connections between schools and local farms was recognised as a valuable opportunity by several study participants, but one which would be difficult to implement. Schools in Scotland could learn from international examples of this model (as discussed in Chapter 2). While many of the teachers in this study recognised the value of repeat or multiple farm visits, a few did not. Teachers' positions on this may relate to their own understanding or perceptions, but in practical terms, the constraints of curriculum content, scheduling and resources may contribute to the likelihood of teachers considering multiple visits. Issues around teachers' awareness, and the practical constraints to farm visiting, are discussed in Chapter 10.

Additionally, this study found that the age of pupils is an important consideration in farm visiting, relating to their engagement, concentration, and potential for distress. This study found that P2-P3 is the most common age group of Scottish primary school pupils to visit a farm. There was some suggestion however that younger children would be overwhelmed by a farm visit, that children in the P1-P2 age range were too young to fully appreciated the complexities of the farm environment, and that visits would need to be very interactive to maintain their interest. Older primary school children were described by some teachers as likely to be uninterested in visiting a farm, although brief comments from older pupils themselves contradicted this view. Primary 4 was broadly regarded as the most appropriate stage of primary school for the type of farm visit offered by RHET/ RNCI to take place.

All the farms which were part of case studies were 'working farms'; that is, their main purpose was the production of food and drink for sale and consumption. Apart from the variety of produce types (e.g. arable, dairy), the main distinction between the farms in this study was the type of location; RHET/RNCI farms

tended to be those which existed primarily as farms and had undergone little or no adaptation for visitors, while the Co-op Farms site was located within a more visitor-friendly estate. Teachers were clear that both types offered worthwhile learning opportunities, but that some were more appropriate for particular groups.

Several of the 'influential factors' identified in this study align with factors reported by Rickinson *et al.* (2004) as relating to children's learning in the outdoors more broadly. These include child age, prior knowledge and experience, and additional support needs. While this study did not seek to establish the influence of these factors on the pupils' learning at the farm, they emerged as issues which related to the conduct of the farm visit and pupils' experiences at the farm. Teachers may wish to consider the balance of these factors, and the others identified above, with the authenticity of a planned farm visit.

9. Findings & Discussion IV: Farmers' Experiences

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> "…it would be handy maybe for some of them to understand how little it takes for the kids to get something out of it […] It's not as complicated as people think it is […] anything you can, any knowledge you can impart to them is more than they knew before. Farmers really don't understand that."
> - Farmer E

*

This chapter focuses on the findings relating to Research Question 3: What are farmers' experiences of hosting farm visits and engaging with pupils? These findings are predominantly drawn from the eight interviews with RHET/RNCI volunteer host farmers, which took place as part of case studies. Farmers were asked to discuss their experiences of hosting primary school pupils at their farm, including their motivations for offering visits, and the necessary preparations and practicalities.

The main findings discussed in this chapter are:

- Farmers reported personal and professional benefits of offering educational visits, including enjoyment, building community relationships, and promoting Scottish or British farming and produce.
- There was not thought to be a need to make significant or substantial changes to a farm before offering visits, although the provision of appropriate hygiene facilities was identified as a potential barrier.
- Preparation on the day of a visit was reported as minimal and not disruptive, if usual farm standards are already being maintained. It can be useful for farmers to have 'props' available, and to identify areas of interest to pupils before the visit.
- Farmers do not feel that they need to have a high level of curriculum knowledge. They tend to see it as the role of the teacher (and the RHET/RNCI co-ordinator) to make links with the curriculum.

- Farmers value the reassurance of working with organisations such as RHET, for risk assessment and management, as well as support in arranging and conducting pupil visits.
- Some farmers may be discouraged from offering visits by misconceptions around the requirements. An emphasis on their role as simply 'explaining their day-to-day lives' rather than teaching, the minimal changes required to premises and routines, and the support available, can help to address this.

9.1. Historical and current farm visits

The host farmers in the case studies had been offering visits for varying lengths of time. For some, the case study visit was only the second or third time they had hosted primary school children at their farm, while others had been offering visits for a decade or more. Farmers were asked to discuss the background to their hosting of school visits, and several spoke about this in a historical context, either in relation to their own past experience, or to visits hosted by previous generations at their farms. This reflects the description of a generational tradition of hosting educational visits given by some farmer participants in Harris' (2009) study.

In the present study, farmers gave a consistent explanation of a historical decline in farm visiting as having been driven by health and safety concerns, fear of litigation, and publicity around adverse incidents. One farmer explained:

> "…it was grinding to a halt when people started bringing out rules and regulations and all about health and hygiene, and then it started grinding to a halt because it just was too risky to do it, and um, then very bravely we did do one visit since then and then of course there was the scares with um, was it not E.coli? […] and then after that we thought, whoa, let's not do this again, this is just not worth it."
> - Farmer H1

The farmers were asked to describe the ways in which they had more recently come to offer visits. Most reported having been encouraged by family members or other local farmers who were already hosting visits, or approached directly by

the RHET/RNCI local project co-ordinator. Some of the farmers had initially been involved in committee work for RHET/RNCI or other local farming organisations, which had then led to their offering school visits. Many of the farmers reported that it was only the involvement of an expert organisation such as RHET, providing guidance and conducting thorough risk assessments, which encouraged them to offer their present visits.

> "…in those days you got a pancake and a drink of milk from the farmers, you know, and a look round the farm, I know that. But nowadays you obviously don't do any of these things and it's a different setup altogether…it's changed days with all the suing thing and you know what I mean, it's changed days, you can't leave yourself exposed, you have to do it through a thing like, an organisation like RHET now, you couldn't do it, I wouldn't do it unless it was through RHET."
> - Farmer D

The role of RHET/RNCI in providing reassurance to farmers, particularly in relation to risk assessment, is further discussed in Chapter 10.

9.2. Preparation for hosting visits

The farmers reported that they had no need to make significant changes to their farm before starting to offer visits. They felt that there was no expectation to undertake building or vehicle conversions, and although some preparation for visitors was needed, this was not especially onerous or disruptive.

This is in contrast to previous research findings which indicated that farmers undertook significant adaptations before hosting a school visit. Harris (2009) found that many farmers had introduced toilets and handwashing facilities on site. The provision of accessible facilities, and places for children to eat, could be particularly challenging. Several farmers had also made additional adaptations for educational purposes.

> "Many farmers had also managed to find space or convert buildings to create a 'classroom'. This may have been a garage converted to a permanent display area to create a 'museum' or an old barn restored to be weather proof and provided with chairs, tables, and display materials about farming. These areas

> provided a dry, safe area for discussing farming, and a bolt hole if inclement weather affected a farm visit." (Harris, 2009, p.14)

The availability of designated learning areas and displays suggests that the provision at these visits aligned more closely with those in the present study offered by the Co-op Farms project as part of a managed estate, than with those offered by RHET/RNCI.

The provision of toilet and handwashing facilities is identified in the standard RHET risk assessment document as the responsibility of the host farmer. Several case study participant farmers reported that handwashing facilities were already in place for the use of farm staff, and some also had toilet blocks on site. Others suggested that if necessary, individual children would be allowed to use the farmhouse toilet.

One farmer, who was part of the local RHET committee, recognised that the need to provide toilets might be a barrier for some farmers to offer visits. He suggested:

> "…maybe that's something [the RHET local committee] should be looking at, you know, why won't people do it, and maybe if we had a mobile hand washing unit that we could just tow in, dropped off at the farm the night before, with toilets in it, I mean I know you can rent them, but they can be quite expensive to rent…"
> - Farmer E

Health and safety advice relating to children on farms tends to focus on the minimisation of risk, for example from machinery and disease. Guidance from a number of relevant bodies, including Education Scotland (n.d.) and the Health and Safety Executive (n.d.), highlight the provision of places for handwashing, rather than toilets *per se*. The availability of appropriate and accessible toilet facilities, however, is an increasingly important issue for pupils in Scotland (Burton, 2013), and may require further consideration in relation to visiting farms which have not been designed purposely for visitors.

9.2.1. Preparation on the day

Farmers reported that preparation on the day of a visit was also a straightforward process, and not unduly disruptive to the working of the farm. They appreciated the RHET/RNCI co-ordinators' understanding of the farming context, which meant that farmers were not asked to host visits at their busiest times of year.

> "…they're not trying to put you out. Don't go out your way tidying up, just, you don't want it to be a muck hole, but you know what I mean, don't go out your way […] [The co-ordinator] knows what farming's like so she tries and organises it to suit the farmers, if you know what I mean. If she knows it's a busy time she'll not ask, as it gets near silage time, she knows when everything's got to phase out…"
> - Farmer F

The main tasks before the arrival of pupils related to particular health and safety requirements, which were listed on the risk assessment form and discussed as part of the teacher's pre-visit to the farm. These varied depending on the individual farm, but included:

- Taking keys out of machinery
- Tying up dogs
- Switching off electric fences
- Removing chemicals to a safe place
- Covering slurry tanks
- Taping off prohibited areas

Some farmers felt that hosting visits encouraged a good standard of general tidiness and risk awareness around the farm, and that this in turn minimised the preparation time needed on the day of a visit.

> "I don't look upon it really as anything extra because, you know, it's jobs that really need to be done anyway, giving the machinery a wash is no hardship, it probably wanted to be done anyway"
> - Farmer C

> "…we've got to keep it tidy anyway and it always just makes you that little, like if you know the school's coming tomorrow it just makes you, instead of 'Och, ken, end of the week will be fine' you just do it."
> - Farmer H2

A few farmers also made reference to the cycle of farm inspections by various agencies, for which general standards of cleanliness and safety would be maintained, and noted that comparatively less preparation was needed for hosting school visits.

> "It's no more onerous than doing a full farm inspection that we get every year, we get two or three different bits of inspection a year, and all it is, is just, it gives you the chance to just tidy up a wee bit, I mean it's, we try to keep the place tidy anyway"
> - Farmer B

While most farmers had no need to make significant changes before a visit, some spoke about changes they had chosen to make to their usual practice or routine. These included bringing in animals and machinery which would not normally be inside, so that visiting children could see them more closely.

> "The extras I do is I keep the hens and I get pet lambs every year, so it's just some animals for the kids to see, but apart from that I've not had to change anything […] that's just the personal thing, you don't need to do that, people don't need to do it"
> - Farmer E (arable farm)

Some dairy farmers chose to adapt the milking schedule for a small number of cows on visit days, in order that the children could see a milking demonstration. These changes were intended to enhance the visit for pupils, but were made on the basis of convenience and practicality for the individual farmers.

One farmer suggested that making significant changes to the farm would give visitors a false impression, and that keeping changes to a minimum was important for allowing children to experience the reality of the farm:

> "I do think it's quite important that you do, you know, farmers don't have to change their system to suit the visits, I think they

> have to come to a practical working farm as it is"
> - Farmer H1

This also relates closely to ideas around authenticity (e.g. Smeds *et al.*, 2015), as discussed in Chapter 8.

9.3. Farmers as experts and teachers

As discussed in Chapter 7, teachers and pupils valued the opportunity to learn from an expert at the farm.

> "...there are lots of benefits to being outside, but it's a lot of work to organise, and so if you can go somewhere where there's someone with experience. I think that enhances again the, what the children get out of it."
> - Teacher, Case Study 13

Farmers generally recognised and acknowledged their expert status, but most did not see it as their role to teach or directly educate the children. Instead, they described their function at the visit as simply explaining their day-to-day lives in a way which the teachers could then draw on for education, and link with curriculum requirements.

> "I'm not educating them, I'm just telling them what I do, so it's not really that difficult, it's up to the teacher to take what I give them and use it for education...We've just got to give them our information and it's up to the teacher really to take it from there"
> - Farmer E

This also reflects the authentic experience described by Smeds *et al.* (2015, p.2), in which "farmers are not teaching or giving lectures, but proudly and honestly showing their work and allowing pupils to experience a part of it".

There was also some suggestion from farmers that the experience of the farm visit was valuable independently of the curriculum.

> "…we're producing something that all of these children will have at least once a day, and so in my head, whatever I'm telling them and teaching them, it doesn't matter if it fits in with the curriculum or not, it's life, it's their everyday life"
> - Farmer H1

Some farmers noted that on the RHET/RNCI booking forms, teachers often listed the CfE Experiences and Outcomes which they hoped to address at the visit (see Chapter 6). This was regarded as relatively meaningless to most farmers, and several in the study reported limited knowledge of, or interest in, the curriculum guidelines. Most felt that there was no need to have a great deal of understanding of curriculum content. Instead they tended to rely on RHET/RNCI local co-ordinators to ensure that appropriate farms were selected to fit with the teachers' requirements, and to highlight to the host farmer any particular areas on which the visit should focus in relation to class topics or specific learning outcomes. Harris (2009, p.17), found that "there remains a question as to whether it is up to teachers to make links with the curriculum, or whether farmers should be aware of the exact requirements of the curriculum, and seek to deliver against those learning outcomes." In the present study, farmers were clear about where that responsibility lies. Additionally, the role of the RHET/RNCI local co-ordinator in this respect may help to alleviate any uncertainty for farmers and teachers.

9.4. Engaging and communicating with children

As well as valuing farmers' expertise in the broad sense of enhancing children's learning from the visit, several teachers noted their appreciation for the role of host farmers in communicating issues which were not covered in class. In particular, the killing of animals for food was an aspect of the topic which some teachers were reluctant to bring up with pupils, or which they lacked confidence in discussing with children. Often, farmers included this in their description of farm life.

> "…it was mentioned by the farmer, but it wasn't mentioned really in any of my lessons as a 'how we kill animals', but the kids never really asked which I'm grateful for…I don't want to

> talk about it!"
> - Teacher, Case Study 3

> A: …actually the way the farmer was covering it was quite nice, do you know what I mean, it was things that probably as a class teacher we wouldn't cover in class in a Primary 5 class […]
> B: He didn't go into gruesome details but he talked about it
> A: He was honest and open, and I think as a teacher I don't know how I would have covered that and felt confident with it, you know
> - Teachers, Case Study 4

As alluded to in Chapter 8, some teachers felt that farm visits were most appropriate for younger children, who were thought to be more accepting and less likely to be distressed by these issues. One teacher recalled his Primary 3 pupils' responses:

> "…they were very aware and they just accepted it very quickly, it was like they didn't... they all went into lunch and they still eat their beef burgers and all that, there was none of that. None of them became vegetarians after the experience..."
> - Teacher, Case Study 5

Farmers similarly felt that children were more accepting of this information than adults, and explained the rearing of animals for food in a considered, but matter-of-fact, way.

> "…with the lambs, we say, you know, 'What do you do with them?' and we say 'Well, we feed them and they'll eat the grass and then we eat them' and the kids are fine with it. It's the teachers that go, 'Oh how can you eat them?' but the kids just […] They just take it in."
> - Farmer E

> "I don't try and hide anything from them, you've to tell them that these cows will end up as burgers, you don't talk... you don't use the word kill and things like that but that's kind of common sense I think. But I don't try and hide what a farm is in any way, it is a farm, it's for producing food to eat, or milk, one or the

other."
- Farmer D

In group discussions with pupils, the topic of animals being killed for food was not intentionally introduced, but occasionally arose as part of general conversation. Children who discussed the topic seemed unconcerned by describing these processes:

CD: So they really feed them so that when they kill them they…
CB: They've got lots of meat
CD: Yeah they've got lots of meat
CB: So they kill them for a reason
CC: They've killed them so they can get more food
CB: Cos they don't want to kill so much cows
[…]
CD: And all the like, your McDonald burgers are actually cows but dead
- Pupils aged 7-8, Case Study 3

In contrast, some children appeared reluctant to discuss other aspects of their farm visiting experience. At several of the visits, the cycle of collecting and processing slurry, to fertilise the grass for the cows to eat, was a main feature of the description of farm life. In the group discussions, however, some children seemed uncomfortable, or unsure of the appropriateness of discussing this. The introduction of appropriate language, couched in terms of seeking clarification or through further questioning, seemed to allow children to discuss these topics more freely, using the terms that I had modelled. A discussion about the collection of slurry, however, led to one pupil requesting:

"Could we stop talking about toilet things and stuff like that?"
- Pupil aged 8, Case Study 6

This pupil was reassured that the discussion was appropriate in response to my question about what the children had seen at the farm, but then offered the opportunity to introduce her own response to that question, which led to a discussion about horses.

The ability to communicate effectively with a young audience is an important factor in hosting an educational farm visit. Harris (2009, p.16) found that:

> "Hosting farm visits requires a confidence in the ability to speak to large groups, and to explain farming activities in an interesting and understandable way. School visits present the further challenge of engaging young children, and translating day-to-day activities and farming techniques into a language that children can understand. There is the added issue of coping with questions from children, which can be challenging, unexpected, or critical. Many farmers find the thought of this daunting."

In the present study, most farmers were confident in their ability to communicate with primary school pupils. Several explained that they drew on their other experiences of working or engaging with children, either as part of their own family, or in other voluntary roles. Some had also attended training for classroom speakers offered by RHET, and this was regarded as useful, particularly for those who had initially felt less confident in speaking to children.

Farmers also valued the guidance of the RHET co-ordinator, class teacher, and other adults in indicating which areas of the farm might be of interest to the children, and which the farmers themselves might not have considered discussing.

> "…you go round the farm every day, and a lot of the things you just think, oh right that's there, you forget about it. Sometimes it takes somebody like a teacher to say, 'And what's that for?' Whereas I would just walk past it because I know what that's for."
> - Farmer I

> "[The RHET co-ordinator]'s good as well because you know, we sort of, I did say to her, you know, I'm quite happy doing this but it's quite nice to be able to bounce it back and forward from the teacher to her to me, and if I'm struggling a wee bit, certain bits and pieces cos you know there are some questions you think, hmm, right okay I'm struggling a bit here, but [the co-ordinator] is, she's done it all before"
> - Farmer B

This type of guidance could take place as part of the teacher's pre-visit to the farm, or during the visit itself. Although some of the more experienced host farmers in the case studies had conducted their visits without the RHET co-ordinator present, they recognised the importance of having this type of support in the early days of hosting visits.

Several host farmers reported a noticeable difference in communicating with children who were already known to them, and those whom they were meeting for the first time at the farm visit. Pupils who had met the farmer before, either at a classroom talk or through a previous farm visit, were thought by farmers to be more relaxed at the visit, and more comfortable asking questions. The chance to develop a familiarity with a particular location or farmer, and consequently develop confidence in asking questions, is a further advantage of repeat visits by groups of pupils to a single farm (see also Chapter 8). One farmer suggested however that only a few minutes of general conversation at the start of the visit could be enough for the children to feel more relaxed, and some case study farmers took the time as the children alighted from the bus for this type of rapport-building, for example by asking the pupils about their journey.

A few farmers expressed concerns around their ability to hold the children's interest for the duration of the visit. The support of other adults was valued in this situation. Furthermore, one farmer recognised that pupils are likely to remain engaged because so much of what they see at the farm is new to them.

> "I think probably to start with I was a bit nervous about em, what you would say to them, would I have enough to interest them, but then you realise very quickly that most kids know absolutely nothing. [One teacher] was bringing her P2, P1 class out on the bus, and she said, every time we saw house in the country, 'Is that a farm, is that a farm?' They just don't have an idea."
> - Farmer E

Teachers generally felt that the host farmers had communicated well with the pupils; they had delivered factual information in an appropriate level of detail, and explained concepts using language that the children could understand.

> "…the way [the farmer] was explaining to the children about the calves being born and you know, the bull's got 16 girlfriends and things, it was in a language that was pitched perfectly for the children"
> - Teacher, Case Study 4

A few teachers reported that the farmers' communication with pupils had improved with experience. One teacher noted a year-on-year improvement following repeated visits, while another described how the communication by the host farmer had improved during the course of the visit; he began by using language that was too complex for the age group, but adjusted to the needs of the children by the end of the visit. This suggests that, while multiple visits can have advantages for the communication between farmers and pupils, a good level of familiarity and confidence can also develop in the course of a single visit.

A number of actions by farmers were identified by case study teachers as contributing to pupils' engagement. These included:

- Clear enthusiasm/passion for their work
- Audibility and clarity of speech and language
- Good preparation, including
    - thinking in advance about what to say and how to say it
    - having 'props' available (such as ear tags, 'passports', photos of the farm at different times of year)
- Awareness of own limitations
    - Seeking support from other farmers, family members, RHET staff. For example, one less confident farmer was supported by other farm staff during the visit
    - A farmer who was unable to answer a child's question at the visit but emailed the response to the teacher a few days later

Most pupils also reported that host farmers had explained things well, with very few instances of language or concepts that they did not understand, or which were not explained. The children generally felt comfortable asking questions, and appreciated that farmers had provided opportunities to do so.

> "Well it was quite nice because he wasn't rushing through it, he was trying to get everyone's questions and opinions and everything like that, cos like sometimes, we were looking at the cows and like there was quite a lot of hands up and he answered most of the ones instead of being just like 'We've got to move on'"
> - Pupil, aged 9, Case Study 4

The provision of opportunities to ask questions may go some way to addressing concerns highlighted by Ghafouri (2014, p.66), who found that:

> "…at the farm, the visit was mostly planned and run by the farmers who had years of experience hosting school visits and working on a farm. The farmers passed to the children some relevant and important information about the life in a farm, the animals and the source of our food. However, the pace of the tour (the learning experience) was set by adults and did not necessarily match the children's thinking and learning rhythm."

Although the farm visits in the present study were similarly led by adults, farmers were guided in their pacing of visits by teachers who were familiar with the pupils' needs. Furthermore, farmers and teachers generally did not regard the visit as an isolated learning experience, but as something which related to classroom activity and learning; this presumably would provide opportunities for greater flexibility in individual children's learning. Additionally, Ghafouri (2014) discussed farm visiting for nursery age children (4-5 years old), while the children in this study were at least 5 years old, and generally older. This, combined with the pupils' level of comfort in asking questions, may have allowed the pupils in the present study to exert a greater influence over the pace and content of the visit.

9.5. Motivations and benefits for volunteer farmers

The RHET/RNCI model of farm visiting relies on volunteer farmers to host visits. In the interviews, the case study farmers were asked to explain their motivation for offering visits, and what, if anything, they gained from this.

The farmers reported a range of perceived benefits to hosting school visits, both personal and professional. Several described a sense of satisfaction that that they were contributing to the important work of educating children about food sources, rural life, and farming as a career.

> "I think we should all be doing our little bit to you know, to educate the younger ones"
> - Farmer B

> "I think it's critical that we do start pushing things in that direction because we're just not getting youngsters into farming […] we hear it in the press all the time, but it's genuinely not happening, I will guarantee over the last 2 years, down at [our local] academy, which is a rural place, bar a farmer's son, there won't be one other youngster going into agriculture."
> - Farmer H1

Some highlighted that by offering visits for pupils, they were also potentially contributing to the education of parents and wider families.

> "The kids go home and tell their parents what they've seen at the farm and so on and I think when you educate the kids you're educate the parents as well."
> - Farmer D

> "…if you can educate a child, you'll educate three generations, because that child will go home and tell its parents, who will, and granny will be very interested to find out what the wee soul was doing today, so, and you'll educate them, because as you know there've been generations haven't cooked or eaten food, it's all been pre-prepared"
> - Farmer G2

As well as encouraging families' learning about food production, hosting visits was also regarded as an important opportunity for engagement with the extended community. One farmer explained:

> "I have a very good relationship with the people in the village because they've all had their kids at my farm at some point or another and when I spread slurry or move cattle, I never have a lot of hassle from the village"
> - Farmer D

Furthermore, some farmers saw this as an opportunity to challenge wider public misconceptions about farming and farmers, and to promote Scottish and British produce generally and potentially influence purchasing behaviour.

> "…if you're a lady in a supermarket […] if they've been on a farm visit they're more likely to feel inclined to buy the British product than the foreign product […] if it's a 50/50 decision, maybe the fact that once upon a time they were on a farm and they seen what farmers are all about, cos the general public's perception of farming isn't great…"
> - Farmer H2

There is some evidence to support farmers' aspirations in this respect. Hine and Pretty (2008, p.7) reported, "[f]arm visitors […] told us that their food shopping habits are likely to change as a result of visiting farms, with visitors becoming more likely to buy British". Many of the parents in Harris' (2009) research indicated that the purchase of local produce was already their habit; following their children's farm visit, a further 16% expressed the intention to modify their shopping habits, although 44% reported that their purchasing behaviour would not change.

Farmers often saw their hosting of visits as beneficial to the farming community and industry as a whole. In a related discussion, one farmer expressed concerns about supermarket chains starting to offer their own farm visits:

> "…they're doing it for commercial reasons, they're not doing it as we are, well maybe we are doing it for commercial reasons but not directly, you know, we are doing it for the benefit of farming as a whole, they're doing it so they can sell more stuff"
> - Farmer E

These concerns around motivation to offer farm visits were also reflected by those farmers who discussed the possibility of being paid for hosting visits, as is the case in some other locations and with other organisations (e.g. Harris, 2009). Without exception, the farmers in the present research who discussed this possibility rejected the idea of payment, with one even suggesting that he would

consider personally funding the transport for any school that needed it, if no other finance was available to allow the trip to take place.

Farmers felt that charging a fee or accepting payment for hosting an educational visit would detract from the spirit of the project, and would lead to farmers offering visits for the wrong reasons.

> "…as far as I'm concerned, it's a case of it's the greater good for the education side of it, and we start charging for any of our time I mean you know, the thing will just cave in and won't happen […] if they want any sort of financial reward from it, they'll not do it, simple as that, because if that's the way of thinking, I don't think you're doing it for the right reasons"
> - Farmer B

> "I'm not doing it for the money, I'm doing it to try and educate the children and educate the teachers. Money wouldn't come into it, not interested. I'm not doing it for financial gain".
> - Farmer I

Similarly, some farmers felt that payment would alter the nature of the relationship between farmers and RHET/RNCI, and potentially influence expectations. One noted that taking payment would make hosting visits seem like part of his work, whereas he felt instead that they are something fun. The element of fun and enjoyment, and the opportunity for a break from usual farm routines, was highlighted by several of the case study farmers as a motivational factor.

> "I just enjoy doing it, cos as I say you get a bit of a laugh from the kids sometimes, and I just like to show them round the farm … I just enjoy doing it, so it's no more than that really"
> - Farmer C

One farmer also highlighted the sense of pride amongst the farming team to have pupils seeing their work.

> "…the guys always love it […] they've always had a smile, it's pride, it's pride, you know, like [the farm worker] who looks after the calves, he just loves it, he loves to show off his calves,

> and so it's a bit of pride"
> - Farmer H1

The factors which motivated farmers in this study to host educational visits, and the benefits they felt they gained from offering such visits, reflect the findings of previous studies. Harris (2009) found that farmers in England were motivated to offer visits by an enthusiasm for enabling children to learn about the sources of their food, to counteract a negative public image of farming, and for personal enjoyment and a break from their working routine. In Finland, Risku-Norja and Korpela (2010) found that farmers did not regard the small financial incentive to take part in a pilot study to be their main motivation for participating; rather, they were keen for children to learn about food production and safety, and saw the project as a public relations exercise and a means of addressing children's misconceptions. Similarly, in her research with farmers in Denmark, Dyg (2014, p.85) found that:

> "…opening up their farm is a matter of principle, something important to the farmers and they are motivated by idealistic reasons. They want students to experience what a farm and rural living really is and increase transparency. Many farmers feel an obligation to take in students, because they feel it is important that people know where their food is coming from, but also to give a good impression of agriculture and ensure its continued support in the local community and in society at large."

Izumi *et al*. (2010) found that opportunities for diversification influenced farmers' engagement with Farm-to-School (FTS) programmes in the USA, while Conner *et al*. (2012, p.329) found "a complex array of motivations", both social and financial, amongst farmers participating in a FTS programme in Vermont, USA. As described in Chapter 2, however, that model is significantly different from the type considered in the present study; the FTS programme tends to feature a reciprocal arrangement between farms and schools, with an element of school kitchen supply, as well as educational, purpose. The motivations for these farmers are therefore likely to differ from those for volunteer host farmers in the present study. While the need for farmers to diversify for sustainability is also recognised in the UK (e.g. Policy Commission, 2002), in the present study

some farmers had diversified into the provision of holiday accommodation and similar; however none reported increasing revenue directly through work with schools.

9.6. Chapter conclusion: Encouraging farmers to offer visits

Farmers who participated in the case studies were asked what factors might prevent other farmers from offering visits for pupils, and what could or should be done to encourage more farmers to offer visits. Respondents recognised that some farmers would not be well-placed to host visits, due to the unsuitability of their particular farm type, location, or layout. They were unanimous in their view that hosting educational visits was not something that all farmers would consider or enjoy, and that reluctant farmers should not be coerced into taking part.

> "…it's not for every farmer, eh some farmers won't, some farmers might feel it intrusive or whatever…"
> - Farmer D

> "I mean a lot of farmers round here will say to me, 'It's great what you do' and I'll say well why don't you do it? 'Oh, I couldn't do that.' If they can't, if they don't feel they can do it there's no point in forcing them."
> - Farmer E

The reluctance of some farmers to host visits was seen as resulting from various worries and misconceptions. These included:

- Worries around risk/liability
- Assuming they lack the appropriate facilities for visitors, or would need to make significant changes to their site/premises
- Concerns around expectations or burdens being placed on them (e.g. paperwork, curriculum knowledge)
- Feeling they don't have anything of particular interest to pupils
- Reluctance/lack of confidence (particularly in speaking to children)

Dillon *et al.* (2003, p.25), discussing the 'Farmlink' project (Groundwork UK,

2002), identified similar difficulties in linking schools with farms, including farmers' perceptions that "they do not have a great deal to offer that is of interest to schools".

The findings of my research address many of these concerns. Farmers in the case studies indicated for example that potential visit hosts should not be concerned by the need for significant changes to premises or routines; these were rarely necessary. Neither should farmers be daunted by the prospect of talking to visitors about their work. This was not a complex or demanding task, but a basic explanation of their day-to-day lives.

> "All they need to do is stand and talk about themselves, yeah, and tell them, the people about what their day is and what the machinery does and what the cattle do, and how they're born and things like that, you know it's all knowledge that most farmers have without thinking about it, we don't need to think about it."
> - Farmer E

Furthermore, the role of the RHET/RNCI local co-ordinator can help to alleviate many of the possible concerns and misconceptions. Farmers in the study valued the contribution of RHET/RNCI staff to:

- Carrying out risk assessments specific to educational farm visits, and providing guidance on any minor changes needed, thereby offering reassurance to farmers and to teachers (see also Chapter 10).
- Ensuring that schools did not visit at the busiest times of year for farmers.
- 'Translating' teachers' requirements, connecting schools to appropriate farms for their learning needs, and providing advice on areas of interest.

The co-ordinators also had an important role in providing guidance on curriculum links, and ways of engaging and communicating with pupils. Harris (2009) found that some farmers had attended training on curriculum content and communication skills as part of the requirements for accreditation with CEVAS[26], but in the present study most farmers reported that they did not need or want

[26] The Countryside Educational Visits Accreditation Scheme. See www.visitmyfarm.org/cevas-farmer-training [Accessed 19/9/15]

any additional formal training in these areas. The support they received from RHET/RNCI was enough to enable them to carry out visits successfully. Several farmers intimated that they would not consider offering visits without the support of an organisation such as RHET, and that they would advise any farmer considering hosting visits to do so through such an organisation.

As well as addressing some of the factors which might discourage farmers from considering hosting educational visits, importantly farmers in this study highlighted their sense of fun or enjoyment in hosting pupils at their farm, and their appreciation of a variation to their usual routine. Farming is known to be a stressful profession, with a high incidence of mental health difficulties and suicide, related to factors including social isolation (Stark *et al.*, 2006; Dogliani, 2015). This issue was not explored with farmers in the present study, and clearly the hosting of educational farm visits is, in itself, unlikely to have a significant impact in this area. Opportunities for social engagement and fun can however be 'protective factors' for mental health (Goffin, 2014), and the potential value of hosting farm visits as a contributor to this should be recognised.

10. Findings & Discussion V: Potential Barriers and Promoting Farm Visiting

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> "If you're in a city school in Glasgow then going on a farm visit's quite tricky, they're not wanting to spend all that money on a bus to take the children out […] But I think as well, I think it depends on the type of teacher you are"
> - Teacher, Case Study 14 (Other Urban school)

*

Previous studies have consistently identified barriers to outdoor learning, including concerns around health and safety, transport, teacher confidence, and access to assistance (e.g. Rickinson *et al.*, 2004; Outdoor Connections Advisory Group, 2007; Waite, 2009). In the present study, barriers to outdoor learning are recognised as potentially impacting on farm visits, but teachers and farmers were also asked to consider any barriers to farm visiting specifically. The findings in this chapter relate particularly to Research Question 4: What are the barriers to undertaking educational farm visits, and how can they be addressed?

The main findings discussed in this chapter around barriers are:

- Transport costs (and other costs)
- Risks; health and hygiene (perceptions and risk assessment processes)
- Teachers' lack of awareness around farms and visiting
- Concerns around the supportiveness of school communities

Participants identified that many of these barriers can be addressed through, for example:

- Awareness-raising activity with teachers, such as pre- and in-service training
- Providing information to teachers in easily accessible and identifiable formats
- Working with intermediary organisations which can assist with planning, risk assessment, and access to resources.

These findings are drawn from relevant sections of the teacher questionnaire, as well as from teacher and farmer interviews. Some of the findings discussed in previous chapters can be interpreted as barriers to farm visiting, or factors which may hamper teachers' planning of farm visits; for example, the need to wait until children are five years old before undertaking a visit with RHET (see Chapter 8). This chapter however presents the findings from specific questions and discussions around barriers to outdoor learning and farm visiting.

10.1. Initial questionnaire findings

The questionnaire presented a list of six potential barriers to farm visiting, adapted from existing literature on barriers to outdoor learning more generally (e.g. Ross *et al.*, 2007; Waite, 2010). These were:

- Difficult to organise
- Cost of transport
- Costs other than transport
- Don't know of any suitable farms
- Health/hygiene concerns
- Local Authority (LA) ban (i.e. local authority does not permit farm visits for pupils)

Teachers were asked to indicate which they perceived as the single most significant barrier to farm visiting. They were also given the opportunity to identify in a free text box any barrier that was not listed, or to make an additional comment on their choice.

Although teachers were asked to give a single response to this question, 25 respondents selected multiple options. This may indicate that teachers felt unable to identify a single barrier as the most problematic, or that they felt that multiple barriers had equal significance. Such an interpretation is supported by the findings of Ross *et al.* (2007, p.168), who noted during interviews with teachers a "preference to describe a complex of factors rather than accept the interviewers' asking for an outstanding factor." Alternatively, it may be simply

that teachers misread or misinterpreted the question. Since it was not possible to clarify this retrospectively, or to determine any rank amongst the multiple responses, Figure 10.1 shows the total number of times each response option was selected, rather than displaying responses as a proportion of respondents.

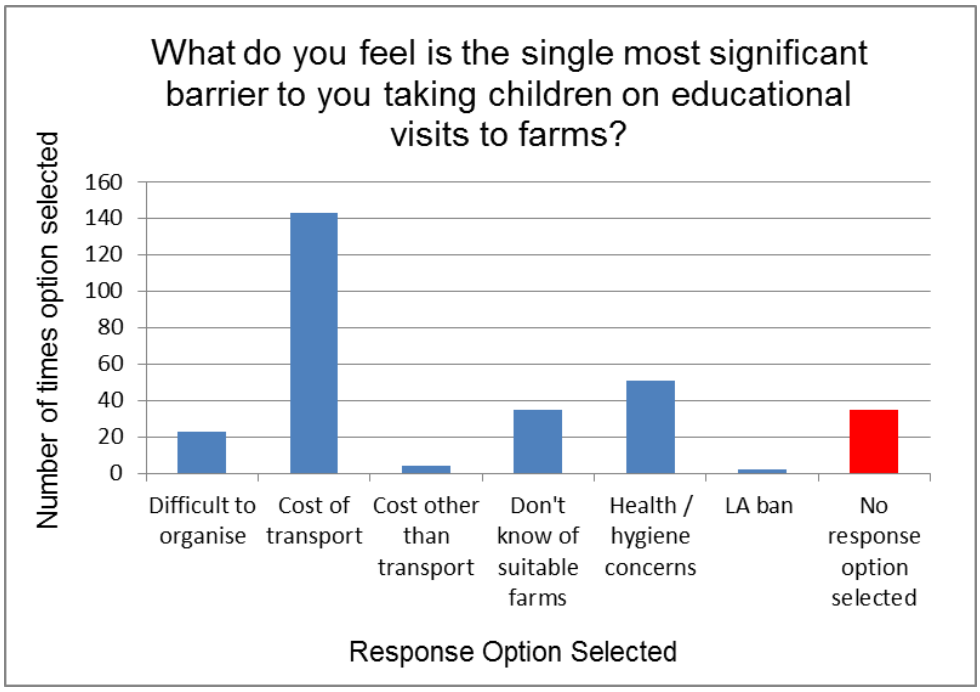


Figure 10.1: Barriers to Farm Visits

Despite the possibility that some teachers felt unable to identify a single most significant barrier to farm visiting, the graph demonstrates that overall, the 'Cost of transport' was the barrier most frequently selected by respondents, by a substantial margin. Even excluding all the responses of those teachers who indicated multiple barriers, this was by far the most commonly selected option. Health and hygiene concerns were, overall, the second most frequently selected option.

Thirty-five of the questionnaire respondents did not select any of the given options. Of these, one respondent gave no comment or explanation. Fourteen offered alternatives to the options provided, including:

- No suitable local farms to visit (implying that respondent knew of local farms and had found them unsuitable, as opposed to being unaware of what was available locally);

- Does not fit with our topics;
- Planning and administration time, paperwork and bureaucracy;
- Lack of adults to meet appropriate adult/child ratios;
- Lack of structured activity on farms of the type offered at other potential trip venues;
- The "huge responsibility".

Around twenty teachers, most of whom were based in remote rural schools, suggested through their comments that they did not perceive any barriers to farm visits; three stated explicitly that the rural location of their school gave ease of access to farms, and one noted that in this respect, "We are very lucky" (Survey respondent 154). The potential influence of school location on farm visiting was discussed in *8.2.2 School location*, and is further addressed later in this chapter in relation to transport costs.

Some comments indicated frustration amongst teachers about the assumptions made, and barriers perceived or created, by those outside the classroom or school environment. One respondent indicated that the most significant barrier was:

> "The paranoia created by people in offices that know nothing about schools and children."
> - Survey respondent 168

While another implied that perceived barriers may be artificial:

> "There are no real barriers. Many are just made up."
> - Survey respondent 259

Many of these issues were also discussed by teachers and as part of the case studies, through which a more nuanced understanding was possible.

10.2. Transport and other costs

As mentioned previously, Figure 10.1 shows that the cost of transport was the barrier most frequently selected by questionnaire respondents. This is perhaps

unsurprising amongst teachers in urban schools, who have longer distances to travel to reach a farm. As Figure 10.2 shows, however, a similar pattern of response was given by teachers in all urban/rural categories. The graph presents teachers' responses on barriers, categorised by the urban/rural status of the responding teacher's school, as a proportion of all selections made by teachers in that type of school, and demonstrates that the cost of transport was the most frequently selected barrier by teachers in all categories of school except Large Urban, where it was equal with 'health and hygiene concerns'.

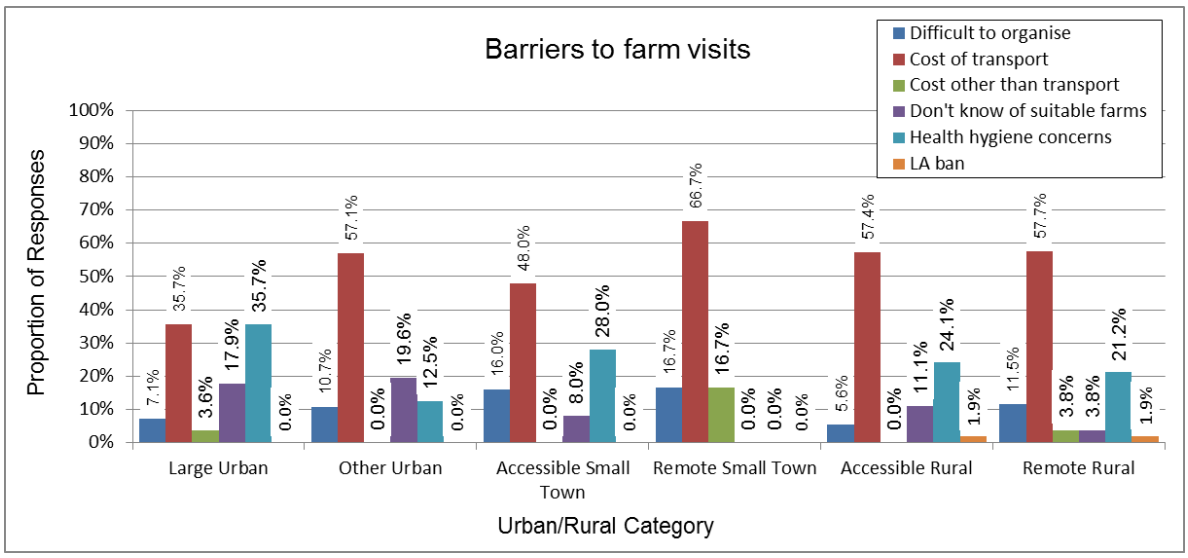


Figure 10.2: Barriers to farm visiting, by urban/rural category of school

As discussed in *8.2.2 School location*, case study participant teachers in rural schools regarded themselves as fortunate in having easy access to farmers' activities for teaching agricultural topics. They were able, for example, to take pupils spontaneously into the school playground to watch tractors operating in a neighbouring field. In relation to actually visiting a farm, however, teachers reported concerns around transport costs regardless of school location. Although pupils in rural schools had shorter distances to travel to the farm in comparison to urban children, for most a bus was a necessity due to the lack of safe walking routes or public transport between school and farm. This was also recognised as a potential barrier by several farmers.

Teachers from rural schools gave varying accounts of the costs of transport for school trips and visits. One teacher noted that the relatively short distance between the school and the farm meant that a hired bus could make this trip, and be available for other hires soon afterwards, minimising the cost to the school.

> "…because it's only 15, 20 minutes down the road and because it's local the bus can drop us off and go and do other [trips]... and then come back, that makes a difference. If you go up to [the city] or whatever then the bus is with you for the whole day it can be more expensive."
> - Teacher, Case Study 7 (Remote Rural school)

Another, who had taken the pupils on a whole-day trip including the farm in the morning and another related location in the afternoon, felt that the difference in cost between a short hire and a full-day hire meant that retaining the bus for the whole day was not significantly more expensive.

> "I think a bus is so expensive that once you've got the bus and driver, certainly in this part of Scotland, it's not that much more expensive for a whole day as for two hours"
> - Teacher, Case Study 13 (Accessible Rural school)

In cases where the trip extended beyond the normal school day, however, further costs would be incurred for returning pupils directly to their homes, as the local authority 'school bus' would not be available at that time.

Other than the children in Case Studies 11 and 12, who attended the same school and walked to their local farm for the visit, all the children in the case studies travelled to their farm visit by commercially hired minibus or coach. Funding for transport was met in several ways, sometimes using a combination of approaches. Some schools had access to funding through RHET/RNCI. Others were able to meet the cost of the transport through the school budget, or were in receipt of financial assistance for trips from the school's Parent-Teacher Association or equivalent, through general fundraising activity. Some undertook enterprise projects, selling items they had made, and some took part in theme days (such as 'dress like a farmer' day) as a means of generating income to finance their travel. In some schools, families were asked for a financial

contribution to the costs; in the few case studies where this occurred, the usual amount was around £2-£3 per child, regardless of the socioeconomic area in which the school was located.

Costs such as these can present a barrier to individual children's participation in school trips. Recent research with pupils in Glasgow found that "[l]ow cost trips can be difficult to afford for families on low incomes … Having to ask for help to pay for trips is potentially embarrassing for children and they may choose not [to] do it" (Spencer, 2015, p.6). The report also suggested that the costs of clothing, such as school uniform items, can present a challenge to children from less affluent families (Spencer, 2015). In the present study, cost of clothing for the farm visit, such as appropriate footwear, was not reported as a significant barrier to farm visiting. Some teachers, in the survey as well as the case studies, were however aware of pupils who did not have warm and waterproof outdoor clothing, or boots appropriate for the muddy farm conditions.

> "Our school is in a highly deprived area and it is often difficult to […] ensure children are appropriately clothed for outdoor work"
> - Survey respondent 206

In some cases, particularly in those schools located in less affluent areas, the school itself maintained a supply of such items for pupils to borrow; one school, for example, had successfully bid for funding which enabled the purchase of cagoule jackets in a wide range of sizes, which were distributed to all pupils before leaving for the farm, and collected in again at the end of the visit. Anecdotally, teachers also reported having accessed items on loan from friends and colleagues, while some farmers and RHET/RNCI local co-ordinators had a small supply of spare boots available to pupils who had 'forgotten' theirs.

As reported in Chapter 3, some of the literature around Curriculum for Excellence has suggested that the guidelines did not go far enough in mandating outdoor learning or legitimising the associated costs (e.g. Beames *et al.*, 2009). There have been subsequent developments in policy and other drivers around outdoor learning, and some teachers in the present study clearly felt that CfE had played a legitimising role in outdoor learning.

> "I think financially it began to get more difficult to get the children out of school, and Curriculum for Excellence has made it okay, you can justify the expense now."
> - Teacher, Case Study 13

Other teachers felt that outdoor learning has always been promoted within the curriculum guidelines, and that the introduction of CfE was not a significant change. One described CfE as promoting learning outside the classroom, but felt that the potential of this was constrained by the introduction of the guidelines at a time of increased economic pressures.

> "I think good teachers that were experienced enough always took children on trips and did things like that as part of the 5-14. I think the Curriculum for Excellence encourages all teachers to do that, unfortunately the Curriculum for Excellence has came when there's a time for no money, so as they're starting all these great ideas and active learning and all these kind of things, the schools have now got no money to do a lot of these things"
> - Teacher, Case Study 3

Table 10.1 shows a profile of the schools from which teachers responded to the questionnaire. It suggests that the proportion of teachers with recent farm visiting experience was broadly similar across SIMD categories, indicating that the socioeconomic status of the area in which the school is located did not have a substantial influence on the availability of farm visits to pupils.

Table 10.1: Teachers with recent farm visit, as a proportion of all respondents in SIMD category

SIMD category	Recent farm visit	Total Respondents	Recent visit as a % of all in category
SIMD 1	9	27	33.3%
SIMD 2	16	44	36.4%
SIMD 3	25	74	33.8%
SIMD 4	15	59	25.4%
SIMD 5	8	24	33.3%
Unknown Category	17	36	47.2%
Total	**90**	**264**	**34.0%**

The questionnaire did not however ask teachers to indicate the means by which trips had been financed or whether the costs had been difficult to meet, either for the school or individual families.

Although at the time of writing, the UK economy as a whole seems to be slowly recovering from the 2008 global financial crisis (Walker, 2015), the budgets of Scottish local authorities remain under pressure and education spending remains at risk (The Accounts Commission, 2014). The financing of school trips, and particularly those to locations such as farms which necessitate the hire of transport, is likely to remain a concern. Access to alternative sources of funding for such trips is vital to ensure they continue to take place.

10.3. Health and hygiene; risk and risk management

The second most commonly identified barrier in the survey was 'Health and Hygiene Concerns'. Although this category was intended to include the potential risks associated with farm visits, some respondents also commented on risk, and risk management, specifically:

> "I think the risks involved in farm visits can cause schools to avoid farm visits. I think guidance on managing these risks would be useful."
> - Survey respondent 19

> "There is a general feeling that it could be difficult to manage all risks on such a visit"
> - Survey respondent 199

Teachers' concerns around the risks associated with outdoor learning, and their role in minimising these risks, are likely to have been influenced by high-profile incidents. McArdle (2011, p.373) notes that following publicity around outdoor adventure activities which resulted in child fatalities, "the edicts of health and safety law have become an important consideration for teachers and education authorities". Although child fatalities do occur on farms, these tend to be amongst family members rather than visitors (Health and Safety Executive, n.d.). Nevertheless, in recent years there have been a number of media reports

of harm to children visiting farms, including children who have contracted *Escherichia coli O157* (*'E. coli')* (e.g. BBC News, 2000; Griffin, 2010).

One teacher in the present study acknowledged that the first response to the idea of a farm visit is likely to include the perception of a high level of risk:

> "…a farm does automatically spring to your head [gasp], d'you know, too much, that's too dangerous for them"
> - Teacher, Case Study 6

In general, however, study participants did not perceive the farm as a riskier location than any other venue for outdoor learning. In the questionnaire, teachers were asked to rate their agreement with the statement 'Educational farm visits are riskier than visits to other outdoor locations', on a scale from 0 to 5, where 5 represented strong agreement. As Figure 10.3 shows, teachers tended to disagree with the statement.

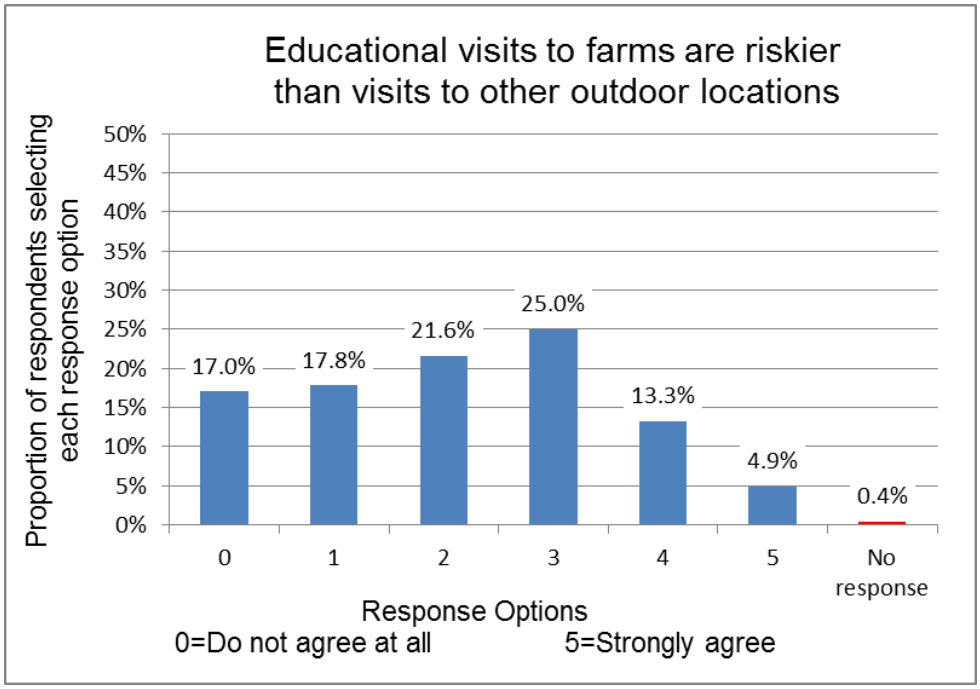


Figure 10.3: Teachers' perceptions of farm risk compared to other outdoor locations

In contrast, some farmers were much more emphatic about the risks on a farm compared to other locations designed for visitors.

> "…you've got to remember that on a farm you're in a business site, ken there's obviously going to be more risks than taking them to the Science Centre or something, these places are equipped for that, out here you're on a working place, there's probably going to be more risks involved"
> - Farmer I

Others however felt that in reality there were few risks, but that teachers were likely to perceive the level of risk as high.

> "I think the only, the only real risk that you have on the visit, in all honesty, is children putting dirty hands into mouths, and we all look out for that and you cannot you know, it takes a second […] a nanosecond for a child to do that and you know, so I think the risks are far less, I think, yeah, the teachers will think they're more than what they are"
> - Farmer H1

In interviews, while teachers recognised the risks of taking children to a farm, they tended to regard this as a different sort of risk from that in other outdoor locations, rather than necessarily a higher risk. They recognised that the risks of visiting the farm could be minimised through utilising expert knowledge, and their perception of risk seemed to be strongly influenced by their experiences of working with farmers and organisational representatives (RHET, RNCI, Co-op Farms) to carry out risk assessment.

As Richardson (2000, p.21) explains, incidences of infection from farms are "largely avoidable if recognised risk-management procedures and sound approaches to hygiene and disease control are used." In this study, the organisations responsible for arranging the farm visits provided written risk assessment documents and guidance on appropriate procedures. This was highlighted by teacher and farmer interviewees as a valuable service; in particular, teachers appreciated the contribution of an expert to properly assessing farm-specific risks, while the RHET/RNCI volunteer host farmers recognised the value of risk assessing specifically for pupils visits, as distinct from usual, more generic, farm risk assessment.

Minimising the risk addresses one barrier to farm visiting; however, the risk assessment process itself may also present a barrier. Farm visits arranged through RHET/RNCI required teachers to visit the farm in advance of the pupils' visit. This 'pre-visit' usually involved a brief tour of the farm, by the route that the children would use at their visit, after which the teacher, farmer, and local RHET/RNCI project co-ordinator discussed the risk assessment document together.

Some RHET/RNCI farmers reported that carrying out a risk assessment could take considerable time, but most recognised that this only needed to be done in-depth once by the local co-ordinator, and then reviewed at regular intervals. One farmer explained that, in comparison to some of the other professional expectations placed on farmers, the risk assessment was straightforward:

> "…it's not any more complicated than 90% of the other stuff we've to do round about here, to do with farm assurance and stuff, they're a nightmare, like your risk assessment for RHET is just a doddle compared to that kind of stuff, so no, it's not a problem"
> - Farmer I

Some teachers however were surprised by the length and content of the standard RHET/RNCI risk assessment document (an extract of which is available in Appendix 15); two, both of whom had personal experience of farms, felt that it could discourage teachers from going on the visit, or head teachers from permitting it. Most of the teachers in the case studies, however, rather than being discouraged by the document, were reassured that it represented a thorough and complete assessment of the risks.

> "…when I read the risk assessment I thought, 'Oh my goodness', you know how… more things than you could even imagine, em, which was good for me because at least RHET had prepared that so it made me aware of all these things"
> - Teacher, Case Study 3

Farmers who discussed teachers' perceptions of the document similarly felt that its length and level of detail was reassuring for teachers.

> "I don't think any of the teachers that come have ever really been surprised [by the risk assessment document]. Some of them maybe, I think find it a little bit more in-depth than they had expected, but I think they're all quite happy about it cos they know that it's been done properly"
> - Farmer G1

Teachers also valued the time saving that resulted from not having to complete a risk assessment document themselves, as would be the case with other trips. Similarly, Higgins *et al*. (2006, p.41) found:

> "external providers, such as field centres and rangers are providing schools with risk assessments for their own sites which saves schools having to do their own. This is a welcome development for the respondents with some interviewees reporting that one of the major benefits of such partners was that they took some responsibility for safety in general."

Some teachers in the present study however indicated that the pre-visit process was unnecessarily time-consuming and "tedious" (Teachers, Case Studies 2 and 10), although most agreed that it was important.

> "…the risk assessment actually took longer than the actual visit, which is quite frustrating in a way, but, and it's more preparation you would put into a normal visit but I can understand completely […] it's [the farmer's] livelihood and you don't want to take that risk and you don't want to put the children at risk either."
> - Teacher, Case Study 6

Furthermore, teachers and farmers identified a range of other benefits to this process, beyond the identification and minimisation of risk. Benefits included:

- Allowing teachers to be confident of the location/whereabouts of the farm
- Helping teachers' own level of comfort, especially for those unfamiliar with a farm environment
- Enabling farmers and teachers to discuss and clarify the focus of the visit and links with topic-related classroom activity and learning

- Providing an opportunity for farmers to be made aware of any specific requirements for the visit (e.g. around individual children's needs)
- Allowing teachers to better prepare children for the visit by telling them about the specific farm

The latter points were particularly emphasised by teachers whose classes included children with additional support needs, who were able to identify potential difficulties, describe the farm in much more detail to the children ahead of the visit, and develop a 'Plan B' for any children who might struggle with the new experience.

Although some farmers felt that the pre-visit offered no direct benefit to themselves, others reported that it was useful to meet the teachers and find out about what the pupils were learning in class, to enable them to think about what they might say to the children at their visit (see Chapter 9). Some took the opportunity to reinforce information about requirements such as appropriate footwear, and to ensure that teachers were adequately prepared. It was also an opportunity to generate enthusiasm for the visit.

> "I think the teachers who have been unprepared and they haven't been here before, and then they've met me and they've gone round the farm, and I think what it's done is, instead of it's just the visit, they've actually gone back enthused"
> - Farmer H1

This farmer noted that in her opinion the pre-visit was "critical", particularly for teachers who had not been to the farm before. Some teachers and farmers suggested however that the time spent on the pre-visit could be reduced for those who had visited the same farm previously. Two teachers gave examples of this, in which they had discussed the updated risk assessment documents with the farmers, but did not conduct the farm tour, since they were already familiar with the layout and had been assured that there had been no changes since their previous visit.

Farmers also noted that finding the time for the pre-visit could be a difficulty for them, and that in some cases the discussion of the risk assessment document could be carried out by phone. They reported that pre-visits were often

scheduled for after school time, which was a necessity for most teachers, but could clash with time-sensitive farm tasks such as milking. Some gave examples of how this could be addressed; one farmer reported asking other family members to conduct the farm tour, while another had built up a relationship with the local RHET co-ordinator such that she was able to take the teachers round the farm herself. In these cases, the farmer joined the teacher and co-ordinator at the end of the pre-visit to complete the necessary paperwork.

In contrast to RHET/RNCI procedures, Co-op Farms did not mandate a pre-visit by teachers. A risk assessment document was however provided, and some teachers reportedly undertook a pre-visit for their own reassurance. A few of the teachers in the case studies had experience of RHET/RNCI as well as Co-op Farms visits, and perceived the level of risk at the Co-op Farm visit to be lower. Several factors may have influenced this perception, including the 'country estate' nature of the Co-op case study location. This was also recognised by project staff:

> "…it is a slightly different situation here because it's not a 'farm' farm as such […] It's like a country park, and that comes into the whole health and safety things as well, that it's a, it's set up here for members of the public to visit anyway"
> - Visit Leader A, Co-op 'Farm-to-Fork'

Furthermore, there was also some suggestion that the Co-op Farm being arable, rather than containing animals, contributed to the perception of lower risk. This feature was also discussed in relation to RHET/RNCI visits to arable farms, in contrast to dairy or beef farms. One teacher, who came from a farming family and took her class to an arable farm, explained:

> "…most ones [farms] I see have got animals in them so there is a lot higher risk there. I think just because it is just crops it's much easier to manage and contain for the visit coming in"
> - Teacher, Case Study 10

A few teachers also suggested that the children's own backgrounds were a factor in the level of risk and risk awareness at the farm. One teacher in an urban school, for example, felt that:

> "…town children don't have an appreciation and an understanding of these dangers"
> - Teacher, Case Study 8

In contrast, some teachers in rural case study schools noted that the children had a good understanding of the risks and knew farms to be dangerous places. This familiarity and level of comfort with animals and rural locations could however lead to a sense of the visit being somewhat artificial, and a feeling that pupils were perhaps overly restricted by the health and safety rules in place for the visit. The Primary 7 pupils in Case Study 11, some of whom had experience of helping at farms, expressed similar sentiments. One was surprised by the need to go through a disinfectant 'welly bath' at the start and end of the visit, as this was not something she would usually do at a farm. Another said of her experience of the school-led farm visit:

> "It was different, cos normally I can go up to the horses or the cows and just like, give them a right good pat on the head"
> - Pupil, aged 11 (Case Study 11)

These findings suggest that although teachers may have concerns around health, hygiene, and more general risks at a farm, they do not see these as an insurmountable barrier which prevents pupils from visiting farms at all. Instead, teachers may feel that they lack the confidence or expertise to fully risk assess an unfamiliar farm location, and the contribution of those with greater experience in this area is welcomed. The need to visit the farm in advance of the school trip may however be regarded as an unnecessary inconvenience, particularly by those teachers who are already familiar or comfortable with the farm environment.

10.4. Teacher awareness

In the initial questionnaire, some teachers' free-text responses suggested that teachers lacked awareness around farm visiting, and particularly around the help available to them in undertaking a farm visit. The issue of teachers' awareness was subsequently incorporated into interviews with teachers and farmers as part

of the case studies, and three main categories were identified; farming generally, the educational potential of farm visits, and the availability of assistance and resources. The first two of these categories are discussed only briefly here, having been considered in more detail in previous chapters. The third, however, warrants further examination. Teachers' lack of awareness in any of these three areas could present a barrier to farm visiting for pupils.

10.4.1. Farming practice, and the educational potential of farms

Although it must be acknowledged that a farm visit cannot relate to every topic a teacher might choose to explore in class, teachers' own lack of farming knowledge, and their assumptions about the limited pedagogical potential of farm visiting, may hinder the availability of these learning opportunities to pupils.

As discussed in Chapter 7, many teachers lack knowledge and awareness of rural life, and the contemporary and local farming context. Furthermore, some study participants regarded farm visits as relevant only to very specific topics and age group, mainly food and farming at the P2-P3 stage (see Chapter 6). Teachers holding these limited perspectives may not consider, or may instinctively exclude, the idea of a farm visit for their pupils.

> "Never considered it before - we could walk from our school"
> - Survey respondent 228 (Head of a Remote Rural school)

Relatedly, some teachers in this study also indicated a lack of awareness of the potential of farm visits as an educational experience. Ernst (2014, p.736) suggested that "early childhood educators may not recognize the potential opportunities for learning in natural outdoor settings nor the alignment between early childhood pedagogy and the opportunities offered by nature experiences". This was more likely, she indicated, if teachers lacked childhood experiences in nature themselves. In the present study, teachers were not asked about their own childhood experiences of farm visiting; however, recent research in the UK has explored adults' farm visiting experiences. A survey in May 2015, carried out by a commercial research company on behalf of the charity 'Linking Environment and Farming' (LEAF), found that 22% of adult respondents had never visited a

farm, and a further 21% had not visited a farm in the previous five years (LEAF, 2015). Another study suggests that this figure may be lower amongst teachers. Only 4% of teachers in a survey carried out by the British Nutrition Foundation (BNF, 2015) reported never having visited a farm. As with other surveys on farm visiting (including the questionnaire sent to teachers as part of the present study) however, it is likely that respondents incorporated a broad range of farm types in their responses; city farms and farm parks may also have been included in these figures. Furthermore, the BNF survey is based on a relatively small sample of teachers across the UK (n=524), who were not asked whether their reported farm visiting was associated with their teaching work. Although these surveys have indicated that a reasonably high proportion of adults in the UK, and an even higher proportion of teachers, have visited a farm, they do not necessarily indicate high levels of farming knowledge amongst adults, including teachers.

10.4.2. Availability, assistance, and access to resources

A further area in which teachers seemed to lack awareness was around the help and resources available to them for organising a farm visit. In the initial questionnaire, as well as in the case study interviews, teachers were asked to comment on the sort of guidance that might be useful to them in the future for planning a farm visit. Some responses suggested that teachers lacked awareness of the range of guidance and assistance available to them, which could hinder their use of the farm visit as an educational experience.

> "I'm not aware of any materials to support learning in a farm so there would initially be a lot of research and planning to make the most of the learning opportunity."
> - Survey respondent 123

Several respondents offered suggestions around the resources and guidance which teachers would find useful. These included:

- Activity ideas
    - Linked to CfE
    - Relating to different types of farming
- Lists of local farms

    - Willing to host visits
    - Able to provide visiting speaker to school
    - Already risk assessed
- Risk assessment support
    - Sample or tick-box risk assessment form
    - Guidance on risk management at farms (hygiene, health and safety)
    - Information on legal requirements and issues
    - Local authority statement of support for farm visiting
    - Information to reassure parents and guardians
- Other information on
    - Accessing transport /funding
    - How to prepare for a farm visit
    - Sample itinerary for farm visit

Since much of this information is already available to teachers, these comments suggest that some research participants lacked awareness of this, and of the work of RHET and similar organisations to help plan and carry out farm visits. This is reinforced by the comments of the teacher in Case Study 2, herself from a farming background, who explained that she had not considered taking pupils to a farm in the first two years that she had taught a farming topic, because she "didn't really know much about it". She subsequently became aware of the work of RHET through informal discussion with farming colleagues. Similarly, the teacher in Case Study 3 reported having had a long career in teaching, but only recent having become aware of RHET. Several questionnaire respondents who had previously undertaken farm visits with assistance from RHET and similar organisations indicated that the most useful guidance for other teachers would be to make them aware of the existence and role of these organisations.

These findings suggest that the educational potential of farm visits is not fully recognised by teachers, many of whom lack knowledge of farming, as well as of the organisations which can assist with planning and conducting visits. In contrast, teachers in Harris' (2009, p.24) study were able to identify a wide range of available resources, but were daunted by the "enormous amount of material on the web". Even where teachers are aware of what is available, difficulties with identifying and managing resources and assistance can presents a significant barrier to pupils' access to these learning opportunities.

10.5. Teacher attitude, disposition and confidence

A number of studies have suggested that teachers' individual attributes are likely to influence their use of outdoor learning. Scott *et al*. (2015, p.165) found that "teacher confidence" was a barrier to teachers' undertaking outdoor fieldwork for biology. Teachers' attitudes and dispositions towards outdoor learning have also been found to influence their decisions to take pupils outdoors; "those who were predisposed to taking pupils outdoors would find a way of doing so and those who were not were far less likely to" (Higgins *et al.*, 2006, p. 53).

This sentiment was also expressed by teachers in the present study. Discussing the outdoor learning knowledge of probationer teachers, the teacher in Case Study 3 suggested that those with a particular interest would engage with outdoor learning, but those without such an interest may not. As another teacher explained:

> "Teachers all have their strengths and their weaknesses and if a teacher's very musical she will naturally want to bring music into more things and if a teacher is more arty they will naturally want to bring that into things. And if a teacher is naturally more outdoorsy, they will take their children outdoors more"
> - Teacher, Case Studies 11 & 12

These personal preferences were seen as something that, at least in some schools, could be negotiated between different teachers to 'share out' areas of particular interest or affinity.

Scott *et al*. (2015) found that, despite 35% of student teachers in their study identifying themselves as 'not outdoorsy', all agreed that learning outside the classroom was important for children. In the present study, teachers responding to the survey were not explicitly asked to identify themselves as outdoorsy or otherwise. Their responses to statements on their enjoyment of the outdoors, however, suggest that most are engaged with the outdoors (see Chapter 5). As Figure 10.4 shows, these teachers felt that giving pupils opportunities for outdoor learning was an important part of their role.

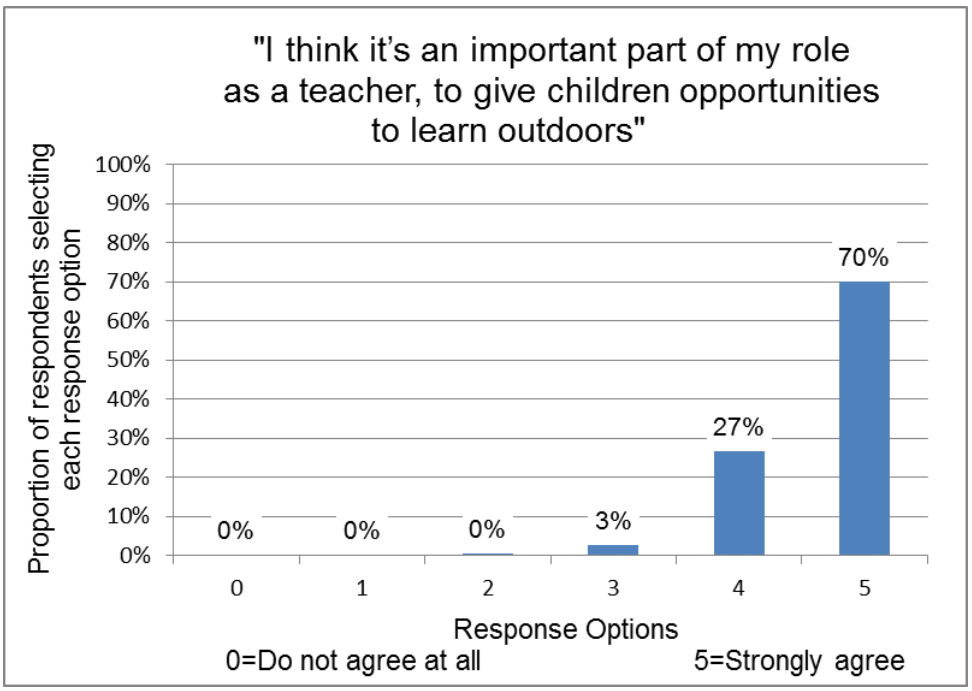


Figure 10.4: Teachers' agreement with the statement 'I think it's an important part of my role as a teacher, to give children opportunities to learn outdoors.'

These findings, as well as those of Scott *et al.* (2015) should nevertheless be interpreted with caution. Teachers' recognition of the importance of outdoor learning does not itself ensure that those teachers will take their pupils outside. Furthermore, although interview participant teachers in the present study tended to see themselves as 'outdoorsy' to some degree, a few commented that this did not necessarily reflect any expertise on their part around outdoor issues or facts.

> Int: Do you think of yourselves as outdoorsy sort of people?
> Teacher A: No, not at all [laughs]
> Teacher B: [Exhales sharply] Yes, in the sense that I like being outdoors […] But no, in the sense that I couldn't tell you about trees and plants and things like that
> Int: Right, so you've kind of got the enjoyment, but not…
> Teacher B: Yes, not the knowledge
> Int: Don't consider yourself an expert?
> Teacher B: Not at all, not in the slightest
> - Teachers, Case Study 4

Since teachers' attitudes, disposition and confidence influence their engagement

with outdoor learning generally, it seems likely that these factors will also influence their participation in farm visiting. In the present study, teachers who participated in interviews generally felt that despite the increased curricular support for outdoor learning through CfE (see Chapter 3), farm visiting would only be undertaken by teachers who were particularly keen. As the teacher in Case Study 2 explained, "they really need to want to do it".

Farmer participants in the case studies similarly suggested that individual teachers' attitudes could have a strong influence on the farm visit. One indicated that the visit could be qualitatively different depending on the enthusiasm of the teacher.

> "Well I think it would be a completely different ball game, had I got two teachers that weren't interested, really hadn't got into it […] I think, you know, the visit could have been a completely different slant on it"
> - Farmer B

Another farmer suggested that those who visit a farm with their pupils are those who are already enthusiastic about visiting the farm, and that reluctant teachers simply would not initiate or investigate such an idea.

> "…if they get to this stage they're usually up for it, there's probably a lot of teachers that do the work in the classroom and don't make it onto the farm and probably they're the ones that are... yeah, well you need to be enthusiastic enough to make the effort to get onto the farm"
> - Farmer D

This suggestion was supported informally by RHET/RNCI regional co-ordinators, who reported no experiences of teachers contacting them to find out more about farm visiting and subsequently withdrawing once they had found out more about the risks and requirements. Co-ordinators reported teachers withdrawing or cancelling due to other reasons such as time pressures and costs, and it is possible that some teachers lacked the enthusiasm to try and overcome such barriers. Co-ordinators felt however that by the time of making the initial contact with RHET/RNCI, most teachers were already quite committed to

undertaking a visit (RHET/RNCI Regional Project Co-ordinators, personal communications, April 2015).

The influence of teacher confidence was specifically highlighted by one interview participant, who speculated:

> "I don't know if I would have went on a farm visit if I didn't have a farming background because I don't know if I would have been as confident about going."
> - Teacher, Case Study 14

Another teacher similarly expressed her experiences of attending training on outdoor learning, which she felt unsure about putting into practice with her pupils.

> "...there are lots of ideas, but some people look at them and think great, and some people look at them and only see the problems. I'm the camp that only sees problems."
> - Teacher, Case Study 13

This teacher reported feeling reassured in regards to the farm visit by engagement with RHET/RNCI and the pre-visit to the farm. The concern remains however that individual teachers' attitudes and confidence around farm visiting may preclude them from considering or pursuing such an idea.

10.6. Local Authority, school, and parental support

Given the favourable policy context around outdoor learning within Curriculum for Excellence, it seems reasonable to assume that local authorities would support teachers' use of outdoor learning environments. Thorburn and Allison (2013) suggest that support for outdoor learning varies between local authorities, but as Figure 10.5 shows, teachers responding to the questionnaire element of this study tended to agree that the local authorities responsible for their schools were supportive of outdoor learning. This was not however a unanimously strong agreement.

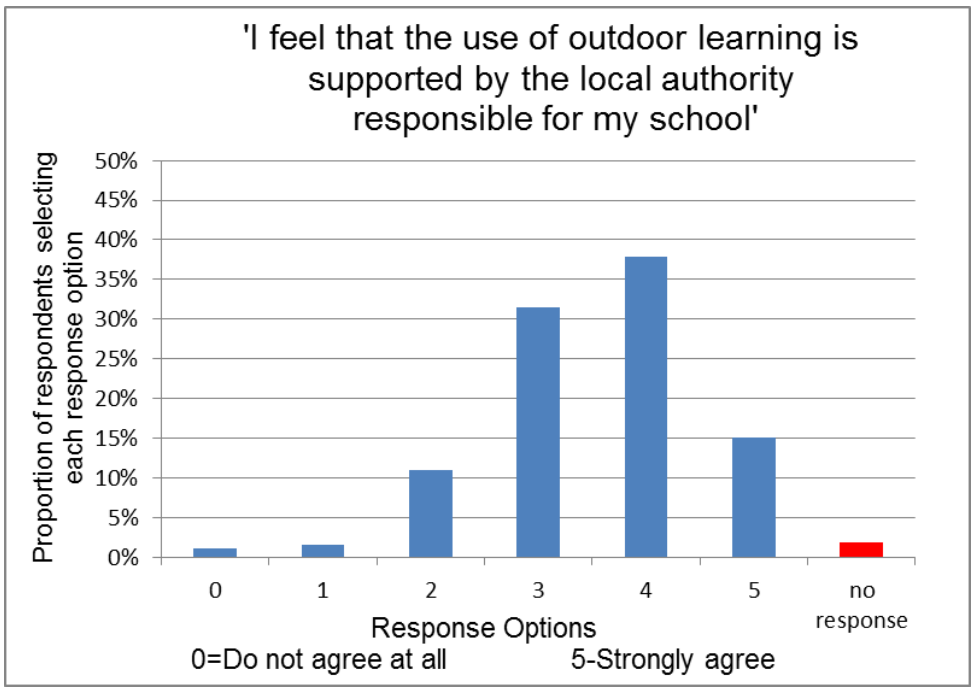


Figure 10.5: Teachers' agreement with the statement 'I feel that the use of outdoor learning is supported by the local authority responsible for my school.'

While local authorities may be supportive of outdoor learning, however, case study participants also alluded to the influence of support from other relevant groups. One teacher suggested that although CfE encouraged teachers to go take pupils outdoors, the attitudes of parents could present a barrier:

> "... are parents ready for outdoor learning? Do they not think it's just a waste of time? I think that's the only barrier to outdoor learning is parents accepting that 'oh, children are learning something when they're outdoors'..."
> - Teacher, Case Study 5

In relation to farm visiting specifically, the support of school-level management was also identified as important, with one farmer commenting:

> "…of course it depends on the objectives of the schools, going on this situation, you know, it's the objectives of the schools, I mean if they don't, if they have a man at the top or a woman at the top or whoever at the top that's not interested, well maybe they [interested teachers and RHET] need to be pushing it more"
> - Farmer B

Furthermore, despite the apparent support of local authorities for outdoor learning generally, it became apparent at an early stage in this study that the same was not necessarily true of farm visiting. One local authority declined consent for this research to take place in their schools with the explanation that teachers in that area were not permitted to take pupils to farms. Others who refused this consent did not provide a reason, and several provided no response at all; it is therefore possible that there is an outright ban on farm visiting in multiple Scottish local authorities. Additionally, one case study participant farmer subsequently reported that farm visiting was only permitted by the local authorities in his area if these were conducted through RHET. A comment by one questionnaire respondent also indicated that some teachers may be unaware of their local authority's position on farm visiting:

> "Unsure of LA attitude towards farm visits. Will need to check this."
> - Survey respondent 148

Although outdoor learning is a prominent feature of Curriculum for Excellence, these findings suggest that while local authorities and school managers are supportive of this approach, teachers themselves may perceive some scepticism amongst other relevant groups, such as parents. More specifically, evidence suggests that support for farm visiting is highly variable amongst local authorities. This will present a barrier even to teachers who are comfortable and confident in taking pupils to a farm.

10.7. Raising awareness as a means of addressing barriers

These findings suggest that many of the barriers to farm visiting identified by study participants could be addressed to some extent by increasing teachers' awareness in a number of domains. Concerns around, for example, transport costs, risk assessment, and identification of curriculum links, were recognised by some participants in this study as having been mitigated by engagement with an expert organisation such as RHET, but there was evidence that some teachers were unaware of the existence or role of these organisations. Furthermore, greater awareness of farm life and the educational potential of farm visiting

could encourage teachers to consider farm visits for their pupils in a range of topics across the primary school age range.

Identification of the ways in which teachers with farm visiting experience gained awareness in these areas was therefore important for recognising how other teachers' awareness might be raised in the future. As part of their case study interviews, teachers in the present study were asked to discuss how they had first become aware of farm visiting as a possibility for their pupils, and how they had initially engaged with the organisations through which they arranged their visits.

10.7.1. Learning from colleagues

Informal discussions with colleagues had been an important contributor for most; for some, these were teaching colleagues who had previously undertaken farm visits or worked with RHET, but one teacher (from a farming background and still actively involved in farming) reported finding out about farm visiting through farming colleagues. Other adults associated with schools were also identified as initial sources of information, including one local farmer who was also a school volunteer, and a parent of pupils at the school who was also a RHET Project Co-ordinator. Some teachers had become aware of relevant organisations through advertising, often by email. In some cases this was indirectly, such as though RHET/RNCI advertising events such as the Royal Highland Show, rather than specifically around individual farm visits. Harris (2009, p.15) similarly found that "word of mouth seemed…to be the best form of advertising", although this was in a context of farmers making links directly with individual teachers and schools, rather than through the involvement of an intermediary organisation as in the present study.

10.7.2. Initial teacher education and CPD

Rebar (2012) identified four main routes through which teachers learn about conducting field trips. These included informal peer-mediated learning, reflecting the above findings of the present study. Formal training, as part of standard teacher training or specifically on use of the outdoors, was also identified. None of the teachers in the case studies reported having first

encountered the idea of farm visiting or the existence of intermediary organisations as part of their initial teaching qualification, although some had vague recollections of having discussed these topics as part of later CPD on outdoor learning more generally.

The teachers in my case studies had a variety of experiences of initial teacher education (ITE)[27]; some had an undergraduate degree in primary teaching, while others had completed a first degree in a specific subject, and had qualified as primary school teachers through a postgraduate certificate or professional diploma ('PGCE' or 'PGDE'). Interviewees were not routinely asked where and when they had trained, but in some interviews this topic arose as part of the general conversation, and some participants volunteered this information. Most of the respondents had trained in Scotland, but two had trained elsewhere (Wales, Ireland), and qualification dates ranged from the 1980s to very recently qualified teachers.

Most, including those who trained outside Scotland, could not recall having had much, if any, formal input on outdoor learning as part of their ITE. This reflects the comments by Higgins *et al*. (2006, p.52) that "[a]t present there is no requirement for any Teacher Education Institute in Scotland to provide any out-of-doors experiences for trainee teachers." It should be noted however that Higgins *et al*. (2006) were writing in advance of the more recent emphasis on outdoor learning, including the changes to the teacher registration standards (see Chapter 3). Promisingly, in the present study one of the most recently qualified teachers was the exception to these findings around ITE. She felt that she had received a great deal of input on outdoor learning during her ITE and probation year[28], and attributed this to the location of her university and probation school, which had facilitated extensive use of outdoor locations. Concurrent teaching degrees, which are offered by several ITE institutions in Scotland, may offer opportunities for greater integration of outdoor learning and farm visiting as part of a student teacher's experience.

[27] Also called 'Initial Teacher Training' or ITT in other parts of the UK.
[28] A guaranteed one-year post immediately following university qualification, successful completion of which is necessary to become a fully qualified teacher.

Several respondents suggested that professional knowledge about how to use the outdoors to support pupils' learning was something that developed with experience and from colleagues, rather than being directly taught. Learning from colleagues could be formal, such as through structured and scheduled cascading of training (continuing professional development; 'CPD'[29]) attended by other teachers, or more informal, for example through casual staffroom conversation and sharing of experiences. The professional learning described by the teachers in this study reflects the 'Reid's quadrants of teacher learning' framework explained by Fraser *et al*. (2007), with learning opportunities ranging from formal to informal, and from planned to incidental. It also reflects the model of professional learning advocated in a major review of teacher education in Scotland, which emphasises teachers as peer educators and mentors (Donaldson, 2010).

One teacher in the present study noted that although she had never attended formal training on outdoor learning, she felt that she had "had enough passed on". She also acknowledged however that, while she felt that she had gleaned enough about outdoor learning from informal avenues, more training …

> "…never goes wrong and certainly I think, I think there should be more learning just so that people are aware of it [outdoors] as a potential learning space and try to make use of it"
> - Teacher, Case Study 1

Some teachers felt strongly that they would benefit from additional input on the ways in which outdoor learning environments could be used, in response to greater curricular emphasis on this.

> "... recently the change for outdoor learning's not just going out and having a wee walk in the woods, it's actually going out and, you know, […] doing your science outside, that side of things. […] Certainly I'm still in my learning curve of that to see exactly how that works, but the taking children out is not a problem, but the actual taking them out for specific learning tasks I think we're still in the throes of... well, I would be still looking for CPD."
> - Teacher, Case Study 7

[29] Now also known as 'Professional Learning' or PL.

Respondents also suggested that CPD sessions on outdoor learning were useful for "just generally increasing your confidence about trying things" (Teacher, Case Study 10). The importance of trying new approaches and reflecting on their success was also highlighted:

> "…every time you do it, you're constantly assessing what it that you're doing in your head. It's not that you're writing it down but you're constantly thinking, how can I make that bit better, that didn't work, I'm going to try this next time…There's a new idea from here, my pal told me about this, this new website… And you try things."
> - Teacher, Case Studies 11 & 12

CPD was also identified by some as useful in ensuring that outdoor learning remained at the forefront of teachers' minds. Others however felt that the benefits of CPD for outdoor learning were limited, because every class and every topic would be slightly different. Furthermore, as discussed above, some teachers may not be receptive to the idea of learning outdoors.

Only one teacher had any recollection of formal CPD input specifically on farm visits, which had been with RHET around 10-12 years previously. The teacher recalled this as a time when there was a noticeable shift from the use of 'friends and family' farms, to a greater emphasis on formal arrangement and risk assessment.

> "…a while ago there was lots about farm visits, I think it was just when it all came in that you can't just go to a farm for a visit, when that all kind of stopped, if somebody's granny owned a farm you could go, you know, when that all came in there was a lot more about the whole risk assessment. I remember going on a, like as a whole lot of teachers meeting at a farm and getting shown round a farm. We went up, a whole lot of us went up and did, and talked about the different parts of the farm"
> - Teacher, Case Study 7

As with the earlier comments on outdoor learning, offers of training and CPD were regarded as something that would only be accepted by those who were already keen or interested.

> "I think there has to be an interest on our part… and if you're not interested in going somewhere like a farm, I think it would be very difficult to do because your heart wouldn't be in it. The enthusiasm wouldn't be there and I think you have to have a level of enthusiasm so that you enthuse the children."
> - Teacher, Case Study 8

As part of the initial questionnaire, teachers were asked to comment on their preferred means of receiving guidance and advice on farm visiting. Along with a 'one-stop shop' website, one of the most commonly identified preferences was for CPD, and one teacher reported having become aware of farm visiting by this route.

> "A 'hands on' CPD session for staff would be valuable […] would help to alleviate any concerns around hygiene or safety"
> - Survey respondent 15

> "Would be good to have CPD sessions linked to farm visits to assist teachers with planning of topic for their pupils."
> - Survey respondent 184

> "It was a CPD session which raised my awareness of the possibility of a farm visit."
> – Survey respondent 60

Several respondents also noted having previously attended useful CPD delivered by RHET, and recommended that other teachers should be advised to attend this type of session.

The need to provide opportunities for teachers to visit farms was also identified by some farmer participants. One suggested:

> "I would say they're needing to do farming visits with the teachers only. I mean that's been my war cry since day one I started [volunteering with] RHET, because the teachers are, it's not nice to say, they're ignorant to farming. They need to have actual farm days for teachers only."
> - Farmer F

Dillon *et al.* (2003) similarly identified the importance of opportunities for

teachers to visit outdoor locations more generally, while a number of authors have advised that teacher education in Scotland could place greater emphasis on learning to teach in the outdoors (e.g. Thorburn & Allison, 2013). Christie *et al.* (2014a) suggest that there is already an increasing availability of outdoor learning input at teacher education institutions in Scotland.

Mannion *et al.* (2011, p.34) highlight that opportunities for student teachers should reflect the type of experiences available to pupils, and "help teachers, through this kind of pedagogy, to see links with formal curricular outcomes and experiences within single subject and interdisciplinary project work". In relation to farm visiting, Harris (2009, p.25) suggested that farm visits for teachers were needed, either as CPD or as part of initial teaching qualifications, to "increase awareness of the potential for farm visits to meet curriculum needs". The findings of Smeds *et al.* (2011), that teachers In Finland preferred on-site learning to sustain delivery of a rural education programme, further supports the suggestion that teachers should have professional opportunities for farm visiting.

The introduction of CfE, and the subsequent reviews of teacher education and professionalism in Scotland by Donaldson (2010) and McCormac (2011), have created a great deal of expectation around teachers' professional development. Concerns have been raised around the capacity of teachers, as well as universities, schools, and local authorities to meet these challenges (Donaldson, 2014). Teachers are faced with a wide range of competing priorities around training they can attend and topics they are expected to be aware of, and the importance of raising awareness of farm visiting must be seen within this context. Nevertheless, a drive for greater teacher awareness of farming, the educational potential of farms, and the help available to make use of these opportunities, aligns clearly with the recent curricular emphasis on outdoor learning. Although these findings demonstrate that some teachers learn informally and from colleagues, providing opportunities formal learning on farms can further raise awareness of the educational potential of farm visits.

10.8. Chapter conclusion: How easy it is

Many of the barriers which have been found in relation to outdoor learning generally are also relevant to farm visiting. The perception of risk was recognised as something which might be presumed to be higher at a farm, but most teachers with farm visiting experience saw the farm as simply a different, rather than higher, risk. This barrier could be addressed to some degree by engagement with organisations such as RHET, whose representatives have expertise in risk assessing in this context. Similarly, some of the other barriers could be addressed through teachers' own efforts, such as through fundraising to meet transport costs, or through other sources of funding such as charities.

Teachers in this study demonstrated the potential for farm visits to support teaching and learning in a wide range of non-farming topics such as 'water', and across the whole primary school age range, using a range of approaches and with links to all CfE curriculum areas. Nevertheless, the study also indicates that some teachers lack knowledge of farming, and understanding of the curriculum links offered by farm visiting. Some may be discouraged from considering a farm visit by their perceptions of risk, assumptions about costs, and their own lack of confidence around farming topics and locations. Teachers may also lack awareness of the available sources of guidance and assistance to help them address these barriers, and this has implications for the farm visiting opportunities offered to primary school pupils in Scotland.

While teachers may learn from colleagues about farm visiting, this is an informal and inconsistent approach to raising awareness of what is available to them. More formal avenues such as direct, farm-based training, may help teachers to recognise the curriculum links, become aware of the available organisations and resources, and develop their confidence. The most significant barrier to address may be teachers' lack of awareness of the help that is already available.

> "I don't think teachers actually realise how easy it is"
> - Teacher, Case studies 11 & 12

11. Conclusions and Recommendations

The aims of this research were to explore how farm visits, as an example of outdoor learning, can be linked with the 'Curriculum for Excellence' guidelines relevant to the primary school age range; to highlight issues which those involved in educational farm visiting may wish to consider in planning visits; and to provide general guidance on farm visiting. The study was underpinned by four key research questions, which are revisited here along with the main findings relating to each.

Research Question 1: How can teachers use educational farm visits and link them with Curriculum for Excellence (CfE)?

Farm visits are an example of outdoor learning, which is an approach to learning advocated within the CfE guidelines. This research found that:

- Teachers use farm visits as part of topic-based learning, aligning with the curricular support for interdisciplinary approaches.
- Visits and topics can relate to all of the curriculum areas, although some (such as Modern Languages) may require an element of creativity on the part of the teacher.
- Visits aligned with many of the 'Principles for Curriculum Design' of CfE, including 'relevance' and 'enjoyment'.
- Some elements of the curriculum guidelines which might be expected to relate to farm visiting, such as education for sustainable development, were not explicitly identified by case study participants.
- Topics for which a farm visit is appropriate can be undertaken at all curriculum levels relevant to the primary school age range, although visits are most commonly arranged for pupils in Primary 2 or 3.
- Farming topics and related visits may provide a unique opportunity for interdisciplinarity which is related to specific 'Experiences and Outcomes' but also enables broader learning. Some teachers indicated that few other topics could offer such a range.

Research Question 2: How do farm visits contribute to learning?

The use of outdoor environments can contribute to learning in a range of ways (see Chapter 3). The outdoor setting of a farm is likely to provide many of the

general benefits of learning in other outdoor locations. More specifically, the participants in this study identified that their farm visits contributed to learning by:

- Consolidating and contextualising pupils' classroom learning. This was predominantly the view of teachers.
- Allowing pupils to question farming experts and find out about specific details of farm life which were of particular interest. This level of detail may not have been available from class teachers.
- Enabling adults (teachers, classroom assistants, adult helpers) to learn about farm life and food production. The importance of this was recognised by all participant groups in this study, and particularly by farmers for the promotion of wider societal understanding of farming.
- Providing a sensory and 'real life' experience of the farm, which cannot be fully replicated in the classroom.

Research Question 3: What are farmers' experiences of hosting visits and engaging with children?

Few studies in the UK have previously explored the experiences of farmers in this context. Farmers are often extremely busy and have a range of commercial pressures which may lead them to feel that they are unable to invite pupils to their farms. Nevertheless, the farmers in this study reported that:

- Preparing for a visit was reasonably straightforward, particularly with support from an intermediary organisation.
- Hosting pupils at the farm was an enjoyable experience and a welcome variation from the usual farm routine.
- Farmers drew on their other experiences of engaging with children (e.g. family, other voluntary activity) in engaging with pupils, and also sought guidance from teachers and RHET/RNCI co-ordinators to supplement this.
- Farmers who do not host visits are thought to be discouraged by a misconception of the expectations that would be placed on them around, for example, changes to sites and routines.

Research Question 4: What are the barriers to farm visits, and how can they be addressed?

A wide range of previous literature has identified the barriers to outdoor learning generally (see Chapter 10). This study found that many of these are also relevant to farm visiting, and identified the most pertinent. These were:

- The cost of transport, which is a challenge in rural areas as well as urban.
- Concerns around risk. Teachers did not necessarily see the farms as more risky than other outdoor locations, but rather as having a different sort of risk, which they may not have the expertise to properly identify and address.
- Teachers who lack familiarity and confidence in the farm environment may not consider the possibility of a farm visit for pupils, or the range of curriculum links that such a visit can offer.
- Many teachers were unaware of the organisations and resources which already exist to help with risk assessment, planning and resources, and access to funding for transport.

A summary of these findings relating to the four main research questions is presented in Appendix 16.

As well as the findings relating directly to the individual research questions, three central themes for consideration emerged from this project: balancing authenticity, risk, and other factors; teachers' experience and influence; and the role of intermediary organisations. The main study recommendations relate to and derive from these themes.

11.1. Overarching themes and recommendations

Although the findings of this research are primarily intended for the use of teachers and farmers themselves, the three overarching areas emerging from the findings have relevance to an audience beyond individual practitioners. The study recommendations are therefore addressed to a broader spectrum of stakeholders, including those involved in teacher education and the delivery of educational farm visits. Furthermore, the issues raised by participants in this study also relate, in some instances, to outdoor learning more generally, and the findings and recommendations may therefore be of interest to a wider audience. The recommendations from this research are discussed here, and are summarised in Appendix 17.

11.1.1. Balancing authenticity, risk, and other factors

This study identified a number of issues with which teachers must contend in the planning of their farm visit. The need to balance a desire for authenticity with concerns around safety was an area of potential tension. While case study participant teachers valued the authenticity of visiting 'real' farms, there was also a clear sense that visits to farm parks or farms on managed estates were regarded as safer, particularly for younger children.

The age of children visiting farms was important in relation to risk, in that younger children were anticipated to be more prone to potentially risky behaviours such as putting their fingers in their mouths, and becoming overwhelmed or overexcited. This highlights another issue of potential conflict identified by this study; topics which related closely to farm visits were regarded by some teachers as fitting most closely with the curriculum at the Primary 2-3 stage, and some teachers indicated the importance of making such visits at an early age as a starting point for further learning. Other teachers, and some farmers, however felt that visits to farms which were not specifically designed for visitors were less appropriate for pupils in this age group.

Teachers may also have to consider the needs of pupils with mobility difficulties or other particular needs, for whom some farm locations may be unsuitable. Contending with such issues may present difficulties for any teachers wishing to provide their pupils with an opportunity to visit a farm, in choosing the best destination for their visit, and may also influence the preparation that pupils need ahead of the visit. Reflecting previous findings around the importance of preparing pupils for a trip (e.g. Behrendt & Franklin, 2014), teachers and farmers tended to agree that giving pupils some input or information about farming ahead of their visit was important. This could take the form of teacher-led classroom activity, but could also include direct engagement with a farmer – for example, though the provision of a 'topic box' with genuine farm items, or a classroom visit from the farmer. A classroom visit was also regarded as an important opportunity for pupils to meet the farmer and develop rapport, which could help them to feel more relaxed and engaged at their farm visit.

Some teachers in this study expressed uncertainty around whether a further farm visit, to the same farm or another, in a different season or later in the school career, would be educationally worthwhile for pupils. In contrast,

farmers were clear that pupils could not gain a thoroughly authentic sense of the farm from a single visit, and should have the opportunity to visit a farm more than once. The farmers' views align with the model of ongoing relationships between schools and farms demonstrated in the international literature (see Chapter 2). They are also supported by the guidance from Education Scotland, which emphasises that pupils should have a meaningful progression of outdoor experiences throughout their school careers (e.g. LTS, 2010).

The following recommendations provide a suggested approach to planning farm visits which responds to these issues:

> Recommendation 1: Teachers should visit a farm park, or other similar location designed for visitors, with younger primary school children and those whose particular needs warrant it.
>
> Recommendation 2: Pupils should have the opportunity for at least one further visit to a farm during their time at primary school, ideally around P4.
>
> - Where possible, this would involve an 'authentic' working farm not specifically designed for visitors
> - The visit should be led by farmers themselves.
> - Farm visits as part of a topic should ideally take place in the same timeframe as the topic, but not as a starting point.

While it is recognised that some teachers will not have a great deal of choice in the locations available to them, due to geography, costs, or specific requirements, the above recommendations represent a scenario in which the issues of authenticity, safety, and pupils' needs can be addressed. This study has demonstrated that farm visits can be linked with topics at all stages of primary school, and teachers may wish to consider at least one visit at each of the two CfE Levels which relate most closely to the primary school age range (broadly, First and Second levels). A farm visit at each of these two stages, to different types of farm location, will increase the breadth of pupils' experience and acknowledge the progression in their knowledge and development, as suggested by the curriculum guidelines.

11.1.2. Teachers' experiences and influence

The role of teachers in giving pupils opportunities to visit a farm was vital. In the case studies which formed part of this research, the visits took place as part of a topic, most commonly 'food' and/or 'farming'. While the choice of topic was sometimes directed by school management, the choice to conduct the farm visit was usually made by the teachers themselves. Amongst the teachers who participated in the case studies, as well as those survey respondents who had been on a farm visit in the previous year, the visits were usually a purposeful part of learning, whether as part of a topic or otherwise, and not simply a 'fun day out'.

As some study participants reported, however, teachers are known to conduct relevant topics with their pupils without ever visiting a farm. Three main reasons were identified in this study as potentially contributing to this. Firstly, teachers may assume that farm visits are only relevant to food and farming topics, and to pupils in P2/P3. Consequently, they may not consider that such a visit could relate to their other planned topics or for older pupils. Secondly, many teachers have never visited a farm and may be uncomfortable with the farm environment. This may contribute to their reluctance to take pupils to this unfamiliar environment. Finally, many teachers seem to be unaware of the organisations which exist to help them plan and conduct farm visits, and the resources which are already available. Recommendation 3 responds to these issues.

> Recommendation 3: Teachers in Scotland should have the opportunity to visit a farm as part of their Initial Teacher Education (ITE).

Even a brief visit to a farm would allow student teachers to become more familiar with the environment and the learning opportunities available there. Such a visit could be supplemented with a short discussion of the range of relevant topics at different stages of primary school, and an element of awareness-raising around the assistance that is available from different organisations.

Other authors have also recommended the inclusion of farm visits in teacher education. Dillon *et al.* (2003) highlighted that teachers' lack of familiarity with

a field trip environment was a potential barrier to the use of that environment, and could impede teachers' planning for such visits. The importance of effective planning to ensure the success of a field trip as a learning experience has been identified in a range of studies (e.g. Dillon *et al.*, 2006; Morag & Tal, 2012). Following her research with teachers in England, Harris (2009) advised that teacher training should include time at a farm or similar environment, either as part of initial qualification, or as later CPD or 'Inset' (in-service) training days. While qualified teachers in Scotland can access training opportunities around farm visiting as part of their ongoing professional development, it is likely that these are attended by those who already have some interest in the area. Embedding this opportunity within the routine delivery of ITE would ensure that all teachers would have some level of awareness of what is available to them at a farm. The recommendation in the present study is therefore intended to focus on pre-service or student teachers.

Higgins and Kirk (2006) described the variable provision of teacher education around sustainability and outdoor learning across Scotland. They concluded that although some individual ITE institutions offered relevant modules, there was little political or curricular support for this to progress. As Chapter 3 outlines, however, there is now increasing support for outdoor learning within the Scottish curriculum guidelines, and the use of outdoor learning environments is specified in the registration standards for teachers. These standards inform the content of teacher education courses, and farm visiting could therefore be integrated within this ongoing ITE development.

11.1.3. The role of intermediary organisations

Although this study did not set out to evaluate specific organisations, nor their approach to the provision of educational farm visits, most of the case studies in this project were with visits arranged through the Royal Highland Education Trust (RHET), and their partner in North East Scotland, the Royal Northern Countryside Initiative (RNCI). The model of provision utilised by those organisations as intermediaries emerged as an important feature in attracting both farmers and teachers to take part in visits, and many of the findings of this study cannot therefore be separated from this context. The reported benefits of working with RHET/RNCI included:

- Identifying appropriate farms to visit
    - Geographically
    - To meet the requirements of the topic/curriculum (e.g. if the focus was particularly on dairy farming or arable farming)
    - To meet the individual needs of the pupils
    - With risk assessments in place
- Liaising between school staff and farmers
    - Daily schedules of different groups meant it could be difficult for teachers and farmers to contact each other directly
    - Identifying dates and times to suit both groups; ensuring that farmers' busiest times were avoided
    - Communicating expectations around visit content
- Support before and during the visit
    - In carrying out an expert risk assessment, ensuring that any actions were communicated to the farmer, and that the document was agreed between the teacher and farmer
    - The pre-visit risk assessment process, which although time-consuming had additional benefits beyond risk minimisation
    - Advice and assistance to farmers, especially those new to offering visits, in communicating with pupils
    - Practical assistance with, for example, hand and footwear-washing (and provision of resources for this).

Several teachers and farmers in the case studies reported that they would not have considered undertaking farm visits for pupils, had it not been for the involvement of RHET/RNCI and the reassurance that such a partnership gave them. Teachers whose case study visit had been with the Co-op Farms' 'Farm-to-Fork' project reported similar benefits to engaging with an expert organisation. This reflects similar findings by authors such as Harris (2009), and Thorburn and Allison (2010), who noted the importance of organisations which can provide guidance and resources, and facilitate links between teachers and different types of outdoor learning providers.

In the initial questionnaire as part of this study, several teacher respondents reported their awareness of RHET/RNCI through personal engagement or having been on a farm visit with those organisations. These teachers were, without exception, complimentary about the work of the co-ordinators and other representatives, the organisation of visits, and the resources which accompanied their visit. As highlighted above, however, many survey respondents seemed

unaware of the work of organisations such as RHET/RNCI, or the assistance and advice available from them. Recommendation 4 reflects this concern.

> Recommendation 4: Efforts should be made to raise awareness, particularly amongst teachers and farmers, of the organisations which can help with planning and carrying out farm visits.
>
> - Awareness raising activity for farmers should highlight their valuable role in explaining their routines to pupils, address possible misconceptions around the requirements of hosting visits, and emphasise the support and guidance that is available.

This recommendation could be met, for teachers, as part of the Initial Teacher Education input recommended earlier. The recommendation is also intended to include farmers, however, amongst whom increased awareness could include reassurance on the level of preparation needed ahead of a visit, and information on the support available, to encourage more farmers to engage with organisations and offer visits at their farms. The farmers in this study generally reported becoming engaged with educational visiting through farmers' organisations and farming colleagues. The final recommendation emphasises this point.

> Recommendation 5: Intermediary organisations should seek to harness existing farmers' networks, to promote their work and provide information to farmers who may have inaccurate perceptions of the requirements of hosting school visits.
>
> - Farming colleagues from within these networks could fulfil a mentoring role and provide another source of support for farmers who are considering hosting educational visits.

11.2. Limitations of this study, and potential future research

This study has sought to explore the use of educational farm visits by primary school teachers in Scotland in a broad sense, but the scope of the study was necessarily limited. Future research may seek to address some of these limitations.

In relation to the survey, head teachers were asked to nominate one member of staff to complete and return the questionnaire. As the respondent profiles in Chapter 5 demonstrate, most of the responding teachers were already engaged with the outdoors, and regarded outdoor learning as an important feature of their work. Many also had previous experience of farm visits. Clearly this is likely to have influenced their responses to questions on outdoor learning and farm visiting. The contribution of teachers who are less enthusiastic about the outdoors, and those who have no experience of visiting a farm in either a personal or professional capacity, is absent from this study, and could perhaps provide greater insight into how teachers in these groups could be encouraged to engage with farm visiting.

The case studies conducted as part of this research engaged with a limited range of intermediary organisations. Other organisations may have vastly different protocols or procedures, and some teachers may undertake farm visiting without the input of such organisations; these perspectives have not been considered in detail in this study. Furthermore most of the case study farm visits took place at dairy, beef, and arable farms. No case study visits included other types of farm which are known to exist in Scotland, such as fish farms, deer farms, and Christmas tree farms. This may relate in part to teachers' preferences, farm and school locations, and the range of farm types available to the organisations involved in this research. Nevertheless, it may be useful to explore the potential contribution of other farm types to pupils' learning. Additionally, only farmers who hosted educational visits were included; the perspectives of those who choose not to do so could usefully contribute to understanding how more farmers could be encouraged to volunteer.

In relation to the schools involved in this research, all were state-run mainstream day schools for children aged 4.5-11.5 years old. No secondary, fee-paying, boarding or residential schools, or schools for children with additional support needs, were included. While the inclusion of pupils and teachers in these schools would have been the ideal, a full account of their potentially very different experiences of farm visiting was beyond the capacity of this study. So too was the consideration of alternative approaches to education, such as through Steiner schools or home-schooling. Future research which includes

these groups would contribute further to understanding the ways in which farm visits can be used for educational purposes.

This study sought to engage pupils' own voices about their farm visiting experiences, rather than accessing their experiences through parental questionnaires or other indirect approaches. The 'group discussions' method, however, was less successful and yielded less insight than had been anticipated, particularly with the youngest participants. While this worked well with the limited number of older primary children in the study, the use of alternative approaches such as visual methods (e.g. Clark *et al.*, 2013), may have enabled younger pupils to engage more meaningfully with the study, and allowed their perspectives to be included more fully in the research findings. Additionally, this research included an accompanied visit with pupils to a farm only as an informal element. No formal data collection, through methods such as recorded observation, photography or video recording, for example, took place. Use of these methods would be logistically and ethically complex, but could provide a much greater depth of information.

This research explored, in a broad sense, the ways in which farm visits could be utilised and linked with the CfE guidelines. The findings of the study suggest a number of avenues in which further research could usefully be conducted. These include:

- In-depth study of a whole topic (on food and farming, or another relevant area), to explore more precisely how classroom-based learning interacts with the farm visit.
- Research to quantify the benefits of multiple or repeat visits, either as part of the same topic within different seasons, or at different ages/ stages of schooling.
- Comparisons of different pedagogical approaches or frameworks, such as those discussed in Chapters 2 and 3.

The study has also been based on a number of assumptions; not least that farm visits are a worthwhile endeavour which should be continued and developed. While this study has sought to provide evidence for ways in which this continuation and development can take place, future studies may include more explicit comparisons of learning about food and farming wholly in the classroom or by other means.

11.3. Contribution of this study

11.3.1. The contemporary context

Throughout the duration of this study, farming has rarely been out of the UK media headlines. The impact of bad weather (e.g. Urquhart, 2013) and the price of milk (e.g. BBC News, 2015; Mendick, 2015) have kept farming in the media view. In 2013, traces of horse DNA were found in beef burgers on sale in the UK and Ireland (e.g. BBC News, 2013). Subsequent media reporting implied that this had encouraged the public to question the sources of their meat products, and influenced some to purchase their meat from small independent butchers who could demonstrate personal links to source farms (e.g. Morris, 2014).

Research undertaken at the time of the 2001 outbreak of foot and mouth disease (FMD) in the UK suggested that discussions of this amongst farm-based, other rural, and urban children offered some opportunity to address misconceptions and stereotypes of farm life (Nerlich *et al.*, 2005). Nevertheless, the authors concluded that "the gulf between town and country… is perceived to have widened, rather than narrowed since the 2001 FMD outbreak" (p.358). Although some changes have been identified following the 'horse meat scandal', it remains to be seen whether these changes persist, or whether the perceptions and behaviours of the general public revert to their earlier status. Furthermore, whether the consistent presence of farming in the news headlines in recent years has any significant impact on the general public's understanding and perceptions of farming, or on children's knowledge and curiosity about where their food comes from, remains unknown. One recent survey nevertheless suggests that many children are interested in learning more about farming (Davies, 2015); the provision of opportunities for children to visit farms, to better understand the life of farmers and the ways in which foods are produced, therefore remains important.

The choice to situate this research within an outdoor learning context was driven by the increasing prominence of outdoor learning within the Scottish curriculum guidelines (see Chapter 3). The ongoing promotion of outdoor learning has continued throughout the duration of this research, with further

Curriculum for Excellence publications supporting outdoor learning. Most recently, the fourth edition of *How Good is our School?* (Education Scotland, 2015d), for the first time explicitly includes statements on outdoor learning as a feature of highly effective practice. This reflective self-assessment approach is an element of the school inspection process in Scotland, and the fourth edition will become part of the inspection model from July 2016 (Education Scotland, n.d.). The inclusion of outdoor learning represents an additional driver for schools to consider how best to use the outdoor opportunities available to them.

The findings of this study contribute to important concerns within this contemporary context by presenting evidence on the ways in which the farm, as one specific example of an outdoor learning location, can be accessed and linked with the curriculum guidelines. These links can be made as part of topics on farming and food, which are relevant and of interest to pupils, and to a variety of other topics across the primary school age range.

11.3.2. Responding to identified needs

In parallel with the increasing emphasis on outdoor learning and interdisciplinarity within Scottish education has been the recognition that more research, and further guidance for teachers, is required. Thorburn and Allison (2010), for example, call for examples of how outdoor experiential learning can take place as an integrated part of the curriculum. Similarly, Humes (2013) discusses a need to identify interdisciplinary topics which relate closely and coherently to the CfE experiences and outcomes and provide scope for progression, without resulting in an overly outcome-driven approach.

Following their important review of children's understanding of food and farming, Dillon *et al.* (2003) reported a number of gaps in the research literature, including teachers' aims in visiting farms, pupils' experiences, and the removal of barriers to learning in these areas. They highlight the potential of farm visits to contribute to teaching and learning around food and farming, but note a particular lack of UK-based research and examples of how teachers can and do utilise farm visits for educational purposes.

The present study contributes in these areas by identifying a range of ways in which farm visits can be utilised as part of an interdisciplinary topic, and linked

with the curriculum guidelines. This research has explored some of the ways in which primary school teachers in Scotland currently use farm visits, and reflected on these to provide examples and guidance to practicing teachers. The experiences of farmers in offering such visits is also explored, and a number of areas for consideration by farmers and intermediary organisations are identified. The successful and ongoing engagement of farmers in hosting school visits is vital in ensuring that such opportunities continue to be available to pupils.

Recognising that the educational context and curriculum guidelines in Scotland are very different from elsewhere in the UK (e.g. Donaldson, 2014), this research focuses specifically on *Curriculum for Excellence*. While the findings on curriculum links relate specifically to the Scottish guidelines, many of the findings are nevertheless relevant beyond Scotland, particularly in relation to the issues that teachers, farmers, and intermediary organisations may wish to consider when planning educational farm visits. Furthermore, there is evidence that other countries are interested in adopting Scotland's model of education (Hepburn, 2014), with the potential that research relevant to the CfE guidelines can also be utilised elsewhere.

11.3.3. Health, wellbeing, and learning benefits of the outdoors

As well as findings relating to the practical undertaking of farm visits in relation to CfE, this study contributes a perspective on the literature discussed in *3.1.1 Explaining the benefits of time spent outdoors*, on the mechanisms which may underlie learning, and the health and wellbeing benefits of outdoor and nature-based experiences. While this study did not seek to support or refute any particular theoretical position on the ways in which outdoor learning may yield such benefits, some of the findings are nevertheless relevant.

As outlined in Chapter 3, Kellert (2002) describes three types of outdoor experience: direct, indirect, and symbolic/ vicarious. While Kellert acknowledges that all three may contribute to learning and development, he suggests that 'direct' unstructured personal contact, with natural environments not controlled by humans, has a particularly important role to play. The model of farm visiting on which this study is based, however, aligns most closely with

the ‘indirect’ type, since farms are managed areas of land, and pupils’ access to them is structured by teachers, farmers, and representatives of the intermediary organisations. The necessity of this approach is implied by study participants’ acknowledgement that farm visits, in common with many other types of outdoor activity, carry a degree of risk. The need to manage this risk results, in this context, in visits which are adult-led, rather than providing opportunities for pupil-led exploration, or the type of free play described by Ghafouri (2014). The farmers in the study were however keen to emphasise the authenticity of pupils’ experience at their visit. Apart from some minor changes for health and safety purposes, the farms functioned on the day of the school visit in much the same way as on any other day, and several teacher participants in this study felt that this authenticity was an important feature of the farm visit. Farmer and teachers highlighted this as a contrast to the ‘farm park’ type of location, which would also be described as ‘indirect’ in Kellert’s (2002) typology.

Teachers and farmers also felt that personal experience of the farm, in ways which could not be easily replicated in the classroom, was important for pupils’ understanding. The opportunity to see the area and scale of the farm was noted by some teachers as eliciting a sense of awe amongst certain pupils (see Chapter 7). Rathunde (2009, p.74) believes that nature experiences which provide such opportunities have a particular contribution to make to children’s learning, in that “experiences of awe and beauty in nature have the capacity to give us insight about connections to something larger than ourselves.” The opportunity for pupils to experience a sense of the scale of the farm also aligns with the concept of ‘extent’, one of four key components of a restorative environment according to Kaplan's (1995) Attention Restoration Theory. The remaining three components (being away, fascination, and compatibility) were however less evident in the study findings. As the farm visit had an educational purpose, pupils were expected to utilise their ‘directed attention’ in looking at the farm surroundings, listening to the farmer’s explanations, and asking questions. The farm surroundings, in this context, therefore seem unlikely to have provided the ‘restorative environment’ described by Kaplan. The pursuit of such an environment was not, however, an explicitly articulated factor in the choice to visit the farm. Some teacher participants explained that they regarded the trip mainly as one which linked appropriately with their topic, while others had

purposely utilised outdoor learning based on the needs of specific pupils who were thought likely to benefit from that approach. Although the pupils may have benefitted the outdoor environment, the farm visit does not seem likely to have contributed to their health, wellbeing, or learning through the mechanism of attention restoration.

Visiting the farm in person did however provide pupils with an opportunity for sensorimotor engagement with other elements which would be challenging to elicit in the classroom, such as sounds and smells. This type of sensory engagement can contribute to learning through stimulating relevant brain pathways (Schenck & Cruickshank, 2015). Although some pupils described the smells, and the need to physically walk round the farm on foot, as the least enjoyable part of the visit, most appreciated the opportunity for direct, personal, 'real-life' experience of the farm. While some pupils had the opportunity to handle farm artefacts, however, teachers sometimes felt that more tactile, hands-on activity would have been beneficial. This also relates to the study findings on pupil age (see Chapter 8), with some teachers suggesting that for younger pupils especially, a 'petting zoo' or 'farm park' type of visit, which would offer greater opportunity for hands-on activity, would be more appropriate.

As well providing an opportunity for personal experience of the farm environment, most farm visits in this study, including those reported as part of the survey, included some form of classroom-based, post-visit activity. These activities, such as writing thank you letters and giving presentations, enabled pupils to reflect on their experience at the farm. Additionally, it must be recognised that for some pupils, participation in focus groups as part of this research presented a further opportunity to reflect on their learning from the farm visit. The importance of reflection on new information as a component of learning is also emphasised by Itin (1999). Furthermore, although the use of 'experience' in CfE relates mainly to opportunities for first-hand sensory engagement, rather than with the 'experiential learning theory' proposed by Kolb (2015; see also Chapter 3), this post-visit activity aligns this approach with the second stage of his model ('reflection').

It was not possible to determine, from the findings of this research, the extent to which pupils engaged in generalisation, the third stage of the 'experiential learning theory' model. Exploring this was not a goal of the study, and teacher participants did not report any activity from which implications on this might have been derived. The fourth stage of Kolb's model, however, suggests that learners should be able to put their learning into practice and actively use what they have learned (e.g. Behrendt & Franklin, 2014). Pupils in this study reported that they had learned a range of factual details at the visit; however, there is no expectation as part of CfE that they should be able to recite a set of discrete farming facts. Furthermore, the purpose of the farm visits was not that pupils should be able to undertake or demonstrate practical farming tasks. The main purpose of the farm visits, as described by most of the teachers participating in the case studies, was to consolidate and contextualise pupils' classroom learning. The type of farm visiting utilised in the case studies therefore demonstrates a limited degree of connection with 'experiential learning theory'.

In relation to the contextualisation reported as a main purpose of farm visiting, one teacher in particular highlighted that some classroom resources were not fully aligned with the farming context in the local area. The visit therefore provided an important opportunity to learn from a genuine local farmer, and for pupils to experience the realities of farming in their own local area. The CfE guidance emphasises the need to utilise local and Scottish contexts (e.g. Scottish Government, 2008), and many of topics reported by farm visiting teachers in this study included a focus on Scotland generally, or on the more local area in which the school was based (see Chapter 6). This suggests teachers were able to incorporate elements of learning about 'place' into their topic, and that the farm visit helped to ensure that the teaching and learning was relevant.

Kahn (1997) suggests that, within the broad relationship between humans and nature, there is something particularly special about our relationship with animals. Similarly, Myers and Saunders (2002, p.153) assert that "one could argue that every segment of the natural world – plants, weather, landforms, waters, and so on – offers something surpassing and singular to the lives of people. But with animals, we believe we have a special case, a part of nature that is a potent and enduring part of our very development." They go on to discuss one potential reason for the 'special' nature of animals; that is, that

they are responsive and interactive in a way that other elements of the natural world are not. Myers and Saunders (2002) furthermore suggest that learning to care for animals can provide a 'bridge' to caring about the natural world more broadly. They suggests that young children recognise harming of animals as morally wrong, and cite several studies to support this view. In the present study, pupils' response to the animals they encountered or observed as part of their farm visit was notable; they were frequently discussed and identified as the 'best bit' of the visit, including amongst pupils who had visited arable farms (see Chapter 7). This seems to align with the idea of a particularly special relationship, as described above. At their farm visits, however, pupils had the opportunity to observe the responses of animals, but rarely was there an opportunity to interact with them directly. In addition, pupils were reported to be generally accepting of the idea of animals as food, and although several of the teachers were reluctant to discuss this idea in detail, farmers were generally matter-of-fact about this (albeit using language appropriate to the age group). This seems to contrast with the moral sense described by Myers and Saunders (2002); it may be however that pupils did not see the use of animals for food as 'harm' to the animals, but rather as their purpose, as described by the farmers. Nevertheless, the findings of this study demonstrate that, even for those children who visited arable farms, animals seemed to feature as a memorable part of the visit, lending some support to the idea of animals' special status.

Rathunde (2009) describes traditional Western educational practice as placing an emphasis on rational, scientific, disembodied teaching and learning. These methods are, he suggests, often successful but lack "integration of experiential, affective, and other body-based activities that could improve education and make it more well rounded" (Rathunde, 2009, p.71). As part of CfE, however, children are expected to have access to a broad range of first-hand experiences, and a variety of approaches (such as active learning and interdisciplinary learning) are utilised. There is also an expectation that pupils will have the opportunity for learning experiences in the outdoors, in a variety of environments in the local area and beyond. The findings of this study show that topics which incorporate a farm visit align with a number of these approaches, and enable pupils to experience the benefits of spending time in natural environments. The mechanisms though which natural environments contribute

to wellbeing and learning remain unclear (e.g. Houge Mackenzie *et al.*, 2014), and although some of the findings of this research align with prominent theories and models which attempt to explain these benefits, others are less clearly aligned. Farm visits offer an interesting perspective on these theories, and future research could yield greater insight into this relationship.

11.3.4. Contribution of the mixed methods approach

Following Mason (2006), a qualitatively-driven mixed methods approach was utilised in this research. This was guided by the work of Onwuegbuzie and Johnson (2006) on the integration of methods and methodologies, and the conceptual framework developed by Greene *et al.* (1989) on the purposes of mixing methods. A questionnaire for teachers with quantitative and qualitative elements was supplemented by qualitatively-analysed interviews with teachers, pupils and farmers, and the data were analysed in an integrated way (see Chapter 4). This approach allowed the collection of data from teachers across Scotland and with a broad spectrum of backgrounds and experiences, as well as from pupils and farmers. The study has therefore accessed the perspectives of a range of relevant participants, through which differing opinions and beliefs have been identified, offering a richer exploration than other research designs, or the individual methods in isolation, would have allowed.

11.4. Farm visits as an opportunity for curriculum-relevant learning in an outdoor setting

This study responded to the need for further research on outdoor learning, food and farming education, and the developing *Curriculum for Excellence*, by exploring the use of educational farm visits for primary school pupils in Scotland. In contrast to much of the previous international research on farm-based learning, which explored pupils' experiences of longer-term engagement and participation in farming, this research focused on pupils visiting the farm on a single occasion, usually as part of a school-based topic. The aim of the study was to provide teachers, farmers, and others involved in providing farm visits, with:

- genuine examples of the ways in which such visits can be utilised and related to the Scottish Curriculum for Excellence guidelines, and
- information on some of the issues they may wish to consider, including how barriers might be addressed.

The findings of this research indicate that although some teachers perceive farm visits to be limited to certain topics or age groups, others have related these to a wide range of 'experiences and outcomes' and Curriculum Areas within the Scottish 'Curriculum for Excellence'. Curricular links beyond those specified directly by teachers, such as with 'enjoyment' as a principle of curriculum design, have also been identified. These findings contribute to knowledge about the use of farm visits by primary school teachers in Scotland, and the relationship between such visits and the Curriculum for Excellence guidelines. This thesis provides examples of the topics and activities utilised by study participants, which represent a starting point for teachers to consider how they might use farm visits with pupils in the future.

The study also recognised that many teachers, including those with a personal background in farming, are unaware of the realities of the modern and local farming context, the educational potential of farm visits, and the range of resources and organisations available to help plan and safely conduct visits to authentic farm locations. As education policy in Scotland continues to support the use of outdoor learning environments for all young people, the development of greater awareness of the outdoor locations available to them is vital for teachers. This study further contributes to the understanding of teachers' needs in relation to resources and mechanisms for raising awareness.

Finally, the study makes explicit the experiences of farmers who offer educational visits. It demonstrates some of the motivations farmers have for engaging with schools, and identifies some of the needs which farmers have for reassurance and support to continue to offer visits.

Farm visiting is presently used by primary school teachers in Scotland in a range of creative ways, linking with a variety of topics across the whole primary age range. Teachers and farmers value the role of intermediary organisations in providing context-specific risk management expertise, and in supporting the communication of educational needs between those involved in organising the

visit, but some are unaware of the support that is available. This study highlights the value of such organisations, and the potential that exists for greater use of farm visiting as an educational experience.

Appendix 1: Key publications in the development of *Curriculum for Excellence* (2004 – 2013)

This list is not exhaustive, but is intended to demonstrate the breadth of Curriculum for Excellence documentation.

2004
A Curriculum for Excellence (Curriculum Review Group)

A Curriculum for Excellence - Ministerial Response

Ambitious Excellent Schools: Our Agenda for Action (Scottish Executive)

2006
A curriculum for excellence: progress and proposals (Curriculum Review Programme Board)

Building the Curriculum 1: The contribution of curriculum areas (Scottish Executive)

2007
Building the Curriculum 2: Active learning in the early years (Scottish Executive)

Taking Learning Outdoors (Outdoor Connections Advisory Group)

2008
Building the Curriculum 3: A framework for learning and teaching (Scottish Government)

2009
Building the Curriculum 4: Skills for learning, skills for life and skills for work (Scottish Government)

Assessment for Curriculum for Excellence – Strategic Vision, Key Principles (Scottish Government)

2010
Curriculum for Excellence through Outdoor Learning (Learning & Teaching Scotland)

CfE factfiles series 1: Background and Benefits; Assessment and Qualifications; The Secondary Experience

CfE factfiles series 2: Health and Wellbeing; Parents as Partners; Supporting Learners

2011
CfE factfiles series 3: Literacy across Learning; Numeracy across Learning; 3-18

transitions; Outdoor Learning

Building the Curriculum 5: A framework for assessment (Scottish Government)

Building Your Curriculum Outside and In

2012
CfE Briefing 1: Broad general education in the secondary school

CfE Briefing 2: Curriculum for Excellence: Assessing progress and achievement in the 3-15 broad general education

CfE Briefing 3: Curriculum for Excellence: Profiling and the S3 profile

CfE Briefing 4: Interdisciplinary Learning

CfE Briefing 5: Personalised Learning

CfE Briefing 6: A guide for practitioners: Progression from the Broad General Education to the Senior Phase Part 1: The S3 Experience

CfE Briefing 7: Progression from the Broad General Education to the Senior Phase Part 2: Learning in the Senior Phase

2013
CfE Briefing 8: Progression from the Broad General Education to the Senior Phase Part 3. Curriculum Planning at the Senior Phase

CfE Briefing 9: Learning about Scotland

CfE Briefing 10: The role of Community Learning and Development (CLD) and partnership working

CfE Briefing 11: Planning for Learning part 1: Through the Broad General Education

CfE Briefing 12: Planning for Learning part 2: further learning, training and employment beyond age 16

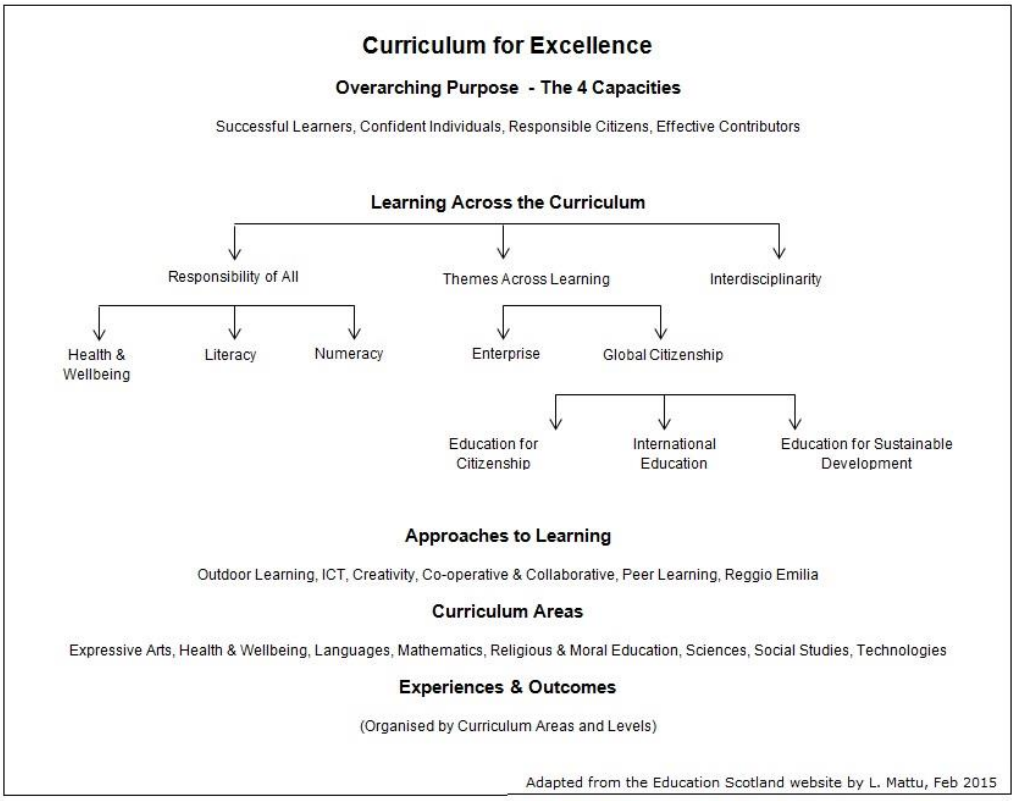
CfE Briefing 13: Planning for Learning part 3 - Individualised educational programmes (IEPs)

CfE Briefing 14: Curriculum for Excellence: Political Literacy

CfE Briefing 15: Sciences for All

Appendix 2: The Structure of Curriculum for Excellence

Some of the components of Curriculum for Excellence are evident in the document titles listed in Appendix 1. The diagram below gives a general illustration of some of the main curriculum features at February 2015, as explained on the Education Scotland website (www.educationscotland.gov.uk). It should be noted however that CfE is continually developing.



In addition to the above, teachers are expected to be aware of the following 'Principles of Curriculum Design':

- Challenge and enjoyment
- Breadth
- Progression
- Depth
- Personalisation and choice
- Coherence
- Relevance

The ‘experiences and outcomes’ are arranged into a series of levels, which are broadly related to the stages of schooling.

- Early: The pre-school years and P1, or later for some.
- First: To the end of P4, but earlier or later for some.
- Second: To the end of P7, but earlier or later for some.
- Third and Fourth S1 to S3, but earlier for some.
- Senior phase S4 to S6, and college or other means of study.
  (from Scottish Government, 2009)

This study refers mainly to ‘experiences and outcomes’ at the First and Second Levels, which cover most of the primary school age range. It is recognised however that Early Level is more relevant to children in Primary 1. Furthermore, the Levels are flexible in regard to individual children, and children in Primary school could be working at any level.

University of Glasgow | Mains of Loirston Charitable Trust | RHET | SRUC

Farm visits and the Scottish primary school curriculum

Survey of Teachers in Scottish Primary Schools

Section 1. General Information

Your job title or role: _____ Postcode of School: _____

Approximate number of years since qualification as primary school teacher: _____ (write number)

or, I am (please circle one, if appropriate): A student teacher / A probationer teacher

I have a formal remit, or I am lead, for Outdoor Learning Yes ☐ No ☐

What proportion of the children in your school live on a farm? Please give your best estimate – there is no need to spend time seeking out specific figures: _____%

Section 2: Your thoughts and opinions on the outdoors and outdoor learning

Please indicate the extent to which you agree with each statement, by circling a number.	**Do not agree at all**			----------		**Strongly agree**
I enjoyed spending time outdoors as a child	0	1	2	3	4	5
I enjoy spending my current leisure time outdoors	0	1	2	3	4	5
I enjoy teaching outdoors	0	1	2	3	4	5
I think it's an important part of my role as a teacher, to give children opportunities to learn outdoors	0	1	2	3	4	5
I feel that I have had sufficient training/CPD on outdoor learning	0	1	2	3	4	5
I think probationer teachers are usually well informed about outdoor learning	0	1	2	3	4	5
My colleagues in school are supportive of each other's use of outdoor learning	0	1	2	3	4	5
I feel that the use of outdoor learning is supported by the local authority responsible for my school	0	1	2	3	4	5
I think *Curriculum for Excellence* will lead to teachers making greater use of the outdoors as a learning environment	0	1	2	3	4	5
Children need to visit a farm to fully understand where food comes from	0	1	2	3	4	5
Educational visits to farms are riskier than visits to other outdoor locations	0	1	2	3	4	5

Section 3: Your thoughts on farm visits

What do you feel is the **single** most significant barrier to you taking children on educational visits to farms? (Please tick **one** of the given options, or write your response in the comment box.)

Difficult to organise ☐ Don't know of any suitable farms ☐

Cost of transport ☐ Health/hygiene concerns e.g. *E.coli* ☐

Costs other than transport ☐ Local Authority does not permit them ☐

Other/comments:

In which areas of *Curriculum for Excellence* do you think a farm visit could be used to enhance or contribute to learning? (Please tick all that apply.)

Expressive Arts ☐ Health and Wellbeing ☐ Language/Literacy ☐

Modern Languages ☐ Maths/numeracy ☐ Sciences ☐

Religious & Moral Education ☐ Social studies ☐ Technologies ☐

Other/comments:

Section 4: Food and Farming in the news

In early 2013, two particular news stories resulted in increased attention on food and farming in the media: the 'horse meat scandal', and the heavy spring snowfall which resulted in the loss of livestock.

Please indicate the extent to which you agree with each statement, by circling a number.	**Do not agree at all**			----------		**Strongly agree**
I think the 'horse meat scandal' has made one or more child(ren) in my class/school more *interested* in where their food comes from	0	1	2	3	4	5
I think the 'horse meat scandal' has made one or more child(ren) in my class/school more *aware of* where their food comes from	0	1	2	3	4	5
I think the 'horse meat scandal' has made one or more child(ren) in my class/school more *worried about* where their food comes from	0	1	2	3	4	5
I think the media reports of farmers' losses due to heavy snow have made one or more child(ren) in my class/school more *interested* in farming or the work of farmers	0	1	2	3	4	5
I think the media reports of farmers' losses due to heavy snow have made one or more child(ren) in my class/school more *aware of* farming or the work of farmers	0	1	2	3	4	5

Section 5: Farming and Farm visit experience

Please complete Section 5 if you have been on an educational farm visit since 1st May 2012.

If you have not, please tick here ☐ and move on to **Section 6 (end of next page).**

1. Approximately when did your **most recent** farm visit take place? (mm/yy) ☐☐☐☐

2. The visit included children in (circle all those appropriate): P1 P2 P3 P4 P5 P6 P7 other

3. Approximately _____ (number) children visited the farm.

4. The type of farm visited was (please circle). If 'other', please specify: _____

Arable	Dairy	Livestock	Mixed	Other (please specify)	Don't know

5. The visit was organised through (please tick **one**):

Co-op Farms ☐ Crofting Connections ☐

Royal Highland Education Trust (RHET) ☐ Don't know ☐

Local farming contacts (e.g. families of children at the school) ☐ Other (please specify):_____

6. The intended main focus or purpose of the farm visit was (please tick **one**):

As a treat/fun day out ☐ Personal and social development ☐

Learning about the local area ☐ Learning about food ☐

Learning about the work farmers do ☐ Learning about nature generally ☐

Health and fitness ☐ Other (please specify): _____

7. The farm visit was intended to relate to the following curricular area(s) (tick as many as required):

Expressive Arts ☐ Health and Wellbeing ☐ Language/Literacy ☐

Modern Languages ☐ Maths/numeracy ☐ Technologies ☐

Sciences ☐ Social studies ☐ Religious & Moral Ed ☐

Other (please specify): _____

8. The visit was part of a broader topic that the children were working on Yes ☐ No ☐

8a. If yes, what was the topic? _____

9. The children took part in lessons/activities relating to the farm visit, in school, **before** the visit took place Yes ☐ No ☐

10. The children took part in lessons/activities relating to the farm visit, in school, **after** the visit took place Yes ☐ No ☐

11. How was the pupils' learning from the visit assessed?

This was not specifically assessed (tick here) ☐

Or, please give a brief description: _____

Please indicate the extent to which you agree with each statement, by circling a number.	**Do not agree at all**					**Strongly agree**
Most of the children were enthusiastic about visiting the farm	0	1	2	3	4	5
The children seemed to find the visit engaging	0	1	2	3	4	5
The children learned new things at the farm visit	0	1	2	3	4	5
I learned new things at the farm visit	0	1	2	3	4	5
The experience encouraged me to consider making use of educational farm visits again in the future	0	1	2	3	4	5

If you wish to make any additional comments about your farm visit, please do so here:

Section 6: Developing guidance on farm visits

One aim of this study is to produce guidance on educational farm visits. If you have any comments or suggestions on the **content** of the guidance, or on the **format** in which it should be available (e.g. website, CPD session, GLOW page, or something else), please note them here.

If you have no comments, please write n/a.

The information on the next page is about a further opportunity to voice your opinions on farm visiting, outdoor learning and *Curriculum for Excellence* as part of this research.

Farm visits and the Scottish primary school curriculum

An invitation to share your opinions on
outdoor learning, farm visits and *Curriculum for Excellence*.

For anonymity of survey responses, this page will be separated upon receipt.

Another element of this study invites teachers to participate in an informal research interview. Any primary school teacher in Scotland is welcome to participate, but in this part of the study, contributions from the following groups of teachers are particularly welcome:

- **Teachers who don't have any experience of farm visits**
- **Teachers who have arranged farm visits through avenues other than the Royal Highland Education Trust (RHET)**

The interviews will take place at a time and location convenient to the participants. No participants will be asked to discuss their individual responses to this survey, which are anonymous.

If you, or any of your colleagues (from the same local authority), would be interested in participating, please give contact information below. Please check with colleagues before providing their details.

By providing contact information here, you are **not** agreeing to participate – the researcher will contact you with further information about this part of the study, to allow you to make a decision.

The following teachers would like further information on participating in this research: (Please indicate preferred contact method with an asterisk)		
Name of teacher	Phone Number	Email Address
Please continue in the blank space overleaf if necessary.		

Thank you!

Many thanks for your time and effort in taking part in this study. Your response is a valuable contribution to the findings of the research, and to the guidance for teachers and farmers which will be produced as a result. You can keep up-to-date with the progress of the study at www.farmvisitsstudy.co.uk or by emailing l.mattu.1@research.gla.ac.uk for information.

If you have mislaid the return envelope, please use the email address above to request another, or post the survey (no stamp required) to: FREEPOST RTEC-AZJJ-UCAE, Leanne Mattu, University of Glasgow Crichton Campus, Rutherford McCowan Building, Bankend Road, Dumfries. DG1 4ZL.

Appendix 4: Topic guides for interviews with teachers and farmers

Farm visits and the Scottish primary school curriculum
Interviews with teachers: Prompt questions

Checklist:	**Case Study Record Sheet**	**Audio recorder**	**Spare batteries**
	Info sheet	**consent forms**	**Notepad and pen**

Introductions: Remind participant of methods, purpose and right to withdraw. Complete consent forms.

- Recent class farm visit:
  - What made you decide to take the children to the farm? (May prompt for areas such as the fun aspect, benefits of going out of the classroom, learning in a different environment, etc.)
  - Was this part of a wider topic? (Prompt for further details on topic.) Pre- and post-visit classroom activity (if any).
  - Intended learning outcomes of visit itself (if any) and how these were/will be/could be assessed.
  - Did you feel that this visit was explicitly linked to CfE? How [could it be]?
  - To what extent did the visit improve the children's understanding of the food chain/land use?
  - **Practicalities** of the visit: How did you go about organising this? What **barriers** did you encounter? Was there anything that [would have] made the process easier? Talk through organising the visit – did they use RHET? If so, why? How did they become aware of RHET and do they know of any other similar organisations?
  - Farmer communication

- Farm visits and the outdoors generally:
  - Do you feel that there are differences between taking the children to a farm, and taking them to another outdoor location? (What they might learn, practicalities, risks etc.)
  - Accessibility, meeting the needs of different children, equality/diversity (e.g. halal)
  - Potential for distress
  - What is your own experience / level of comfort with outdoor learning? (Are you an especially outdoorsy person? Have you taken children on farm visits previously?)
  - What do you think are the main benefits and drawbacks to outdoor learning? What did they learn from being at a farm that they couldn't have learned from watching a DVD, for example?
  - Age groups, one-off visits, the needs of urban vs rural children to visit farms

- Curriculum for Excellence:
  - In what ways do you feel that farm visits can help teachers and children achieve what is outlined by CfE? (Prompt for interdisciplinary or cross-curricular learning; what sort of classroom work should be done pre- and post-visit to get the most from the visit in CfE terms?)

- Closing questions: One of the main purposes of this study is to develop guidelines for teachers and farmers about the use of farm visits.
  - What sorts of things would you suggest should be included? From your own experience, what would you advise teachers taking children on a farm visit for the first time? What do farmers need to know?
  - What would be the best/most useful format for something like this? Leaflet/website/CPD session/etc?

Closing: Thank teacher, reiterate what will happen to the information collected and what to do if they have any questions/change their mind about having their information included. Issue card with contact info / web address/social media links, if not already issued.

Farm visits and the Scottish primary school curriculum

Interviews with host farmers: Prompt questions

Checklist:

Case Study Record Sheet	**Audio recorder**	**Spare batteries**
Info sheet	**consent form**	**Notepad and pen**

Introductions: Remind participant of name, purpose of study, and right to withdraw. Focus of the discussion will be on farm visits, but will cover other related areas such as Curriculum for Excellence, outdoor learning more generally. Complete consent forms.

- The farmer as a host:
  - When and why did you decide to start offering educational farm visits?
  - What was the process of starting to offer visits? (Changes to practice, practicalities, additions to facilities, accessibility, risk assessment etc.)
  - Did you receive any training, advice, information about how to conduct visits? (Child development, communication/engaging with the children, the curriculum, etc.) What was/would have been useful?
  - Do you feel teachers understand the risks of farm visits? Are they put off by the perceived risks?
  - Do you do anything in particular to make visits child-friendly? (Practically, in use of tone/language, etc.)
  - How have you found the undertaking of farm visits? Are there areas you feel you are particularly confident in, or areas in which you would like more support?
  - When and why did you decide to start offering educational farm visits?
  - What was the process of starting to offer visits? (Changes to practice, practicalities, additions to facilities, accessibility, risk assessment etc.)
  - Did you receive any training, advice, information about how to conduct visits? (Child development, communication/engaging with the children, the curriculum, etc.) What was/would have been useful?
  - Do you feel teachers understand the risks of farm visits? Are they put off by the perceived risks?
  - Do you do anything in particular to make visits child-friendly? (Practically, in use of tone/language, etc.)
  - How have you found the undertaking of farm visits? Are there areas you feel you are particularly confident in, or areas in which you would like more support?

- The educational experience:
  - What do you feel children learn from visiting the farm [that they couldn't learn elsewhere/in another outdoor environment]?
  - Why should teachers bring children to farms rather than just showing them a video etc.?
  - Are you ever surprised by the questions children (or teachers) ask?
  - Is there anything that children are surprised by or find particularly interesting?
  - How much do you know in advance of the visit about the intended learning outcomes? [How much] do you adapt what you'll say to the children in response to this?
  - How familiar are you with CfE? Is it important for you [and other host farmers] to know about the curriculum generally?

- Closing questions: One of the main purposes of this study is to develop guidelines for farmers and teachers about the use of farm visits.
  - What sorts of things would you suggest should be included? From your own experience, what would you advise farmers hosting visits for the first time? What do teachers need to know?
  - What would be the best/most useful format for something like this? (Leaflet/website/presentation/etc?)

Closing: Thank farmer, reiterate what will happen to the information collected and what to do if they have any questions/change their mind about having their information included. Issue card with contact info / web address/social media links, if not already issued.

Appendix 5: Topic guide for group discussions with pupils

Farm visits study: Child FG protocol

Checklist:

Case Study Record Sheet	**Audio recorder**	**Spare batteries**
Child consent forms (depending on age)	**Participation certificates**	**Notepad and pen**

Set up in space provided:
- all seated round table, with children closest to the door where possible, and in location visible to others.
- audio recorder in centre. Check batteries.

"We are going to have a discussion about your farm visit that you went to [last week]. This is part of my research that I told you about before, where I'm finding out about what children can learn from being at a farm. I'm going to record what everyone says, and then later put it together with what lots of other children say, to help me write my report about what children, teachers and farmers think about farm visits."
"It's up to you whether you want to do this – you don't have to, and even if you say yes just now, you can change your mind later on and go back to class. If there are any questions you don't want to answer, that's okay too."
We will be finished by [lunch time].

- Go through Child FG Info sheet & complete consent (written from those in P3 and older, verbal from P1/P2).
- Outline ground rules about turn taking, respecting others' opinions, no right/wrong answers
- 'Name game' ice breaker if children seem uncomfortable.

Main discussion: You know that we are here mainly to have a chat about visiting the farm, so can you tell me about the farm you visited [last week]? [I was there too, but I wanted to know what you thought of it.]

- What did you see/do?
- What did you find most interesting?
- Did you find out anything you didn't know before / what do you think you learned at the farm? [May ask about specific processes if relevant.]
- Did you think the farmer was good at explaining things? What [would have] helped with this?
- Did you learn anything in school about farms before the visit?
- What do you think your teacher wanted you to learn at the farm?
- Did visiting the farm help you to understand where food comes from?
- Do you think you learned anything by being at the farm that you couldn't have learned anywhere else (e.g. DVD)?
- Was there anything you wanted to know about the farm/animals/food production that you didn't have the chance to find out?
- Closing question: What was the one thing you liked best about the farm visit, and what one thing could have made it even better?

Closing: Thank children, reiterate what will happen to the information collected and what to do if they have any questions/change their mind about having their information included, issue 'Participation Certificates'.

Appendix 6: Plain Language Statement

University of Glasgow | Mains of Loirston Charitable Trust | RHET | SRUC

Farm visits and the Scottish primary school curriculum

Plain Language Statement: General Information about this research study

This information is for you to keep.

What is this research project about?
It's about how children can benefit from visits to farms, as part of their primary school education. It will look at how teachers and farmers can use farm visits as an educational experience, and link this to Scottish primary school curriculum guidance, *Curriculum for Excellence*.

Who is conducting this research project, and why?
The study is being conducted by Leanne Mattu, a PhD candidate in the University of Glasgow's College of Social Sciences. The study and associated studentship are supported by the Mains of Loirston Charitable Trust, which funds research to benefit agricultural education. The project is also supported by SRUC (formerly the Scottish Agricultural College) and the Royal Highland Education Trust.

As well as the thesis which will be written about this study to fulfil PhD requirements, a main aim of the research project is to develop guidance from the findings for teachers and farmers.

The principal supervisor of this PhD study is Dr Bethan Wood at the University of Glasgow School of Interdisciplinary Studies. The other supervisors are Dr Dave Roberts (SRUC) and Mr Carlo Rinaldi (University of Glasgow). Their contact details are at the bottom of the page.

What does this research involve?
A 'mixed methods' approach is being used, which involves several different ways of looking at the same topic. The methods include: *A survey of teachers in primary schools.
*Interviews with teachers and with farmers.
*Focus groups with children.

All the potential participants in the study (and the parents/guardians of potential child participants) will be given a more detailed information sheet, which will explain the part of the study that they are being asked to help with.

All those who agree to participate face-to-face in an interview or focus group (and where appropriate, their parent/guardian) will also be asked to read and sign a consent form before participating, apart from children in P1 and P2, who will be asked for verbal consent only. No child will be asked to participate unless parental consent is received.

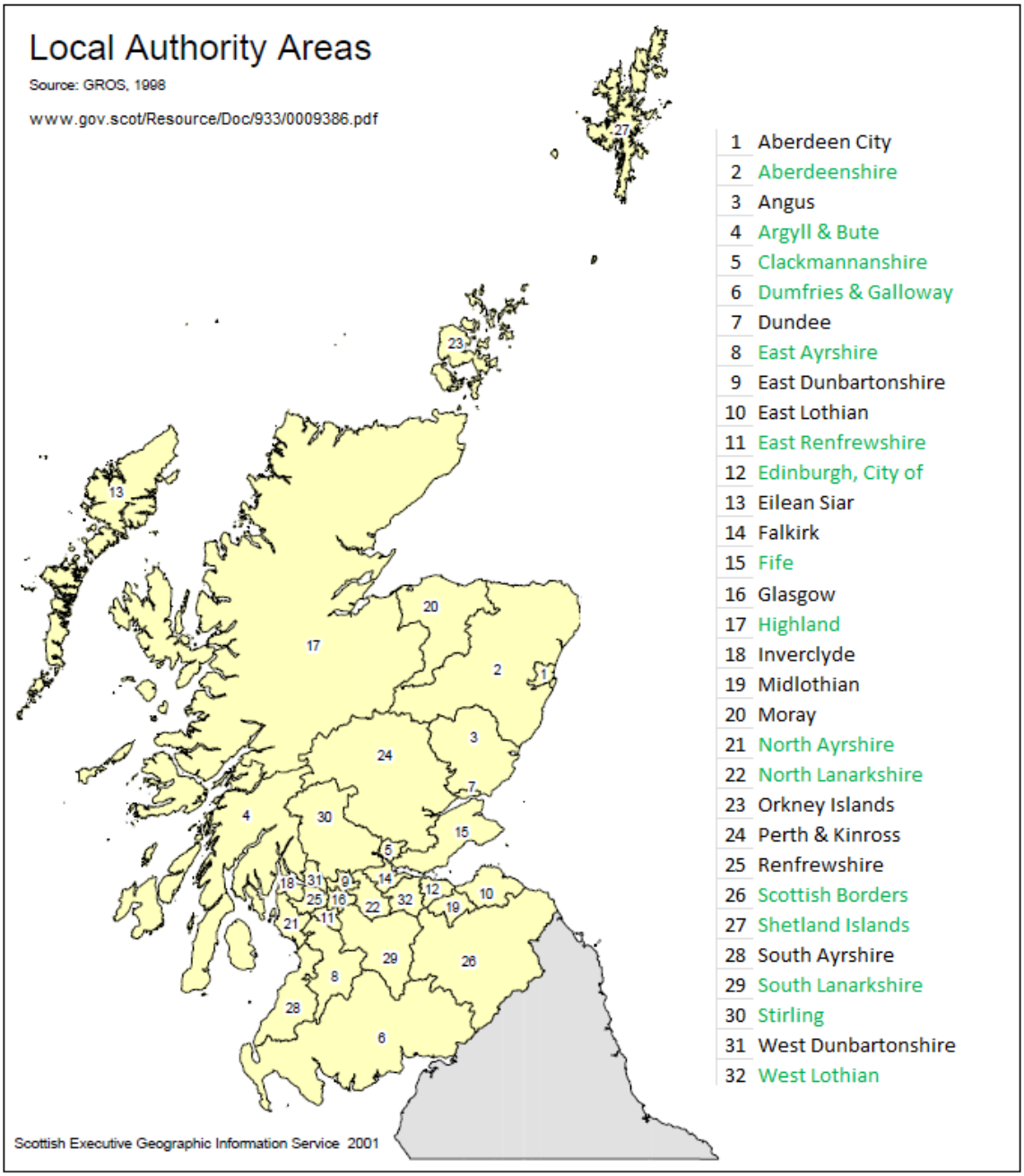
Useful information
If you have any questions about this research project generally, please contact Leanne Mattu on 07881 928 177, or email l.mattu.1@research.gla.ac.uk. The study website is at www.farmvisitsstudy.co.uk

If you have any concerns about the conduct of the study, please contact one of the following:
The study supervisors - Dr Bethan Wood (Email: bethan.wood@glasgow.ac.uk or phone 01387 702 096), Dr Dave Roberts (Email: dave.roberts@sac.ac.uk) and Mr Carlo Rinaldi (Email: carlo.rinaldi@glasgow.ac.uk), or the University of Glasgow College of Social Sciences Ethics Officer, Professor John McKernan (Email: john.mckernan@glasgow.ac.uk).

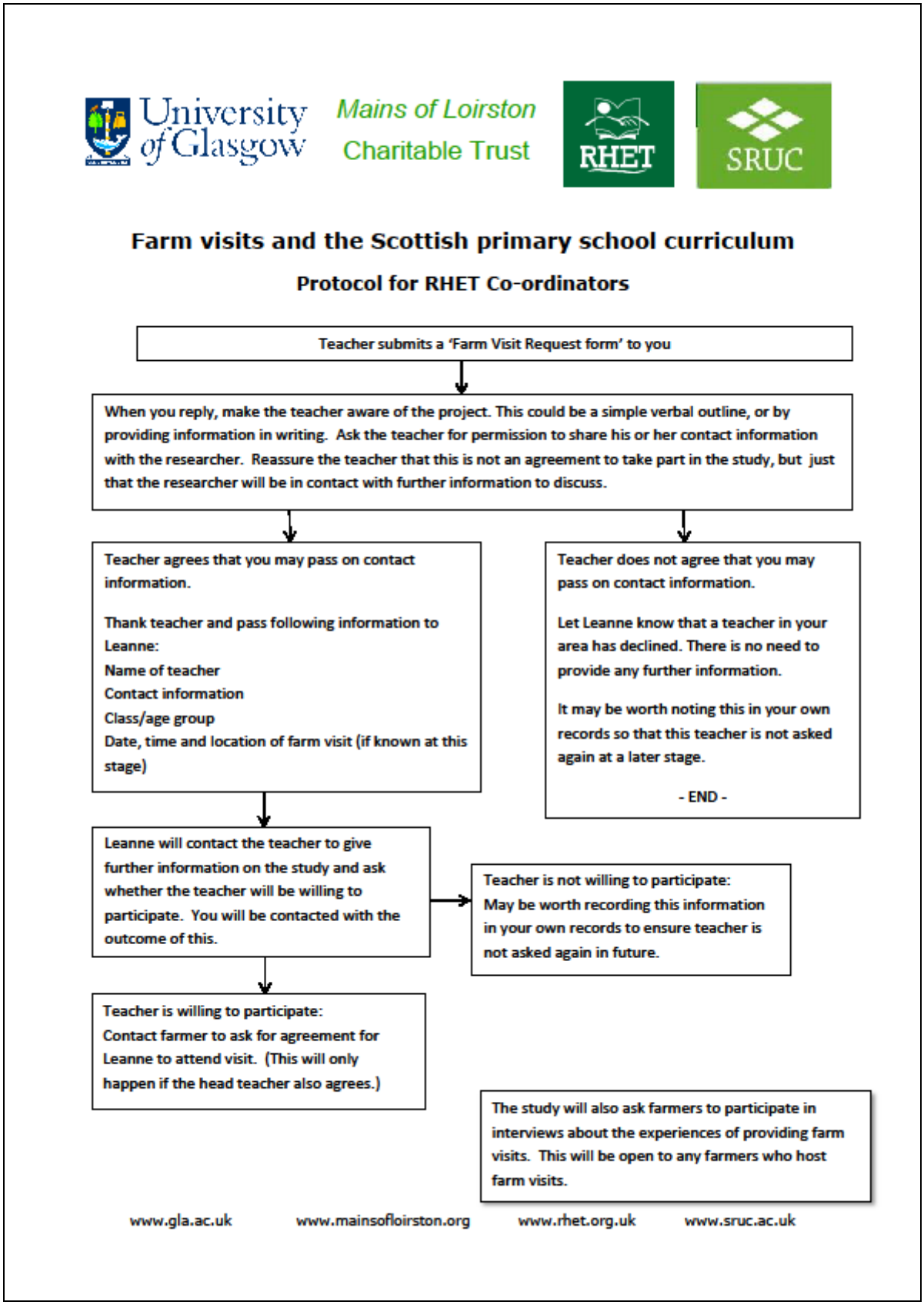
www.farmvisitsstudy.co.uk
www.glasgow.ac.uk www.mainsofloirston.org www.rhet.org.uk www.sruc.ac.uk

Appendix 7: Map of Scottish Local Authorities

Those Local Authorities which gave consent for case studies to take place in their schools are listed in green.



Appendix 8: Protocol for approaching teachers to participate in case studies



University of Glasgow

Mains of Loirston Charitable Trust

RHET

SRUC

Farm visits and the Scottish primary school curriculum

Protocol for RHET Co-ordinators

Teacher submits a 'Farm Visit Request form' to you

When you reply, make the teacher aware of the project. This could be a simple verbal outline, or by providing information in writing. Ask the teacher for permission to share his or her contact information with the researcher. Reassure the teacher that this is not an agreement to take part in the study, but just that the researcher will be in contact with further information to discuss.

Teacher agrees that you may pass on contact information.

Thank teacher and pass following information to Leanne:
Name of teacher
Contact information
Class/age group
Date, time and location of farm visit (if known at this stage)

Teacher does not agree that you may pass on contact information.

Let Leanne know that a teacher in your area has declined. There is no need to provide any further information.

It may be worth noting this in your own records so that this teacher is not asked again at a later stage.

- END -

Leanne will contact the teacher to give further information on the study and ask whether the teacher will be willing to participate. You will be contacted with the outcome of this.

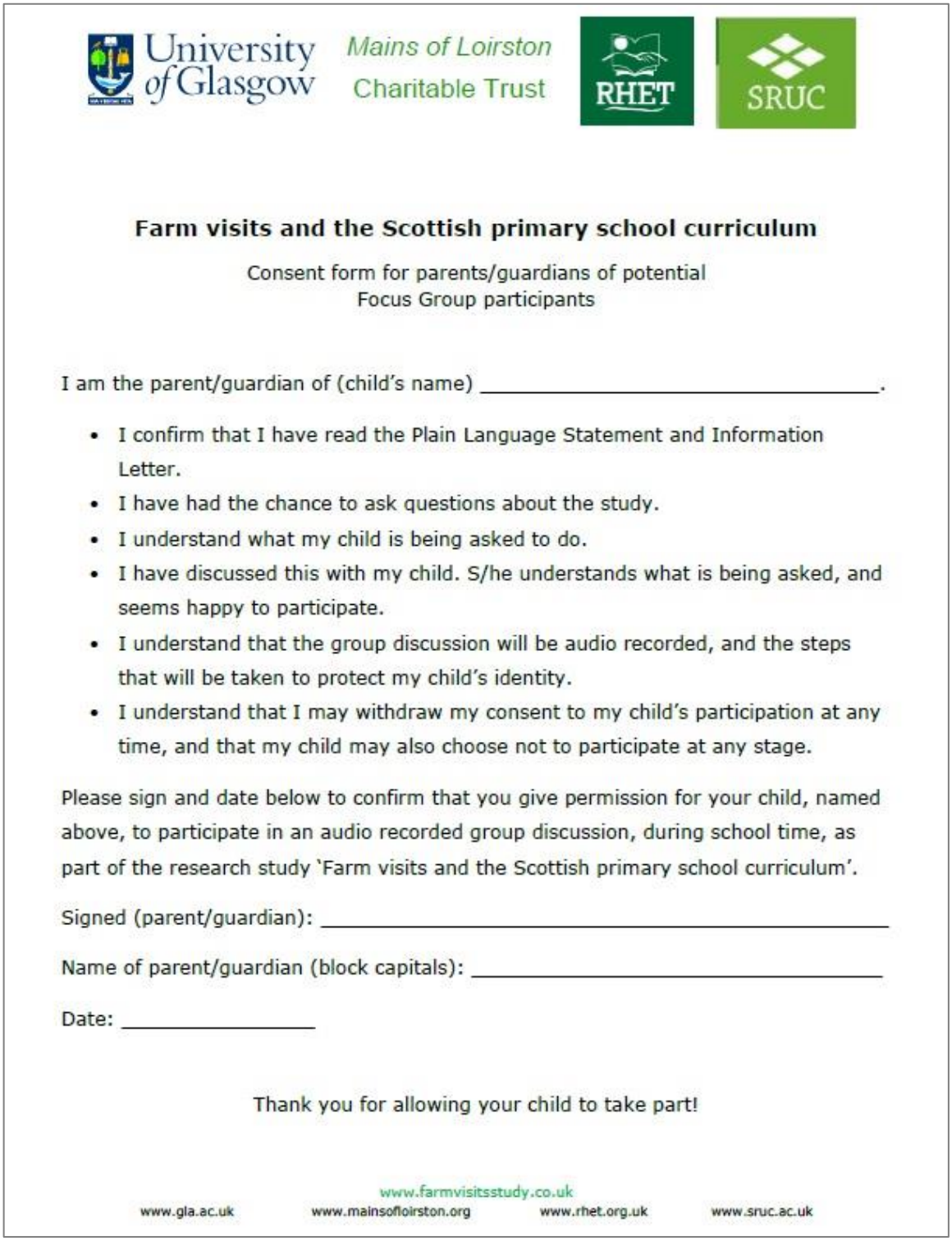
Teacher is not willing to participate:
May be worth recording this information in your own records to ensure teacher is not asked again in future.

Teacher is willing to participate:
Contact farmer to ask for agreement for Leanne to attend visit. (This will only happen if the head teacher also agrees.)

The study will also ask farmers to participate in interviews about the experiences of providing farm visits. This will be open to any farmers who host farm visits.

www.gla.ac.uk www.mainsofloirston.org www.rhet.org.uk www.sruc.ac.uk

Appendix 9: Parental consent form



University of Glasgow | Mains of Loirston Charitable Trust | RHET | SRUC

Farm visits and the Scottish primary school curriculum

Consent form for parents/guardians of potential Focus Group participants

I am the parent/guardian of (child's name) _____.

- I confirm that I have read the Plain Language Statement and Information Letter.
- I have had the chance to ask questions about the study.
- I understand what my child is being asked to do.
- I have discussed this with my child. S/he understands what is being asked, and seems happy to participate.
- I understand that the group discussion will be audio recorded, and the steps that will be taken to protect my child's identity.
- I understand that I may withdraw my consent to my child's participation at any time, and that my child may also choose not to participate at any stage.

Please sign and date below to confirm that you give permission for your child, named above, to participate in an audio recorded group discussion, during school time, as part of the research study 'Farm visits and the Scottish primary school curriculum'.

Signed (parent/guardian): _____

Name of parent/guardian (block capitals): _____

Date: _____

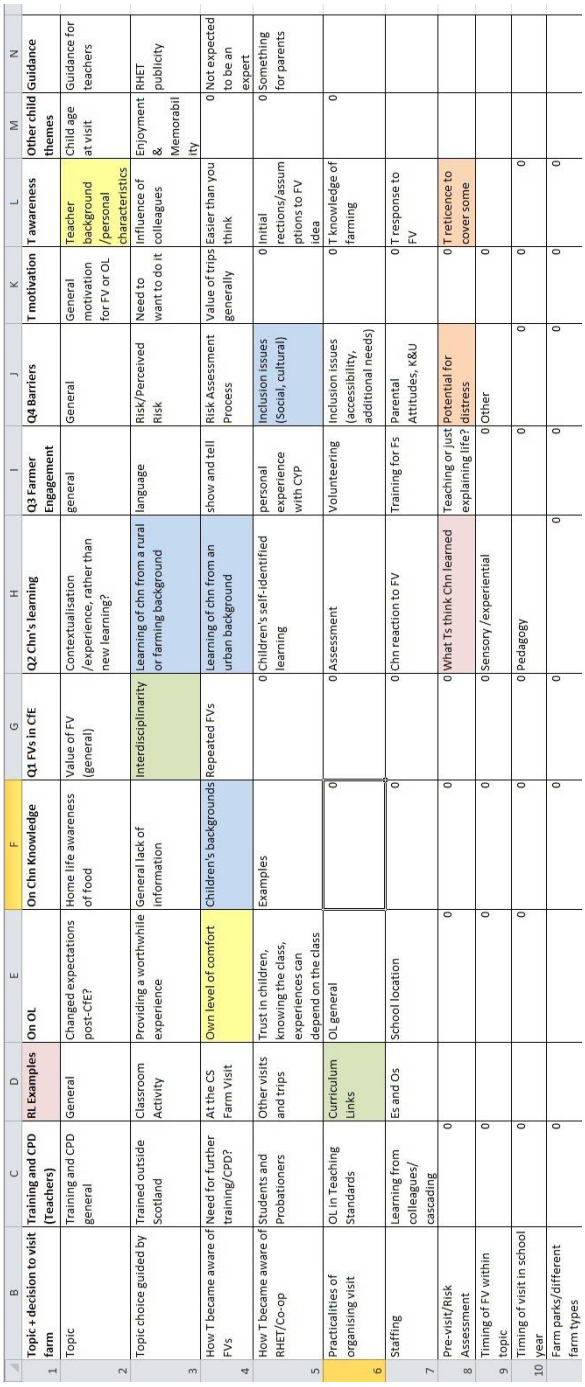
Thank you for allowing your child to take part!

www.farmvisitsstudy.co.uk

www.gla.ac.uk www.mainsofloirston.org www.rhet.org.uk www.sruc.ac.uk

Appendix 10: Example of Framework Analysis matrix - Summary page for teacher interview analysis

An example of the summary page of an Excel spreadsheet used for framework analysis – taken from the analysis of teacher interviews. The text in row 1 represents a series of worksheet tabs, and the text in each column identifies the themes within that tab. Colours were used to highlight potentially connected themes. Within each tab, themes were used as column headers, rows for cases.



	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Topic + decision to visit farm	Training and CPD (Teachers)	RL Examples	On OL	On Chn Knowledge	Q1 FVs in CfE	Q2 Chn's learning	Q3 Farmer Engagement	Q4 Barriers	T motivation	T awareness	Other child themes	Guidance
2	Topic	Training and CPD general	General	Changed expectations post-CfE?	Home life awareness of food	Value of FV (general)	Contextualisation /experience, rather than new learning?	general	General	General motivation for FV or OL	Teacher background /personal characteristics	Child age at visit	Guidance for teachers
3	Topic choice guided by	Trained outside Scotland	Classroom Activity	Providing a worthwhile experience	General lack of information	Interdisciplinarity	Learning of chn from a rural or farming background	language	Risk/Perceived Risk	Need to want to do it	Influence of colleagues	Enjoyment & Memorabil ity	RHET publicity
4	How T became aware of FVs	Need for further training/CPD?	At the CS Farm Visit	Own level of comfort	Children's backgrounds	Repeated FVs	Learning of chn from an urban background	show and tell	Risk Assessment Process	Value of trips generally	Easier than you think	0	Not expected to be an expert
5	How T became aware of RHET/Co-op	Students and Probationers	Other visits and trips	Trust in children, knowing the class, experiences can depend on the class	Examples	0	Children's self-identified learning	personal experience with CYP	Inclusion issues (Social, cultural)	0	Initial rections/assum ptions to FV idea	0	Something for parents
6	Practicalities of organising visit	OL in Teaching Standards	Curriculum Links	OL general	0	0	Assessment	Volunteering	Inclusion issues (accessibility, additional needs)	0	T knowledge of farming	0	
7	Staffing	Learning from colleagues/ cascading	Es and Os	School location	0	0	Chn reaction to FV	Training for Fs	Parental Attitudes, K&U	0	T response to FV		
8	Pre-visit/Risk Assessment	0		0	0	0	What Ts think Chn learned	Teaching or just explaining life?	Potential for distress	0	T reticence to cover some		
9	Timing of FV within topic	0		0	0	0	Sensory /experiential	0	Other	0			
10	Timing of visit in school year	0		0	0	0	Pedagogy	0	0	0	0	0	
	Farm parks/different farm types	0			0	0	0	0	0	0	0		

Appendix 11: Criteria for assessing the quality of mixed methods research (from O'Cathain, 2010)

Domain 1: Planning Quality (Planning the study)

1. **Foundation**: research questions and methods are based on sound examination of the relevant literature
2. **Rationale**: Use of mixed methods approach is clearly justified and explained
3. **Planning**: detail of intended design, data collection, analysis, and reporting is given
4. **Feasibility**: Planned study can be completed with the available resources

Domain 2: Design quality (Conducting the study)

5. **Design transparency**: design is clearly articulated and related to known typologies where appropriate.
6. **Design suitability**: design is suitable to answer research questions, and fits with other stated features i.e. reason for use of methods, paradigm
7. **Design strength**: Selection of methods minimises bias and enables broader/deeper study than single method
8. **Design rigor**: Implementation of methods is congruent with study design

Domain 3: Data Quality (Conducting the study)

9. **Data transparency**: Detail is given of individual methods and their role in the study.
10. **Data rigor/design fidelity**: Methods are rigorously implemented.
11. **Sampling adequacy**: Selection approach and sample size are appropriate to method and context
12. **Analytic adequacy**: Analysis is undertaken appropriately to the methods and questions
13. **Analytic integration rigor**: Integration at the analysis stage, if conducted, is robust

Domain 4: Interpretive Rigor (Interpretation of data)

14. **Interpretive transparency**: Clarity on which findings have emerged from which methods
15. **Interpretive consistency**: Inferences are appropriate to findings
16. **Theoretical consistency**: Inferences are consistent with contemporary theory
17. **Interpretive agreement**: Others would reach the same conclusions from these findings
18. **Interpretive distinctiveness**: Conclusions are credible in comparison to alternatives
19. **Interpretive efficacy**: Study meta-inferences adequately encompass findings are inferences for qualitative and quantitative elements
20. **Interpretive bias reduction**: Inconsistencies in findings and inferences are explained
21. **Interpretive correspondence**: Inferences align with purpose and research questions of study

Domain 5: Inference transferability (Interpretation of Data)

22. **Ecological transferability**: Inferences can be transferred to other contexts
23. **Population transferability**: Inferences can be transferred to other populations
24. **Temporal transferability**: Inferences are relevant to future contexts
25. **Theoretical transferability**: Other data collection methods could be transferred.

Domain 6: Reporting Quality (Dissemination of Findings)

26. **Report availability**: successful completion of study within planned/allocated time and resource.
27. **Reporting transparency**: key aspects of study are reported appropriately to the mixed methods design
28. **Yield**: mixed methods design yields greater insight than single methods

Domain 7: Synthesizability (Real world application) (from Pluye *et al.*, 2009)

29. Qualitative element/ study has qualitative objective or question
30. Qualitative element/study has appropriate design or method
31. Context for qualitative element/study is described
32. Sampling approach and participants in qualitative element/study are described
33. Approach to data collection and analysis in qualitative element/study is described
34. Researcher reflexivity in qualitative element/study is discussed
35. Sequence generation or randomization in quantitative experimental element/study is appropriate
36. 'Blinding' in quantitative experimental element/study is appropriate
37. Data sets are complete or largely complete in quantitative experimental element/study
38. Sampling and sample is appropriate to quantitative observational study/element
39. Choice of measurements in quantitative observational study/element is justified
40. Confounding variables are properly controlled in quantitative observational study/element
41. Mixed methods element/study is justified
42. Mixed methods element/study combines qualitative and quantitative data collection methods and/or analysis techniques
43. Mixed methods element/study integrates data or results from qualitative and quantitative elements

Domain 8: Utility

44. Findings are useful to 'target audience' e.g. policy makers

Appendix 12: Ethical Approval

University of Glasgow | College of Social Sciences

Ethics Committee for Non Clinical Research Involving Human Subjects

Staff Research: NOTIFICATION OF ETHICS APPLICATION OUTCOME

Application Details

Application Type: New
(select from drop down as appropriate)

Application Number: CSS2012/0240

Applicant's Name: Leanne Mattu

Project Title: Farm visits and the Scottish primary school curriculum

Date Application Reviewed: 3/12/12

Application Outcome

☒ **Fully Approved**
(select from drop down as appropriate)

Start Date of Approval: 7 December 2012 ***End Date of Approval: 31 August 2015***

If the applicant has been given approval with amendments required, this means they can proceed with their data collection, with effect from the date of approval. The College Ethics Committee expects the applicant to act responsibly in addressing the recommended amendments. The amendments should be submitted to the College Office for completion of the applicant's ethics file. An acknowledgement that all requested amendments have been made will be made within three weeks of receipt.

☐ Application is Not Approved at this time
Please note the comments below and provide further information where requested. The full application should then be sent to the College Office via e-mail to Terri.Hume@glasgow.ac.uk. You must include a covering letter to explain the changes you have made to the application.

☐ **Select Option**
(select from drop down as appropriate)
This section only applies to applicants whose original application was approved but required amendments.

Major Recommendations: *(where applicable)*

Not applicable.

Minor Recommendations: *(where applicable)*

Not applicable.

If amendments have been recommended, **please ensure that copies of amended documents are provided to the College Office** for completion of your ethics file.

Reviewer Comments ***(other than specific recommendations)***

Both reviewers agree that this is a complex study and that the applicant has dealt with the range of ethical considerations carefully and effectively.

Please retain this notification for future reference. If you have any queries please do not hesitate to contact Terri Hume, Ethics Secretary, in Room 104, Florentine House, 53 Hillhead Street, Glasgow G12 8QF.

Page 1 of 1

University of Glasgow
College of Social Sciences
Florentine House, 53 Hillhead Street, Glasgow G12 8QF
The University of Glasgow, charity number SC004401

Tel: 0141-330-3007
E-mail: Terri.Hume@glasgow.ac.uk

Appendix 13: Scottish Index of Multiple Deprivation (SIMD) and 6-fold Urban/Rural Classification

Scottish Index of Multiple Deprivation (SIMD) 2012 (Scottish Government, n.d.)

The Scottish Index of Multiple Deprivation (SIMD) is measure of relative deprivation in Scotland, used by the Scottish Government. It is calculated every three years using data from a number of domains (Crime, Education, Skills, and Training, Employment Geographic Access to Services, Health, Housing, and Income), which are combined into a single measure for 6505 data zones in Scotland. The results are ranked and can then by grouped in a number of different ways, for example by specific postcodes, deciles, or quintiles. SIMD quintile 1 represents the 20% most deprived households in Scotland, while SIMD quintile 5 represents the 20% least deprived.

The SIMD is an imperfect measure and has been criticised in particular for failing to appropriately represent rural areas (e.g. McKendrick *et al.*, 2011). No alternative has yet been developed, however (Fischbacher, 2014).

Urban/Rural Classification (Scottish Government, n.d.)

The 6-fold Urban/Rural categorisation is a Scottish Government measure used to determine the degree of rurality, and can be identified for individual postcodes.

1 Large Urban Areas	Settlements of over 125,000 people.
2 Other Urban Areas	Settlements of 10,000 to 125,000 people.
3 Accessible Small Towns	Settlements of between 3,000 and 10,000 people and within 30 minutes drive of a settlement of 10,000 or more.
4 Remote Small Towns	Settlements of between 3,000 and 10,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.
5 Accessible Rural	Areas with a population of less than 3,000 people, and within a 30 minute drive time of a settlement of 10,000 or more.
6 Remote Rural	Areas with a population of less than 3,000 people, and with a drive time of over 30 minutes to a settlement of 10,000 or more.

In this study, the school postcodes provided by respondents were entered into the SIMD 2012 (revised 10/1/13) database[30]. These were then used to identify:

The SIMD quintile in which the school is located.

The Local Authority in which the school is located.

The 6-fold Urban/Rural Classification to which the school area belongs.

Where no postcode, or only a partial postcode, was given by the respondent, it was sometimes possible to identify the Local Authority. The Postcode Sectors[31] document was used to determine whether the partial postcode given related to only one Local Authority.

On occasion, respondents indicated a geographic area instead of a postcode. Where possible, this was used to identify the local authority. Some respondents declined to provide any location information, and this is explained in the main text where relevant.

[30] www.scotland.gov.uk/Topics/Statistics/SIMD/SIMDPostcodeLookup [January 2013 version, downloaded 12 March 2013]

[31] www.scrol.gov.uk/scrol/metadata/maps/Scotland%20-%20Postcode%20Sectors.pdf [downloaded 23 May 2013]

Appendix 14: Es and Os identified by teacher participants

The Curriculum for Excellence 'Experiences and Outcomes' listed here are those identified specifically by teachers taking part in interviews, either in discussion or though the provision of their topic planning sheet. Some teachers made reference to colleagues addressing different Experiences and Outcomes through farm visits and related topics, and not all participant teachers identified specific Experiences and Outcomes as part of the discussion. This list is therefore indicative rather than exhaustive.

The statements are listed by Curriculum Area. The code following each statement refers to the curriculum area, the level, and the statement number within the Experiences and Outcomes document (Scottish Government, 2009).

Expressive Arts
I have the opportunity to choose and explore a range of media and technologies to create images and objects, discovering their effects and suitability for specific tasks. (EXA 1-02a)

I can create and present work using the visual elements of line, shape, form, colour, tone, pattern and texture. (EXA 1-03a)

Through observing and recording from my experiences across the curriculum, I can create images and objects which show my awareness and recognition of detail. (EXA 2-04a)

Health & Wellbeing
When preparing and cooking a variety of foods, I am becoming aware of the journeys which foods make from source to consumer, their seasonality, their local availability and their sustainability. (HWB 2-35a)

Languages & Literacy
I can show my understanding of what I listen to or watch by responding to and asking different kinds of questions. (LIT 1-07a)

When listening and talking with others for different purposes, I can exchange information, experiences, explanations, ideas and opinions, and clarify points by asking questions or by asking others to say more. (LIT 1-09a)

I can communicate clearly when engaging with others within and beyond my place of learning, using selected resources as required. (LIT 1-10a)

I am learning to use my notes and other types of writing to help me understand information and ideas, explore problems, generate and develop ideas or create new text. (LIT 1-25a)

By considering the type of text I am creating, I can select ideas and relevant information, organise these in a logical sequence and use words which will be interesting and/or useful for others. (LIT 1-26a)

I am developing confidence when engaging with others within and beyond my place of learning. I can communicate in a clear, expressive way and I am learning to select and organise resources independently. (LIT 2-10a)

By considering the type of text I am creating, I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience. (LIT 2-26a)

Mathematics & Numeracy
Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others. (MNU 2-03a)

Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading. (MNU 2-20a)

Religious and Moral Education
I know that Jesus is truly divine and truly human and I can acknowledge Him as our Saviour who brings the New Covenant. (RERC 2-05a) [Religious Education in Roman Catholic Schools]

Sciences
I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food. (SCN 1-02a)

I can help to design experiments to find out what plants need in order to grow and develop. I can observe and record my findings and from what I have learned I can grow healthy plants in school. (SCN 1-03a)

I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area. (SCN 2-02a)

I have collaborated in the design of an investigation into the effects of fertilisers on the growth of plants. I can express an informed view of the risks and benefits of their use. (SCN 2-03a)

I have contributed to investigations into the role of microorganisms in producing and breaking down some materials. (SCN 2-13a)

Social Studies
I can describe and recreate the characteristics of my local environment by exploring the features of the landscape. (SOC 1-07a)

I can consider ways of looking after my school or community and can encourage others to care for their environment. (SOC 1-08a)

Having explored the variety of foods produced in Scotland, I can discuss the importance of different types of agriculture in the production of these foods. (SOC 1-09a)

By exploring a natural environment different from my own, I can discover how the physical features influence the variety of living things. (SOC 1-13b)

I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way. (SOC 2-08a)

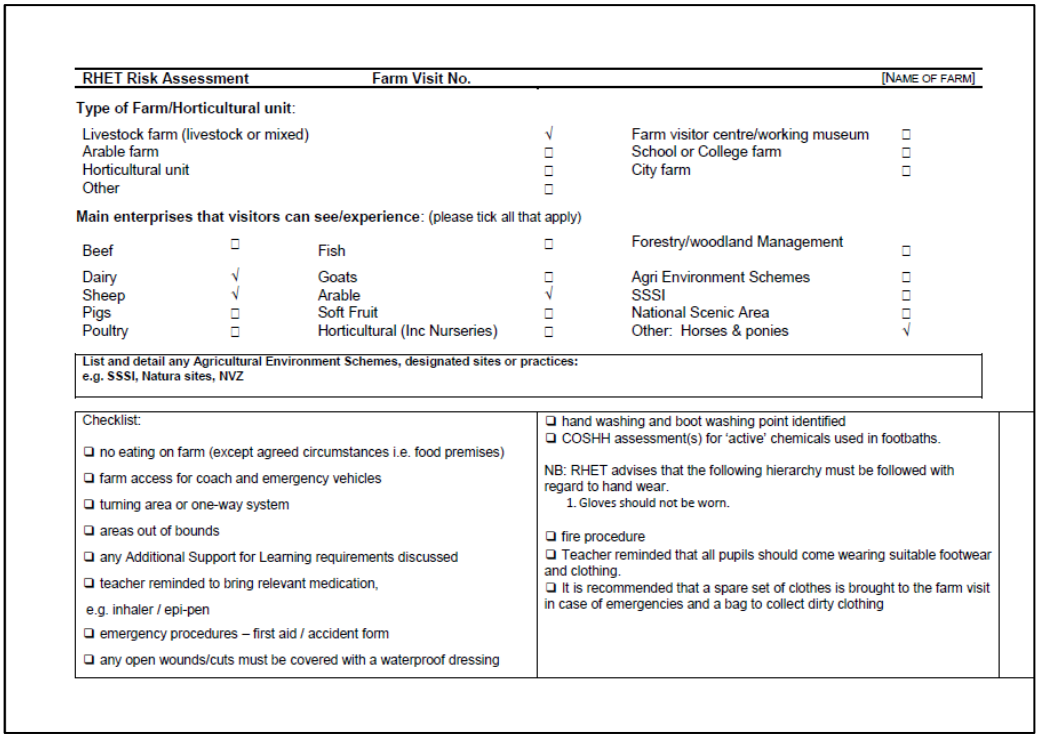
Technologies

Having analysed how lifestyle can impact on the environment and Earth's resources, I can make suggestions about how to live in a more sustainable way. (TCH 2-02a)

Throughout all my learning, I can use search facilities of electronic sources to access and retrieve information, recognising the importance this has in my place of learning, at home and in the workplace. (TCH 2-03b)

Appendix 15: RHET Risk Assessment – sample (extract)

Please note that this is an extract of a 17-page document, and is not intended for use by individuals wishing to conduct risk assessments on farms. It is given as an example only.



RHET Risk Assessment **Farm Visit No.** [NAME OF FARM]

Type of Farm/Horticultural unit:

Livestock farm (livestock or mixed)	√	Farm visitor centre/working museum	☐
Arable farm	☐	School or College farm	☐
Horticultural unit	☐	City farm	☐
Other	☐		

Main enterprises that visitors can see/experience: (please tick all that apply)

Beef	☐	Fish	☐	Forestry/woodland Management	☐
Dairy	√	Goats	☐	Agri Environment Schemes	☐
Sheep	√	Arable	√	SSSI	☐
Pigs	☐	Soft Fruit	☐	National Scenic Area	☐
Poultry	☐	Horticultural (Inc Nurseries)	☐	Other: Horses & ponies	√

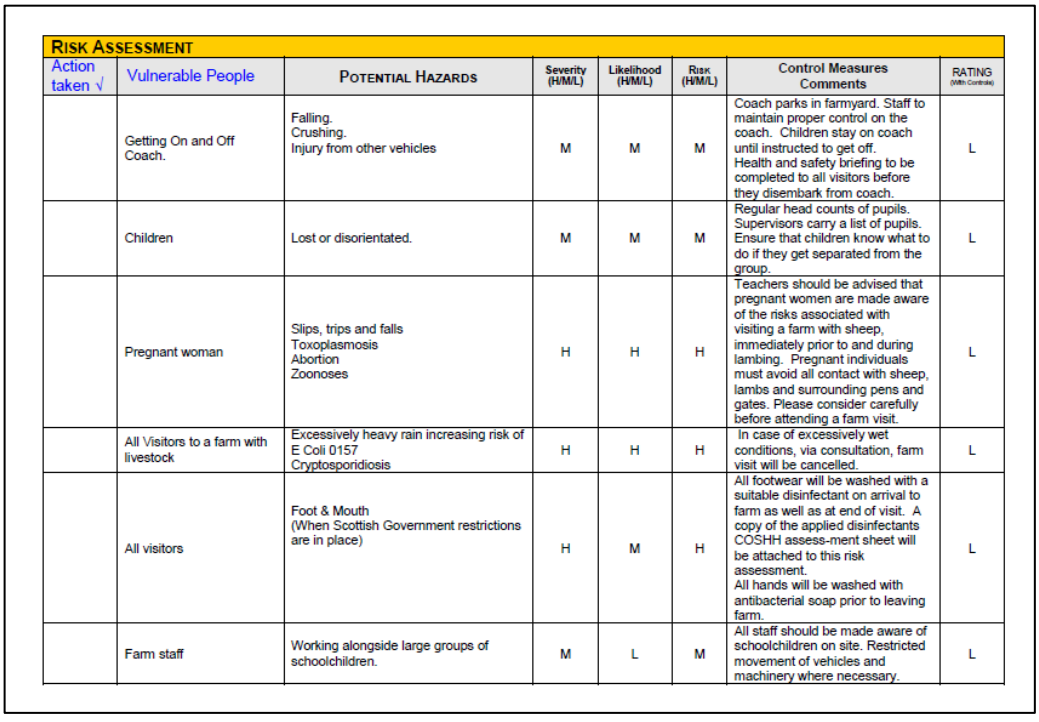
List and detail any Agricultural Environment Schemes, designated sites or practices:
e.g. SSSI, Natura sites, NVZ

Checklist:

- ❑ no eating on farm (except agreed circumstances i.e. food premises)
- ❑ farm access for coach and emergency vehicles
- ❑ turning area or one-way system
- ❑ areas out of bounds
- ❑ any Additional Support for Learning requirements discussed
- ❑ teacher reminded to bring relevant medication,
  e.g. inhaler / epi-pen
- ❑ emergency procedures – first aid / accident form
- ❑ any open wounds/cuts must be covered with a waterproof dressing
- ❑ hand washing and boot washing point identified
- ❑ COSHH assessment(s) for 'active' chemicals used in footbaths.

NB: RHET advises that the following hierarchy must be followed with regard to hand wear.
1. Gloves should not be worn.

- ❑ fire procedure
- ❑ Teacher reminded that all pupils should come wearing suitable footwear and clothing.
- ❑ It is recommended that a spare set of clothes is brought to the farm visit in case of emergencies and a bag to collect dirty clothing



RISK ASSESSMENT

Action taken √	Vulnerable People	POTENTIAL HAZARDS	Severity (H/M/L)	Likelihood (H/M/L)	RISK (H/M/L)	Control Measures Comments	RATING (With Controls)
	Getting On and Off Coach.	Falling. Crushing. Injury from other vehicles	M	M	M	Coach parks in farmyard. Staff to maintain proper control on the coach. Children stay on coach until instructed to get off. Health and safety briefing to be completed to all visitors before they disembark from coach.	L
	Children	Lost or disorientated.	M	M	M	Regular head counts of pupils. Supervisors carry a list of pupils. Ensure that children know what to do if they get separated from the group.	L
	Pregnant woman	Slips, trips and falls Toxoplasmosis Abortion Zoonoses	H	H	H	Teachers should be advised that pregnant women are made aware of the risks associated with visiting a farm with sheep, immediately prior to and during lambing. Pregnant individuals must avoid all contact with sheep, lambs and surrounding pens and gates. Please consider carefully before attending a farm visit.	L
	All Visitors to a farm with livestock	Excessively heavy rain increasing risk of E Coli 0157 Cryptosporidiosis	H	H	H	In case of excessively wet conditions, via consultation, farm visit will be cancelled.	L
	All visitors	Foot & Mouth (When Scottish Government restrictions are in place)	H	M	H	All footwear will be washed with a suitable disinfectant on arrival to farm as well as at end of visit. A copy of the applied disinfectants COSHH assess-ment sheet will be attached to this risk assessment. All hands will be washed with antibacterial soap prior to leaving farm.	L
	Farm staff	Working alongside large groups of schoolchildren.	M	L	M	All staff should be made aware of schoolchildren on site. Restricted movement of vehicles and machinery where necessary.	L

Appendix 16: Findings Summary

- Farm visits were most commonly undertaken as part of a topic on food and/or farming, although examples of other relevant topics at all stages were also found.
- Teachers' choice of topic was mainly influenced by the requirements of the curriculum guidelines, although the degree of teacher autonomy in using these was variable between case study schools.
- Topics were used in a wide variety of ways, including timescales ranging from one week to the whole school year. Teachers gave numerous examples of relevant classroom activity and other trips/visits which can be used in future by teachers planning their own farm visits and related topics.
- Even those teachers who reported that their farm visit was not part of a topic indicated some pre- and/or post-visit classroom activity.
- Farm visits and related topics could be linked with the CfE guidelines in many ways, and inter-disciplinary learning was particularly emphasised, with some teachers suggesting that few other topics could offer the same scope for this as food and farming. Few teachers however discussed farm visiting opportunities using CfE terminology specifically.
- Teachers tended to describe farm visits primarily as an opportunity to contextualise and consolidate classroom learning.
- Pupils clearly identified 'new learning' from their farm visit, including a level of detail which they were unlikely to find out from their class teacher.
- Farm visits were regarded as important for adults' learning, as well as pupils'.
- Pupils, teachers and farmers highlighted the contribution of sensory engagement at the farm.
- Some teachers would have preferred more interactive activity for pupils.
- Child age: Is the most common age for farm visiting the most appropriate?
- Urban/rural background of pupils (and teachers): The influence of this on teachers' perceptions of the importance of farm visiting.
- Additional support needs and other individual requirements.
- The visit venue / type of farm.
- The timing of the farm visit
    - within the topic
    - within the school year.
- The potential of repeat or multiple visits.
- Farmers reported personal and professional benefits of offering educational visits, including enjoyment, building community relationships, and promoting Scottish or British farming and produce.

- There was not thought to be a need to make significant or substantial changes to a farm before offering visits. The provision of appropriate hygiene facilities could present a barrier to some.
- Preparation on the day of a visit was reported as minimal and not disruptive, if usual farm standards are already being maintained. It can be useful for farmers to have 'props' available, and to identify areas of interest to pupils before the visit.
- Farmers do not feel that they need to have a high level of curriculum knowledge. They tend to see it as the role of the teacher (and the RHET/RNCI co-ordinator) to make links with the curriculum.
- Farmers value the reassurance of working with organisations such as RHET, for risk assessment and management, as well as support in arranging and conducting pupil visits.
- Some farmers may be discouraged from offering visits by misconceptions around the requirements. An emphasis on their role as simply 'explaining their day-to-day lives' rather than teaching, the minimal changes required to premises and routines, and the support available, can help to address this.
- Barriers to farm visiting include:
    - Transport costs (and other costs)
    - Risks; health and hygiene (perceptions and risk assessment processes)
    - Teachers' lack of awareness around farms and visiting
    - Concerns around the supportiveness of school communities
- Participants identified that many of these barriers can be addressed through, for example:
    - Awareness-raising activity with teachers, such as pre- and in-service training
    - Providing information to teachers in easily accessible and identifiable formats
    - Working with intermediary organisations which can assist with planning, risk assessment, and access to resources.

Appendix 17: Summary of Recommendations

Recommendation 1: Teachers should visit a farm park, or other similar location designed for visitors, with younger primary school children and those whose particular needs warrant it.

Recommendation 2: Pupils should have the opportunity for at least one further visit to a farm during their time at primary school, ideally around P4.

- Where possible, this would involve an 'authentic' working farm not specifically designed for visitors
- The visit should be led by farmers themselves.
- Farm visits as part of a topic should ideally take place in the same timeframe as the topic, but not as a starting point.

Recommendation 3: Teachers in Scotland should have the opportunity to visit a farm as part of their Initial Teacher Education (ITE).

Recommendation 4: Efforts should be made to raise awareness, particularly amongst teachers and farmers, of the organisations which can help with planning and carrying out farm visits.

- Awareness raising activity for farmers should highlight their valuable role in explaining their routines to pupils, address possible misconceptions around the requirements of hosting visits, and emphasise the support and guidance that is available.

Recommendation 5: Intermediary organisations should seek to harness existing farmers' networks, to promote their work and provide information to farmers who may have inaccurate perceptions of the requirements of hosting school visits.

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