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Examining the opportunities for agricultural experiences as part of Scottish secondary school pupils' learning under Curriculum for Excellence

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Abstract

Society is increasingly disconnected from the processes and practices of agriculture as food production, and therefore the true cost and value of food. A way in which to overcome this disconnect would be to increase agricultural literacy levels through education.

Learning outside the classroom has been shown to benefit children and young people including personal development and increased care towards the environment. Sustainability learning, including outdoor learning, as an approach to developing sustainable behaviours is the focus of much research. There is, however, a gap in research on the potential for agricultural learning experiences that demonstrate the positive role agriculture plays within global environmental systems. Agriculture is often portrayed in a negative framing in regard to the impacts of human action on the environment.

The aim of this study was to examine opportunities for Curriculum for Excellence (CfE) to deliver lasting impressions of farming and food production for secondary school pupils in Scotland through a concept of agricultural experiences. This research was conducted through qualitatively-driven mixed methods consisting of survey, interview, and focus group methodology with a range of school-based and rural-based participants.

The research found that CfE inadvertently maintains an anti-rural position, reflected in the lack of any meaningful reference to agriculture within the Experiences and Outcomes; framing agriculture within a context of negative environmental impact. There exist clear opportunities, as well multiple benefits, for agricultural experiences under CfE learning, however, there remain challenges for implementation within current CfE cultures and structures. Pupils and teachers recognised the value of agricultural experiences to deliver meaningful experiential learning experiences, as well as developing knowledge and skills for lifelong learning. Scottish agricultural stakeholders and farmers feel that media misrepresentation contributes to societal disconnect and thus the attitudes and perceptions of agriculture, particularly livestock farming, while often negating to recognise the primary function of agriculture-as-food within the current challenges facing global environmental systems.

Five recommendations are put forward as a result of this research: Words Matter, Framing Farming, Balanced Environmental Education, Build Partnerships, and Be Bold. These capture ways in which agriculture and agricultural experiences can be better incorporated through a 'Minimum Effort Strategy' which would strengthen current CfE structures, and a 'Radical Strategy' which envisions a planetary or agricultural phronesis challenging us to a transformation in sustainability learning that re-imagines our human relation to the world.

Keywords: Rural life; farmer misrepresentation; interdisciplinary learning; outdoor learning; agricultural phronesis; agricultural literacy

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To my past self – the force is with you. You and your ideas are worthy.

And to future me: Take bold actions. Be courageous. Ask for help.

This thesis is dedicated in loving memory to my Grandpa,
Dr John Ernest Gibbons CBE (1940-2017) who sadly
never got to know of my doctorate achievement.

This is for you Gramps.
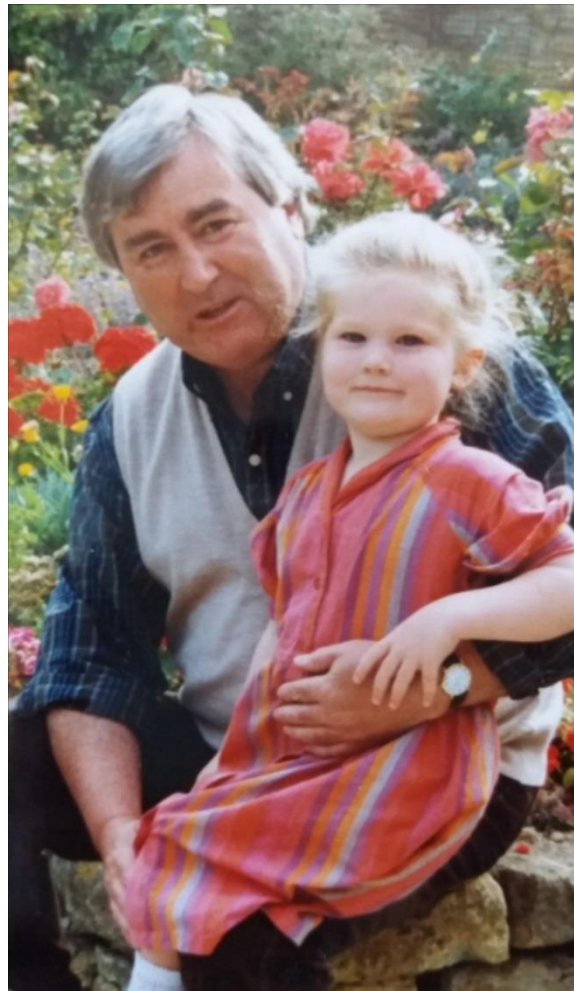
Author Declaration

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

Sophie Natasha Brett

Abbreviations and Definitions

BGE – Broad General Education

CfE – Curriculum for Excellence

ESD – Education for Sustainable Development

Es+Os – Experiences and Outcomes

GCE – Global Citizenship Education

GTCS – General Teaching Council for Scotland

IDL – Interdisciplinary Learning

LfS – Learning for Sustainability

OL – Outdoor Learning

RHET – Royal Highland Education Trust

SQA – Scottish Qualifications Authority

Agriculture- The art, science of, or practice of, farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool and other goods for use.

Also: forestry, aquaculture, horticulture, allotment growers…

Farmer- Person involved in agriculture.

Also: crofters, land managers, smallholders…

Chapter 1: Introduction

Eating is an agricultural act. Eating ends the annual drama of the food economy that begins with planting and birth. Most eaters, however, are no longer aware that this is true. They think of food as an agricultural product, perhaps, but they do not think of themselves as participants in agriculture. They think of themselves as 'consumers'.

Wendell Berry
(*from* The Pleasures of Eating)

1.1 Environmental Education

Given the current global environmental emergencies including climate change, biodiversity, deforestation, among others, environmental education, learning and action are imperative. Educational learning is thus instrumental in meeting these challenges and transforming interactions and attitudes with/about and in the environment. Largely pertaining to the very broad field of environmental studies, educating about the environment stemmed from a growing need for people to understand issues relating to Earth systems and the environment. It has, over the years, shifted to an approach that is more globalised in focus and drives a concerted effort in understanding not only the Earth science, but also the human and societal elements, with an emphasis on the interdependence of local and global (Hicks, 2014). The context and focus of this research on agricultural experiences through *Curriculum for Excellence* (CfE) in Scotland place it firmly within the wider scope of environmental education. This section will thus consider environmental education (EE) and its potential scope as a driver for an holistic and balanced approach to enabling Scotland's young people to develop the values of *Wisdom, Justice, Compassion,* and *Integrity* as set out by CfE (Education Scotland, 2016, p. 4).

The global[1] effort to address environmental degradation through education was formalised in the 1970s through of a series of United Nations (UN) Conferences (Palmer, 1998). The 1972 UN Conference on the Human Environment and it's

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[1] Recognising that 'global' in the sense of a UN agenda is a loaded term that does not fully address the complexity and diversity of worldviews found around the globe.

resultant *Stockholm Declaration* set out 26 principles regarding the environment and development, Principle 19 being: 'Education in environmental matters…is essential' (United Nations, 1972, p. 5).The agenda for environmental education (EE) was advanced further by collaboration of UN Educational, Scientific and Cultural Organisation (UNESCO) and the UN Environment Programme (UNEP) in their International Environmental Education Program (IEEP) which worked to develop the principles set out in the 1975 *Belgrade Charter*. This was the result of an international workshop which built on the basis set for EE in Stockholm in 1972 by adding further goals, objectives and principles. It set out a number of environmental and EE goals as well as a target audience of formal and non-formal education settings in environmental and non-environmental fields. The guiding principles outlined in the Belgrade Charter were ratified as the *Tbilisi Declaration* in 1977 at a further international conference (Mckeown and Hopkins, 2003).

The Tbilisi Declaration updated the Stockholm and Belgrade documents and together with recommendations from the conference itself constituted the framework for EE. The framework established a role for EE within formal and non-formal education via a number of recommendations and guiding principles. It set out the following as goals for EE:

a) to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas;

b) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;

c) to create new patterns of behaviour of individuals, groups, and society as a whole towards the environment (UNESCO, 1977, p. 26).

Note the term 'ecological' as describing the 'how' of environmental processes, and 'environment' as referring to that which surrounds humankind. There was little consideration of the social and economic elements we now consider to be key aspects of education about the environment, rather the 'plight of the environment' through such issues as pollution were key (Mckeown and Hopkins, 2003; Misiaszek, 2019). There are, of course, multiple scientific, geographic (and other) aspects to EE with a much more ancient heritage upon which EE

approaches, strategies, and pedagogies draw, including outdoor education, nature study and conservation education (Stevenson *et al.*, 2013).

The form of EE embodied by IEEP (1975 – 1995) is characterised as being concerned with 'ecological justice' (Low and Gleeson, 2002). This is in contrast to education programs for sustainable development which tend to focus on the distribution of environmental benefits and burdens amongst humankind (Kopnina, 2012) – an area of tension within education that is discussed in greater detail later on in this thesis.

While EE gained traction as a result of increased focus and awareness of environmental degradation due to human activities, at its core there was a desire to seek out a mutually sustaining relationship between seemingly intangible environmental goods such as aesthetic/cultural-historical as well as a natural 'resource' with economic value (Bonnett, 2013). One that respects and acknowledges how profoundly interconnected the natural and human built environments are. What the initial guiding principles of EE could not foresee is just how rapidly environmental issues would progress, in spite of policies to conserve and preserve natural resources (Jorgenson *et al.*, 2019), and the extent to which social issues could be caused by environmentally harmful behaviours (Mckeown and Hopkins, 2003).

Following the UN Rio Earth Summit in 1992, there was a policy shift towards the concept of sustainable development, as defined in the *Brundtland Report*, within EE as an organised approach. In recent decades the focus and prominence of learning and teaching for sustainable development (particularly UN Education for Sustainable Development (ESD)), as set out in the UN *Agenda 21* has become the dominant educational discourse within the context of environmental ethics (Kopnina, 2012). There are criticisms that this move away from EE as set out in the Belgrade Charter and Tbilisi Declaration towards ESD approaches has resulted in learning and teaching in/about social and economic priorities at the expense of the ecological (Bonnett, 2007, 2013; Kopnina, 2014), however I would argue that the two remain discrete yet complementary.

Whilst this research is concerned with Scotland, and its regional particularities including curriculum, Government, and agricultural systems, the approach taken with regard to EE and ESD is by no means a singularity and operates within a wider pan-European and globally influenced agenda. EE and ESD as briefly outlined above have been developed and promoted under the auspices of the UN and are thus informed by a particular worldview. Environmental education in its broadest sense, is carried out – practically and pedagogically – in a host of different ways across the world built upon a range of different foundations - some more ecocentric in their outlook and thoughtscapes than others. An ecocentric outlook or worldview is one that recognises the intrinsic value of all lifeforms and ecosystems, contrasted with an anthropocentric outlook which values lifeforms and ecosystems for the benefit they offer to humankind (Washington *et al.*, 2017).

Thus, there exist educational policies, approaches and pedagogies within the broad field of environmental education with varying interpretations of the value placed on nature and the environment. The intrinsic value of nature is a central tenet to many indigenous cultures around the world whose belief-systems and worldview are built upon the interconnectedness of humankind and nature. Humankind thus cannot be extrapolated from 'the environment', and therefore humans exist as part of a sacred world.

1.1.1 Enacting Environmental Education

Food and food practices lie at the intersection of, and could be considered as a connector, with all of our planetary emergencies, and thus agriculture as food production should be considered within any EE approach. In altering and transforming our interactions with local and global food systems, we can help to nourish not only people but drive positive change across such areas as biodiversity, climate, health, and more (Harris and Barter, 2015).

Historically, EE concerned itself with learning *in* and *about* the environment be that social, cultural, built or natural, that is to say learning outdoors and away from the classroom setup (Bonnett, 2013). The first issue of the *Journal of Environmental Education* discussed the concept of EE, with articles discussing

whether it was simply conservation education 'rebottled', or whether it was something new. The consensus was that EE did have something new to offer with Stapp (1969, p. 31) stating that

> environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

There was also recognition that a more 'comprehensive' approach was required in order to offer a more encompassing view of the 'total environment', rather than compartmentalising the different areas of water conservation, forest conservation, soil conservation, wildlife conservation… which had previously been the approach.

In a similar vein, this research asks whether environmental and agricultural education can co-exist as part of new comprehensive, balanced, and transformative learning experiences. Food, as stated above, involves a complex set of interactions between production systems, and the relating social, economic, ethical, and environmental issues that arise (Davila and Dyball, 2015). Transformative learning is here understood to be learning that allows people to build and develop, through meaningful actions, alternative perspectives of the world (Davila and Dyball, 2015; Mezirow, 1995). Activities that really enable a person to understand the physical exertion and the skills required to grow and produce food can help to highlight the role or impact that those processes have in other areas of life such as through political engagement or developing a deeper ethical concern about food. Action and experience in this way can challenge a person's 'frame of reference' and result in transformed thinking (Mezirow, 1997; Taylor, 2007) about food systems.

In their 2018 article Perry and Collier (2018) examine the way in which creativity influences current educational policies and goals. They establish that once something is assigned as good/bad on a binary scale, that scale easily forms an affinity with further binaries, so when good is polarised from bad, and then good is associated with creative, this lends meaning and status to both bad and uncreative. Whilst binaries are relatively catchy, they are often quite superficial and can be disturbed or transformed where someone has the will and

independence of thought (Perry and Collier, 2018, p. 35). Whilst currently, simply because the environment is good, and because agriculture is often represented as a polar binary to the environment, it carries a value judgement of bad. Thus, overcoming or challenging these binaries is a key element of transforming EE learning experiences for young people.

Food and agriculture have the potential to be sites for transformative experiential EE through such approaches as embodiment – taste, feeling, smell, touch – as well as sustainability and ecological awareness, and in so doing forces us to consider the vast array of ways in which food forms 'part of our lives, worlds and inequalities way beyond our eating tables' (Jones, 2013; Swan and Flowers, 2015, p. 160). Outdoor learning is another approach that fosters a greater connection with the natural world and can carry with it a degree of uncertainty and risk, often associated with adventure education (Brown and Jones, 2021).

1.2 Food is Agriculture

The world has seen immense change in recent times, with many of the industries relied upon to produce the goods and materials fuelling the British economy adversely affected. The impacts of this change on, and the history of, the agricultural industry is widely documented (see, amongst others: Clay, 1990; Collins and Thirsk, 2001; Griffin, 1974; Mathias, 2013; Orwin and Whetham, 1964) and the pressures on agriculture locally and globally are only continuing to grow in current times. The outcome of the ongoing Brexit trade negotiations (a provisional Trade and Co-operation Agreement with the European Union has been in operation since January 2021), in combination with an already declining workforce, have the potential to cause huge changes within British agriculture, particularly in relation to devolved governments, their differing agricultural communities, and their approaches to policy and legislation (Bell, 2017a; Birrell and Gray, 2017; Hubbard *et al.*, 2018; McCombie and Spreafico, 2018). More widely the outcomes of Brexit will impact on the economy and thus the jobs, career paths and lives that Scotland's young people will choose and imagine for themselves in the future (Brown, 2018; Ellison, 2017; Finlay *et al.*, 2019; Gawlewicz, 2020; McCollum, 2020).

It should be noted here that this research project was undertaken after the Brexit referendum of June 2016, and prior to the final transition of the UK leaving the EU (31st January 2021). Much of the writing was undertaken during the global COVID-19 pandemic but the crisis fell outside of the research time parameters and, as such, will not be considered in any depth. The impacts of Brexit are anticipated to be hard-felt across the agricultural community, with a number of key 2016 referendum factors such as animal welfare regulations and food standards already cast into doubt by the UK Government in June 2020 (Merrick, 2020; Read, 2020; Savage, 2020; Taylor, 2020). In addition to Brexit, the effects of the COVID-19 pandemic and the subsequent measures to combat it put in place by governments are all predicted to be wide ranging, impacting many aspects of our lives, and rippling throughout the world - straining economies and perpetuating inequalities (FAO, 2020; Rogers, 2020). Agriculture will not be immune from these effects. Longer-term food security also remains a key concern for the United Kingdom (UK), particularly compounded by Brexit,

and COVID-19 events have already illustrated just how reliant UK food security is on the European Union (EU) (Barling, 2020; Heron, 2020; Wentworth, 2020).

The average age of the Scottish farmer is now estimated to be in the late 50s - whilst UK statistics put the median age of the UK farmer at 60 years of age (Department for Environment Food and Rural Affairs *et al.*, 2018, p. 19). Whilst the median measure of 60 years does indicate a range of ages UK-wide, 33.93% of Scottish farmers are aged above 64 years (classed as commercial farm-holding occupiers) (RESAS, 2018). In combination with a gradual rise in the average age of the workforce, the sector is also experiencing a downturn in terms of the total agricultural workforce. These issues collectively impact heavily on those who work within the agricultural sector, and so their consultation, and inclusion of their voice, will add valuable perspective in terms of their involvement, and the development of any educational agricultural experiences. Agricultural experiences within the scope of this project are defined as being:

> Practical contact and/or observations of agriculture that aim to leave a lasting impression; agriculture being the science of, and the practice of farming.

The concept is discussed in greater detail later in this Chapter. Changes within the sector will affect future employment and job prospects, therefore identifying any possible or perceived benefits and challenges has the potential to increase resilience and a sense of strategic foresight in terms of preparing for change. Lasting agricultural experiences may then in turn be better managed to the benefit of the sector and of Scotland's young people. The importance of these perspectives cannot be underestimated. The journey that young people undertake through their education prepares them for their future, it is thus important that current and future generations are equipped with the relevant knowledge, skills and experiences required to meet these challenges and to ensure continuing good governance of vital resources.

Research and media reports suggest that school children have a lack of understanding in relation to the origins of their food (Farming UK, 2017; Hamilton and Surman, 2018; Powell, 2017). This is in general supported by the available scholarship. One in ten UK secondary school pupils surveyed in 2013

believed that tomatoes grow underground, and 18% had never visited a farm (British Nutrition Foundation, 2013). In the 2018 survey, 10% of 11-14 year olds were unaware that carrots and potatoes grow underground; it also indicated that young people rely on the internet to get information about healthy eating, followed by in-school learning (Ballam, 2017, p. 354). The Scottish Government's Food Education Programme (FEP), which was aimed at both primary and secondary level education, ran from 2010 to 2015 with £3million pledged to support it (Scottish Government, 2016a). The programme supported 9 projects across Scotland, offering opportunities for young people, teachers, and the wider community to become involved in food education. The following projects received funding (Scottish Government, 2016a, pp. 8–9):

- Chefs@School,
- Crofting Connections,
- Dumfries House Learning Centre,
- Eco Schools,
- Futures in Food,
- Food for Thought Fund,
- Food and Health Development Office,
- From Farm to Plate, and
- Seafood in Schools

The evaluation and analysis carried out on the programme (Scottish Government, 2016a) raised some interesting points. The first was that while there was a reported increase in teachers using food-related topics across a number of different subject areas (social, cultural, economic, health, and environmental themes), this proved more challenging to deliver within secondary schools:

> due to the number of school departments that are required to work together to deliver food education.
>
> (Scottish Government, 2016a, p. 4).

The second point was that while primary schools were established in delivering content that increased their pupils' knowledge and understanding of the food they eat, in secondary schools the focus still remained on the health and wellbeing elements. Lastly, the evaluation highlighted that there was a level of resistance to engagement with the programme from some teachers/schools where the topic of food is less embedded within the curriculum and a focus still

remains on health and wellbeing overall (Scottish Government, 2016a). The resistance from secondary schools was reportedly due to,

> a lack of resources and limited understanding and confidence among teachers on how to use food as a topic for learning
>
> (Scottish Government, 2016a, p. 27).

In 2013 Scottish Ministers accepted all recommendations made by the *Learning for Sustainability* (LfS) report (Scottish Government, 2012a), including the high-level recommendations that every learner be entitled to learning for sustainability in their education journey, and that every practitioner should demonstrate this in their practice (confirmed in the revised General Teaching Council for Scotland (GTCS) Professional Standards of 2013), and that a strategic national approach to supporting LfS should be established (Scottish Government, 2012a). LfS is defined in the report as,

> A whole school approach that enables the school and its wider community to build the values, attitudes, knowledge, skills and confidence needed to develop practices and take decisions which are compatible with a sustainable and equitable society.
>
> (Scottish Government, 2012a, p. 9)

LfS is a combination unique to Scotland of Education for Sustainable Development (ESD), Global Citizenship Education (GCE), and Outdoor Learning (OL) (Christie and Higgins, 2020; Scottish Government, 2012a; Swanson and Gamal, 2021). As a result of the initial 2012 report, the LfS National Implementation Group was convened, and the final report *Vision 2030+* published in 2016 (Scottish Government, 2016b). *Vision 2030+* outlines the intended approach for LfS within Scotland's educational settings through to 2030, and does so by building on the original strategic recommendations of the *Learning for Sustainability* report:

1. All learners should have an entitlement to learning for sustainability.

2. In line with the new GTCS Professional Standards, every practitioner, school and education leader should demonstrate learning for sustainability in their practice.

3. Every school should have a whole-school approach to learning for sustainability that is robust, demonstrable, evaluated and supported by leadership at all levels.

4. All school buildings, grounds and policies should support learning for sustainability.

5. A strategic national approach to supporting learning for sustainability should be established.

(Scottish Government, 2016b, p. 6)

These are seen as key factors that can help to provide an environment that both displays and fosters a care and duty towards sustainable attitudes and behaviours, ensuring that children and young people themselves carry these into their adult lives. Despite the requirement to embed LfS within CfE, the Scottish Government published in 2019 a *Learning for Sustainability: Action Plan* and *Theory of Change* document which together aim to 'act as a catalyst to support increased prevalence' of LfS in early years settings, schools, and colleges - calling for teachers and practitioners to 'renew' their commitment to LfS (Scottish Government, 2019a). The inclusion of ESD within the concept of LfS opens up the concept to discussions on the manner in which sustainable development can be framed and interpreted and is addressed in Chapter Three.

Considering the entitlement accorded every child, and the resultant embedded nature of a LfS approach, there are now a number of resources available for practitioners to make use of in order to implement it in their practice. Education Scotland regularly updates a summary page of available LfS resources, including case studies and strategic information (Education Scotland, 2021a), and the GLOW LfS Blog updates with news and available development opportunities (Education Scotland, n.d.-a). In addition to the Education Scotland provision - which covers a wide variety of topics and approaches including, among others, outdoor learning, climate change, community resilience, and learning about Scotland - there are a wide range of organisations that have inspiring and relevant guidance available to encourage activities within the wider reach of LfS (see for example: Learning for Sustainability Scotland (n.d.); Scottish Advisory Panel for Outdoor Education (2020); YouthLink Scotland (n.d.); Learning Through Landscapes (n.d.), amongst others).

A resource of particular interest in terms of the topic of agriculture-related research is *Food for Thought* from Education Scotland, which seeks to link together topics such as food with health and wellbeing and employability (Education Scotland, 2020a). *Food for Thought* falls under the wider curricular category of 'learning about Scotland' (Education Scotland, 2020a) and consists of a package of seven documents that have been designed to aid the teacher to plan progressing content for learners throughout the Broad General Education (BGE) phase (this includes the first three years of secondary school education in Scotland). It is based in the Scottish Food context. Also continuing with the food thread is a resource that links well within the wider field of agricultural literacy and education - *Better Eating, Better Learning* (BEBL) - which encourages exploration of the school food system and its sustainability. BEBL was launched in 2014 and was aimed at those involved with young people (Scottish Government, 2014a). It encourages teachers and school staff to consider food at school - both in terms of what they eat and what they learn about - with the longer-term benefits of this intended to feed into the health, wellbeing and economic prosperity of Scotland:

> what our children and young people eat and, importantly, their understanding of how it arrives on their plate and the impact it has on their health are an important part of this.
>
> (Scottish Government, 2014a, p. 4)

In principle, the initiative has huge potential to link in with the objectives of the current research project. High incidences of obesity in school children and a rise in Type 2 diabetes has led to much focus on, and encouragement of, healthy eating choices and cooking skills in order to challenge attitudes and change behaviours (Candler *et al.*, 2018; Hasan *et al.*, 2019; Peel *et al.*, 2005). The Scottish Health Survey in 2016 reported that Scotland has one of the worst obesity rates among OECD countries and estimated that 29% of children were at risk of being overweight, with around half of these children at risk of obesity specifically (Bardsley, 2017). Consumption of ultra-processed foods (UPFs) account for 82.9% of adolescent energy intake in the UK (Rauber *et al.*, 2019, p. 4); and so the consumption of unprocessed and minimally processed foods is recommended (Monteiro *et al.*, 2018; Rauber *et al.*, 2020). A strategy to deal with Scotland's weight problem, *A healthier future: Scotland's diet and healthy weight delivery plan*, was launched in 2018 with the aim of early intervention

and a reduction in child obesity rates by half by 2030 (Scottish Government, 2018a, p. 8). Educating children on where their food grows and how it gets to their plate is slowly becoming a focus of food education. First Minister Nicola Sturgeon announced a food education programme at the Royal Highland Show in June 2019 which also aims to,

> give children a greater understanding of where food comes from and the many career opportunities available in the industry
>
> (Scottish Government, 2018b).

The programme, named *Good Food Futures*, will be backed by £1 million investment and provide support to increase farm visits and healthy cooking lessons and ensure that more local food is on school menus. It is set to be delivered in partnership with the Royal Highland Education Trust (RHET) for farm visits, Education Scotland via *Food for Thought*, the Soil Association through *Food for Life*, and the Food and Drink Federation Scotland (Scottish Government, 2018b). The programme has the potential to ensure that all children gain an understanding of the importance of agriculture and food production processes and the contribution that these bring to their wider health and broader lives. Following its initial launch, the programme was disrupted by the COVID-19 pandemic and a resource was subsequently released in early 2021, albeit behind a subscription wall. The *Good Food Nation Bill* was also impacted and delayed by the impacts of the pandemic and will finally be introduced in the new 2021 parliamentary term.

During the time frame of this research project, the RHET developed a range of educational activity resources aimed at teachers and a number of documents aimed at explaining their activities' links to CfE (RHET, n.d.-a). RHET has a collection of resources produced in-house or in partnership with other agriculture-related organisations available for teachers to download (RHET, n.d.-a). These resources are suitable for all stages of learning, from broad and general discussions of farming in Scotland to more careers-focussed information. Further links to the Experiences and Outcomes (Es+Os) within the curriculum are offered at several educational levels - National 4 and 5, SQA Highers - as well as more general information on how the activities they offer (farm visits and classroom visits) link to the Es+Os (RHET, n.d.-b). In May 2019 the RHET

established and launched a *Resource Portal* with a range of content for Early Level up to Level 4 (RHET, n.d.-c). These are aimed at supporting teachers with,

> food, farming and STEM [Science, Technology, Engineering and Mathematics] delivery…as well as opportunities to link to DYW [Developing the Young Workforce]
>
> (RHET, n.d.-c)

At secondary school level, the resources available through the portal link into the curriculum areas of Social Studies, Health and Wellbeing, Science, and Mathematics at Levels 3 and 4. In addition to RHET, there are a range of other organisations which have developed educational materials - including [LANTRA Scotland](#) (LANTRA Scotland, n.d.), [Quality Meat Scotland](#) (Quality Meat Scotland, n.d.), [Food Standards Scotland](#) (Food Standards Scotland, n.d.), [Food and Drink Federation Scotland](#) (Food and Drink Federation Scotland, 2020), [Scottish Crofting Federation](#) (Scottish Crofting Federation, n.d.) and Education Scotland (Education Scotland, 2019a). These resources cover a wide variety of agriculture-related topics such as meat, seasonality of produce, the food and drinks industry, traditional crofting skills, and career pathways within the wider industry. They are all intended to help teachers bring details of agricultural life into their teaching practice, especially for those who lack a confidence in covering the topic, and for young people to learn about career options from other young people already working in the sector.

Food and food education have the potential to be a powerful vehicle for change, with some research suggesting that healthy food choices for children may improve intelligence, whereas foods high in fat, sugar and cholesterol may negatively impact IQ in later childhood (Northstone *et al.*, 2012; Theodore *et al.*, 2009). Agriculture is the primary source of raw materials for food production, and as such should be intrinsic to any food education. Food itself occupies a 'fundamental place in human life' (Flannery and Mincyte, 2010, p. 423), not only in terms of sustenance, but also politically speaking. Food is inherently linked to labour, justice, subsistence, inequalities, right to eat, field workers, packaging, transportation, processing plants, restaurants, health and safety, security.

Seeking the views of stakeholders such as farmers and teachers on this cluster of concerns will thus help to identify any perceived benefits or challenges in developing and implementing agricultural experiences - in both school-based, and broader rural sector settings. In doing so, potential differences between urban and rural settings can also be identified, thus contributing to the better building of lasting experiences which will benefit not only Scotland's young people but also the wider systems and structures that support society, economy and the environment.

1.3 The Research

The overarching research aim of this project is to,

> Examine the opportunities for agricultural experiences as part of Scottish Secondary School pupils' learning under the Curriculum for Excellence.

This is aimed to be achieved through consideration of the following objectives. To,

I.   Examine CfE to see where agricultural experiences could be best employed and link the placement to outdoor learning opportunities;

II.   Seek stakeholders' (agricultural sector and school-based) views on the benefits and challenges of agricultural experiences;

III.   Look for any differences, or specific challenges, between rural and urban stakeholders;

IV.   Compile a list of recommendations for interested parties on agricultural experiences as part of CfE for Scottish secondary pupils;

V.   Produce guidance for secondary school teachers, highlighting available resources and strategies to increase agricultural experiences within their teaching practice

The objectives provide scope for a range of topics to be discussed, including the exploration and formulation of an *agricultural experience* definition based on the relevant literature; the experiences and outcomes that such an encounter might provide; and any guidance or additional support required for implementation. This wide scope for topics, coupled with the methodology, are also intended to encompass ample opportunity for the development and pursuit of unexpected links and implications previously not considered.

1.4 Rationale

The research is of significance as it seeks to address some of the concerns surrounding food and farming education, and examines the experiences, skills, and knowledge that Scotland's young people need in order to meet the challenges of the future.

Curriculum for Excellence (CfE) is the national curriculum for learners in Scotland aged 3-18 years. It was implemented in 2010, and is overseen by *Education Scotland*, the Executive Agency of the Scottish Government charged with supporting 'quality and improvement in Scottish education' (Education Scotland, 2020b). The purpose of *Curriculum for Excellence* is encapsulated in its Four Capacities, which seek to enable every child and young person to become,

- successful learners,
- confident individuals,
- responsible citizens, and
- effective contributors

The wider aim of CfE is to ensure that Scotland's young people gain the knowledge, skills and attributes required for 'life in the 21st Century, including skills for learning, life, and work' (Biesta, 2008, 2009, 2015; Education Scotland, n.d.-b; Hayward, 2007; Priestley *et al.*, 2014; Priestley and Biesta, 2013; Priestley and Sinnema, 2014). Interdisciplinary learning is considered to be one of the most innovative features of CfE (Harvie, 2018; RSE, 2019; Scottish Government, 2008; Thorburn, 2017a), and provides a solid backdrop for the inclusion of creative, challenging and enjoyable curriculum activities for pupils. Interdisciplinary learning understood within the context of CfE is a planned learning activity that combines *Experiences and Outcomes* (Es+Os) from across the curriculum into a one-off study or longer course of study (Scottish Government, 2012b). In combination with such elements as LfS, and thus outdoor and wider experiential learning approaches, it manifests as an ideal conceptual zone to embed agricultural-based learning experiences. Not only can these rich experiences allow young people to progress their skills, knowledge and understanding (central to interdisciplinary learning experiences) of agriculture more generally, but they can also increase their awareness more

widely of the related ecological, societal, geo-political and ethical thoughtscapes, landscapes, and foodscapes that always and everywhere surround agriculture.

Whilst aiming for young people to gain 'skills for learning, life, and work' is a commendable outcome for CfE, in terms of the scope and aims of this research, critical examination of the curriculum shows it is in fact lacking in any direct and explicit or extended reference to agriculture, despite the sector's cultural and historical significance in Scotland. Indeed '*agriculture*' is included only 3 times within the entire formal *Curriculum for Excellence: Experiences and Outcomes* document (which forms the basic building blocks of CfE); while *farm, farmer, farming* do not feature once throughout the entire Es+Os document.

This seems to be in stark contrast with the government policy vision of Scotland becoming a 'Good Food Nation' by 2025; a policy which envisages that Scotland's young people 'know where their food comes from and how it affects their health, the environment and the economy' (Scottish Government, 2014b). Government statistics put the numeracy and literacy attainment of children and young people living in some rural areas of Scotland well below the average of their peers in more urban locations across the country (McEnaney, 2020; statistics from Scottish Government *Achievement of Curriculum for Excellence Levels* report). Content knowledge has been shown to be integral to comprehension (Sosu and Ellis, 2014), so by this logic further reference to background knowledge (farming) that may be more familiar for young people in remote or rural areas of Scotland could work to close the attainment gap by learning across CfE through 'highly engaging, knowledge-rich' experiences (Sosu and Ellis, 2014, p. 32). If Scotland is also to meet the pressing environmental, and thus by extension agricultural, challenges of the future there is significant work to be done within the education system to make sure that future generations are skilled, able, prepared and informed to take forward sustainable, productive and profitable food systems (RSA, 2019; Scottish Government, 2018c).

Scotland has a rich and proud history in both agriculture and education, and throughout the historic changes and developments in Scottish society and culture

these have remained important and defining features of life in the nation. Farming is historically - and largely still is in the UK - a 'family affair' in terms of both the day-to-day management of the farm and farm businesses and also in terms of commercial heredity (Fischer and Burton, 2014; Silvasti, 2003a). Inheritance of the farm and its management is traditionally passed from father to son through the generations - although this is of course not always the case (Shortall, 1996), and there are examples of female succession throughout Scotland[2]. The laws and legal frameworks that govern the transfer of land differ across Europe, and despite a number of these theoretically and legally passing succession to women (Allodial Law in Norway puts the eldest child as the legal heir to a farm; the heir must purchase the farm in Denmark, and the parental assets are spilt among all siblings on their death), male offspring still predominantly inherit farms in Scotland as elsewhere (Shortall *et al.*, 2017).

The rich and vital contribution and involvement of women in agriculture is nonetheless increasingly the focus of research. Sally Shortall, Duke of Northumberland Professor of Rural Economy (at Newcastle University), has published widely on the role of women in agriculture and rural development (Kelly and Shortall, 2002; Shortall, 1992, 1996, 2006, 2017a, 2017b, 2018; Shortall and Shucksmith, 1998). In 2016 she headed the Scottish Government's commissioned research into the role of women in farming and agriculture resulting in the *Women in Farming and the Agricultural Sector* Report (Shortall *et al.*, 2017). This was the first research of its kind to be conducted within Scotland, and generated a very rich data set that went beyond the scope of the intended document (Shortall *et al.*, 2017). The recommendations of the report then provided the basis for the rationale and focus of the subsequent *Women in Agriculture* taskforce. It also included a number of lifelong learning and training recommendations intended to increase educational content available to women in all facets and at all levels of agricultural participation and involvement, including an urgent recommendation for the increase of female representation on the boards of agricultural organisations (Shortall *et al.*, 2017). In addition to training, succession and challenging the unconscious bias within cultural

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[2] I note the gendered language employed here and recognise that whilst traditionally succession is a passing from father to son through the generations, change is happening. It is imperative that the plethora of roles that women have historically held and continue to hold within agriculture, and their voices and experiences are recognised and championed within research.

practice, challenging the sexist expectation of male heir succession, was included in the report alongside other topics such as leadership and childcare in rural areas. In early 2017 the Scottish Government, as part of post-Brexit and future policy strategy development, announced four *Agricultural Champions* (including an Education champion) to conduct a review of Scottish Agriculture. The final report of the Agricultural Champions published in 2018 recommends that,

> Scottish farming must be more visible as a career option and must attract more young people, which will need a huge increase in focus from schools onwards.

(Scottish Government, 2018c, p. 7)

The report also calls for a number of changes to the way in which secondary schools engage and deal with agriculture - principally in relation to agricultural sector careers. The recommendations that particularly resonate with this research are:

- A coordinated approach to identify best practice at schools teaching Rural Skills at Level 4 so that it can be rolled out nationally,
- Continued work to develop a National Progression Award at Level 5 at schools so that it can be rolled out nationally,
- Improving the ways in which career opportunities in farming and related sectors are illustrated and communicated in schools.

(Scottish Government, 2018c, p. 12)

[A full list of the career-related recommendations made in the report is included in Appendix 8]. There is increasing recognition of the disconnect between society and the processes of food production and farming (Food Standards Agency, 2016), and in combination with the recommendations made in the final report of the *Agricultural Champions* are evidence that this present research project is both necessary and timely in terms of wider cultural and educational development and awareness in relation to food and farming.

For example, despite an overall reduction in the total number of jobs in agriculture, farming businesses are 'finding it increasingly difficult to recruit new staff' (Meredith, 2018). Attracting young people into the sector is something that is extremely important to its longevity, and there are many misconceptions

amongst young people as to what these types of careers typically involve. They are often viewed by young people as 'second-class' career options where workers 'carry out mundane tasks and earn low wages' (Marshall, 2015). While a smaller pool of employees is required to run a modern farm business successfully, given the progress of technology over time, a number of these roles are increasingly skilled - particularly in terms of the technology now employed in machinery and farm equipment - and so there is increasing need for highly skilled people to take up these types of employment (Riley, 2016a). Continuing and unresolved discussions regarding immigration procedures to the UK post-Brexit are also a concern for some areas of the seasonal agricultural workforce, such as soft fruit picking, that rely on workers from Europe (Wheeler, 2018). This has been a particularly prominent issue during the COVID-19 crisis, where a total ban on travel has meant that there is a shortage of seasonal agricultural workers including for soft fruit picking. Those workers on furlough from their usual jobs have been encouraged to seek out roles as fruit pickers in a 'call' to 'feed the nation' (BBC, 2020; Chapman, 2020; Farming UK, 2020). Being locked-down in our homes for a large part of 2020 also shifted the way in which some people perceived 'nature' and the outdoors given the restrictions of lockdown, and the 'healing power' of nature became a frequently used phrase. The sudden appreciation for the countryside and outdoor spaces has encouraged people to re-examine their relationship with nature, which, whilst positive in many ways, perhaps further illuminates the deeper disconnect or divide that exists between urban and rural spaces. Thus, there is a need to ensure that better information and communication around rurality, and agricultural and rural career opportunities and job opportunities, are available to educators and young people.

Agriculture will also have to adapt radically to a number of different contemporary issues: globally impacting issues such as Climate Change, Food Security, Food Safety, potential health pandemics, and, nationally, issues such as Brexit and possible Scottish Independence all have the potential to exert significant influence within the agricultural sector in the years ahead (Helm, 2017; Pretty *et al.*, 2010; Scottish Government, 2018c). Local issues will also have an impact, and this includes education - especially in the rural areas of Scotland where agriculture plays a large part in the community. In addition to

these wider problems, consumers and the general public also have a role to play in how food and agriculture will adapt to the challenges that it faces in coming times (Food Standards Agency, 2016; Scottish Government, 2018c). The future workforce and consumer base of Scotland will be largely built from the young people currently in education across the country, and so it is important that their education prepares them, regardless of the pathway they forge for themselves. This is intended through the aim of CfE to develop young people who are *successful learners, confident individuals, responsible citizens,* and *effective contributors*. Thus, in developing young peoples' understanding of Scotland's place in the world, there is an important role to play for agriculture as the processes through which food, drink, and other vital goods are produced.

Agriculture has always faced challenges: unpredictable weather events such as flooding; drought and storms that can catastrophically impact an annual harvest or livestock, both in terms of quality product but also in terms of profit; political decisions that can impact and influence proceedings; and market volatility that can cause unexpected changes in profit margins (Bindraban *et al.*, 2008; House of Lords, 2016). Despite all of this, European farmers ensure a remarkably secure supply of food that is safe to consume, provide stewardship of the land, and contribute to the rural economy (Knickel *et al.*, 2004). Agriculture is after all a business and cannot generate income (livelihood) or be economically sustainable without making a profit within the present capitalist economic order. The role of big supermarkets in pursuing unfair contracts and end price for agricultural outputs such as milk (Butler and Brignall, 2015; Mackenzie, 2018; Martin, 2020; White, 2020) also impact the ability of agricultural businesses to be successful and sustainable. Recent campaigns to increase awareness of the food waste caused by supermarkets' requirements for fruit and vegetables to be of aesthetical and standard shape and size have led to a rise in the marketing of so called 'wonky veg', both through major supermarkets and specific companies (BBC, 2017; Beament, 2017; Butler, 2018; Dobson and Edmondson, 2019; Johnston, 2020; Oddbox, n.d.; Quinn, 2016).

In addition to these more systemic economic and policy issues, agriculture faces growing challenges resulting from increasing planetary change attributable to human activity, and the pressures resulting from the ever-rising awareness of

this impact. Often referred to as the *Anthropocene*, it has been suggested by many that we have entered a new epoch characterised by human domination of the planet:

> A daunting task lies ahead for scientists and engineers to guide society towards environ-mentally sustainable management during the era of the Anthropocene. This will require appropriate human behaviour at all scales…
>
> (Crutzen, 2002, p. 23)

> Human activity has been a geologically recent, yet profound, influence on the global environment. The magnitude, variety and longevity and human-induced changes, including lasting surface transformation and the changing composition of the atmosphere, has led to the suggestion that we should refer to the present…as…the Anthropocene Epoch.
>
> (Lewis and Maslin, 2015, p. 171)

> Scholars also agree that the scale and intensity of the changes in the Anthropocene, and more important, the leading role that humans play in these changes, necessitate rethinking some of the fundamental questions about what it means to be a human, what binds us together, and how we want to live on this planet.
>
> (Antadze, 2019, p. 2)

It is thus humankind that must mitigate against our own impacts on the environment within the Anthropocene experience. Profound 'unlearning' on the binary strands of our perceived human exceptionalism needs to occur in order that we can respond to the wicked challenges of the Anthropocene with a diverse portfolio of remedies (Adam *et al.*, 2020). Perhaps even more shattering to ideas of human exceptionalism than even the urgency of the climate crisis, is that confronting the Anthropocene shows us that many other facets of the way in which we live our lives, particularly in wealthy parts of the world, are utterly unsustainable (Castree, 2016). Many of the elements that enable us to maintain aspects of the 'other' within our human social identity in a natural world, reproduce dyads or dualisms such as nature/society, ecological/technological, darkness/light, traditional/progressive, urban/rural, emotion/reason, even North/South which are also proving increasingly superannuated (Adam, 2016; Adam *et al.*, 2020). Extending this critical perspective, it is clear that many received constructions of, and attitudes towards, agriculture must hence be

'unlearned' if we are to be freed from an increasingly destructive agriculture/environment dualism.

Even for those of us sympathetic to the rural worldview, it cannot be denied that the intensification of agriculture over time has contributed to many damaging features of these changes (Dicks *et al.*, 2019; Perkins and Jamison, 2008; Robinson and Sutherland, 2002; Rudel *et al.*, 2009; Tilman *et al.*, 2011). However, the importance and influence of the consumer within the agricultural system should not go unacknowledged at this point. There are facets to modern farming practices that are unsustainable on a global level, but it would be remiss not to note that lifestyle and food preference choices of consumers are often drivers of unsustainable practices both consciously and unconsciously. In choosing to unlearn our unsustainable consumption habits it is thus entirely possible to imagine agriculture as part of the solution to our wicked Anthropocene challenges, choosing instead to support regenerative, ethical, and transformative food systems.

Shifting to a more plant-based lifestyle is suggested by some as a way in which some of these Anthropocene challenges might be alleviated (Willett *et al.*, 2019). However, pursuing a lifestyle and diet based purely on a rejection of animal products for environmental reasons only assumes that the products consumed in line with these restrictions can be produced in a more 'environmentally sustainable/friendly' manner than the animal-sourced alternatives that it rejects, which is not a foregone conclusion (Farming UK, 2019; Henderson, 2018; Knapton, 2019; Leroy *et al.*, 2020; Parker, 2019; Sparks, 2019; Tree, 2018; Wickramasinghe *et al.*, 2021). There is not scope within this study to consider the wider impacts of plant-based or animal product lifestyles as they relate to, for example, textile use. Animal-source natural fibres such as wool and leather are fully biodegradable, made from renewable sources, and are often a by-product, whereas a rejection of these products relies on materials that are petroleum and plastic based which can lead to microplastic and microfibre build-up within the environment (Cesa *et al.*, 2017; Chen and Burns, 2006); or the impacts of increasingly processed foodstuffs and plastic packaging, amongst many other examples. A plant-based diet option could have serious implications for societal organisation given the interventions required, and could

be open to hijack by those with vested interests (Leroy *et al.*, 2020). Favouring a universal diet in this way does not always take into account the very different ecological and environmental geographies and topographies of different parts of the world, which would be better served by a balanced food system and subsequent diet that is relative to the natural resources available at more local or national levels - which is actually the main recommendation of the International Panel on Climate Change (IPCC) in relation to sustainable food systems (Smith *et al.*, 2014).

Factors such as lifestyle (for example plant-based), food preferences, varying global seasonality, the unsuitability of some grounds and climates to sustain particular crops, population size, and competing demands for natural resources all contribute to the complexity of food supply and demand, and thus food security around the world (Beddington, 2010; Ericksen, 2008; Kneafsey *et al.*, 2013; McMichael, 2009; Mottet *et al.*, 2017; Weatherell *et al.*, 2003). It is therefore of vital importance that agriculture as local and regional systems, based within a concept of *place* (Duram and Oberholtzer, 2010; Harris, 2010; Sonnino, 2013), is included within education and curricula in a balanced, place-based, and informed fashion. In Scotland, for example, it would be more sustainable for meat-eaters to consume *local* lamb - an animal that is largely raised in less favoured areas (LFA[3]) (marginal lands) and turns poor quality grassland into high quality protein - than it would be to consume highly processed plant-based alternatives, the raw materials of which are often transported around the world by plane; (see map for a clear visual of land capability for agriculture in Scotland (The James Hutton Institute, n.d.)). This goes against the common presumption that a meat-free diet is more 'environmentally friendly' and highlights that while global environmental concerns are of vital importance, the impacts of meat-free produce on both health and the environment are much more complex than simply choosing to consume plant-based foods; it implicates a much broader range of local, national and globally located systems and processes. The effects of climate change will

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[3]Scotland's LFAs defined as: (i) The presence of poor land of poor productivity, which is difficult to cultivate and with a limited potential which cannot be increased except at excessive cost, and which is mainly suitable for extensive livestock farming. (ii) lower than average production, compared to the main indices of economic performance in agriculture. (iii) a low or dwindling population predominantly dependent on agricultural activity, the accelerated decline of which could cause rural depopulation (Scottish Government, 2018f).

undoubtedly impact *all* agricultural systems, and in my view the importance of this is often lost in arguments that support a shift to a purely plant-based or even vegan diet (Macdiarmid *et al.*, 2016; Macdiarmid and Whybrow, 2019).

The import and export of foods support local economies at the point of food origin. For example, the recent increase in demand for avocados and quinoa across the West led them to become unaffordable to those who depend on them as part of their staple diet, because those importing the product can command a higher consumer price, and thus a higher cost-price (Henderson, 2018). Kenya halted the export of avocados for a period in 2018 due to a shortage of the fruit (Embury-Dennis, 2018). These more recent examples are evocative of European (and United States) wheat exports to Africa in the late 1970s and early 1980s, the adverse implications of which are still present today (Gardner, 1996). An overproduction of wheat stimulated through Common Agricultural Policy (CAP) mechanisms, in combination with high export subsidy from the EU (then the European Community), not only destroyed the livelihoods of countless farming families and food producers in Africa, but contributed to changes in dietary patterns stemming from the consequent local adoption of wheat-derived foods at the expense of locally grown crops such as cassava, maize and rice (Gardner, 1996). The complex lifecycles of the other inbuilt costs of food production - such as fertiliser, fuel use and associated emissions of transporting goods from their place of origin to their destinations around the world - and resulting 'virtual water' trade and pollution incurred, all further contribute to an inequity in favour of those parts of the world that can afford to pay. This issue is particularly relevant to those goods that are water intensive to grow, grown in potentially water scarce areas of the world and which are then transported to places where water is not scarce, but where the climate does not facilitate the growing of such crops (see: Allan, 2015; Chatterton, 2015; Harris et al., 2020; Mekonnen and Hoekstra, 2011).

The deepening disconnects of modern urban life and rurality mean that some children are unaware of the environmental, economic and social realities of rural life, both locally in their lives, as well as circumstances further afield (Brauer and Dymitrow, 2014; Giles *et al.*, 2013; Glendinning *et al.*, 2003; Stockdale, 2006). Whilst young people may lack agricultural literacy and

awareness, there is growing understanding and cognizance of global environmental concerns, particularly climate change and the contribution that the continued use of fossil fuels adds to the nexus of issues. This is evident in increased levels of activism undertaken by young people, particularly through Web 2.0 Tools (for example through social media – Facebook, Instagram, Twitter, TikTok, which allow users to interact quickly and collaboratively in groups rather than just being in receipt of information) and which empower young people to become part of the solution, rather than relying on 'experts' to show the way (see: Andersson and Öhman, 2017; Hodson, 2014; Krstovic, 2014; Marques and Reis, 2017; Reis, 2020; Robelia et al., 2011). An example of this is the youth activism inspired by the teenager Greta Thunberg in 2018, who, aged 15, initiated a strike at her school in Sweden in order to protest outside the Swedish Parliament by urging politicians to act on the impacts associated with global warming. Her message was circulated via social media platforms and mobilised youth activism across the world. *Fridays For Future* youth climate marches have taken place across Scotland - inspired by Greta - which have seen children and young people strike from school/education in order to attend more than 15 marches across the country; with, for example, more than 20,000 people joining an Edinburgh demonstration in 2019 (Keane, 2019).

Agriculture, particularly livestock, is often demonised as part of the climate change environmental debate, and is repeatedly cited as a large contributor to, and aggravator of, climate change - though according to some commentators often with little recognition of the positive benefits that agriculture brings, including livelihoods, poverty reduction in parts of the global South (Randolph *et al.*, 2007), food supply and security, or the role it might play in mitigating the effects of climate change through e.g., carbon sequestration, biodiversity, and ecosystem services. The situation is much more nuanced than a simple 'global agriculture sector' caricature of the intertwining of agricultural systems around the world that is often portrayed. The contribution and relative 'sustainability' of these different systems globally and how they best sustain the populations they feed is a complex web which includes more than just food; spanning a whole range of other issues such as malnutrition (both obesity and under-nutrition), lack of education around nutrition, resource conflicts, population

growth, dependence on vehicles and technology, access to safe drinking water, and sanitation (Thorkildsen and Reksnes, 2020).

There remains a wealth of economic and occupational opportunity in the agricultural sector at all levels of academic interest and practical skills experience, not all of which requires prior lived experience of farming or agriculture: careers in areas such as food and crop science, technology, engineering, research, trading; the list goes on (Davies, 2015). In order to ensure future *Scottish* food security, the agricultural workforce will need to diversify and maintain at the very least its current level, meaning the sector will need to engage and encourage young people to join the wider workforce throughout food production processes and related fields. The age demographic of the Scottish farming sector has long been a cause for concern (Scottish Government, 2017a) and so there is an imperative for demonstrating to Scotland's young people the many benefits and career pathway options that the sector has to offer (Scottish Government, 2018c). Doing so through the framework of secondary school level agricultural experiences within CfE has huge potential to encourage a new generation who are invested in Scotland; taking our rich food and farming heritage forward responsibly into the future.

There is a significant gap in the available literature that relates directly to the scope of this research, which further highlights the value of the contribution to knowledge. There is much literature relating on the one hand to the value of outdoor learning, adventure learning, and Education for Sustainable Development (including Environmental Education), and on the other hand to the importance of education on the theme of food (such areas as food security, and as relating to health). However, there is very little that directly links agriculture with formal education as a way to address food concerns as they relate to agriculture in wider society. It is intended that this study will highlight the significance of the role of agricultural experiences within formal education in Scotland and the potential benefits that this can bring both for the agricultural sector in terms of raising awareness of career opportunities, but also in the wider sense of the role that agriculture plays in ensuring that the Scottish environment, economy and society continue to flourish.

1.5   Researcher Position

This research project, and my PhD studentship, were funded by the Mains of Loirston Charitable Trust. Their aim is to support and advance agriculture education in Scotland.

The present section will reflect on my own personal relationship to the thesis topic and on my positioning within it - not just to explain my background, but to examine my place as someone invested in the wider research area rather than an objective observer on the side-lines. I feel that this is an important disclosure to make at this point in the study, because it is my experiences in life to date that have moulded me into the person and researcher that I am, and thus the manner in which I relate to and understand the wider topic.

My formal schooling and childhood could be described as atypical, and so I believe that the inclusion of my reflection will enhance the way in which I am positioned within the thesis and the research project. I wish to acknowledge the advantages I have been afforded as a white female with a private education, particularly within the frame and scope of the research. The agricultural population in Scotland is far from diverse, and often viewed as being a tale of two halves: an elite clique dominated by white males, and those other males who do the work.

I grew up in the countryside with a dog, flock of chickens and a herd of pigs as my pets. I had my own vegetable patch to maintain and, alongside my sisters, I gained a clear understanding of the processes behind the production of food and animal husbandry. Including the time, the effort and the resources that are required in bringing food to the table and the many impacts of this production on the environment. I consider agriculture to be part of my heritage. Indeed, my strongest childhood memories are associated with being on the farm, and I have always been drawn toward the rural and outdoors, and dream of one day having a smallholding. My farming heritage, however, has not always been perceived by others as 'agricultural heritage' in the traditional sense, and I have experienced negative comments rooted in arrogance and haughtiness toward my experiences that I am often reminded of and which sit heavily with me. My paternal

grandparents established a social enterprise farm in 1987, which remains in the family today. It has never been understood as something that will be inherited, since its core rationale is to provide purpose for those who lack the capacity to live fully independent lives. The farm is run according to biodynamic principles and is home to a small community, some with learning disabilities, living and working together. It formed a big part of my life growing up, which gave me unique hands-on experiences that my current peers largely do not have. The animals we farmed were always destined to be part of the food chain, and so the quality of their lives whilst under our care was always of paramount importance. The ethics of this has never been problematic for me, provided that assurances of quality and traceability are available. To me these assurances come from ensuring that I consume Scottish-produced meat and dairy (Quality Meat Scotland are the assurance body responsible). A biodynamic farm consists of both livestock and arable, and so stewardship of the land and regeneration of soils are equally important to the whole farm system.

This hands-on approach in my home life was very much reflected in my formal schooling; and influenced in part by the overlap between school and home – a number of my extended family also attended and taught at the school. This meant that some of the principles and practices used in the school's approach to education were also upheld at home. I attended a Steiner Waldorf school, part of a global network of independent schools, which places a central role on the outdoors and practical activities in its educational approach and curricula (Steiner Waldorf Schools Fellowship, n.d.). The extension of the practical and outdoor focus from my experiences at school reinforced the interconnected nature of the outdoors with learning and knowledge throughout my early childhood.

Outdoor learning is therefore a key driver in the importance of this research to me personally, because it is the memories of those hands-on and 'different' learning experiences that I can vividly recall from my own education. Whilst I was fortunate enough to benefit from wide and varied outdoor learning experiences as part of my schooling, part of this can be attributed to the fundamental cultural and structural value that the school's curriculum placed on outdoor learning experiences, ensuring that dedicated time and space was

timetabled in the weekly timetable, but also in terms of longer and more immersive experiences through day trips and longer residential experiences. I recognise the advantages that are associated with the provision of these within a private education, however for some of my school friends the experiences of being responsible for a school garden plot continue to enrich their lives today, and have given them the confidence to pursue outdoor activities with their own young children.

Steiner Waldorf education is inspired from lectures and teachings of Dr Rudolf Steiner (1861-1925) - an academic whose theories and outlook on the world are today often contested. They have, however, been a source and inspiration for a number of practical applications such as education, agriculture (referred to as Biodynamic Agriculture), architecture and Camphill[4] communities around the world (Hindes, 2019; McKanan, 2017). Steiner Waldorf education educates for the 'whole child' is based on the core principle that children should be educated in order that they have freedom as individuals:

> Our highest endeavour must be to develop free human beings, who are able out of their own initiative to impart purpose and direction to their lives
>
> (Steiner, 1923)

The preceding quote from the foreword to Steiner's lectures on education is often used as a mission statement or vision for Steiner Waldorf schools around the world because it encapsulates the approach to education contained in most of the schools and curricula. The idea of individual freedom is reflected in the outcomes that are intended for young people who attend Steiner Waldorf schools: that the process of the education develops,

> unusually free thinking but socially and culturally connected individual[s] who may be disposed to challenge prevailing orthodoxies
>
> (Ashley, 2008, p. 68).

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[4] The Camphill Movement is dedicated to building communities of purpose for people with learning disabilities world-wide. The first Camphill community was established in Aberdeen in 1940 and there are currently 11 Camphill communities offering a variety of support for children, young people, and adults across Scotland (Camphill Scotland, n.d.).

This freedom comes, not from a *rights for the child* approach but from the authority and guidance of the class teacher[5] (Ashley, 2008), and can also be understood in terms of inner freedom; to be free *within* (Oberski, 2011). While the notion of authority can be perceived as counter to current approaches to education, *authority* in this context relates to the role of the teacher as a guide and a facilitator of knowledge and learning, encouraging children to challenge and question the topics and status quo.

Steiner Waldorf schools form the largest group of independent non-denominational schools in the world with some 1,200 schools and 2,000 Early Years settings in over 60 countries (Steiner Waldorf Schools Fellowship, n.d.). The educational setting of Steiner Waldorf schools tends to be 3-18 years. Education is one of the main practical applications of Steiner's teachings that has gained widespread support across the world, although it should be noted that most Steiner Waldorf schools would describe their connections to Steiner's teachings as 'inspired by' by rather than as a prescriptive application of his philosophies within the field of education (Oberski, 2011, p. 14). There are aspects to Steiner's teachings that are criticised today for being pseudo- and anti- scientific; particularly the science (including agriculture) and medical disciplines. But some criticisms are also levelled at the education discipline itself. These are often related to the roots of Steiner Waldorf education stemming from Steiner's philosophy, or *anthroposophy*. At the core of Steiner's *Anthroposophy* ('anthopos' - human; 'sophia' – wisdom) is a

> path of conscious personal development, involving both observation of the world and self-reflection, in which experience and understanding may mature into direct insight into the human spirit and its connection to the spiritual world

> (Emerson College, n.d.).

There is hence an intrinsically 'spiritual' strand to the educational approach of Steiner (Oberski, 2011; Steiner, 2003) that can be hard to reconcile - particularly when it is central to the philosophies which inspire educating for 'freedom' and

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[5] *In Steiner Waldorf education the class teacher remains with the year group of children from the beginning of formal education at the age of six for the following 8 years of Lower School, after which the young people move into the Upper School under the guidance of a 'Class Guardian' who fulfils a pastoral supporting role for the following 4 years.*

encouraging young people to question the 'prevailing orthodoxies' (for further discussions on Steiner's philosophy of freedom see: Oberski (2011), Reinsmith (1990)). How this is all experienced and absorbed by the young people educated through this particular education system is an interesting area for reflection, research and educational theory in general. My lived experiences of it shaped me into the person that I am today, and thus by extension the researcher that I am. In reflecting back on the approaches taken by my school teachers, I find that the overriding memories are of positive authoritative facilitation, guidance, encouragement and space to ask questions about what we were learning, and as I got older to question *why* we were learning. The Steiner curriculum is understood as a spiral curriculum in which topics are revisited with deepening levels of complexity and difficulty, encouraging integration between discrete topics/disciplines, and a breaking down of barriers (Barnes, 1991; Clouder, 2003; Harden and Stamper, 1999; Steiner, 2008).

To approach learning and research in an interdisciplinary manner has always been second nature to me. My outlook on the world is that everything is interconnected, even where this is not immediately calculable, and this is a very direct reflection of the way in which I experienced my education. I have always been encouraged to think beyond traditional boundaries in a creative and critical manner in order to learn new things and to expand my knowledge of the world. A particularly important aspect of my formal education and upbringing was the *ecocentric* focus of the approach. The placing of the planet as the foundation for all provides the link that connects everything together and is the basis for my adult outlook. Rather than thinking of the planet as an external resource purely for the benefit of humankind, approaching research with an ecocentric lens in the Steiner tradition gives intrinsic value to nature and our environment and places humankind among the wider ecosystem of the planet. I have always found the words used to describe Planet Earth and the subtleties of them interesting, and wrote my Masters dissertation on understandings of 'nature', and 'the environment' within Scottish environmental policy - finding in that undertaking both terms and the concepts they represent to be complex and nuanced, but also largely social constructs of the cultural ways in which humankind perceives its environment (Brett, 2015). Given this subtlety I will use the term *the*

environment throughout the thesis in reference to Earth/nature/the planet to ensure that any ambiguities are minimised.

Humankinds' stewardship of the environment has always fascinated me. My father was a shepherd throughout my early life, then became a farm manager of my grandfather's farm, before retraining as a teacher. 'Stewardship' is of course a contested term that can be understood to mean many things, including human domination of Earth (Michaels *et al.*, 2020; Peçanha Enqvist *et al.*, 2018; Szrot, 2020; Taylor, 2017). However, I maintain its usage here in the commonly used *environmental stewardship* 'secular' sense that farmers are stewards, custodians and managers of land (Clinch, 2020; Falkner and Buzan, 2019; Raftopoulos, 2020). The impact of my family's involvement with the outdoors, with farming life and with education gave me a passion for, and interest in, agriculture and the environment that continues throughout my life. It is because of the large overlap between my experiences at home and the education I received at school that I am on a path of interdisciplinary study, which gave me the freedom, tools and inclination to find connections outwith the norms of mainstream education.

My formal education and life experiences as a young person brought me to my *Environmental Stewardship* undergraduate degree programme based at the School of Interdisciplinary Studies at the University of Glasgow's Dumfries Campus. Here, the freedom to explore the crossover relationship across and between traditional academic disciplines was encouraged. This in turn afforded me a smooth transition into higher education, a sector I was initially reticent to get involved with given my non-traditional formal education, and my lack of self-confidence as a young person. University turned out to be a great setting for me and I really thrived. The entire student experience, both academic and extra-curricular, moulded me into the researcher I am today. The breadth and depth of the courses on offer appealed to me in terms of their intention to encourage wider and critical thinking around science, health, humanities, and the environment. Grounding myself amidst Interdisciplinary Studies enabled me to develop further and at the same time honed my skills in bridging disciplines and forging connections. My particular interests at the conclusion of my undergraduate studies were in understanding the multiple impacts of neoliberal policies on how we value and comprehend the environment; the inner workings

and negotiation of UN and global environmental policy making; and how the UN Education for Sustainable Development agenda deals with the environment in its promotion of sustainable development (Brett *et al.*, 2014). These interests all have in common how we as humankind place ourselves within the grand ecosystem of Earth, and how we work to govern our behaviours and attitudes responsibly towards the environment and its resources.

These interests directed me to my Masters Degree in *Environmental Policy and Governance* at the University of Stirling which, whilst very definitely *multi*-disciplinary, was not as inherently *inter*-disciplinary as my undergraduate experience. I found it more limiting having to think 'inside' of one discipline, however this did force me to consider some topics with a smaller focus and tighter lens - particularly policy and politics - and to immerse myself within new disciplines. New disciplines provided me with additional elements to add to my preferred interdisciplinary outlook, adding to the arsenal of experiences that I bring to my role as a researcher now. The experiences that I had throughout my Masters further tested my perceptions and definitely ratified for me my belief that research conducted with an interdisciplinary approach is what is required to deal with the challenges that our world is facing. In particular it confirmed to me that further work is required to bridge agricultural concerns and environmental concerns, which, despite working towards the same outcome - efficient and sustainable use of natural resources - are often found on opposing 'sides' of a difficult debate. While I have chosen to follow a path of 'environmental study', for me this always included agriculture - farmers are people who work the land every day of the year after all; they are stewards and custodians of the land, and their livelihood relies on that land being productive and well cared for. It thus became increasingly clear to me that there was a big disconnect between the processes of Scottish agriculture and the often extreme 'globalised' representation of a singular global agriculture sector often presented by those promoting or critiquing the environmental agenda: an area made increasingly polarised in recent years by the surge in vegan activism (and reactions to it) and the wider rejection of traditional agriculture that this often represents. There can be no food without agriculture, and so its importance is paramount in some shape or form. Beyond current horizons, agriculture might look very different – however the cultivation of something is likely to endure. I

believe that real change is needed in order that the disconnect that exists between humankind and the environment can be addressed and attitudes altered in relation to the myriad challenges humanity faces.

Thus, I come to the research emphatically not as an impartial observer, but as someone interested and invested in the topic of the project and its place within the wider setting of environment, economy and society. I am passionate and committed to ensuring that the rich cultural heritage of agriculture as part of Scottish society is no longer side-lined within the education of our young people. My hope is that by fostering a sense of joy and interest in lasting and positive agricultural experiences young people develop and discover skills and knowledge that can continue to inspire them throughout their lives - as well as illustrating to them that valuable and fulfilling careers can be found within the rural sector.

1.6 Agricultural Experiences

The core element around which this research is centred is the concept of **agricultural experiences**. The term itself was included in the project brief advertised by the funding body, and I have developed the concept into the following extended definition:

> Practical contact and/or observations of agriculture that aim to leave a lasting impression; agriculture being the science of, and the practice of farming.

It is intentionally broad, and elements are open to interpretation, however I believe that the active strand of 'practical contact and observation' is less likely to be misinterpreted, which then ensures that there is at least an element of outdoor or field-trip experience inherently included within the concept. In terms of interpreting 'agriculture', this has been left in intentionally wide given the very broad scope of what *could* constitute agriculture, and the extent to which teacher motivation or enthusiasm impacts this educationally. For the purposes of the study, agriculture refers to farming of largely livestock and arable crops, however broader definitions include other cultivated and farmed areas such as forestry, aquaculture, horticulture - all of which also provide breadth to build a rich learning experience. Table 1-1 below outlines further details of the definition.

CfE encourages out of classroom learning in the outdoors (Education Scotland, 2009, 2021b; Learning and Teaching Scotland, 2010; Learning for Sustainability National Implementation Group, 2016; Scottish Government, 2012a), and there is much scholarship which support the benefits to children and young people of outdoor learning - from personal development to history, participatory virtues to increasing concentration, and attainment improvement (Dillon *et al.*, 2006; Ferkany and Whyte, 2012; Harris and Bilton, 2019; James and Williams, 2017; Quibell *et al.*, 2017; Rickinson *et al.*, 2004; Wells and Evans, 2003). Thus, the concept is not prescriptive of the ways in which learning outdoors could take place, and agricultural experiences in this context should therefore be considered as part of a wider learning experience that uses a journey or excursion into the outdoors as an opportunity to deepen the learning rather than

simply as an add-on. All of these aspects are considered in greater detail throughout the course of the thesis. It is intended that a framework guidance document will be part of the research dissemination process, helping to clarify potential implementation of the concept, and as set out by the funding body. This is to be made available to participants, and other interested parties.

Table 1-1: Agricultural Experiences

AGRICULTURE
Late middle England, from Latin: ager, agr = field cultura = growing
The art, science of, or practice of, farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool and other goods for use

$	$
science	practice
$	$
Agri-science	Farming
$	$
The application of science to agriculture	Set of activities that transform the environment for the production of animals and/or plants for consumption

EXPERIENCE
Late middle English from Old French, from Latin experientia, from *experivi* = to try

Noun.
1. Practical contact with, and observations of facts and events (involvement in, or participation in)
2. An event or occurrence that leaves an impression

Verb.
Encounter or undergo (e.g., an event or occurrence)

1.7 Outline of Thesis

This thesis is structured by way of five chapters, the present being **Chapter One**.

Chapter Two is a literature review and begins with a context setting consideration of the historical importance of education in Scotland. The discussion then deliberates CfE and where it is within the current structures of the curriculum that agriculture experiences might be best placed. This is done taking into consideration such areas as assessment, Interdisciplinary Learning, Outdoor Learning, and the content of the curriculum. It concludes with a discussion on agricultural education and agricultural literacy.

Chapter Three details the methods and methodological approach taken in this research study, aligning this as a pragmatic mixed methods approach. The first part of the chapter discusses the theoretical and philosophical complexities of employing mixed methods research, before going on to discuss the research design and individual methods employed. The chapter then continues with an explanation of the data analysis processes and the ethical considerations and procedures implemented within the research project; concluded by a short discussion regarding limitations experienced.

Chapter Four begins with a consideration of agriculture and curriculum content, outlining where agricultural experiences *could* or *should* be placed to best increase the agricultural literacy of Scotland's secondary school pupils. It then asks what is it that agricultural experiences can bring to CfE and education in its widest sense. This Chapter is a results and discussion chapter based in the data collected through themes such as definitions of agriculture, the potential and perceived benefits and challenges of implementing agricultural experiences, and attitudes toward agriculture and rurality in Scotland. The discussion is informed by the thematic and narrative analysis carried out. The chapter concludes by revisiting the themes of agriculture and curriculum content and structures, asking whether there is now a greater imperative for a more radical re-imagining of how education seeks to prepare young people for the world.

Chapter Five concludes the thesis and lists the recommendations.

Chapter 2: Literature Review

We plough the fields, and scatter
The good seed on the land;
But it is fed and watered
By God's almighty hand:
He sends the snow in winter,
The warmth to swell the grain,
The breezes and the sunshine,
And soft refreshing rain.

Harvest Hymn
(words after Mattias Claudius,
Jane Montgomery Campbell)

2.1 Introduction

An important driver in this research was exploring the interplay and influence between agriculture and the education system, both historically and in its current iteration. Both have experienced big changes across the centuries but have seen accelerating innovation in the decades following World War 2 leaving a lasting impact on how these sectors operate and intersect with one another.

This literature review is contextualized in relation to the key objectives of the research. As such, it is interested in a range of different literature types spanning academic, professional, popular, scholarly, and policy, in order to maintain focus on the priorities of the project. A further purpose of a motivated literature review of this kind is to advance, inform and refine the postal survey, and interview and focus group themes in response to the research questions that were set by the funding body, thereby ensuring that these are critically engaged with available scholarship and popular information sources. Thus, the project also contributes to a funded lineage of enquiry within the wider field of education and agriculture/farming.

The chapter begins with a consideration of the historic importance of Scottish education. Following this, I appraise CfE through a series of discussions connecting aspects of assessment, interdisciplinary learning, outdoor learning and curriculum content as they relate to agriculture. This in turn leads to an exploration of food, agriculture, and agricultural literacy and their relative salience in light of the current climate emergency.

2.2 Agriculture, Knowledge and Education in Scotland

Changes to legislative and pedagogical approaches in the provision of mass education in Scotland took place originally within the context of the 1560 Scottish Reformation and were part of a wider pan-European humanist agenda seeking to create an educated citizenry (Houston, 2017). The population of Scotland then was small and supported by an agrarian system that relied on the muscles of animals and people (agricultural servants and labourers), and tools that would be considered highly inefficient by any modern standard (Smout, 2012). Only sporadically was the classic Reformer objective of a school in every parish realised – itself an achievement for such an agrarian society – with those rural schools that did emerge attended by a range of pupils reflecting the societal makeup of landowners and labourers. The opportunities afforded to poorer pupils in rural schools meant that *some* could progress into university, however it was still boys from landowning classes that ascended into positions of power. Thus the divide between the academic and vocational is an historic one in Scotland, going back to the Middle Ages (Matheson, 2014), where attending university was largely the preserve of the clergy or the law, and as such was not a chief concern of schools with comparison to their current role in the preparation of young people for massified university intakes (Perkin, 2007).

The 1700s brought big cultural and social changes to Scotland, as well as major industrial and agricultural developments. The patriarchal Clan system had long been considered a challenge to rulers of Scotland, but its ultimate collapse can be charted to changes within Scotland and its institutions that took place throughout the 1700s and into the 1800s. It is estimated that some 70,000 highlanders were dispossessed between 1760 and 1800 (Devine, 2005, p. 160), though the true number can never be known. The culture and character of the Highlands was forever altered by these events. There is little scope for the reach of this study to cover exhaustively the events of the Highland Clearances, however their importance and lasting impact within the Scottish agricultural heritage must not go without remark. Clearances from all parts of agrarian Scotland took place against a backdrop of changing land ownership, displacing communities all over the country (Devine, 2010, 2019).

The changes in the direction of education policy that took place across the following decades and centuries did so against a general trend of modernization and increasing state intervention in public services e.g., health, education, agriculture, land, and a slow revitalized recognition of Scottish distinctiveness as separate from the Westminster Government (Humes, 2021a; Mitchell, 2003). The running of the Scotch Education Department (SED) by powerful and centralising civil servants was marked by a succession of bureaucrats with high levels of managerial continuity and widespread discretionary powers; steadily replacing those held under control of the Church prior to the Education (Scotland) Act 1872 (Humes, 2021a, 2021b; O'Hagan and Davis, 2007). The pursuit of a uniform education system intersected with the increasing power of the state as a unique provider and overseer, shifting control further to an urban centre that often bore little resemblance to local conditions or social realities beyond the metropolis (Anderson, 1995). Education must continue to evolve even today, as it has historically, if it is to meet the challenges that are ahead, and perhaps, given the changing world and country we are in now, it is time for a more radical and philosophical reappraisal of education in Scotland.

2.2.1 20th Century Developments

The improvement and development of education policy during the 20th Century is of particular interest to this study given the importance of the influence of organisations discussed below. The evolution of policy during this period takes place against a backdrop of worldwide conflicts, technological advance, social transformation and increasing globalisation - both in terms of travel and experiences, and in terms of global political economy and trade. This included the formation internationally of intergovernmental organisations such as the United Nations (UN) in 1945, the World Health Organisation (WHO) in 1948, the European Economic Community (EEC; European Union (EU) since 1993) in 1958, and the Organisation for Economic Cooperation and Development (OECD) in 1961. The influence of these organisations has gone on to impact all facets of society and provided the foundation for the development of contemporary priorities within both education and agriculture - such as the Programme for International Student Assessment test (PISA) managed by the OECD, established with the intention of evaluating educational systems; the Common Agricultural Policy (CAP) as introduced by the EU as a means to increase agricultural productivity post-World War Two; and, the UN Environment Programme (UNEP), which is the UN body responsible for coordinating the response to environmental issues.

The repercussions of such interconnected multilateral and global initiatives reveals both strengths and weaknesses. Strength lies in their efficiency to be a force for change. For example, the EU has developed and enacted more environmental protection legislation than could have been achieved by individual member states, thus delivering positive environmental protection on a scale unachievable without the structures of the EU (Bell *et al.*, 2017; Fisher *et al.*, 2019). On the flipside, using the CAP as an example, the mechanisms of such a system can become so ingrained that radical reform is almost impossible. The weaknesses relate largely to the often undemocratic nature of their structures; eligibility is limited and is not even guaranteed to be universal (Chanda, 2008; List and Rittberger, 1998; Mazlish, 2006; Nilsson, 2017).

The OECD administers PISA but has no mandate for improving education. That said, over the past decades education has become an important concern for the wider activities of the OECD within its shared aim of promoting economic development and growth in the global free market economy (Sjøberg, 2017). There are no democratic mechanisms in place that enable participation in the decision making processes associated with PISA, yet it has become a benchmark for educational system success, and is now a main source by which the UN monitors progress towards the Sustainable Development Goals (SDGs) (Ward, 2020) - in some accounts inflicting irreparable harms on schools and pupils across the world (Andrews *et al.*, 2014). This is an important point, since Scotland has recently (2021) announced wide-ranging reforms of education governance as the direct result of an OECD report (Hepburn, 2021a; Priestley *et al.*, 2021).

Secondary schools saw continued growth and expansion in the latter decades of the twentieth-century, particularly for girls and young women who increasingly stayed on in education (Harvie, 1998). New qualifications were developed in the latter decades: *Scottish Certificate of Education Ordinary Grade* (O-Grade) and *Higher Grade* (Higher) (in 1962) which became the entry qualification for university study (Anderson, 2013). New *Standard Grade* qualifications were introduced from 1986 onwards to replace the O-Grades; the Higher however, was retained. The Education (Scotland) Act 1980 set out again that local authorities were responsible for the provision of education, thus also performing the functions of education authorities, and this remains a key piece of underpinning legislation governing education in Scotland to this day (Education Scotland, 2021c).

A development plan for a new 5-14 curriculum was published following consultation in 1987, which outlined a review of curriculum and assessment practice for all primary school and the first two years of secondary school – echoing a similar development plan in the drive for a National Curriculum in England and Wales (Malcolm, 1997). Whilst in England and Wales the curriculum was imposed by statute, the introduction of the new 5-14 curriculum in Scotland was done on the consensual basis of building on the recognised good practice of

teachers with new approaches published as guidelines (Goulder *et al.*, 1994; Malcolm, 1997).

Following Devolution, the Scotland Act 1998 granted the Scottish Parliament law-making powers in a number of *devolved matters*, with the UK Parliament retaining sovereign powers over *reserved matters*. Devolved matters include **agriculture**, forestry and fisheries; **education and training**; environment; local government, and others; meaning the Scottish Parliament has the powers to create new laws in these areas. Reserved matters include e.g., nuclear energy, oil, coal, gas and electricity employment, immigration, broadcasting…

2.2.2 21st Century: New Outlook

Devolution established the Scottish Executive (a Labour/Liberal Democrat coalition until 2007) in Scotland – rebranded to the 'Scottish Government' by the Scottish National Party (SNP) on their victorious election in 2007. Following a 2002 'National Conversation' on education, the Scottish Executive then published the findings of The Curriculum Review Group in 2004 which set out the vision for a new 3-18 *Curriculum for Excellence* (CfE). These recommendations were accepted by Ministers and so began the process of development which would lead to the implementation of CfE in 2010. The Education (Scotland) Act 1980 therefore remains the principal legislation, and there is essentially still no statutory curriculum in Scotland. There are a few exceptions, including a requirement for 'the teaching of Gaelic in Gaelic-speaking areas' (Education (Scotland) Act 1980 (c44) (s1(5) (a) (iii))), and instruction in religion is expected to be provided (Education (Scotland) Act 1980 s8). The National Improvement Framework sets out the 'four key priorities' that all should still be working towards:

- Improvement in attainment, particularly in literacy and numeracy
- Closing the attainment gap between the most and least disadvantaged children
- Improvement in children's and young people's health and wellbeing
- Improvement in employability skills and sustained, positive school leaver destinations for all young people

(Scottish Government, 2016c, p. 2)

The Education (Scotland) Act 2016 introduced further measures to improve Scottish education, including reducing socioeconomic barriers to learning, provisions to extend the rights of children, and establishing a process whereby parents can request Gaelic Medium Primary Education from their education authority (delivery of education through Gaelic as opposed to it being taught as a subject lesson). Further legislation underpinning Scottish education today includes:

- United Nations Convention on the Rights of the Child (UNCRC)
- The Equality Act 2010

- [The Requirements for Community Learning and Development (Scotland) Regulations 2013](#)

Education policy is increasingly an important and significant area of social policy, linking with wider facets of social life including health, crime, and economic policy (Arnott and Ozga, 2008). Since coming to government in 2007, the SNP have been very active within the education policy field, and other policy arenas, and it has been argued that a discursive narrative current of 'inward' references to a community that is imagined as a 'fairer', 'greener', 'healthier' and 'smarter Scotland', and 'outward' references to the small and social democratic Nordic nations, are tacitly leading and enabling a 'learning nation' inclining towards the SNP goal of independence (Arnott, 2014; Arnott and Ozga, 2008, 2010, 2016; Ozga, 2016; Scottish Government, 2014b).

As mentioned in the Researcher Position section of Chapter One, the theoretical and philosophical underpinnings of my own education are considered 'alternative'. There may be lessons to learn from other education systems from this as relates to their priorities and structures, as well as their curriculum making, in enabling and ensuring greater inclusion of agriculture and wider agricultural experiences as part of CfE. International approaches to the inclusion of the outdoors within curricula and pedagogy also provide scope for further focus including those such as the bottom-up *udeskole* and *friluftsliv* principles in Nordic countries, and the 'top-down' approach in Australia (see: Backman, 2011; Barfod and Daugbjerg, 2018; Barfod and Mygind, 2018; Bentsen et al., 2010; Fägerstam, 2012, 2014; Gurholt, 2014; Polley and Thomas, 2017; Sandseter et al., 2012).

It would be remiss not to mention private and independent schools at this point, given their long and established history as part of the Scottish education system (although not always as the elite models of today). A number of these are modelled on the English system of public boarding schools, and indeed offer the English curriculum and its related qualifications (Forbes and Weiner, 2008). Whilst some do subscribe to CfE and/or offer SQA qualifications, independent schools have the freedom to offer not only a very broad range of subjects, but different approaches to pedagogical theory and school ethos and

structure - thus, it is claimed, widening the choice of educational provision in Scotland and offering alternative and varied education experiences (Exley and Suissa, 2013; Henderson *et al.*, 2020; ISC, 2020; SCIS, n.d.).

As a country with an international reputation for food and drink, and a strong historical and cultural relationship and connection with the countryside, the opportunities to showcase the sustainable and world-leading food and welfare standards that govern our agricultural sector, and the crops and livestock it creates, are boundless (Clarke, 2021a; Truss, 2021). The Scottish Government's *Becoming a Good Food Nation* policy (2014a) has an educational aim but makes only one explicit reference to 'agriculture' (in the form of the CAP), instead employing terminology focussed on 'produce' and 'producers' of food. I believe that discussing agriculture in this way decreases awareness of the fundamental processes by which food is 'produced'. Agriculture, as defined in the previous chapter, is the art, science, practice of farming, which includes the cultivation of the soil for growing crops and rearing of livestock in order to provide food, wool, leather and other goods for human (and animal) use and consumption. In an increasingly consumer-oriented society, this is a pertinent reminder that food is not produced in a vacuum but relies on a network and community of dedicated business people cultivating our environment by processes of science to ensure the continued survival of humans all over the world.

2.3 *Curriculum for Excellence*: finding a place for agriculture

As signalled above, CfE is Scotland's formal education curriculum and was introduced to learners in 2010. The curriculum is a 3-18 framework which encompasses all of the experiences planned for children and young people throughout their educative journey (Priestley and Humes, 2010; Scottish Government, 2008). It places the learner at its core served by a wider context for learning about e.g., the curriculum areas and subjects, Interdisciplinary Learning (IDL), Learning for Sustainability (LfS), ethos and life of the school, and opportunities for personal achievement (Scottish Government, 2008, p. 13). Both LfS and IDL are of key interest to this research and will be covered later in this chapter. A range of qualifications are available for young people to pursue in secondary school, the majority of which are currently overseen by the Scottish Qualifications Authority (SQA), which is a non-executive branch of the Scottish Government tasked with both setting and accrediting educational awards.

The purpose of CfE is reflected in its four capacities (Education Scotland, 2019), which aspire to enable Scotland's young people to become: **successful learners**, **confident individuals**, **responsible citizens**, and **effective contributors**. These capacities are underpinned by a number of attributes (which can be found in [Appendix 9](#)). These are embedded throughout the CfE experience and support the wider aim of giving Scotland's young people the 'opportunities to develop the knowledge, skills and attributes they need to adapt, think critically and flourish in today's world' (Education Scotland, 2019). This aim is set against the values of *Wisdom, Justice, Compassion,* and *Integrity*, which are considered to 'define the values for Scottish society' (Education Scotland, 2016, p. 4) following the deliberations that succeeded the Devolution settlement and then inscribed on the Parliament's ceremonial mace. The framework of the curriculum is set out for teachers and practitioners in a series of documents collectively known as [*Building the Curriculum*](#), which aim to provide advice, guidance and policy on different dimensions of schooling.

Curriculum for Excellence: Experiences and Outcomes (commonly referred to as Es+Os) are a set of statements based in each curriculum area, and include separate sets for those 'responsibility of all staff' cross-curricular areas; literacy

across learning, numeracy across learning, and health and wellbeing across learning. The Es+Os within a particular curriculum area are grouped in 'organisers', which are then structured into statements that reflect the relative curriculum level[1], with some curriculum areas providing further context and opportunities for personalisation within these structures (Education Scotland, 2012). Multiple Es+Os for a specific level which allows for this personalisation of the curriculum, as can be seen in both the tables included below. Table 2-1 (Scottish Government, 2009, p. 287) and Table 2-2 (Scottish Government, 2009, p. 275) below contain examples from the *Social Studies* and the *Sciences* Es+Os for illustration. Instances also occur where a single E+O is applicable across all curriculum levels or between particular neighbouring levels:

> I am developing respect for others and my understanding of their beliefs and values. RME 0-07a/1-07a/RME 2-07a/RME 3-07a/RME 4-07a (Scottish Government, 2009, p. 225).

The Es+Os are used to help teachers plan learning and assessments, and in combination with *Building the Curriculum*, the National Improvement Framework, the Scottish Attainment Challenge, Developing the Young Workforce, and the Benchmarks, supposedly allow teachers to build a flexible and coherent curriculum that takes into consideration local context and ensures that young people experience appropriate progression and levels of attainment.

Table 2-1: Social Studies: People, place and environment Es+Os

Curriculum Area: Social Studies			
Key Organiser: People, place and environment			
	Second	**Third**	**Fourth**
	I can describe the major characteristic features of Scotland's landscape and explain how these were formed. **SOC 2-07a** I can describe the physical processes of a natural disaster and discuss its impact on people and the landscape. **SOC 2-07b**	Having investigated processes which form and shape landscapes, I can explain their impact on selected landscapes in Scotland, Europe and beyond. **SOC 3-07a**	I can explain how the interaction of physical systems shaped and continue to shape the Earth's surface by assessing their impact on contrasting landscape types. **SOC 4-07a**

Table 2-2: Sciences: Materials Es+Os

Curriculum Area: Sciences			
Key Organiser: Materials (continued)			
	Second	**Third**	**Fourth**
Earth's materials Learners develop their knowledge and understanding of substances that make up the Earth's surface. Properties, uses and methods of extraction of such materials are explored. Opportunities exist to discuss the importance of carbon compounds derived from crude oil to our lives.	Having explored the substances that make up Earth's surface, I can compare some of their characteristics and uses. SCN 2-17a	Through evaluation of a range of data, I can describe the formation, characteristics and uses of soils, minerals and basic types of rocks. SCN 3-17a I can participate in practical activities to extract useful substances from natural resources. SCN 3-17b	I have explored how different materials can be derived from crude oil and their uses. I can explain the importance of carbon compounds in our lives. SCN 4-17a

CfE was implemented with the premise that assessment should follow the curriculum rather than lead it, and so the new secondary level national qualifications (National 1-5) were available to be taken from the school year of 2013/14, with the new Higher and Advanced Higher qualifications following in the subsequent years (Kidner, 2013). Alongside the development of these new qualifications in the traditional subject examination route, a great deal of focus has gone into developing qualifications in vocational learning that are delivered to the same Scottish Credit and Qualifications Framework (SCQF) levels as the traditional National 4 and 5s and Highers. The SCQF is a framework that assigns levels to qualifications which allow individuals, employers, education and training providers, and others, to understand and chart out or map the different qualifications available. There are a range of different vocational qualifications available, including:

- *Skills for Work National* – more generic employability skills linked to broader vocational areas,
- *National Progression Awards* – schools/colleges/employers work in partnership in specialist vocational areas,
- *National Certificates* - tend to be aimed at 16-18 year olds or adults in full-time education.

These types of qualifications, along with schemes such as the *Foundation Apprenticeship*, are of particular interest here given the relevance to the rural-, land-, and environment-based focus of this study, as well as their applicability within the BGE and senior phases of secondary school (a full list of all SQA *Land Based and Environment* qualifications can be found [here](#)). The Commission for Developing Scotland's Young Workforce was established by the Scottish Government in 2013 and consulted with business, education leaders and equality groups producing its final report, *[Education Working for All!](#)* in 2014, which provided 39 recommendations on improvements to Scottish education (Scottish Government, 2014b; SQA, n.d.-a).

These more vocationally-focussed qualifications are designed to give young people the opportunity for a more work-relevant school education experience, developing skills and knowledge within particular areas that enable them to make informed and ambitious choices about careers and jobs. Learners who

choose vocation-focussed qualifications often spend some of their time at a local college or employer who has specialist expertise and/or practical resources. Experiential learning is a key part of these qualifications, however for some a work placement is not an essential component (SQA, n.d.-b). The longstanding perception that children and young people need to choose *between* the vocational or the academic, and that the academic choice somehow indicates or ascribes higher social and cultural status, creates for itself a self-fulfilling cycle whereby the vocational 'stream' is the one that young people fall into or 'end up in' (Breslin, 2016; Kramer *et al.*, 2020).

The idea that jobs and careers in agriculture and the rural/countryside sector are 'second class' or menial options is an outdated and incorrect assumption that belittles the importance of the agri- and rural- sectors of the economy and in sustaining society into the future. Indeed those involved in the sector feel that the stigma associated with agricultural careers does not match the innovative, exciting and varied array of jobs and career paths the sector has to offer (Farmers Guardian, 2021; Hale, 2021; Osiowy, 2021).

2.3.1 Barriers to Vocational Learning: qualifications and credentialism

A term initially used by economists, 'neoliberalism' became the predominant economic paradigm in a move away from Keynesian economics beginning in the 1970s, and it is now widely used across many social science disciplines in reference to a range of processes and outcomes (Clarke, 2008; Ross and Gibson, 2014; Venugopal, 2015). Based in notions of free market capitalism and laissez-faire economic liberalism, neoliberalism is a complex of economic, political and cultural arrangements that have become globally dominant in many societies since the 1980s (Dekker, 2020; Mamonova and Franquesa, 2020; Ross and Gibson, 2014). Its history is complex owing to its multifaceted emergence in different guises and uses over lengthy time periods (Boas and Gans-Morse, 2009; Davies and Bansel, 2007). The decline of Keynesian economic thinking and the strains laid on welfare states by the deliberate move to neoliberal policy positions had substantial implications for the structures and policies governing education - with the vast restructuring of services by Margaret Thatcher often cited as an ideological turning point for the UK (Morrow and Torres, 2000; Ross and Gibson, 2014; Vincent, 2009). Fink (2016, p. 158) describes neoliberalism as a 'long-term, strategic organising campaign'; and the concept is to varying degrees reflected across the political party spectrum – characterised by tenets such as the increased role in society and economy of the private sector, reinforced by government spending reductions, as well as related notions such as the embrace of globalisation, deregulation, privatisation, free-trade, and austerity among others (Bloom, 2017; Boas and Gans-Morse, 2009; Goldstein, 2011; Springer *et al.*, 2016).

The impact of these approaches has led away from the more 'liberal' approach to education in the immediate post-war and progressive periods to one with a greater focus on preparation for the workforce. Learners, under these scenarios, no longer study to simply acquire knowledge and learning, instead they seek to acquire knowledge and skills strongly correlated with securing work in the neoliberal economy (Dyment and Potter, 2021; Larner and Le Heron, 2005). At the same time, it can be argued that neoliberalism as applied within education policy has also resulted in the creation of concepts of the knowledge economy and knowledge society, leading to knowledge capitalism (Brancaleone and

O'Brien, 2011; Peters, 2003; Powell and Snellman, 2004). In creating and endorsing these concepts in schools and universities, it seems we have over time cultivated the impression amongst young people that in order to be 'successful' they must pursue a route of Highers followed by University and that not following this path is deemed as failure - which is then often attributed to their 'inborn facilities' such as cognition, or to cultural deficits of family invoking a social capital argument over ingrained structural poverty, whether implicit or explicit (Avis, 2006; Bathmaker, 2017; Berger, 2003; Bernstein, 2000; Wheelahan, 2015; Wheelahan and Moodie, 2017; Young, 2013). I say 'success' here because it is a subjective term that can be taken to mean a great many things including but not limited to social markers such as salary, creating a family, house ownership, influence, career progression…

Knowledge in the understanding of it as academic prowess within the knowledge economy, or 'cognitive (bio)capitalism' (Fumagalli, 2011), is not the only measure of being smart and intelligent, despite what a neoliberal examination-based education system would often have us believe. In this economy, the goods of physical labour are replaced by the immaterial production of intellectual and symbolic capital (Patrick, 2013; Tsogas, 2012). Thus the purpose of education becomes about creating 'knowledge workers' who carry with them their own means of production relied upon by the knowledge society – generating a system of 'capitalism with no capitalists' (Drucker, 2011, p. 61; Patrick, 2013; Peters and Reveley, 2014). Learning within the knowledge society becomes a process that is lifelong and inheres in skills and competencies that continuously adapt (Olssen, 2006). This transition to a knowledge society facilitates the development of a global job market, with e.g., British and French *workers* rather than British and French *jobs* (Brown and Lauder, 2006). A global auction thus exists for jobs based on 'quality' (knowledge, skills and insights) rather than price, where the main bidders are presumed to be the leading economies, making them 'magnet economies' in their attraction of 'high-skilled' (in knowledge) occupations and their occupants (Brown and Lauder, 2001, 2006). The magnet economy theory thus supposes that access to an education overcomes the 'inequality gap' by proposing that it is no longer the case that wealthy students have an educational advantage, but that disadvantaged students lack only 'credentials, knowledge and skills'. Thus, education becomes

not about levelling the playing field, but raising the standards of *all* in the credentials, knowledge and skills valued by the global market (Brown and Lauder, 2006, p. 28). The politics of this theory focuses on lifting the skills of indigenous workers, but also relies on migrant workers to meet the demands of those elements of the national economy that are not knowledge-based (Brown and Lauder, 2006). In Scotland, for example, there is much reliance on agricultural seasonal migrant workers to pick fruit, which under this model is deemed to be low in 'quality' despite the relatively high pay.

Whilst magnet economy theory may offer an explanation for, and a system in which, the knowledge society and knowledge economy really thriving, demand for these skills cannot be understood in such a linear manner, and does not operate within a genuinely accessible global market. Brown and Lauder (2006) argue that increasing inequalities in occupational reward and career prospects are driving up the value of credentials gained from well-respected schools and universities, and that families mobilise great amounts of financial, cultural and social investment in their fight for these essential commodities; thus gaining access to the elite market of occupations. They also argue that an unintended consequence of the application to policy of human capital modelling is the management of expectation: essentially leading to a mix of overqualified employees on the one hand, and on the other, the political ramifications of a disillusioned middle class that might very well,

> flex its political muscles to gain a better deal for family members as they invest increasing amounts of time, effort and money in maintaining the status and standard of living to which they have become accustomed (Brown and Lauder, 2006, p. 50).

Whereas there are aspects to knowledge economy theory presented here that may be rather speculative in their real life application (magnet economy theory) and are thus largely speculative in their reach, some elements can be clearly demonstrated in the changing perceived role of Higher Education in the United Kingdom. These elements include credentialism, and the 'commodification' of knowledge, in the sense that it is increasingly commercially 'produced'. Higher Education, some argue, subject to these marketised and neoliberal forms of governance, has seen the sector and universities become 'hollowed out' and has undermined their mission as 'independent source[s] of knowledge and inquiry'

(Torres and Van Heertum, 2009, p. 155). Institutions of education then become part of a social reality that is identifiable with an economic value system which in turn 'shapes all reality in its own image' (Brancaleone and O'Brien, 2011, p. 502). Knowledge as part of this system then becomes something 'objectified, measurable and transferable' (Brancaleone and O'Brien, 2011, p. 506); generating a system whereby credentialism becomes an intrinsic and defining feature. As the education sector has expanded, the value of the credential 'currency' has diminished rather than increased, thus leading to an oversupply of graduates and reducing graduate salaries (Brown and Lauder, 2006). Knowledge in applied sciences and information technology gains increased status over the arts and humanities due to its assumed economic utility (Patrick, 2013).

Nussbaum argues that those who educate for economic growth fear the arts and humanities because they cultivate and develop sympathy, which is the 'enemy of obtuseness', and that moral obtuseness is central to carrying out plans of economic development that delegitimise or accentuate inequalities:

> it is easier to treat people as objects to be manipulated if you have never learned any other way to see them (Nussbaum, 2010, p. 23).

Within this utilitarian and commodified conception of education, whereby knowledge has been assigned relative levels of worth and value, the learner also becomes a commodity within the system. Learners are to all intents and purposes the 'embodiment of knowledge' (Patrick, 2013), or, as Goddard describes, 'selves which are endlessly adaptable to the levels of change and insecurity, to personal and social instability generated by a globalised economy' (Goddard, 2010, p. 353). It can hence be argued that education practice within the neoliberal model is concerned with moulding learners,

> in accordance with what are perceived to be current economic imperatives, rather than…what arises from their sense of their own existence (Bonnett, 2009, p. 358).

However, education practice is never neutral and has always involved, and continues to involve, young people as 'selves' or agents, acting to shape them as emotional, intelligent beings (Patrick, 2013); engaging them, we might say, to become *successful learners, confident individuals, responsible citizens,* and

effective contributors. The neoliberal approach has little concern for the purpose of education as being for the 'good' of an individual, and through engaging the students or young people as consumers, subtly reorients the language of education. The learner now has their needs met by the teacher, within a system that narrows learning needs to teaching inputs which are designed for pre-established outcomes (Biesta, 2005). In theory, individuals possess the agency to reject, accept, or ignore neoliberal policies and practices, and so commodification in this sense should not be understood as an externally-imposed relentless force. However, the degree to which individuals *can* exercise their choices is almost always limited by social, economic or cultural factors. Thus, depending upon the levels of neoliberal policy presence in a particular school or workplace, an individual may well feel helpless amidst a system that prioritises economic rationalism over than the talents and needs of individuals (Patrick, 2013).

A Foucauldian perspective on this understands knowledge and discourse as signifiers for the way in which power is discursively constituted through accepted forms of scientific understanding, knowledge, and truth. Much focus has been afforded to Foucault's perspectives on the self within academic practice, however his work on the way in which power is enacted upon individuals also has value. The subtleties of Foucault's understanding of power and freedom give room for individual empowerment; nicely described by Ball and Olmedo (2013) as our capacity,

> to define ourselves according to our own judgements, or, in other words, to develop a particular *technology of the self* according to our own principles, an aesthetics of the self (Ball and Olmedo, 2013, p. 92).

If individuals are ever to 'reclaim themselves', or teachers to act as agents of change, or indeed if teachers are to encourage their pupils to develop their own selves it,

> becomes clear that the first responsibility of the teacher is a responsibility for the subjectivity of the student, for that which allows the student to be a unique, singular being (Biesta, 2005, p. 63).

Teacher agency then is not something that can be had, but is something that teachers *do* and *achieve* (Biesta and Tedder, 2006; Priestley and Drew, 2019). The practice of freedom within this horizon can be understood for Foucault as the 'struggle to remain mindful to one's present status and condition' (Pignatelli, 1993, p. 418), and to be open to other possibilities through identification of 'the arbitrary' in that which appears to be essential or fundamental (Pignatelli, 1993). Thus, we work towards understanding ourselves as both a product of the discursive and as a frontier of resistance in the transformation of the present into something other; not through destroying it, but rather by grasping it for what it is (Ball, 2019; Simons and Masschelein, 2019; Zalloua, 2004). While the tradition of knowledge in this academic sense does have its place and value, the concept of a knowledge economy and the commodification and accumulation of knowledge as *power* all serve to perpetuate a discourse centred on the value to the economy of the subject's own product. A question posed by Ball (2019, p. 141) is how we move from 'an education' that privileges a reverence for past failures to one that instead seeks to be a creative process of curiosity and vulnerability, unbounded by any institutional rationale and that is related to and part of the broader life of citizens. Humes (2021b) suggests that meaningful change can be made by engaging in the systems and structures of CfE teaching and learning, and identifying those elements that are no longer working to serve their purpose. Given the broader aims of this research, this seems a pertinent question to consider for future related research.

Hence the ability to ace a physics exam, and the ability to shoe a horse are not abilities that can be compared in a direct way, however we cannot judge one as being 'better' or 'lesser' than the other. They simply contribute differently to different demands and offer us locations within regimes of teaching and learning where forms of subjectivity may emerge not totalised by the neoliberal biopolitical order. From a different educational perspective, Goodheart (2020) suggests that in recent decades the ratios of *Head* (cognitive), *Hand* (manual and craft) and *Heart* (caring, emotional) have become unbalanced, leading to higher value being placed on cognitive capacities and those individuals adept at manipulating data (largely the Head worldview). He recommends that society needs to re-evaluate how we understand skilled work, and ensure that those who

choose Hand and Heart are afforded equal value and status. The way to address this is to 'acknowledge a wider range of human aptitudes' and strive towards a better balance between Head, Hand and Heart (Goodhart, 2020, p. xiii). The idea of Head and Hand work is also captured by Richard Sennett in his classic exploration of 'The Craftsman' as a template for living (Sennett, 2009). It thus needs to be made clear, and not just to young people, their families and support networks, but also to schools, that high quality, exciting, innovative and rewarding career pathways can be found in vocational training, as well as in rural careers of all kinds across academic and vocational pathways. Progression along any given career pathway requires study and lifelong learning, however the assessment and qualifications required to become a successful farrier are not in the same format as those to become a successful physicist and thus their relative 'successfulness' cannot be directly compared. Any suggestion that there is any inherent added social value in physics qualifications over farrier qualifications is misplaced, and only perpetuates the outdated idea that to be academic or academically inclined is to have achieved a higher level of 'success' in life. Sandel (2020) also challenges us to rethink the narratives of success versus failure in this same logic, suggesting that we should instead be thinking about success as part of a framework of positive impacts on the common good.

The systemic issues of neoliberal capitalism are not only felt in economic and ecological terms, but also on a deeper human and philosophical level (Faber, 2018). Education within this neoliberal model thus reproduces those economic and social inequalities (Klees, 2017). Current economic models in this way barely allow visibility for the rural way of life and have perhaps given rise to a *desensitisation* amongst the general population to the real needs of rural society. Challenging the ways in which the system perceives non-knowledge or Head- based work, and building on the arguments of e.g., Sandel and Goodhart, we come to see that there are alternatives to the neoliberal. The implementation of these, however, requires reaching deep into underpinning and overarching philosophies of knowledge and the purpose in education, something that future research in this area would do well to consider.

2.3.2 The Problematics of Assessment

Assessment is the umbrella term used to cover a range of actions and processes including tests, teacher-based assessments, examinations (thus qualifications), as well as things such as informal teacher judgement (Elwood and Lundy, 2010; Moss *et al.*, 2008). Education Scotland (n.d.-c) define assessment as being a number of things:

- The ways teachers support and assess children's learning and monitor progress and identify next steps in learning.

- Reporting to parents/carers, in writing and in discussions, to help them understand their child's progress and what they can do to help their child's learning.

- Formal recognition of a child or young person's achievements through profiles and qualifications.

- Recognising our children's achievements through a range of new qualifications in the senior school, which build on everything they have accomplished throughout their schooling.

The organisation goes on to state that each learner's progress and achievements in 'knowledge and understanding, skills, and attributes and capabilities' are '*what*' is being assessed (Education Scotland, n.d.-c). Assessment has long been a part of schooling, but has become sedimented in a conceptualisation in key respects separate from the learner, despite research developments in learner-centred constructions of assessment (Hayward and Hutchinson, 2013). Assessment can also be understood as a social practice, or a 'cultural script', that 'mediates human relations with the world', forming part of symbolic networks and the ongoing activities of multiple institutions (Elwood and Murphy, 2015, p. 183). Understood in this way, perhaps it is time to reconsider the construct of assessment and the role of its underpinning values of 'validity and reliability' in perpetuating the understanding of what is coveted and valued as *knowing* within society (Elwood and Murphy, 2015; Harlen, 2007).

The currently commonplace system of assessment by standardised written examination was not a native feature of European education systems (Usher, 2016). The purpose behind the examinations in the standardised format was to create a hierarchy of merit through the instrument of a high stakes test. This

format has become a central feature of the measurement of academic achievement and progress found in schools and universities across the world: the more 'credentials' that an individual has in the form of qualifications, the more marketable they become within the system (Patrick, 2013, p. 3). Whilst this form of assessment does have benefits, these are often acquired by young people in very high-stakes situations with perceived life-altering consequences alongside serious consequences for schools' and teachers' performance measures. Indeed, the PISA Test referenced above, which tests for Reading, Mathematics and Science, has caused controversy since its inception in 2000. There are currently 79 member nations and the test is carried out every three years generating a score for each of the three elements - and a global ranking based on the chosen focus (Reading was the focus of the last test in 2018). No feedback is issued to schools, teachers or pupils, but PISA is considered to be the 'high-stakes' test for governments and their wider education policies; governments are therefore quick to take praise, but even quicker to be blamed for 'shock' results, leading to frequent calls for education reform (Humes, 2021; Sjøberg, 2017). The impact of Scotland's scores and ranking in PISA figures has consistently led to demands for 'radical reform' of the education system (often with party political implications) owing to continuing allegedly 'poor performance' (BBC, 2016, 2019a; Davidson, 2019; Macwhirter, 2020; Massie, 2020; McLellan, 2020) over sustained periods. To put this in its wider context, Scotland scored above the 2018 OECD Reading average of 487 (Scotland = 504), and similar to the OECD Mathematics and Science average of 489 (Scotland = 489, 490 respectively) (BBC, 2019a); in terms of the 2018 global ranking (by reading score) the UK sits 14th – where the UK average reading score of 504 was the same as Scotland's (OECD, 2018a).

Many view the PISA model as embodying a neoliberal stance on education policy that is forcing the sector into intensified globalisation, inducing a cycle of crises and calls for reforms in education across many countries. Other commentators find the supposed link between education and economic growth problematic (Araujo *et al.*, 2017; Ozga and Arnott, 2019; Saltelli, 2017; Sellar and Lingard, 2014, 2018; Wolf, 2004). On the other hand, defenders claim that country comparisons and objective data-driven measures present a solid basis for evidence-based policies and can provide impetus for self-reflection. This

includes showcasing good practice worth emulating, as well as indicating a country's innovation potential (Hanberger, 2014; McGough, 2016).

The test itself, however, relies on a random sample of pupils' responses to challenges at the age of 15 and as such is not actually an accurate measurement of the quality of a school system. It should also be noted here that Scotland's alleged decline between 2015 and 2018 is not statistically significant given changes PISA made to their own methodology and so it is impossible to determine whether the drop was due to an actual reduction in attainment (Priestley and Shapira, 2019). The test cannot make any claims on cause and effect, and brushes aside any national or cultural differences, priorities or curricula, essentially generating a global standards race for a domain that is customarily considered a zone of intrinsic domestic policy (Schleicher, 2013). Neoliberal measures and approaches of this kind are nonetheless pervasive within education. For some, it is clear that they,

> withdraw value from the social good. Economic productivity is seen to come not from government investment in education but from transforming education into a product that can be bought and sold like anything else (Davies and Bansel, 2007, p. 254).

PISA is the prime example of this paradox in action: contributing directly to the notion of a decentralised education system that is valued on its ability to produce young people against standards that can be compared across a global ranking - whilst simultaneously ignoring any national and cultural priorities and differences – educational, economic, or otherwise.

The result of this confusion is that systemic and practice-based changes occur across a number of real scenarios - including assessment frameworks, enhancement of performance indicators and monitoring systems, a focus on 'acquired' and 'applied' competences and the priority of 'outcome-based' models of education (Brancaleone and O'Brien, 2011, p. 507). Interestingly (or ironically given PISA 'shock'), Scotland is ranked in the top three OECD countries in *Global Competences*; newly introduced in 2018 with 27 members choosing to take part. The rationale from the OECD for the inclusion of a global based competence is the necessity for young people learning how to contribute in

interconnected, diverse and complex societies (OECD, n.d.). The documents go on to define global competence as,

> the capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and world views of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development (OECD, n.d.).

These types of learning points and goals fit well with the purposes of CfE in developing the four capacities and their related attitudes; in essence they align well with the 'process' aims of CfE in developing young people who will flourish in a dynamic local and global society. The results of the global competence test showed Scottish pupils as among the most likely to:

- understand and appreciate the perspective of others,

- demonstrate some of the most positive attitudes towards immigrants, and

- score highly on a test that assesses the ability to evaluate information and analyse multiple perspectives (Seith, 2020).

Taking into consideration the weighting given to Scotland's PISA score, and the perception that the current education system requires 'radical reform', and then given the very recent radical overhaul of education in Scotland in CfE, the rather more fundamental question of the *purpose* of education becomes a much more salient one. If the *purpose* of CfE were to produce highly literate, scientific and mathematical young people at the age of 15, then the right conclusion may be that the system is in dire need of a radical overhaul and reform. However, as stated above, the *purpose* of CfE is to enable young people to 'flourish in life, learning and work, now and in the future', and whilst this undoubtedly must include proficiency in Reading, Science and Maths, young people must be encouraged to find their individual talent and passions, and forge their pathway within the workforce beyond these curricular silos. Thus, if the scores of global competence and the related indicators or 'outcomes' were the juggernaut of policy influence, then perhaps the conclusion would be that CfE is beginning to 'deliver' success on its process aims and purposes, beyond being forced into a reform cycle as part of a self-perpetuating global ranking race in Reading, Maths and Science.

In the UK, rural schools outperformed their urban school[6] counterparts in Science in PISA 2015 despite the average rural school pupil across OECD countries scoring 31 points lower in the subject than in urban schools (the equivalent to one year of schooling) (Echazarra and Radinger, 2019a). Even with this academic outperformance, rural pupils do not expect to complete a university degree on the same level as their urban counterparts. Across OECD countries, around 50% of urban school pupils expect at least to complete a university degree, which falls to only 30% of rural pupils; this pattern holds for the UK, for which the PISA 2015 data shows a statistically significant negative odds ratio correlation in rural pupils expecting to complete a university degree (Echazarra and Radinger, 2019a, pp. 19; Figure 8). Rural schools account for approximately 34% of all Scottish schools; of which around 67 provide secondary level provision (20% of secondary schools) (Scottish Government, 2017b). The *Destination of Leavers from Scottish Schools* survey indicates that a higher number of rural pupils transition straight into the workforce (33.5%) after leaving school compared with the rest of Scotland (27%) (Scottish Government, 2021). Rural pupils are often required to travel much further distances for further study, and may be less likely to engage in activities such as university open days and career exploration activities than are available to those young people in urban centres (Griffin *et al.*, 2011). Thus, it is important that due attention and recognition are paid to those young people whose journey to the workplace is not through a university pathway.

I am not suggesting that there is no value to be found in high-stakes examination, or that approaches dominated by examinations, assessment and rankings are inherently *wrong*. I am also not suggesting that a system of vocational qualifications should replace the current system. I am suggesting in this critical review of diverse literatures that we should be working towards developing a system that includes pathways into the workplace through school qualifications and training that are highly coveted by, and desirable to, employers and that fit the needs of the economy - not just offering vocational training as an 'easy' alternative route. We need to challenge the perception

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[6] Rural schools defined as being in a 'village, hamlet or rural area with fewer than' 3000 inhabitants; urban schools as being located in 'cities with over 100,000' inhabitants (Echazarra and Radinger, 2019b)

across society that rural sector careers are inherently vocational, and strongly advocate for the very broad range of careers and career types the sector encompasses.

Rural life and agriculture are essential components of Scotland's economy and culture and their side-lining in formal learning is not going unnoticed by the rural sector, evidenced in part by the large proliferation in educational resources and content created by leading agricultural organisations themselves in recent years. The [Royal Highland Education Trust](#) (RHET), [Royal Northern Countryside Initiative](#) (RNCI), [Countryside Learning Scotland](#) (CLS), [Quality Meat Scotland](#) (QMS), [LANTRA Scotland](#), [Scottish Crofting Federation](#), [Countryside Classroom](#) and [LEAF Education](#) are among many organisations offering a variety of resources, advice, trips, and CPD opportunities. Some of their available resources for secondary school teachers to use include data workbooks, Es+Os-linked activity prompts, teacher training sessions, in-school talks, outdoor learning ideas, and online sessions. More widely, there is provision available in residential courses for young people, organized countryside days, and opportunities for work experience.

The impact of the COVID-19 pandemic on assessment and examinations in 2020 and 2021 has shown just how precarious the reliance on high stakes testing is, given the fiasco surrounding teacher assigned grades and the knock-on effect that this had on university entrance (Kippin and Cairney, 2021). This episode exposes further the longstanding unfitness of the assessment system for rural society, which has always been disadvantageous, but which also at times is irrelevant or of marginal interest to rural society; a system that has always favoured an urban-based university entry. The many opportunities for radical overhaul thus provide prospects not only to transform education, but to 'level up' for rural communities, careers and livelihoods.

2.3.3 Interpreting Interdisciplinary Learning for Agriculture

Interdisciplinary learning (IDL) is considered to be one of the key concepts in the innovation of CfE, encouraging and endorsing greater 'cross-subject' activity (Drew, 2013; Fenwick *et al.*, 2013). However, defining it has long been a source of debate, one which Education Scotland (2020c) admits has impacted its implementation within teaching and learning practice. Initial CfE guidance recommended that the curriculum include space for 'interdisciplinary studies', described as learning which reaches beyond subject boundaries and based on groupings of Es+Os from across the curriculum areas. This suggests that whilst an innovative approach was being recommended, there was no serious shift entailed from the more traditional structure of subject learning. In the preceding section, the guidance explicitly states that in secondary school:

> Subjects are an essential feature of the curriculum…provid[ing] an important and familiar structure for knowledge…which will lead to subjects increasingly being the principal means of structuring lessons and delivering outcomes (Scottish Government, 2008, p. 20).

Whilst IDL has been a focus of CfE right from its inception and, along with holistic or integrated learning, is often considered to be a central characteristic of 'progressive' education (Thorburn, 2017a), there continues to be much debate around its definitions and whether or not these offer good enough levels of clarity to develop and foster effective application in practice (Humes, 2013, 2021; Ralston, 2011; Thorburn, 2017a). It should be noted that a definition based in the traditional structures of subjects is the one offered in *Building the Curriculum 3*, which is still recommended by Education Scotland as the framework for planning a curriculum (Education Scotland, n.d.-d).

The slightly conflicting concepts of, on the one hand, an IDL approach that is looking to form cross-curricular connections, and, on the other, a 'familiar' subject-based structure, perhaps provide illumination on continuing high-profile debates and controversies. There are some who would argue that CfE was not radical or bold enough in its uptake of a flexible curriculum, and that an interdisciplinary approach requires a more fundamental challenging of the traditional subject based structures of knowledge that we have come to expect

(Gillies, 2006; Humes, 2013; Thorburn, 2017a; Wrigley *et al.*, 2012). For Beane (1995), integration represents this more fundamental re-imagining of curriculum and in this sense acts as a basis for reconsidering the purpose of schools and its uses of knowledge; any reference to *discipline* simply indicates that only 'a realignment of the existing subjects, is…intended' (Beane, 1997). By clinging on to these traditional structures, it thus follows that we may have held back Scottish secondary education from evolving or embracing changes that could better meet the needs of Scottish young people and employers (Drake and Reid, 2018; Humes, 2021; Kneen et al., 2020; McPhail, 2018; Pluim et al., 2020).

Building on the concept and earlier terminology of 'interdisciplinary studies', further guidance on *interdisciplinary learning* was published by the Scottish Government in 2012 as *CfE Briefing 4: Interdisciplinary Learning*. The evolution of IDL terminology within guidance documentation merits a more detailed exposition, and so what follows here is an exploration of its meandering development.

Briefing 4 goes on to offer a relatively extended context-setting explanation for IDL, including reference to 'deepening' learning and of being 'particularly useful…at the senior phase' (Scottish Government, 2012b). The guidance then states that IDL can,

> usually…be recognised by one or more of the following characteristics.
>
> - It may be individual one-off projects or longer courses of study.
>
> - It is planned around clear purposes.
>
> - It is based upon experiences and outcomes drawn from different curriculum areas or subjects within them.
>
> - It ensures progression in skills and in knowledge and understanding.
>
> - It can provide opportunities for mixed stage learning which is interest based (Scottish Government, 2012b, p. 2).

The *CfE Briefing 4: Interdisciplinary Learning* (Scottish Government, 2012b), forms part of a wider set of documents prepared in order to offer information

and advice to practitioners in supporting their implementation of CfE. Clarity seems to have been offered at some levels; the singular understanding of the concept as *Interdisciplinary Learning* emerged at this juncture, and indeed no subsequent publications refer to the idea as *interdisciplinary studies*. The CfE Briefing largely explores the delivery of IDL under two 'distinct and complimentary' approaches: 1) learning that is based on an individual one-off project exploring a theme or issue, and 2) learning that is based around a longer course of study including connections and differences across subjects (Scottish Government, 2012b, p. 2). The guidance also refers to approaches to learning organisation and planning currently being employed in schools but that are not considered to deliver the benefits of IDL. These include themed days or weeks, and curriculum area connections chosen to fit a particular context but which lack progression/coherence (Scottish Government, 2012b). Humes (2013) suggests that one of the reasons IDL approaches are receiving increased focus is that many issues that require to be addressed are just too complex in their nature to be covered by a single discipline. He goes on to highlight the move in universities to the umbrella term of, for example, *Environmental Studies*, which allows space for the multiple perspectives needed to tackle the issues at hand in this vast and complex area. Whilst Education Scotland initially used *interdisciplinary studies* as their chosen terminology for IDL, it is a point of interest that they have chosen *interdisciplinary learning* as the preferred terminology within their wider discourses over the last 8 years or so.

As part of the refreshed understanding of the CfE narrative, IDL lies at the centre of a 'fresh approaches to interdisciplinary learning' thought-paper *Interdisciplinary Learning: ambitious learning for an increasingly complex world* (2020c) published by Education Scotland in 2020. This document defines IDL as,

> a planned experience that brings disciplines together in one coherent programme or project (Education Scotland, 2020c, p. 5).

Learning in this way may take place within a single curriculum area (for example the sciences, or social studies) or across multiple areas. The combination of different disciplines then work together as one. The favoured approach thus enables young people to:

- learn new knowledge or skills, and develop new understanding of concepts;

- draw on prior knowledge, understanding and skills;

- transfer and apply that collective knowledge to new problems or other areas of learning (Education Scotland, 2020c, p. 5).

Such a refreshed definition and outlining of IDL is much more streamlined than both of the earlier iterations of CfE guidance and, weighing Humes' comments above, does make stronger reference to the importance of interdisciplinary thinking ''T' thinkers', particularly in the context of increasingly complex global issues. Nonetheless, it contains confusing and unclear wording: stating that IDL is,

> different from learning, for example, which takes place when several disciplines or subjects are linked up through a common theme or topic, but the student's experience and educator planning is discreet, or separate in each discipline or subject. This can be referred to as **multi-disciplinary learning** (Education Scotland, 2020c, p. 5).

Following the above definition and explanation there comes a table detailing a list of required elements for IDL (identified as several disciplines collaborating on one project). No real context or header is offered to decipher in what kind of learning situation the elements should be applied, other than that they form part of the wider definition of IDL.

Taking into consideration the definitions of IDL in previous iterations of CfE guidance and advice documents, I suggest that this latest 'refresh' has actually added congestion to deciphering a definition of the concept and has further complicated something that was already unclear. IDL is a highly complex field of practice, and while the approach itself has wide appeal, its inclusion in CfE as one of the four contexts of learning has always lacked a convincing philosophical rationale and engagement with the relevant academic literature (Humes, 2013). Compounding this lack of philosophical analysis, the definitions themselves under-conceptualise the way in which IDL can be effectively employed within the school setting (Priestley, 2019a). Humes (2013) suggests that there are four critical issues in ensuring coherence: *conceptualisation of interdisciplinarity; convincing and intellectually challenging cross-curricular connections; effective*

pedagogic strategies; and the address of operational obstacles to interdisciplinary work. Priestley (2019b, 2019a) identifies similar issues that could shape the way schools approach IDL: e.g., conceptual understanding, and cultural/structural issues (including resourcing). Given the very similar nature of the issues identified, it is clear to see where the principal difficulties in implementing IDL lie. The implementation within secondary schools has been particularly slow and is impacted by such things as curricula and timetabling being designed around examination subjects, and lessons taken across the week perhaps involving up to 20 different teachers - these factors lead to fragmented learning with little coherence. I will consider below the issues within the two broader categories of *conceptual understanding* and *culture/structure* detailed above by Priestley, since they offer the space to discuss and include the four issues outlined by Humes. Shifts in the approaches taken within IDL will create further space for including and inspiring greater agricultural focus in learning activities, utilizing the potential to enable young people to 'evaluate environmental, scientific and technological issues' and 'develop informed, ethical views of complex issues' (Scottish Government, 2008, p. 22).

A stronger conceptual understanding of IDL goes beyond simply refreshing the definitions and narrative of IDL included within policy and guidance, requiring instead that teachers and practitioners develop a wider or more expansive view of the curriculum itself. Priestley (2019b) suggests that viewing curriculum as simply its content is not enough, arguing instead that it be viewed as a 'social practice' that includes pedagogy and assessment. This way teachers are able to see the progression and coherence of their parts of the curriculum in a holistic manner than spans both the age range and the breadth of the school's curriculum. Hence planning the school-level curriculum becomes a more fundamental questioning of the purposes of education for children and young people rather than simply determining what subjects should be taught. A systematic planning of the 'knowledge, skills and attributes [learners] need to adapt, think critically and flourish in today's world' becomes increasingly guided by the four capacities and their associated attributes and capabilities. Approaching the curriculum in this manner will most likely shine a light on gaps that might exist in reaching the desired school experience. By consequence, sense-making of the deeper conceptual underpinnings of IDL by teachers and

practitioners becomes even more important. This aim requires a shift, argues Priestley (2019b), from the view that traditional school subjects are the ends of education, and instead recognising them as the means by which curricular content is to be dispensed/communicated. We can then come to see that knowledge is not a discipline and neither are school subjects. This also encourages teachers and practitioners to build flexible and coherent curricula that take into consideration local context, building school-level learning that reflects the place of learners in their local communities and positioning schools as catalysts for change within and beyond these.

A further cause for ambiguity in the current articulation and definitions of IDL lies in the terminology employed within the IDL discursive space; this includes such ambiguous and amorphous terms as 'cross-disciplinary', 'multi-disciplinary', 'trans-disciplinary' (Moran, 2010) - all of which enrich education but largely in a way considered thematic rather than truly *interdisciplinary* within the scope originally intended by CfE. The Royal Society of Edinburgh (RSE) in their 2017 report into IDL suggests that successful IDL relies on a thorough understanding of the importance and characteristics of *disciplines*: new knowledge, understanding and skills come when learners 'integrate and develop information, concepts, methodologies and procedures' from across two or more disciplines best described by the 'pillars and lintel' model illustrated in Figure 2-1 below (RSE, 2017, p. 3). This approach is also underlined by Harvie (2018), who argues in her thesis that in order to embark on interdisciplinary tasks or courses learners must be able to draw on their foundational knowledge of disciplines to be able to integrate them in their *interdisciplinary learning*. Whilst it is possible to expand and enhance the expertise of teachers and practitioners in their conceptual understanding of IDL, this alone cannot advance the implementation of IDL within Scottish secondary schools. Any cultural and/or structural barriers must also be addressed.
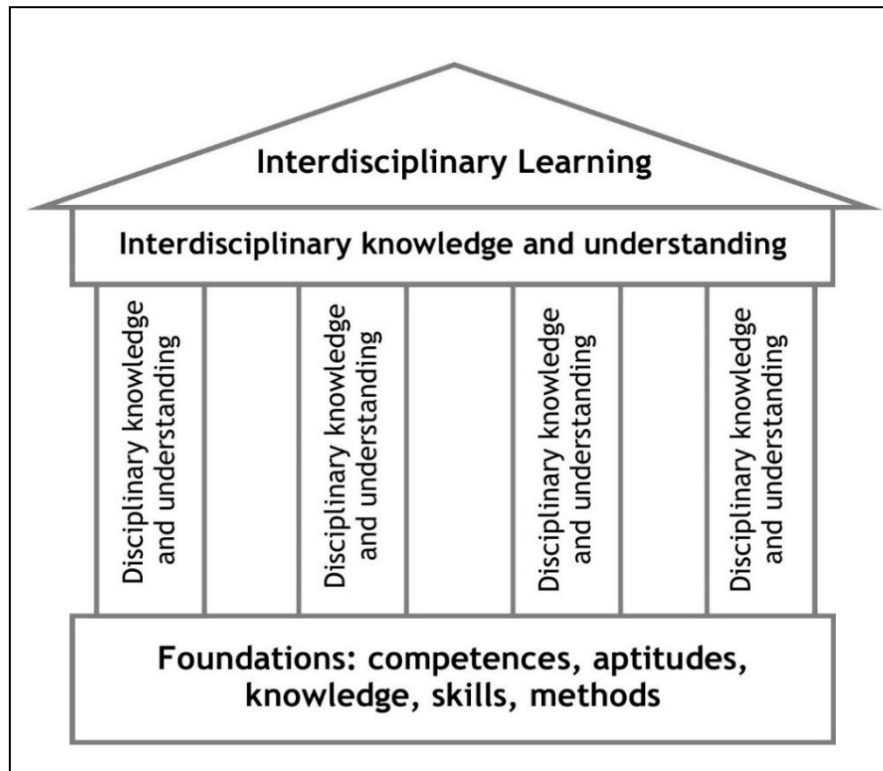
Figure 2-1: Pillars, Lintels and Foundations (The IDL Network, 2020)

Internal structural and cultural barriers often centre around timetabling issues, and even in the education of secondary teachers as subject specialists, which in itself constitutes a major cultural barrier (Humes, 2013; Priestley, 2019b). Primary School teachers are educated to become generalists, and thus to teach across the curriculum, whilst also developing the early skills in literacy and numeracy required to understand areas of the curriculum. Primary pupils also remain with one teacher for most of the day, which has a distinct structural advantage over secondary school pupils for the implementation of IDL (Humes, 2013). Despite recognition that Secondary School pupils move from class to class throughout the day, adjusting to the approaches and narrative knowledge-practices of different teachers and subjects, the patterns of the secondary school week have remained largely unchanged for generations (Humes, 2013). IDL by its very definition implies collaboration and there is increasing involvement of outside agencies and other partners with teachers in supporting the delivery of these elements of education (Drake and Reid, 2018; Humes, 2013; Lenoir and Hasni, 2016). There are a number of paths to overcoming the obstacles, some of which are radical and would require system level changes throughout key aspects of education in Scotland. Accepting the argument that IDL is the appropriate approach across the Primary and Secondary BGE phase

(P5-S2), then an overhaul and refocus of Initial Teacher Education (ITE) to develop a 'middle school' workforce of teachers to aid the primary to secondary transition might well help to combat the fragmented approach of the secondary BGE phase. It could also bring teachers with specialisms into the upper primary school levels of teaching and learning (Priestley, 2019b).

Some of these changes are happening in Scotland, both with regard to the primary specialism factor and some teacher education programmes in primary/secondary transitions. However, a full overhaul would require changes to the General Teaching Council for Scotland (GTCS) accreditation routes and the development of suitable ITE and Masters/PGDE level education courses. Further areas that could be singled out for structural change include a reorientation of qualifications systems to those that reward the development of IDL (Priestley, 2019b). Quite what that would look like, however, and how it would be structured, requires further research and deliberation. A more focussed approach to individualised curricula is another area that could be examined, alongside the refreshed approach to IDL within CfE. In this very connection, a report was recently published by Education Scotland into Learner Pathways as a means of examining what can be done to support a curriculum designed around each young person (Education Scotland, 2020d). The report reflects on the pathways individual learners choose to take and notes that,

> Young people must be encouraged to develop learning that interests and engages them, as well as it being purposeful for them and schools should not feel threatened to allow them to take learning in a different direction (Education Scotland, 2020d, pp. 3–4).

The suggestions offered by the report include being 'intentional' with curriculum planning for all types of pathways, including vocational; seeking out collaboration with partners; reviewing systems and system language to support all pathways (for example: *a Foundation Apprenticeship is worth x number of Highers* was identified as poor use of language); developing teachers' professional skills in planning for learning; and testing how reporting through the capacities and attributes can be used to inform learner journeys (Education Scotland, 2020d, pp. 6–7). These are among a host of other recommendations all worthy of consideration within the wider scope of the report.

There are multiple opportunities for agriculture to link to CfE learning activities across many areas, including IDL and outdoor learning, and these are discussed in the following section. Inclusion of agriculture, particularly in regard to school trips or apprenticeships, within the curriculum relies on building trust and successful working partnerships between schools and those with whom they wish to engage – including farmers, rural sector businesses, those who can offer enriching agrarian experiences for young people. The reader will see that during the course of this study these perceptions are corroborated by the primary data generated from this research.

Resourcing is the final aspect to reference here. This relates to the continued assumption that schools generate their own curricula to suit their local contexts. This, plus the expectation that guidance is issued and schools 'just get on with it' with little support and resourcing for 'curriculum making', suggests a need for the development of targeted resources that can be adapted to take in local contexts rather than schools reinventing the wheel (Priestley, 2019b). The learner pathways report (*Learner Pathways: A key to successful curriculum design*) touches on the resourcing element, and notes that 'education system partners in Scotland have to support and enable schools' (p. 10) to innovate and invest in the capabilities of school leaders to develop curricula.

2.3.4 Opportunities for Agricultural Outdoor Learning

Related to IDL, but in some ways disarticulated from it, sits Outdoor Learning, which is incorporated into CfE through LfS. LfS is a unique to Scotland combination of Education for Sustainable Development (ESD), Global Citizenship Education (GCE), and Outdoor Learning (OL) (Christie and Higgins, 2020; Scottish Government, 2012a; Swanson and Gamal, 2021). LfS is an entitlement for all pupils and considered to be a priority of Scottish education. In addition, LfS is a benchmark standard requirement of professional registration with the General Teaching Council for Scotland (GTCS) (Christie and Higgins, 2020). ESD is a UN initiative identified as a key enabling process in the transition of Scotland to a sustainable society and is also a key element in Scotland's contribution to the SDGs. Nuances that surround the definitions and understandings of sustainable development are discussed later in this section (UNESCO, 2013). GCE is a framework which encourages children and young people to develop the skills and knowledge needed to participate in a more just and sustainable globalised society and economy (Scotdec, 2019). These initiatives often use talismanic terms; the reader should be able to discriminate between them, even where they do overlap.

Given the entitlement of all pupils to LfS, OL is considered to be an important part of CfE and Education Scotland highlights the benefits that it can offer to children, young people and adults:

> It engages our hearts through what we feel and the emotions we experience; our heads through what we think, see and say; and our hands through our physical experiences including how we move through the space the outdoors provides (Education Scotland, 2021d).

Opportunities for outdoor learning can be found in all curriculum areas, and the learning itself can take place anywhere from school grounds to local greenspaces, within the local built environment and national parks, your own garden to the rest of the world (Learning and Teaching Scotland, 2010). With its applicability across all of the four contexts, the opportunities for outdoor learning to link into IDL are varied and important. It is therefore a key factor in considering agriculture and farming-related learning experiences, since the

countryside offers an ample variety of opportunities to learn about rural life - which, as we have seen, may or may not tie in to IDL.

There are important elements of outdoor education scholarship that also extend to Outdoor Adventure Education, which is based in Scotland at the Outdoor and Environmental Education unit at the University of Edinburgh's Moray House School of Education and Sport. The institution's work covers a range of links to CfE and wider education and pedagogies, including Environmental Education, LfS, critical thinking, health and wellbeing, and adventure (Beames *et al.*, 2009, 2011, 2014, 2017; Beames and Brown, 2014; Beames and Ross, 2010; Christie *et al.*, 2016; Higgins, 2000, 2002; Nicol, 2014a, 2014b; Nicol *et al.*, 2019; Thorburn, 2017b, 2018; Thorburn and Allison, 2010, 2013, 2017). Within this copious literature, little scholarship exists, however, linking the potential for agriculture in generating quality outdoor learning. This is despite the fact that around 80% of the Scottish land area is constituted by agricultural holdings (Scottish Government, 2018d), and the underpinning role of agriculture as the vital system that enables food to be produced in a local and sustainable manner.

Outdoor learning is a concept that is increasingly employed around the world, interpreted and implemented in a myriad of different ways and across different cultures, with no real use of international comparisons driving development (Waite, 2020). In this wider context outdoor learning refers to the concept as part of school-based everyday learning rather than as an extra-curricular experience of the kind represented in e.g., the Duke of Edinburgh Award or the John Muir Award - which are two examples of outdoor activities that young people might be involved in beyond the formal curriculum. Beames *et al.* (2011) consider outdoor learning in this everyday sense as a form of *pedagogy*, whereby it is considered to be fashioning the curriculum across the disciplines in authentic outdoor contexts (Christie *et al.*, 2016). In this model, a wide range of resources are available to encourage teachers to take learning outdoors, and the *Outdoor Learning Directory* is a hub of information with links to many secondary school level resources and ideas available across Scotland, as well as opportunities for training, and an interactive map of networks and partners to engage with.

Whilst a great resource for advice on outdoor learning, the Directory nonetheless only returns one result in a search for 'agriculture' and this is a link to Education Scotland's webpage on rural skills. A further search for learning resources as relating to 'farm/farmer/farming' returned zero results for resources, which perhaps highlights why agriculture organisations are developing resources independently that link the curriculum to farming and agriculture. It would be a big improvement and step forward to see organisations such as RHET, CLS, and QMS working with the Directory (RHET do include a link to the Directory, however this is not reciprocated), and to see the resources created by the likes of RHET and QMS developed further to include outdoor learning opportunities. I argue that this would also benefit the wider discourse on outdoor learning, on the grounds that experiences such as farm visits and food production offer up opportunities for rich and deepened learning experiences. It should be noted here that the Outdoor Learning Directory, whilst appearing to be a directory of opportunities for the furtherance of outdoor learning is actually a collaborative network of organisations supported by the Government's Environment and Forestry Directorate. As such, it is very much a collection of resources generated by a specific set of Scottish Government agencies and is intended to promote the services offered for outdoor learning within this capacity. The omission of 'agricultural resources' hence may well be intentional given the 'environmental protectionist' focus of some of these organisations which often construes agriculture as damaging for the environment.

This led me to consider whose duty it should be to centralise or collate agricultural learning resources where there is a recommendation to expand agricultural education within Scotland. By recommendation I refer to the 2018 Report of the Agricultural Champions cited within Chapter 1 (the educational recommendations are also included in Appendix 8), which recommended that there should be a 'coordinated' approach to improving the ways in which farming and rural career opportunities are illustrated and communicated in schools. Thus, whilst the Outdoor Learning Directory represents the work done by the Environment and Forestry agencies, the equivalent does not, so far, exist for the Agriculture and Rural Delivery directorate, meaning that the discrete resources produced by agricultural organisations are not searchable or collated. The absence of overall coordination may be leading to ambiguities and

preserving the disconnect between agriculture and 'the environment'. It would thus be pertinent for further research to determine who, and the extent to which, the delivery of curriculum outcomes contained in reports or recommendations made within the agricultural and rural division have been monitored.

Food production and countryside management policy must both be effectively implemented alongside other key policy goals and targets such as climate change, land use, land reform, biodiversity, which, given the wide extent of interests here is complex (Godfray *et al.*, 2010; Godfray and Garnett, 2014; Janker *et al.*, 2018; Nowak *et al.*, 2019; Whitfield and Marshall, 2017). Thus, the competing but overlapping interests of both the Environment and Forestry, and Agriculture and Rural Delivery Directorates of the Scottish Government are a critical reflection of wider environmental and agriculture policy deliverables. The remits and responsibilities of the two are ultimately related to sustainable, efficient, and fair use of land resources, however this can often be interpreted differently. The Agriculture and Rural Delivery Directorate operates to,

> promote sustainable economic growth in agriculture, the food
> industry, and in rural areas (Scottish Government, n.d.-a);

whilst the aim of the Environment and Forestry Directorate is to,

> protect and enhance Scotland's natural environment and
> resources and to provide scientific support and an integrated
> evidence base for rural and environment policies (Scottish
> Government, n.d.-b).

It is widely accepted that sustainable development (SD) is a contested term despite its pervasiveness; the term is interpreted in many ways leading to it being generally ill-defined, and there exists tension between the three tenets of environmental, economic, and social (Connelly, 2007; Janker et al., 2018; Olawumi and Chan, 2018; Robinson, 2004) within it. SD and sustainability are often referred to interchangeably, however there are subtle differences between the two that distinguish the concepts; sustainability being the end point which is achieved through the process of SD (Gray, 2010; Mensah, 2019). Indeed, there are multiple and contested models of what constitutes 'sustainability', leading to 'weak' and 'strong' representations of the concept

(Connelly, 2007; Hobson, 2013; Klarin, 2018; Tisdell, 1999). This has consequences for the way in which policy and scholarship frame and interpret the ways relative value is weighted towards each of the three tenets. Models of SD and sustainability have developed in time − from the traditional three pillars visualisation, to those more interconnected representations such as the 'three overlapping circles' and 'nested circles' models (for reference these can be found in Appendix 11). The overlapping circle models tend to place greater value on the requirement for a balance between all three tenets - true sustainability can only be achieved when all three tenets work in a connected manner. The nested circles model places greater emphasis on the necessity of the environment as the basis for all, recognising the reliance of both society and economy on natural resources and their care.

These nuances in defining the concepts of SD are important owing to the role to which both agricultural and environmental protection policies and practices contribute, and which are impacted by environmental/ecological sustainability, and sustainable development more generally. The Agriculture and Rural Delivery Directorate is clear in its aim to promote sustainable **economic** growth of agriculture, food and drink, and rural areas - the economic strand being a priority given the role of food production as livelihood and business. With a different remit and responsibilities, the Environment and Forestry Directorate has a priority the protection and enhancement of *natural resources* including biodiversity and species protection, with a more direct priority of **ecological** sustainability. Sustainable food production systems that also enhance biodiversity is one of the critical challenges of global food security at a time when population size and consumer demand are both increasing (Dudley and Alexander, 2017; Lanz *et al.*, 2018; Robinson and Sutherland, 2002). Thus agriculture, and its potential for further expansion, is often perceived as damaging by those with a remit for environmental protection, in spite of the supposedly shared common goal of sustainability.

SD is incorporated into CfE in many ways but specifically through ESD, and as such definitions and interpretations of SD are important in understanding the role of LfS within learning and teaching. This becomes particularly pertinent as the term is used in relation to the environment, agriculture and food. Given that

LfS is the main mechanism through which OL is included in CfE it thus follows that these are key concepts that require to be clearly understood and defined.

2.3.5 Curriculum Content: Situating Agriculture

Following Scottish devolution, the then Scottish Executive in 2004 outlined a rationale for a new 3-18 *Curriculum for Excellence*. On first inspection, the goals set out seem to imply a breadth and depth right through to the senior phase of Secondary Schools built on the strong tradition of flexibility and breadth of Scottish Secondary Level education (Paterson, 2015; Raffe *et al.*, 2007; Shapira and Priestley, 2020) - in significant contrast with England, Wales and Northern Ireland, which traditionally have a less broad secondary level curricula (Machin *et al.*, 2013). This breadth is evidently a feature of the policy guidance and framework lying behind the Broad General Education (BGE) phase of CfE (years S1-S3):

> Learning in the broad general education may often span a number of curriculum areas (for example, a literacy project planned around science and technology might include outdoor learning experiences, research and the use of ICT) (Education Scotland, n.d.-e)

Anecdotal evidence (due to a lack of robust research), however, suggests that this phase has remained largely unchanged despite the introduction of CfE, and tends to consist of a traditional ladder of qualifications where young people progress from one stage to the next (Humes and Priestley, 2021; Scott, 2019; Shapira and Priestley, 2020). This has led to claims of a narrowing of the Scottish Secondary curriculum as the subjects taken during BGE serve increasingly as precursors to those taken in the Senior Phase (years S4-S6). This is in spite of the fact that flexibility does supposedly allow for young people to pick and choose a range of qualifications across their whole senior phase journey. As for BGE, further research is required to establish and explore the different ways in which these are offered within schools (Scott, 2018; Shapira and Priestley, 2020).

Shapira and Priestly (2020) attribute the narrowing of the curriculum in Scotland to a number of issues that can be understood as unintended consequences of developments within CfE itself. These include: the introduction of new national

qualifications and the increased flexibility in the number of subjects on offer to pupils across local authorities and schools. The introduction of new qualifications was particularly pertinent, since CfE replaced a 2 year course of study with a 1 year course and did not reduce the number of overall study hours required. Thus schools had either to reduce the time spent on a subject, or be creative with their solutions in order not to reduce the number of subjects on offer (Shapira and Priestley, 2020) (for more detail on narrowing see: (Priestley and Shapira, 2017; Priestley and Sinnema, 2014; Shapira and Priestley, 2018).

The controversial claims of narrowing across the curriculum are widely covered in the media, often at a frenzied level of panic unjustified by the use of relatively superficial analysis of data that is publicly available or requested via Freedom of Information Requests (FOIs) (see for example: Scott, (2015); Reform Scotland, (2019); BBC, (2019b); BBC, (2019c); BBC, (2019d); McCurdy, (2020); Holden (2020)). These often link a narrowing of the curriculum with decreasing levels of attainment or the so-called 'attainment gap' - a moral preoccupation of a system that is routinely harnessed to the ambition of successive governments in Scotland to tackle the wicked problems of poverty and inequality across the nation (Catts and Ozga, 2005; Iannelli, 2011; Mowat, 2018, 2019, 2020; Paterson and Iannelli, 2007; Pirrie and Hockings, 2012; Sosu and Ellis, 2014). Whilst analyses do show a reduction in the breadth of subjects taken, this is against a more universal trend of narrowing curricula across the whole UK. Although some changes are unique to Scotland, the links to attainment are more nuanced and complex than can be deduced from reports using superficial and decontextualised data of the kind cited above (Adam and I'Anson, 2020; Shapira and Priestley, 2020; Sosu and Ellis, 2014).

It is well understood that social origin is one of the main barriers to educational achievement, and that these social differences and inequalities, often explained by gender and social class asymmetries in secondary school academic achievements impact the prospects of entering HE (Crawford and Vignoles, 2010; Duta *et al.*, 2018; Elwood, 2005; Iannelli *et al.*, 2016; Strand, 2014). Existing research also confirms that the subject choices young people make at the S4 point in their schooling go on to influence later subject choice, and that these are clearly impacted by family background, gender and sometimes their prior

attainment (Duta *et al.*, 2018; Elwood, 2005; Iannelli *et al.*, 2016; Iannelli and Klein, 2015; Jerrim *et al.*, 2015; Sullivan *et al.*, 2014). In their research, Shapira and Priestley (2020) conclude that whilst a link between attainment and a reduced number of subjects studied is often asserted, the claims are not substantiated by rigorous research into the relationship between the two factors. They argue that in order to gain a better understanding of the links between attainment and subject choice, future research needs to encompass a much larger range of outcomes such as attainment and subject choice at ages 17 and 18, which would include school-to-work transitions, qualitative datasets, and the roles of schools and teachers in these pathways, rather than simply the choices that pupils make at age 16 (Shapira and Priestley, 2020). They found that whilst there has been substantial narrowing in the curriculum of some subject areas such as Modern Languages and Art, schools located in more rural regions and local authorities have tended to maintain a higher level of subject entries per pupil. The mechanisms that connect a school's characteristics and an individual pupil's subject choices require deeper understanding, which is an increasingly important consideration given the freedom CfE provides for each school in the provision of curriculum and thus in influencing the subject choices of young people.

There has been much change for teachers and practitioners within secondary education settings in recent years owing to the introduction of CfE, the number of subsequent reforms and guidance alterations. These have required teachers to become 'agents of change' and interpreters of curriculum policy and guidance (Biesta *et al.*, 2015; Shapira and Priestley, 2018, p. 75; Sinnema and Aitkin, 2013), whilst also adapting to a new National Qualifications Framework. It has been recognised that there are too many support and guidance documents for teachers - estimated to be some 20,000 pages of guidance and 1850 learning outcomes - which has over the years led to an overly bureaucratic approach to the planning of learning and assessments (Education Scotland, 2016; Humes and Priestley, 2021).

Following review, and with seemingly low levels of teacher consultation, the CfE Benchmarks were introduced in 2017 with the aim of streamlining the approach taken to CfE and all of its support and guidance documentation. They form part

of a strategy to refocus CfE around the two priorities of 1) literacy, numeracy and wellbeing, and 2) closing the attainment gap (Education Scotland, 2016). Alongside the Es+Os, the *CfE Benchmarks* are currently posited as the main resources teachers and practitioners should utilise in planning their learning, teaching and assessment (Education Scotland, 2016). Following their introduction, Education Scotland has since published a 'Frequently-asked Questions' document suggesting that there exists confusion and lack of clarity in their intended usage (Education Scotland, 2018). Initially, Benchmark documentation was published for *Literacy and English* and *Numeracy and Mathematics*, acting as a support for teachers' professional judgement on 'achievement of a level' in these areas and were followed by Benchmarks in the other curriculum areas.

The Benchmarks across all curriculum areas include reference to Es+Os from the specific curriculum areas, with the aim being to support consistency in teachers' professional judgements and to make clear what is expected of learners to enable them to progress through the curriculum levels (Education Scotland, n.d.-f). This is illustrated in Table 2-3, which contains an excerpt from the *Sciences Benchmarks*, showing in the left-hand column the Es+Os, and on the right the benchmark statements aimed at supporting teacher consistency and professional judgement in assessing progress and achievement:

Table 2-3: Sciences Benchmarks (Education Scotland, 2017a, p. 35)

I have collaborated with others to find and present information on how scientists from Scotland and beyond have contributed to innovative research and development. **SCN 3-20a**	• Collaborates with others to research how scientists, and those who use science in their jobs, have contributed to the development of scientific ideas. • Communicates findings in a suitable way to give an example of how scientists contribute to innovative research and development. • Gives examples of how skills developed through science are used in a wide variety of jobs and careers including science, technology, engineering and mathematics (STEM) careers.
Through research and discussion, I have contributed to evaluations of media items with regard to scientific content and ethical implications. **SCN 3-20b**	• Demonstrates understanding of bias and separates fact from opinion taking into account a range of reasons for bias, for example, selective sampling and political views. • Analyses the scientific content in media items and presents a reasoned argument on the ethical implications of the scientific issue being explored.

The benchmark excerpt in Table 2-3 is included as it typifies a number of features – some that this research would endorse, and others that raise reservations. It is also included because it represents the discursive style within which the Es+Os are presented within the wider CfE. The benchmark laid out in this fashion is clear and has a supportive element to encouraging follow-through and practical applicability of the E+O for the teacher. On the other hand, this also poses a significant limitation: the Es+Os contained within the benchmarks carry a value judgement simply by virtue of being selected. A further weight is then contained within the examples detailed and the terminology and language employed therein. Therefore, with added creativity and expanded terminology, agricultural experiences *could* be situated within the curriculum in a wide variety of curriculum areas and topics.

The benchmark approach is not free of criticism, and there is an argument that breaking the curriculum down into such prescribed, detailed learning outcomes, as are contained within the benchmarks, leads to a fragmented provision of education, losing sight of bigger aims and purposes of education, and reducing schooling to 'bite-sized' chunks of content (Kelly, 2004). This method can also contribute to a narrowing of the educative process rather than broadening it (Priestley and Humes, 2010). 'Strategic curriculum change' has been employed by some secondary schools in Scotland, whereby, after audit, minimal alterations have been made to existing content to bring it in line with outcomes of the new curriculum (Priestley and Minty, 2013). This produces highly specified and linear 'statements of content to be mastered', meeting political imperatives rather than educational essentials, and unreflective of classroom realities (Priestley, 2017, p. 6). It is however widely recognised that CfE is largely a product- and outcomes-based modelled curriculum within which the Es+Os are essentially discrete objectives, despite the original intentions for their use as flexible signposts supporting the overall philosophy of the four capacities as an education that encourages Scotland's young people to become *successful learners, confident individuals, responsible citizens,* and *effective contributors* (Priestley and Humes, 2010).

2.4 Agricultural Education and Literacy

In order to formulate viable and recognisable working definitions of the two concepts with which this section is concerned, it is important to see how they form from interrelated and interconnected ideas. This section thus consists of two subsections, the first of which deliberates on the food and agricultural elements of agricultural education and literacy, and the second the more intimate intricacies of what agricultural literacy is, and how it can contribute to tackling our wicked or supercomplex problems, including the climate emergency.

2.4.1 Food, Agriculture and Rurality

I have employed the term 'rural' tacitly throughout this thesis as a concept understood to mean 'relating to the countryside' as opposed to the city, and 'urban' as relating to towns and cities rather than the countryside. This dichotomy seems particularly stark when we consider the vast array of spaces in-between deepest countryside and city centre, which perhaps adds to a sense of disconnection and disassociation between society and the processes of agriculture as something 'other'. Agriculture is not necessarily a defining feature of the rural. Indeed, there is much successful urban agriculture albeit on a much smaller 'micro' scale. Nevertheless, primary production agriculture rightly remains very much perceived as a rural activity taking place within obviously rural areas (Bittman, 2021; Edmondson *et al.*, 2020; Hedlund, 2017; Steel, 2013, 2020).

Dichotomies are widely used: Left or Right, right or wrong, good or bad – and the dichotomy of urban or rural is no different, with phrases such as 'city life' and 'in the countryside' used with little real consideration of the deeper meanings implied (Dymitrow and Stenseke, 2016). It is hard however to know where one begins and the other ends. Indeed there are some arguments for a re-imagining of urban/rural as a *continuum* (Rusta, 2018); yet arguably the perceived divide is so entrenched, both at a societal level and within actual governance (Urban Rural Classification systems), that it becomes much more difficult to question the underlying assumptions. To my informed understanding,

these categories mutually construct one another and therefore neither can exist without the other, however problematic their individual definitions may be. The irony or 'paradox' of city and urban living is that we experience our life here without ever really considering the direct reliance of the urban world on the rural: cities would become a hybrid of urban/rural if, for example, the farmland they relied upon for sustenance were included in their land area (Steel, 2020, p. 181).

There is much scholarly work on the urban-rural divide; framed in a number of ways including the aforementioned dichotomy and continuum (Dewey, 1960; Pahl, 1966; Shucksmith, 2018). Understanding rurality also extends to concepts such as *sense of place*, along with the more conceptual, historicised manner of the rural as idyll, as innocent, and as natural (See: Carolan, 2008; Cloke, 1997, 2006; Halfacree, 1993; Heley and Jones, 2012; Lagerqvist, 2014; Moore, 2021; Newby, 1980; Phillips, 1998, 2016; Rye, 2006). These are binaries which in some ways mirror again the environment/society division. This dyad centres on anthropocentric perceptions of a certain kind of human exceptionalism which is in turn driven by a profound lack of awareness of our interconnectedness to the wider ecosystem and the limits within which truly sustainable processes, actions and behaviours can happen. I believe that elements of this breakdown, and with particular relation to food, are fuelled in part by the increasingly extensive powers of supermarkets, both in terms of the availability of imported unseasonal fresh produce and their role in controlling the end price of UK grown food, despite the costs incurred in growing this food. This has in turn led to an undervaluing of the true cost of food production and thus society does not essentially value or accurately calculate the processes of food production (Bandel *et al.*, 2020; Fitzpatrick *et al.*, 2017; Pretty *et al.*, 2005).

Between 1957 and 2017, UK average household expenditure on food halved to its current 8%, due in part to the now lower costs of food, but also to increased household incomes and decreased household sizes (Avison, 2020). Despite the lower overall cost of food, some food products do still attract a price premium for factors such as convenience, or health benefits (Avison, 2020). Advertising, food marketing and nutrition labelling are complex and varied, reflecting a wide range of tactics to appeal to consumers' behaviour, attitudes, and willingness to

pay (WTP) (Ertz *et al.*, 2017; Grunert *et al.*, 2014; Schmuck *et al.*, 2018; Torelli *et al.*, 2020). These include today 'green' claims for features such as sustainability, ecologically friendly processes, ethical decision-making, but also more personal consumer motivations such as emotional guilt and healthier choices (Agarwal and Kumar, 2021; Antonetti and Maklan, 2014; Jakubczak and Gotowska, 2020; Zanasi *et al.*, 2017). This is then reinforced by presenting items as being, for instance, 'better' for personal and planetary health (Aschemann-Witzel and Zielke, 2017; Brécard, 2017; de Freitas Netto et al., 2020; Joshua, 2017; Markova-Nenova and Wätzold, 2018). Thus, the distinctions between 'good' food, 'good' food production processes, and 'good' health are somewhat blurred. Consumption and sales of UPF have increased dramatically over the last 50 years, with products subject to many misleading claims including 'imagined health benefits' which often focus on one simple aspect/claim such as 'high in protein', rather than presenting the overall nutritional profile of food items (Provenza *et al.*, 2021; Scrinis, 2020, p. 2; UNC Global Food Research Programme, 2021, p. 6). There exists the potential for agricultural experiences to act as an 'agricultural intervention', with evidence suggesting that increased awareness and understanding of food production processes can lead to improved nutritional outcomes (Fiorella *et al.*, 2016; Garbero and Jäckering, 2021; Girard *et al.*, 2012). This intersects with the focus on *Food and Health* within the health and wellbeing curriculum area of CfE.

What consumers perceive to be 'good food', along with the 'source to consumption' journey and customer WTP are thus influenced by a host of intermediary processes and practices. Again, agricultural experiences show potential for increasing awareness of the role that farmers and farming play in *producing* 'good food'. There is in fact scant research that links together 'good food' – that is to say ethical consumption – and the construction of what it means to be a 'good farmer'[7]. Carolan's (2020) study found that, despite decades of discussion around 'rethinking' links between food *production* and food *consumption*, there has actually been little focus on linking these two largely distinct bodies of literature. Carolan's findings corroborate the general insights of this research and highlight especially the importance of, and need

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[7] The premise of the Good Farmer Theory is that farmers who demonstrate skilled performances that gains symbolic capital evident to themselves and other farmers; the position of 'good farmer' is thus not about public perception (Sutherland and Calo, 2020).

for, these types of links and distinctions to be made within education. Enabling young people to make ethical, sustainable, and responsible consumer decisions must expand beyond being 'environmentally friendly' to include real actions that can help to drive critical change in food systems and their environmental impact.

Supermarkets can be understood in this context as sustaining and prolonging centuries-old practices that have throughout history sought (and sometimes found) legitimacy in the lofty goal of 'improving agriculture' (Dixon, 2007; Freidberg, 2007). As Europeans in the 19th Century considered their knowledge superior and this ideology led to the development of technology and science to master nature and satiate increasing human needs, so 'rational social order' was also established. Within this same paradigm, then, the path was set for the neoliberal market regulation regime, eventually governed by a system of supermarket 'standards' of agricultural best practice (Freidberg, 2007; Hatanaka *et al.*, 2005). The development of quality assurance schemes has required suppliers to be transparent in their processes and, whilst on a global level this has highlighted the differences in the norms of good practice, the obligation upon suppliers (farmers) to meet commercially imposed standards has enabled supermarkets to operate in blatant violation of any such transparency themselves (Freidberg, 2007; Hatanaka *et al.*, 2005).

There are a number of farm assurance schemes in the UK, including Red Tractor, RSPCA Assured, Lion Eggs Code of Practice, Soil Association and Quality Meat Scotland (BVA, 2020). Alongside these schemes, which all carry a certifying logo, there are schemes for arable and crop agriculture which do not carry a visible logo. Farm assurance schemes are not without criticism, often of the added bureaucracy required for farmers, which is often similar to that required by health and safety, and environmental and trading standards, with little added premium returned on end products (Clarke, 2021b; Stokes *et al.*, 2020). Quality Meat Scotland (QMS) is the assurance scheme for red meat, covering cattle, sheep and pigs under three assurance labels: Scotch Beef PGI, Scotch Lamb PGI, and Specially Selected Pork. In order to display the certifying logo on products, cattle, sheep and pigs must be born, reared, and slaughtered in Scotland in

addition to further stipulations such as assured holdings, feed and haulage (Quality Meat Scotland, 2019).

Supermarkets have evolved over time from single enterprises to large conglomerates which not only sell food, but also own and manage farms, food laboratories and kitchens. They increasingly also supply leisure and entertainment materials and are becoming key players in other services such petrol distribution (Dixon, 2007). The rise of the discount supermarkets such as Lidl and Aldi, has further disrupted the traditional supermarket market share, ultimately pushing down the cost to the consumer of food (Steenkamp, 2018; Steenkamp and Sloot, 2019). Consumers are increasingly expecting Scottish- (and British-) produced food to be available at supermarkets. Indeed, the food shortages of the early COVID-19 pandemic have highlighted the importance of the provenance of food supply chains – leading to supermarkets being challenged to stock greater levels of Scottish produce (Carmichael, 2021).

Food sovereignty has emerged as a key concept and paradigm amongst wider global food discourse and is an increasingly burgeoning topic for research activity (Levkoe *et al.*, 2019). At its core, the concept is largely rooted in a narrative of *peoples' rights* to food, including the right to just livelihoods on the part of those who work within the wider food supply chain. The notion of food sovereignty additionally comprises elements of national food self-sufficiency, however no definitive definition has been established, and the concept continues to expand and evolve over time (Agarwal, 2014; Anderson *et al.*, 2019; Fitzpatrick and Willis, 2015; Levkoe *et al.*, 2019; Wittman, 2011). Food sovereignty has developed as a counter narrative to food security discourse, which is traditionally concerned with *access* to food (Levkoe *et al.*, 2019); the roots of which stem from a 1974 UN definition which was by today's orthodoxies lacking in reference to social control (FAO, 2003; Patel, 2009; United Nations, 1975). At a policy level, this nuanced language allowed for continued and increased intensification and efficiency of agriculture for the purposes of food security (Araghi, 1995; Patel, 2009). Thus, food sovereignty is increasingly positioned as part of the solution to creating a more sustainable and just food system which maintains and encourages diversity and innovation; all of which should be a pre-condition of genuine food security.

Food Sovereignty is also a transformative movement consisting of activists, consumers, farmers, and growers calling for radical change in the way food is produced and valued. The international peasants' movement La Via Campesina is a well-known leader in the movement, bringing together millions of 'peasants, small and medium size farmers, landless people, rural women and youth, indigenous people, migrants and agricultural workers' around the world (La Via Campesina, n.d.). Originating in the Global South, it began as a response to challenges faced by peasant farmers from the fallout of, for example, highly-subsidised and hyper-productive European and American agriculture, amongst other challenges. Over the last decade the Global North has found resonance with the same concepts, particularly in response to agro-industrial food production models, and the corporate control of many parts of the food system (Agarwal, 2014; Ayres and Bosia, 2011; Navin and Dieterle, 2018; Nourish Scotland, 2019; Wach, 2021).

2.4.2 Agricultural Literacy

Children and young peoples' interactions with food are increasingly urban in nature, largely related to the end point of their food's journey – alongside supermarket trips, leaving them with a warped view and understanding of the food chain (Sigman, 2007). For most, the term 'agriculture' is associated with farming only and is not generally perceived as being important, which has led to an observable decline in agricultural literacy through the generations (Bradford *et al.*, 2019). Thus whilst 'agricultural literacy' does concern farming, its scope – much like the working definition of agriculture – is much more expansive, reaching to those issues such as understanding agriculture's relationship with the environment, environmental and agricultural policies, natural resources, plant and animal production, climate change, and its economic impact (Bradford *et al.*, 2019). The misrepresentation of agriculture in the media, along with misconceptions of what it entails, has contributed to an increasingly negative perception of and attitude towards agriculture amongst the general public (Balschweid and Thompson, 1998). Increasing agricultural literacy would therefore enable society to 'decipher' the negative emotive media coverage (Kovar and Ball, 2013).

Literacy itself is a complex term that despite seeming relatively simple (often characterised as reading and/or writing abilities) is far more nuanced, carrying with it a value judgement and its relative use within a particular time and/or place (Keefe and Copeland, 2011; Knoblauch, 1990). Thus, it reaches beyond language or vocabulary, embodying elements of cultural beliefs, attitudes, values, perceptions, power. Therefore, becoming more *literate* entails the ability to make critical judgements that reshape the culture to which the literate relate. Becoming literate is no longer confined to print, and as such learning takes place through the combining of different modes such as photographs, videos, speech, drawing, written word, music, drawings; enabled by the internet, video games, apps… (Mills and Unsworth, 2017). Including aspects of informal social contexts including home life, this concept is known as *multimodal literacy*.

We learn to read and write in order to participate within society, within democracy, within our local communities, and within the workplace. Thus, developing agricultural literacy along multimodal lines gives us the capacity to be self-critical, to justify or challenge practices, and to discriminate between those key issues relating to the wider context of food, climate change, policy, countryside management, and so on. Our *informed* positions are thus informed by being judicious and critical with a range of information and information sources, enabled to challenge ill-formed understandings of food, agriculture and rurality. Agriculture sits at the heart of food reform, and therefore any dietary or nutrition recommendations aimed at tackling climate change necessarily implicate farming and land managers, whether negatively or positively.

From out of this set of recognitions, Meischen and Trexler (2003, p. 44) define agricultural literacy as follows:

> Agricultural literacy entails knowledge and understanding of agriculturally related scientific and technologically-based concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity. At a minimum, if a person were literate about agriculture, food, fiber, and natural resource systems, he or she would be able to a) engage in social conversation, b) evaluate the validity of media, c) identify local, national, and

> international issues, and d) pose and evaluate arguments based
> on scientific evidence.

A fairly extensive definition, it possesses significant enough detail so as to enable a clear understanding of its aims and objectives to form (Frick et al., 1991; Kovar and Ball, 2013; Powell et al., 2008). Developed in relation to United States agricultural education programmes, the concept remains applicable within this setting of Scottish agriculture and education owing to its comprehensive yet broad terminology and language. The above definition of agricultural literacy formed the basis for the slightly adapted version included below:

> Agricultural literacy involves the knowledge and understanding
> of agriculture related concepts and processes that are required
> for personal decision making, participation in societal and
> cultural affairs, and economic productivity. As a baseline, a
> person would be literate about food, agriculture, natural
> resource systems, climate change, and the interconnectedness
> of the environment. They would be able to: engage in social
> conversation; critically evaluate the validity of media; identify
> local, national and international issues; and, form and evaluate
> arguments based on sound evidence.

Minimal alterations have been made; however, the changes reflect the need for a less technologically focussed definition that better echoes the current time and the place. It is this definition that this research adopts as its working or stipulative definition. It is clear to see that mapping elements of agricultural literacy over the capacities and attributes of CfE (these are detailed in Appendix 9), and that combining this with multimodal understandings of literacy would be wholly within the remit of agricultural experiences as set out in Chapter One.

School-based agricultural education and experiences, such as those this study examines, can thus be considered as a strategy for transforming agricultural literacy (Fisher-Maltese, 2014). A focus on agriculture, Blair (2009, p. 18) argues, means that food can no longer be viewed as a commodity:

> we are brought into the ritual of communal goodness that is
> found at the intersection of people and plants.

A transformed understanding of food as part of a wider agricultural system, rather than as a supermarket commodity, has the potential to act as a springboard for other elements of natural resources management such as the circular economy and the transition to net-zero emissions.

Involving children and young people experientially in agriculture enables them to contextualise the connectedness of science and the natural world and can provide an interdisciplinary outlook that relates to other, wider, topics (Blair, 2009). The experiential aspect of agricultural education also encourages young people to engage critically with, and reflect on, the topic at hand – rather than through memorisation (Baker and Robinson, 2016). These are crucial approaches to meeting, especially, the urgent challenges of the environment and climate change. In addition to the tangible and embodied experiences that connect learners to nature and the land, the literacy dimensions of agricultural education make visible those structural inequities experienced by food workers and producers which are shaping global and local food systems (Yamashita and Robinson, 2016).

Working within the wider area of wicked or supercomplex problems such as the climate emergency and environmental issues requires engaging with high levels of uncertainty, transcending disciplines, interacting with an array of stakeholders, being able to respond to and appreciate a difference in values and emotions – and in some cases even incompatible worldviews (Barnett, 2007; McCune *et al.*, 2021). All educators are under increasing pressure to ensure that children and young people are equipped with the skills and knowledge for living and working amongst the complexities of modern 21st century life (Lotz-Sisitka *et al.*, 2015; Weeks *et al.*, 2020). This section has illustrated that a focus on agricultural literacy has the potential to provide a key channel for the delivery of engaging, relevant, challenging, and important learning experiences within the wider frame of tackling positively these often seemingly intractable problems.

2.5 Conclusion

Agriculture, rurality, and education in Scotland have a long, intertwined history that has over time benefitted society in different ways. Education and its systems have adapted, reflecting population and societal changes as Scotland transformed from an agrarian society to an increasingly urbanised and industrial on – and one that now places high value on the knowledge economy. All of this has taken place against a backdrop of changing relationships to nature, our environment, each other, common culture, and our relative place in a modern, globalised world.

Education, once a preserve of a rich, rural, and narrow stratum of society is now readily accessible and highly politicised, locked into a waterfall of high-stakes assessment and testing, and global league tables. As we have become more aware of the environmental impact of human behavior, so too has education transformed itself to meet these challenges. Environmental education, and other approaches, has increasingly developed as an activist mechanism for environmental change, challenging behavior and actions that are perceived to be unsustainable and environmentally damaging. In some cases, we must acknowledge, this has included perpetuating a negative attitude towards agriculture. The structures and culture of education in Scotland possess the potential and the mechanisms to enable Scotland's young people to develop the curriculum values of Wisdom, Compassion, Justice, and Integrity through meaningful and memorable agricultural experiences. Alongside this, agricultural literacy can equip learners with the capacity to critique current practices and personal decision making procedures, and to make informed deliberations about the positive and negative aspects around food, agriculture, and their environmental impact.

The intensification of agricultural practices has no doubt placed strains on the environment and contributes to climate change on a continuing basis. This does not mean to say that farmers do not care about climate change, but that the primary purpose of agriculture remains the production of food to sustain human life and has thus far been enabled by policies and by societies that have rewarded output over sustainability. By this I mean that society has enjoyed a

cheap and plentiful supply of food, without critically questioning why or even how the economics of food and agriculture play out.

Agriculture has faced its own set of challenges, including the impact of climate change, and is often criticised for its level of greenhouse gas emissions contributions to climate change, in addition to its seeming inaction in delivering impactful climate mitigating responses. The Good Farmer Theory shows that public perception of agricultural 'goodness' does not influence farmer attitudes and behaviours as much as farmers' own perceptions of each other. Society is increasingly cognizant of the nuances of food and its climate impact, with agriculture rightly facing increased scrutiny as a result. A transformation of food systems will be required in order to ensure that climate targets are met, and therefore the role of agricultural education and literacy will ultimately become critically important elements to a balanced environmental education.

Chapter 3: Methodology

It would be possible to describe everything scientifically, but it would make no sense; it would be without meaning, as if you described a Beethoven symphony as a variation of wave pressure.

Albert Einstein

3.1 Introduction

This chapter will examine the methodology of the research project, describing and considering each of the methods used, including their justification, along with any accompanying limitations or difficulties. The approach to data analysis follows and the chapter concludes with ethical considerations and approval processes, alongside the limitations faced in carrying out the project, and the responses invoked to overcome them.

3.2 Research Design

This section will detail the design and employment of the chosen methods within the research project. It will begin with research design, followed by a discussion of the individual methods adopted.

Prior to commencement of the recruitment of participants and the data collection, ethical approval was required from a number of different bodies:

- College of Social Sciences Research Ethics Committee (University of Glasgow), who also required written consent from:
    - Local Authority Directors of Education (or equivalent).

These requirements reflected the nature of the research project and its integral inclusion of young people as human subject research participants. Further consent was also required from parents/guardians in order for young people to participate, but ultimately the right to informed consent to participate was given to the young people themselves in order to foster a sense of ownership and

empowerment from their involvement in the research process. Learner participation was vital to the research design, reflecting the right of children to be heard under both the UNCRC and *Getting It Right for Every Child* (GIRFEC): Scottish Government's support framework for children and young people (Scottish Government, n.d.-c). Permission for the investigations was also required from Head Teachers in order for staff members to participate, and informed consent was obtained from every individual who chose to take part, including those who operated outside of Local Authority governance (i.e., farmers and rural stakeholders).

The design of the project was constructed around the intended purpose of the research (aim and objectives listed previously. The project was visualised and approached from the outset as an interdisciplinary, multi-dimensional, interconnected whole, with all of the various aspects of it combining together as illustrated by my diagram in Figure 3-1.
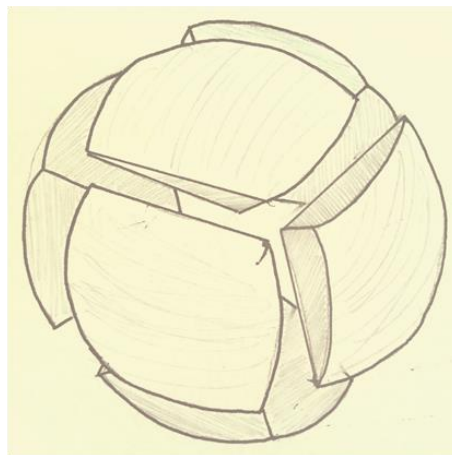
Aspects of project represented as sections of a whole sphere.

Figure 3-1: Interconnected Whole (Brett *et al.*, 2014, p. 28)

The design of the project was intentionally about identifying strategies that would encourage an interdependence between the different sources of data, methods and approaches (Bazeley, 2018a), in an attempt to create a meaningful and integrated narrative of research (Creamer, 2018). It was also of importance to the researcher that where facets of complexity or contradiction arose, these should be recognised and 'differences' should be sought out and investigated. In

other words, complexity was *invited* into the research design, echoing the important proposals of Creamer (2019) that researchers,

- Explore differences among participant groups.
- Search for unanticipated outcomes.
- Consider "extreme" and "outlier" cases.
- Consider alternative explanations.
- Compare the explanation generated by multiple theoretical perspectives.
- Consult related literature in diverse fields.
- Conduct further analysis to explain contradictory findings.

(Creamer, 2019, p. 17) (partially from Johnson and Schoonenboom (2016) some points from full list excluded).

The design of the project evolved throughout its duration, influenced by a number of factors that were both built into the design, and unexpected.

3.2.1 Methods

The research was conducted using a qualitatively driven mixed methods approach. Mixed methods research design,

> is a method of obtaining complementary findings that strengthen research results and contribute to theory and knowledge development... Researchers who purport to subscribe to the philosophical underpinnings of only one research approach have lost sight of the fact that research methodologies are merely tools, instruments to be used to facilitate understanding. Smart researchers are versatile and have a balanced and extensive repertoire of methods at their disposal (Morse, 1991, p. 122).

Whilst qualitative methods were at the forefront of the endeavour, the research design and research questions were strongly complemented and enhanced by the use of quantitative methods. These add both layers and depth, facilitating fuller and more complex analysis, answers and conclusions to be derived from the data (Bazeley, 2018b; Denzin, 2010; Mason, 2006; Plano Clark and Ivankova, 2016; Tashakkori and Creswell, 2007). Creamer (2018) suggests such integration in a meaningful manner, and as such the methods employed here were considered and reconsidered iteratively throughout the different phases of the research - including research question formulation, data collection, analysis and the

formation of conclusions and recommendations. The phases employed consisted of:

1. a postal survey (quantitative),
2. face-to-face interviews and focus group (qualitative),
3. surveys of interview and focus group participants (quantitative),
4. and content analysis of relevant documentation such as curriculum and curriculum policy documents (qualitative).

These methods were implemented, broadly speaking, with the philosophical approach associated with pragmatism. That is to say, as the researcher, I identified the methodological detail that I consider to be the best fit for the research questions (see: Florczak, 2014; Johnson and Onwuegbuzie, 2004; Kaushik and Walsh, 2019; Tashakkori and Teddlie, 1998). In terms of application within research, Pragmatism is often an approach used in attempting to understand and resolve 'real world' issues, the outcomes of which can be translated into practical terms such as policy recommendations (Duram, 2010; Goldkuhl, 2012). Hence it is John Dewey's theory of inquiry that is central to the application of a pragmatist approach to educational research (Creswell and Plano Clark, 2011; Morgan, 2014).

The particular and decisive contributions of Dewey to the development of the philosophy of pragmatism re-oriented the approach from more abstract concerns and instead placed emphasis on human experience and the needs of human beings in society and community (Dewey, 2008a, 2008b). Pragmatism is a distinctly American philosophy, developed by 'settlers' (and colonists, of course) as a means to overcome the challenges of a 'new'[8] and unfamiliar environment, reflective of the need to problem-solve often in the absence of historical precedent or inherited practice (Held, 2019; Rosiek, 2013). Thus, there is a longstanding association between 'the rural' and pragmatism in its American genealogy; pragmatism carrying the interests of the agrarian, given its practical, working, action-based drivers.

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[8] Recognising, of course, that Indigenous Americans, First Nations, Inuit, and other indigenous tribal groups called the land home long before Europeans settled.

Each method in this project was chosen for its appropriateness in terms of the research questions under consideration, and therefore its relative ability to generate data appropriate to the task at hand – allowing for a meaningful and practical solution to be reached (each method is discussed in more detail in the following sections of this chapter). From the outset of the project, I realised and embraced that the research would be best furthered by a mixed methods approach. Given the diverse mix of the participant population and their locations within education to farming it was clear that a social sciences mixed methods approach was best suited. It was anticipated that the individual methods chosen would be more suited to answering specific research questions, but also that in meshing together methods from both the qualitative and quantitative modes of research the data generated would be more multi-dimensional. This would then help to create a richer and more detailed response to the overarching research aim, as illustrated in Table 3-1.

Table 3-1: Contribution of methods to research objectives

Objective	Postal Survey	Interview	Focus Group	Short Surveys
1. Examine the CfE to see where agricultural experiences could be best employed and link the placement to outdoor learning opportunities				x
2. Seek stakeholders' (agricultural sector and school-based) views on the benefits and challenges of agricultural experiences	x	x	x	x
3. Look for any differences, or specific challenges, between rural and urban stakeholders	x	x	x	x
4. Compile a list of recommendations for interested parties on agricultural experiences as part of the CfE for Scottish secondary pupils	x	x	x	x
5. Produce guidance for secondary school teachers, highlighting available resources and strategies to increase agricultural experiences within their teaching practice	x	x	x	x

An initial survey was conducted using a postal questionnaire (see Appendix 4), which was designed to gather information on the views and experiences of secondary school teachers. It was sent as part of the research project participant recruitment pack to Head Teachers in all secondary schools in Scotland (in those Local Authorities by which research permission was granted) and the resulting data was fed into the prompt questions for the interviews and

focus groups (the final version of these prompt questions can be found in
Appendix 5).

The recruitment pack detailed the information required for teachers to
volunteer themselves and their pupils as participants in the face-to-face aspects
of the research project. Face-to-face interviews were chosen for adult and
individual participants since this allowed in-depth discussions of the topics to be
conducted, resulting in rich data for analysis. On the other hand, focus groups
were chosen as a tool for school pupils because this was a discussion format with
which they were likely to be familiar from school, thus allowing the pupils to
contribute in a more meaningful, supportive and confident fashion. In addition
to the postal survey, short surveys (the short surveys are detailed in Appendix 6)
were conducted with each participant who took part in a face-to-face session
(interviews and focus groups). These were implemented in order to explore some
of the perceptions that participants held, and to capture some basic participant
demographics (e.g., Age, Urban/Rural Classification). Surveys as a classically
quantitative method also allowed for a different level of analysis that could then
be integrated alongside the rich qualitative data collected as part of the
interviews and focus groups. A short survey was conducted prior to the interview
or focus group, and a further one once each interview or focus group was
completed.

3.2.2 Postal Survey

An important task of this research was to collect the views and responses of teachers from a range of different backgrounds and from across Scotland. The survey was chosen as the most appropriate method for the collection of such data since it is an efficient and flexible tool (Mathers *et al.*, 2007), allowing for data to be collected from a wide geographic area. The survey was employed in sequential combination with the interviews and focus groups in order that the questions prepared were relevant and adequately detailed. The data that I planned to collect from the survey included general information such as relative Urban/Rural Classification (details are included in Appendix 7) and socioeconomic factors, which would also make aspects of comparative analysis more simple in terms of identifying any differences or commonalities - not only in terms of the formation of the interview/focus group questions and discussion points, but also in terms of the wider discussions related to the research findings. The survey was not intended to be statistically representative, but to capture a snapshot of the breadth (or lack thereof) of views and opinions held by the Scottish teaching population. The survey was sent out as part of the general recruitment pack directed to the Head Teacher within each school.

The survey was also a straightforward way in which to gather the information sought in a manner which required minimum input from teachers, whose workloads are already under pressure. In 2018 the OECD reported that secondary school teaching exceeded 800 hours per annum in only seven countries. Scotland (reports subnational education data to the OECD) was among the seven (OECD, 2018b, p. 383). Every recruitment pack sent out therefore included a stamped and addressed envelope for quick and easy return of the questionnaire, given reports that 'more than 75 per cent of Scottish teachers frequently feel stressed because of their workload…' (Seith, 2019), and 'have chronically poor working conditions' (Ravalier and Walsh, 2017, p. 11). It was intended that the survey would not burden or increase the workload for any teachers, whilst also aiming for maximum return in terms of data value. The capacity of the survey to provide input for the other data collection tools was a positive aspect, though there are of course drawbacks to utilising surveys as a research method (Albudaiwi, 2017; West, 2019). Surveys with a postal questionnaire are known to

have low response rates, but are often the most financially viable way in which to collect data from a wide geographic area (Edwards *et al.*, 2002). In order to increase the response rates, I employed recognised tactics such as sending first class, inclusion of a stamped and addressed return envelope, coloured ink, and ensuring that University and sponsor branding were visible (Edwards *et al.*, 2002; Torgerson and Bland, 2004).

3.2.2.1 Content and Design

The content of the survey questionnaire (Appendix 4) was built around the objectives and wider aims of the project, and in response to broader reading and desk study around the research topic contained in Chapter One - along with the researcher's first-hand background knowledge and prior experience of the topic.

Section One asked participants to detail general information relating to a number of different factors. Postcoding allowed for the relevant Urban/Rural classifications to be identified, and local authority details would mean that the educational strategy priorities for the schools' regions could also be found. The job title of the participant completing the survey was requested in order to determine whether there was a spread of disciplines responding to the survey, and whether the teachers were in elevated positions (such as Head of Department). This section also asked the teacher to indicate the length of their service as a teacher in order to establish whether or not there was a range of experience in the participant population. The section was also intended to act as a base for pulling out the differences, complexities, and detail in any urban-rural divide that might exist within the provision of agricultural experiences in schools located in more urban or rural settings (details of the Scottish Government Urban Rural classification can be found in Appendix 7).

Section Two of the survey was related to the relative perceptions of teachers of agriculture and the outdoors. The intention behind this section of the survey was to examine the individual experiences of teachers and to determine whether teachers valued outdoor teaching/learning in their practice; the extent to which they felt they had sufficient time to do so/or to implement it; and to gauge whether visits to farms were perceived by staff as being 'riskier' than other outdoor trips. While there are many areas of CfE that could link to agriculture,

these are not explicit, and therefore require time and careful planning to realise. As stated above, *agriculture* is mentioned only three times explicitly within the entire CfE's *Experiences and Outcomes* (Es+Os) (Scottish Government, 2009); twice in the secondary school Broad General Education Es+Os (one each in the third and fourth stages) and once at primary school level Es+Os. The first reference at the secondary school phase is located within Sciences and pertains to *Planet Earth*:

> Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in **agriculture** and their alternatives and can evaluate their potential impact on the world's food production
>
> (SCN 3-03a, (Scottish Government, 2009, p. 261) emphasis added).

The second is located in Social Studies and pertains to *People, Place and Environment* (interestingly this is also the location of the primary school reference SOC 1-09a):

> Having evaluated the role of **agriculture** in the production of food and raw material, I can draw reasoned conclusions about the environmental impacts and sustainability
>
> (SOC 4-09a, (Scottish Government, 2009, p. 288) emphasis added).

Section Three then moved on to ask more direct questions about practices of teaching and learning involving agriculture - relating particularly to the provision of school trips, and to what the participant identified as the most significant barrier to taking pupils on such trips. This section also included the option for participants to record any additional thoughts and judgements they had on these strands, or to identify features that had not been included. The intention here was to feed the additional comments forward into the interview and focus group themes and questions for participants in the subsequent phases of the project. The challenges and barriers of getting children on farm visits were discussed by Mattu (2016) in her study on Primary School farm visits. She found that,

> ...the 'Cost of transport' was the barrier most frequently selected by respondents, by a substantial margin
>
> (Mattu, 2016, p. 212)

This section of the survey was thus informed by the work of Mattu, given the explicit parallels between the research projects, and it was anticipated that the challenges or barriers faced in secondary schools might be elevated or intensified versions of those faced in primary schools, given the additional pressures of exams and timetabling at secondary school.

Section Four contained a series of statements relating to interdisciplinary learning and the relative confidence of the teacher in aspects relating to agriculture within their general teaching practice. This was in order to assess perceptions of interdisciplinary learning as a potential framework for an agriculturally-based learning experience. There are multiple ways and topic avenues in which agriculture can be linked and incorporated within CfE, yet as with agriculture, but perhaps still more disappointingly, there are *no* direct uses of *farm*, *farmer*, or *farming* anywhere within CfE Broad General Education (BGE) Es+Os (early years through to end of S3 (aged 16)). A statement was also included as to the relative value the teacher might place on the benefits of a guidance document aimed at an agricultural interdisciplinary learning experience for pupils at the secondary school level of BGE. The survey ended with the option to leave a contact email in order to be informed of the project findings. At all times throughout this project, the option was given to those who participated to be informed of the project findings, since it was important to the researcher that the research process be presented as something that ultimately would feed back for the benefit of those it intended to serve.

Particular attention was paid to the design and layout of the survey to ensure that it was easy and straightforward for teachers with already stretched workloads to complete. The majority of the survey ([Appendix 4](#)) was laid out as a series of statements supported by a Likert scale, such as:

- I have specific memories of farming and agriculture from my time at school
- I feel sufficiently confident to cover agriculture as a lesson topic

Using a Likert rating scale affords the researcher 'freedom to fuse measurement with opinion, quantity and quality' (Cohen *et al.*, 2018, p. 481). This was important given the context of the mixed methods approach chosen by the

researcher. Collating the data in Excel, in this numeric scale manner, facilitated easy data analysis and integration with the other features of the data collected.

3.2.2.2 Selection

The number of Secondary Schools in Scotland is relatively small (n = 414; correct as of September 2017; this number included all Local Authority and Independent Schools listed by Scottish Government, but not grant maintained or those considered to be Special Schools[9]) (Scottish Government, 2019b). All 414 schools and locations were considered within the selection process, including all inhabited Scottish Islands. While previous similar studies in the primary school sector (Mattu, 2016) chose to exclude independent schools, the study chose to include them. There were multiple reasons for this inclusion: for example, the researcher's own experience of formal education was not 'typical' but included experiences of agriculture as part of 'independent' secondary level education as outlined in section 1.5. Moreover, given the aim of Objective V which is to produce a guidance document to help teachers better engage with agriculture through CfE, it seemed pertinent to look beyond the provision currently offered by Local Authority schools and to seek out in these locations any other instances or examples of successful engagement with agriculture that might add breadth and depth to the guidance framework document. Although the entire secondary school list was considered, ethical consent was only obtained from 18 out of the 32 Local Authorities (11 refused permission; 3 did not respond; this list can be found in Appendix 2) giving a total sample size of 185 schools (44.69% of schools available to participate); detailed in Table 3-2. Head Teachers were invited to return the survey questionnaire, and teachers and pupils invited to take part in interviews and focus groups from the sample of 185 schools.

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[9] This list does include grant maintained and Special Schools, but not by secondary level of education provision, as such these were not included for consideration.

Table 3-2: Number of Schools Contacted in Consenting Local Authorities

Local Authority	Number of Schools
Aberdeenshire	18
Argyll & Bute	11
Dumfries & Galloway	16
East Ayrshire	9
East Lothian[1]	0
East Renfrewshire[2]	1
Edinburgh City	0
Fife[2]	2
Glasgow City	38
Moray	10
Comhairle nan Eilean Siar (Western Isles Council)	4
North Lanarkshire	23
Orkney Isles	5
Perth and Kinross	16
Renfrewshire	11
Shetland Islands	7
South Ayrshire	9
West Dunbartonshire	5
Total	**185 schools**
	44.69% (n=414)
[1] Council granted permission - no schools wished to take part; [2] Council mediated directly with Head Teachers.	

3.2.3 Interviews

Capturing rich and in-depth data on the thoughts and judgements of stakeholders (both agricultural sector and school-based) - as well as any unexpected themes or discussion points which had not been identified though desk study or from the survey responses - was vital to meeting Objective II. The interviews were conducted in a responsive manner, which allowed the flow and direction of the conversations to be led by the participants, and thus following those unexpected or unanticipated topics through their whole course. The interviews were all audio recorded on a portable recording device, which aimed to make the transcription process easier. The interviews took place across the country at locations convenient for, and chosen by, the participants themselves. These ranged from places of work, farm kitchens, to public spaces, and, as such, a lone-working procedure was agreed upon and approved as part of the Ethics application made to the University (the lone working detail of this is included in Appendix 3).

3.2.3.1 Content and Design

The interview themes (these can be found in Appendix 5) were created as a result of wider and deeper reading in the topic, both academic and in terms of media and societal trends, as well as in response to data collected from the returned postal surveys. Influenced by previous similar studies in this vein, the themes were developed by interacting with a wide range of pertinent sources and issues raised from the literature review (Mattu, 2016). These were listed as *themes* to reflect the responsive and changing nature of each interview in relation to the particular situation and the circumstances in which they occurred:

1. Personal relationship with agriculture/education
2. Thoughts and opinions on agriculture as part of Scottish education
3. Thoughts and opinions on society's relationship with food and food production

The element of themes was consolidated so that rather than an entire set list of questions to be covered each time, there was scope for the discussions and

conversation to flow into other topics, and for the final questions to act more as a prompt to which the interviewer could return after an extended tangential, but nevertheless related, discussion occurred. The themes were developed in line with whether they were intended for farmers and agricultural sector employees or teachers (Table 3-3 details the breakdown of adult participants and gives their background). More detailed questions are included in the final iterations with further refinement during the course of the study.

Each interview regardless of participant category began with the question:

> In your own words please could you define agriculture?

The intention behind this question was to explore what agriculture meant to each of the participants, particularly given the often very broad multifunctionality attributed to agriculture (see: Anderson, 2000; Huylenbroeck et al., 2007; Nchuchuwe and Adejuwon, 2012). Beyond this first question, the interviews were then open to adaptation, but guided by the pre-prepared themes and questions. The various themes of the interviews were designed to begin with a very open question in order to make the participants comfortable with speaking out loud, before moving into the aspects that were more personal, such as 'how did you get into farming?'. This took place before widening out on to the broader concerns, such as the relationship between society and food production processes. This allowed the discussions to flow and change as the interview proceeded.

Farmer participants

The questions prepared for farmer participants included things such as:

- describing how they came to be involved with agriculture;
- the importance of children learning about agriculture in secondary school;
- the benefits and barriers associated with having secondary school pupils on their farms;
- the relationship between society and food production processes;
- the perceived value of rural sector career pathways;
- advice to teachers on visiting farms,

amongst many other anticipated topics and themes (see Appendix 5). In order to align the farmer interviews with Objective V, the researcher asked each farmer for their comments and advice to teachers who might be planning to undertake an agricultural experience within secondary schools in Scotland. The intention behind this was to ensure that any guidance produced for the benefit of teachers could also align with the thinking, experiences, and priorities of the agricultural sector as represented by these subjects.

Agriculture Sector Stakeholder participants

The stakeholder participant themes were developed around educational and agricultural issues similar to both the farmer and teacher themes, but with more of a focus on the relationship that society has with food production processes. Alongside the thoughts and judgements on food production processes, the themes covered issues such as:

- perceived urban and rural differences to agriculture and agricultural education;
- whether agriculture was a topic that could be covered in greater depth by the curriculum;
- young people's perceptions of rural careers;
- societal perceptions of food and food production,

These were planned so that the conversations and discussions could migrate if needed to tangential but significant and related topics led by the participant. As for farmer and teacher interviews, stakeholders were also asked about guidance for school teachers with the aim of capturing advice and perspectives from the rural sector more widely.

Teacher participants

The teacher participant themes included similar question types such as:

- describing their experiences of agriculture to date;
- whether they offer farm visits as part of usual teaching practice;
- the main barriers or challenges they face in implementing agricultural experiences;
- what any benefits to their pupils might be;

Again - these were some amongst many other topics and themes. Matching the farmer interview, the researcher asked the teacher to suggest input for a guidance document aimed at helping secondary school teachers incorporate further agricultural dimensions within their CfE teaching practice. This included comments on what they would like to see contained in the document, what advice they would have for farmers, and what would be the most useful and accessible format for the document to assume once completed.

3.2.3.2 Selection

The selection process for the interview participants was varied for the different participant groups. The limitations that were experienced in recruiting participants to this particular element of the research are detailed at the end of this chapter. The participants are detailed in Table 3-3 below.

Table 3-3: Adult Participants

Local Authority	Category	Background	Pseudonym
Dumfries & Galloway	Farmer	Dairy farmer	William
Dumfries & Galloway	Stakeholder	Quantity Surveyor with family farm upbringing	Craig
Highland	Stakeholder	Agricultural Engineer with family farm upbringing	Charlie
Highland	Stakeholder	Careers Advisor with interest in rural careers	Roger
Highland	Farmer	Mixed Farmer	Mark
Highland	Farmer	Sheep farmer	Beverly
Moray	Teacher	Keen interest in horticulture	Joanne

Agricultural Sector Participants

The selection process for agricultural sector interviews was a combination of personal contacts and connections to agricultural organisations. Those participants who were not farmers were chosen due to their close involvement or personal experience with agriculture and/or the rural sector. In terms of agricultural experiences for secondary school children, these may come from businesses, organisations, or sectors that operate outside a working farm but which are all very much key supporting proponents of farming; for example, agricultural engineering, consultants, food science workers, amongst many others. The participants who fell into this category are highlighted in Table 3-3 above.

Thanks to the willingness and enthusiasm of the agricultural sector subjects to participate and lend their voices, this particular set of interviews became the central focus of the research project, also proving to be of greater value than previously expected and adding breadth and depth to discussions and recommendations. This is discussed in greater detail later in the chapter.

School-based Participants

The selection process for teacher interviews began with the recruitment pack which was sent out to all consenting schools as described earlier in this chapter. Each Head Teacher was invited to participate in an interview, or to approach/nominate a member of their staff who they felt was better suited. It was intended that those schools running a rural skills programme, or who were located in particularly agriculturally prominent regions of Scotland, would choose to participate, given the topic of this project. However, owing to a lack of engagement and follow-through with the project, the set of interviews generated under this section of the research was small in terms of its overall perceived contribution within the wider realm of the Scottish education system. The recruitment of teachers and school-based participants was one of the greater challenges that this research faced. This is discussed further in section 3.5, along with the research response in overcoming the limitations.

3.2.4 Focus Groups

Focus groups were the tool chosen to interact with young people since it was a discussion format with which they were likely to be familiar and thus less likely to cause any undue stress or worry for the pupils. CfE strongly encourages pupils to participate and to recognise their right to contribute under of the rubric of the UNCRC:

> As a human right, the participation of learners in decision-making is more than a reward that is won or a privilege to be given on the grounds of class, religious persuasion, ethnicity, gender or background. All children and young people – including those with disabilities, minority groups, and those in need of support for learning – are afforded both the right to an education and the right to have a say in shaping that education.
>
> (Mannion and Sowerby, 2018, p. 2)

Thus, the Focus Group format also tied in with educational and attainment objectives that are a common component of young people's wider education in Scotland. The discussion-focussed nature of the groups allowed the researcher to pursue the thoughts and judgements of the pupils as they arose during the course of the focus group. This was useful because it meant that any inter-group interactions between the pupils could be recorded, and any unexpected links or topics could be explored in depth. It was anticipated that the young people who chose to take part in the focus groups would gain something from the experience and use it further to reflect on their engagement and involvement with agriculture afterwards.

3.2.4.1 Content and Design

The content of the focus group themes (these can be found in Appendix 5) was developed in a similar manner to that of the interviews: from wider reading and from the responses gathered from the postal survey of teachers, as well as from social media, and media trends. The focus group featured a short Ice Breaker activity. While it was anticipated that the pupils would already know one another, and that the format of a group-based discussion would be familiar to them, it was intended to encourage a relaxed and chatty environment prior to the formal focus group discussion beginning. The Ice Breaker activity simply involved each young person saying a fun fact about themselves. The added

benefit of implementing this within the focus group was to have an audio recording of each pupil saying their name. This helped ensure accuracy in assigning a pseudonym for the protection of their anonymity.

After the Ice Breaker activity, each pupil was asked, as in the adult interviews, to furnish their definition of what agriculture meant to them. This was the only question in which each individual pupil was asked directly to answer the same question. The rest of the discussion took place in a similar manner to the interviews, with the flow of discussion and topics determined by the input and conversations of the pupils. The themes that were outlined for the focus groups covered topics such as:

- their perspectives on agriculture as taught at school,
- and whether this would be useful for them in the future;
- career aspirations;
- agriculture within Scottish culture;
- the relationship that society has with food production.

The design of the focus group themes was similar to that for the interviews. However, given that participants had a shorter allocated timeframe, and that the focus group discussion format had the scope for many opposing viewpoints in contrast to the one-on-one of the interviews, it was anticipated that each topic or issue would take longer to resolve or discuss, and as such there were fewer themes included in the design.

3.2.4.2 Selection

The process for recruiting pupils to this study was inseparable from the process for recruiting teachers since the consent from Head Teachers was required for schools to participate in focus groups. As with the recruitment of teachers, the success of recruiting young people proved a challenge that this research faced. This is considered in greater detail along with other recruitment challenges in section 3.5, where the research response to these limitations is also discussed.

Table 3-4 below details the pseudonyms of those pupils who participated in the study.

Table 3-4: Pupil Participants

Pseudonyms
Lillian
Mia
Alex
Clemence
Keera
Joseph
Ilona
Alice

3.2.5 Short Interview/Focus Group Surveys

A very short survey was issued to every participant prior to taking part in a face-to-face component, and a further one on the conclusion of the session (for the full wording of the surveys see Appendix 6). These were intended to provide a further layer of quantitative and demographic data to the rich qualitative data captured in the interview.

3.2.5.1 Content and Design

The surveys were designed to be quick and easy to fill out, capturing basic demographic information for urban/rural classification purposes, including postcoding. The intention behind employing the short surveys was to collect data that would enable a comparison of the participants' attitudes *prior* to the interview or focus group, with their attitudes *following* the interview or focus group, in order to measure whether there was any positive or empowering effect on participants.

The survey conducted prior to taking part in a face-to-face element largely consisted of a number of questions posed on a Likert scale to gauge attitude, and covered a range of topics such as the relationship between society and food production, whether participants thought every secondary school pupil should have an agricultural experience as part of their formal education, and participants' attitudes towards the role of farmers within society.

The surveys conducted on completion of the interview or focus group included another set of Likert scale enquiries into attitudes covering a range of slightly more personal questions, such as:

- I enjoyed taking part in the study
- I feel confident about the future of agriculture in Scotland
- A guidance document on agriculture and CfE would be useful to my practice
- My opinions on the importance of agriculture have changed after taking part in this focus group.

3.3 Data Analysis

3.3.1 Postal Survey and Short Surveys

The data were input to a Microsoft Excel document. The qualitative question data responses were recorded on a separate sheet from the quantitative data in order to make the analysis easier. The numeric data were then subject to various basic counts and Excel functions in order to generate graphs or tables as required. The data generated as a result of the postal surveys analysis fed into several different elements of the project.

First, a basic analysis of the data and comments was used to inform the development of the interview and focus group themes (which have been outlined in detail within this Chapter). *Secondly*, the numeric data was subjected to further analysis in order to build up a more detailed understanding of the weight and strength of the answers to the different questions and how these correlated (or did not correlate) with the wider reading and understanding around the research area.

3.3.2 Interviews and Focus Groups

All of the interviews and focus groups were audio recorded on a portable recording device (Olympus LS-P2 model) which made the process of transcription straightforward. Each audio recording was transcribed into text by the researcher in full. During this process references to participant names and other identifying information were removed and pseudonyms were applied to ensure anonymity.

In my preparations for analysis, I listened back to the interviews and read over printed copies to familiarise myself with both the contents of the data and the personalities of each of the participants, which I found to be helpful. I transcribed the interviews and focus group in full and verbatim, as I wanted the final writing to be faithful and illuminative of their direct imperfections and 'thought streams' when I presented their responses and quotations. As the only person working with the data, this was an important part of making sense of the

information. In its basic form, qualitative data analysis is about the movement from data to 'understanding, explaining and interpreting the phenomena in question' (Cohen *et al.*, 2018, p. 643). There is no single way, or simple formula or recipe for doing this (Patton, 2015), and as such it can often be heavy on interpretation and reflexivity (Cohen *et al.*, 2018).

Given that my analysis was driven by the research objectives of the project, there were a number of *a priori* themes that I outlined prior to the processes of analysis, these included:

- Challenges of Agricultural Experiences
    - School-based participants
    - Rural Stakeholders
- Benefits of Agricultural Experiences
    - School-based participants
    - Rural Stakeholders
- Attitudes to Agriculture
    - Similarities between urban and rural perspectives
    - Differences between urban and rural perspectives

The analysis adopted a *thematic analysis* at this point because it offers the researcher the opportunity to identify, interpret and describe the lived experiences of their participants through 'thick description' (Braun and Clarke, 2006). The interview and focus group data were analysed in order to identify patterns and themes. Locations where the analysis aligned or did *not* align with the predetermined themes outlined above were considered sites for discussion. For reasons discussed in section 3.5 the data source proportions were different from initially intended. These changes prompted narrative analysis to be applied, bringing with it the opportunity for the testimonies of the participants to be heard with greater weight and depth.

In combination with thematic and narrative analyses I wove into the mix features of reflective analysis. This echoes my researcher position as outlined in Chapter One and extended to the analysis an element of my own personal interest and involvement with the subject at hand, as well as illustrating how

stories and narratives can have effect beyond their individual meanings; creating possibilities for group belonging and collective action (Kohler Riessman, 2008). As researchers 'there is no view we can derive that is free from social position given our participation in the social world' (May and Perry, 2014). I therefore wanted to incorporate elements of the individual participants' stories to show that there is a plurality to the truths and narratives that were shared with the researcher, and that these stories are valued as something *more* than simply word-based data.

There are a number of approaches to classical narrative analysis that can be employed including *thematic*, *structural* and *dialogic/performance* (Figgou and Pavlopoulos, 2015). These vary depending on whether the analysis is concerned with the content or structure of the narrative. Narrative analysis seeks to understand how individual people interpret their everyday lived experiences, and the underlying ideologies that are embedded in stories (Garcia Rodriguez, 2016). *Thematic narrative analysis* is an analytic approach which interrogates the 'what' and identifies themes from across the participants' stories (Hall, 2015).

Given the intrinsic element of interpretation present in any data analysis, Kim (2020a) argues that these two elements, analysis and interpretation, work in tandem in an 'act of finding narrative meaning'. In finding narrative meaning we can seek better to understand the human experience. Thus, the aim is to draw out and retell stories and 'the implications this meaning has for understanding human existence' (Polkinghorne, 1988, p. 6). There is a change from individual meaning to the production and development of cultural narratives and the influence they have on people's lives – resting at the intersection between history, biography and society (Hunter, 2010; Liamputtong and Ezzy, 2005).

The narrative analysis element to the data analysis provided the researcher with the opportunity to incorporate some of the complexities and differences in the action, feelings, perceptions and values of the participants, thus demonstrating the rich nuances and ambiguities that might not otherwise be identified within the dataset (Kim, 2020b). The unit of text for consideration in narrative analysis is often represented by the inclusion of larger components of text or quotations,

where deemed appropriate and effective (Rice and Ezzy, 1999). I thus utilised narrative analysis with the aim not to show that there is one truth, but to 'sing up the many' different and antiphonal truths, narratives and perspectives present across my participants (Byrne-Armstrong, 2001, p. 112). Therefore, extended quotations from participant interviews are used to support the emerging themes.

A number of complexities exist across the participant population of the study including the lived experiences of farmers in different traditions such as arable, beef, sheep, or dairy. In addition to this are the complex set of cultural ties associated with farm inheritance, relative position within a line-up of siblings, and the impact of gender on how these lived experiences are felt on an emotional level. For those stakeholder participants who do not necessarily have lived experiences of farming, there also exist complexities in the ways that they come to be 'outside' of farming, or the relative level of their immersion within rural life. An example would be a sibling who has not inherited a farm but who continues to be involved in the rural sector, or someone who has married into farming but who does not carry an inherited lived experience. I am therefore not proposing that the group of participants is in any way homogenous or unitary. Nevertheless, a detailed analysis of the language, stories, ideas, tones, and so on, all yield a rich picture of the population – both in its rewards and its disappointments.

A close reading of participant testimonials in this way enables a detailed portrait of their experiences to be built. Giving weight to, and space for, their aspirations and anxieties to be elucidated, alongside their responses, judgements and personal opinions. Thus, the decision to expand and apply narrative analysis brought with it to this research the opportunity to amplify aspects of the data that may have gone unheeded without the enforced change in focus of the research. The narrative analysis is interpreted in detail in the next chapter.

Whilst initially I started my analysis using NVivo software, I found that I preferred the tactile feel of pen and paper, and thus used a combination of paper-based and digital searching, keeping track with highlighting, sticky-notes,

and coloured pens. I found that having printed copies of the transcripts to work on allowed me to feel connected to the participants in a way that I did not get through the screen.

3.4 Ethical Issues

This research project was carried out in compliance with: (1) British Educational Research Association's (BERA) Ethical Guidelines ((British Educational Research Association, 2011); (*NB* Since the commencement of this project and after ethical consent was granted, BERA have fully revised and updated their Ethical Guidelines) and, (2) the University of Glasgow's College of Social Sciences Ethics Committee in March 2018. The outcome document that granted permission for the study to begin is included in [Appendix 1](). In accordance with the ethical consent granted from the College's Ethics Committee, permission was required from the Director for Education (or equivalent) in each Local Authority before the recruitment of any Local Authority employees (teachers) or pupils could begin.

An important ethical consideration of this project was ensuring that every participant was afforded the opportunity to make an informed decision about taking part, and that this decision was reached voluntarily. In broad terms this was achieved through a suite of documentation that was specifically formulated for the various participant groups that were the intended targets of recruitment. It was reiterated on a number of occasions that the decision to take part was entirely of a voluntary nature, and that they could choose to halt participation at any time. In this vein, the participants were given the option to have any details of the recording withdrawn at the end of the interview and were only asked to sign the consent form at the conclusion of the interview or focus group when satisfied with their input. Particular care was paid to ensuring that pupils made voluntary and informed consent.

The decision to take part was ultimately that made by the young people, regardless of whether they were in receipt of parental consent. However, the researcher recognises that there is always a risk that the consent given by children, even when informed, is not necessarily genuinely freely, especially when obtained within a school setting where it could be perceived as an obligatory element of schoolwork (Denscombe and Aubrook, 1992). As has been mentioned previously, I took special care and consideration to ensure that the recruitment process, and final participation, did not place undue time burdens on those choosing to take part, and I worked hard to make sure that all elements

of the research, including the survey and my visits, did not disrupt normal routines to any significant degree. The choice of venue and time was up to the participant, in order to best fit in with their schedule. However, some specific dates were suggested by the researcher in light of the distances required to travel, and in order to reduce the number of journeys around Scotland.

Another key feature of ethical consideration of this study was ensuring and maintaining participant anonymity as far as was possible. The practical applications of this within the project outputs amounted to the assignment of pseudonyms to each participant, and careful consideration of any characteristics that could identify any participants, especially given the small sample size of the research participants. Particular attention was paid to ensuring the anonymity of school-based participants, given the extremely low numbers in the sample size. All of the audio recorded data was transcribed by the researcher and no external parties were employed to carry out this function.

3.5 Limitations and Responses to Them

This section will detail the limitations experienced during the process of this project; alongside the response of the research in overcoming challenges.

There were a number of particularly acute risk-points within this project, largely centred on the potential of the project recruiting zero participants wishing to take part in the face-to-face elements of the research. One potential risk of this was that in seeking consent from Local Authority (LA) education directors every Director for Education (or equivalent) could refuse consent, which would have limited the entire project by non-representation of any teachers or pupils in the data. This concern in itself proved not to be the main reason for a lower than anticipated number of participants because a positive response granting permission was given by 18 out of the 32 LA Directors for Education (or equivalent), which led to a potential sample size of 185 (44.69%; n=414) schools as mentioned previously.

The real challenge came in the recruitment of schools actively wishing to participate - including both teachers for interviews and pupils for focus groups. A number of factors have been identified as contributing to this problem. The first was that the process for the granting of ethics approval at the University was impacted by sector strike action, which delayed the outcome of the application and thus the proposed timeline, which had originally been intended to line up with school term dates. This delay meant that the recruitment packs sent to Head Teachers arrived after the Easter holidays rather than before, which limited the available time prior to the end of term before the summer break, ultimately impacting adversely on the number of school-based participants recruited to the study.

Compounded with the issue of timing, there was an overall lack of engagement and follow-through with the study and its recruitment process by school-based professionals. This led to a change in focus. All such changes made were made in agreement and with, and approval from, the funding body of the research scholarship. Whilst it was personally disappointing that the school-based participant group was small, this in itself became a point of consideration within

the discussions and the analysis. At a time when teacher workloads and pupil attainment are increasingly under intense scrutiny, the potentially negative effect led to discussion points surrounding topics such as the role of research in the curriculum and education sectors, and what the impact of an overall lack of engagement with research might ultimately mean for the curriculum and the education system itself.

Owing to the willingness and passion of those working in the agricultural sector in contributing their voices, along with their enthusiasm for the topic, exciting data *was* collected covering these perspectives and allowing for a meaningful consideration of relevant contributions, views and opinions. The input and ideas of the participants suggested that their voices in the research of agricultural experiences for secondary school pupils should be much louder. The consideration of agricultural experiences is largely and routinely conducted in terms of on-farm experiences, whereas the agricultural economy is much wider than this - covering businesses, sector organisations and other related fields and disciplines as outlined earlier during this chapter. Thus, on looking at the data obtained from the interactions with these stakeholders, it was proposed and accepted (by supervisors and funding body) that the focus of the research actually move more towards the objectives, suggestions and recommendations coming from, or linked directly to, these stakeholders. Although schools did not take part in the scale anticipated, the contributions from the agricultural sector became more important within the wider frame and scope of the research project, not just in terms of their higher active numbers but also in terms of their rich content, resulting in the illuminating and thought-provoking discussion points of this contribution to knowledge.

The addition of narrative analysis in confronting the obstacles that could have been a significant threat to the project also brought with it opportunities for often unheard voices to be amplified. To take advantage of this, I made the decision to return to the data – a rich and vibrant collection of peoples' judgements and perspectives – with the aim of showcasing simultaneously the variety and interrelatedness of my participants' stories. On a personal level, this became a bigger opportunity than previously anticipated, and really allowed the raw honesty and authenticity of the participants' voices to shine and echo within

the study. Giving space to these stories thus became a matter of justice on behalf of my participants, rather than viewing the responses as simply 'data'. It became abundantly clear during the final stages of completing the thesis just how valuable the addition of narrative analysis was in terms of the richness and sincerity of the voices being amplified, and their contribution to elevating and clarifying the research. Thus, what ultimately could have been a disabling limitation for the study was transformed into, arguably, one of the biggest assets of the research. As the results and discussion chapter will show, engaging with the narratives of the participants in this detailed way proved to be rich motivation for proposing and suggesting a radical rethink to the ways in which we frame agriculture and food as part of environmental action and education.

Chapter 4: Results and Discussion: Scotland, Education and Agriculture

Some hae meat an canna eat,
And some wad eat that want it;
But we hae meat, and we can eat,
And sae the Lord be thankit.

But some hate meat and girn and weep,
Resisting all coercion,
So bless the tatties, bless the neeps
And the vegetarian version.

Then filled wi' fruits o' field and vine
And feelin fairlie frisky,
The One who water turned to wine,
We'd ask to bless the whisky.

Richard Medrington
(The Original (Selkirk) and
the Alternative Grace)

4.1 Introduction

The fundamental role that agriculture plays in getting food from seed to ground to table should be considered essential enough for its inclusion within CfE. When agriculture is then considered as part of its wider social, economic, and ecological contexts it becomes quite clear just how important a foundational and basic understanding of food systems becomes (Morath, 2016; Stanley, 2021). Thus, it is not really a question of whether the structures and cultures of secondary schools *can* accommodate agricultural experiences, but rather that food and agriculture provide an opportunity for education to be thoroughly reframed.

The data constructed with participants forms the basis of this Chapter – which combine results and discussion, weaving the analysis and interpretation of results amongst the discussions and thus placing them in context. The Chapter begins with an examination of agriculture and CfE as relates to Objective I, identifying those elements of CfE that I believe *would* be best fit for further inclusion of agricultural experiences. I recommend that the framework generated for the funding body as a result of this research should aim to link-up and showcase work already being done rather than seeking to add a further

resource to the already overly bureaucratic environment that teachers currently experience. Threads of education re-orientation are also woven through this section of the chapter, representing a more radical exploration of where agriculture *could* be best employed within CfE to enable increased agricultural experiences and to cultivate greater agricultural literacy amongst Scotland's young people.

The chapter then moves on to an exploration of how participants defined agriculture and is followed by a combined results and discussion covering the perceived benefits and challenges to agricultural experiences both from a school-based and rural sector perspective (Objective II). This section was informed by both qualitative and quantitative data which has led to a rich discussion incorporating narrative analysis of participant data.

Following this, the Chapter considers attitudes to agriculture in Scotland, including the perceived disconnect of society from food and agriculture, along with other perspectives such as veganism, media representation, and (again) CfE (Objective III). The Chapter concludes by revisiting the finishing themes of agriculture and CfE, and asks whether, given the findings within the data, and relevant discussions, there is a much greater imperative for the more radical reshaping of the structures and purposes of Scottish education in relation to agriculture, rather than the 'minimal effort' currently visible.

A note on 'Farm to Fork' and Animal Welfare
Throughout this Chapter I employ the phrase 'farm to fork', or similar, as a placeholder for the much wider scope of discourse and action that are understood to happen, or indeed not happen, around the journey of food from its source to our consumption. Whilst food is itself nourishment, nutrition and sustenance, the varying approaches through which the raw materials are grown/reared, and the relative journey of processing and modification that these then undergo before reaching our forks, is increasingly the subject of much debate (McClements, 2020; Monteiro et al., 2019; Scrinis, 2020; UNC Global Food Research Programme, 2021).

Food has long been a topic of policy and is often cited as an underlying factor in many issues: hunger, obesity, climate change. It is of course intimately interwoven into the fabric of our lives. Health, environment, economy, national security, culture, art, science, energy – all are connected to food. The way in which we grow it, the way we sell it, and the way we eat it are of huge consequence to our lives, and so it is critical that we begin to appreciate educationally the vital role these processes play (Andrés, 2014). Food as a *learning experience* therefore offers wide opportunity for many other intersectional learning activities, some of which may indeed address problematic details of current agriculture and food systems. This also shows, however, that where there may be difficult conversations to be had around, for example, the curriculum values of Wisdom, Justice, Compassion and Integrity, within which agriculture can be a framework for healthy and respectful debate.

As this Chapter will come to show, there exists a real societal (largely urban-dwelling) detachment from those who live and work in rural spaces, and who value the livelihood that rurality offers them, be they farmer or engineer. Thus, I caveat this Chapter by saying that I recognise and appreciate the many wicked and 'unsavoury' or even dark facets to modern agriculture and food production and agree that we should all be deeply concerned about these. Nevertheless, I do believe that simply excluding or negatively broad-brushing **all** mention and inclusion of agriculture within CfE, and its related conceptual and pedagogical tools, risks fundamentally alienating children and young people from understanding how food systems can alter our environmental trajectory.

Animal welfare, animal rights, and the moral and ethical dilemma of eating animal-source food (ASF), are central and key elements to many of today's difficult and challenging conversations about agriculture, food, and farming. This research, whilst concerned with agriculture, is not an exploration of animal welfare and rights, and as such the topic is mentioned only a handful of times throughout the chapter. Young people are increasingly using their consumer power to demand higher welfare and more 'sustainable' products across all areas of their spending, and thus animal welfare/rights, cruelty-free production, and also veganism are important considerations to many organisations. Neither I nor this research is denying or ignoring these concerns, but I am choosing to

highlight that there is diversity to agriculture, farming and food around the world. Therefore, I argue, there is not a singular, one-size fits all opinion or value judgement that can be applied to agriculture. The cultivation of agricultural literacy that empowers Scotland's young people to understand their local agriculture, the rural economy, and their individual and collective roles in building Scotland's future foodscape, can hence help drive improvement in all of those aspects about which young people increasingly and demonstrably care (Pickard, 2019).

4.2 *Curriculum for Excellence*: Situating Agriculture

The aim of this study is to examine the opportunities for agricultural experiences as part of Scottish secondary school pupils' learning under *Curriculum for Excellence*. This section is therefore concerned with responding to Objective I:

> *Examine CfE to see where agricultural experiences could be best employed and link the placement to outdoor learning opportunities.*

Textual analysis of curriculum Es+Os reveals that explicit inclusion of agriculture is generally sparse, only occurring three times within the entire 313 pages of Education Scotland's CfE documentation – with one of these being at primary level (SOC 1-09a (Scottish Government, 2009, p. 288)). The secondary school setting offers two references, one located within the *Sciences* (SCN), and one within the *Social Studies* (SOC) curriculum areas (Scottish Government, 2009). The context within which the references to agriculture are placed also arguably leads to a negative representation of the sector, given that the term is only used twice at the secondary level.

Table 4-1 below (bold font added to indicate agricultural references) details all of the references to agriculture within CfE. On further examination of the Sciences reference (presented in the green column on the left), there could be breadth to take the wider learning experiences within which the individual Es+Os are placed and create a positive framing of agriculture at the early years and primary school settings. However, it is the phrasing and framing of the term 'agriculture' within the Es+Os themselves that I believe causes this to become generally negative and pejorative within the secondary school setting.

The first reference is placed within Third Level sciences *Biodiversity and Interdependence* within a wider *Planet Earth* curriculum organiser and is detailed in the table below (
Table 4-1). The setting of the E+O itself is within the rather narrow frame of 'fertiliser usage' – which more often than not receives negative coverage in popular media and news sources (Gabbatiss, 2018, 2019; Matthews-King, 2018; Win, 2020). The Third Level E+O presents agriculture as merely the setting for a consideration of chemical use, which is further progressed in the related Fourth Level E+O into the design of a fertiliser and its impact on the environment. Thus,

taking into account the Third and Fourth Level Es+Os, agriculture is here setup to be the vehicle for investigations into the chemical makeup of fertiliser and their (usually negative) environmental impacts. Whilst there is obviously scope for individual teachers to present agriculture in a positive frame here (and for this to be combined with other Es+Os), I would argue that given the negligible explicit references to agriculture it is more likely that agriculture would be perceived here chiefly as an environmentally damaging process as opposed to being embraced as a vital system of food production. This includes of course the understanding that there are many approaches to farming that do *not* use chemical fertiliser and that work to sustain the planet during times of unprecedented change, including rapid population growth and the impacts of climate change.

The second reference is located in the Social Studies curriculum area, within the *People, Place and Environment* curriculum organiser (
Table 4-1, pink column on the right side) at Fourth Level. The framing and phrasing of agriculture within this second reference is set up ostensibly for a much more positively-contextualised consideration of agriculture. However, the positing of agriculture as a *role* within food production and raw materials use draws attention away from the active process of *agriculture as primary food production*. In a similar manner to the sciences reference, the inclusion of 'environmental impacts and sustainability' again provides an easy background setting from which to present agriculture as an essentially damaging domain rather than orienting it as a positive and integral sector of society, culture and economy, which, through its primary food production purposes, sustains humanity.

Table 4-1: Agriculture References within Es+Os (Scottish Government, 2009)

	Planet Earth [Biodiversity and interdependence] (SCN)	Development/ progression of learning experience	People, Place and Environment (SOC)
Early Level	I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. SCN 0-03a	⌄	I explore and discover where foods come from as I choose, prepare and taste different foods. HWB 0-35a
First Level	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	⌄	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
Second Level	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	⌄	
Third Level	Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in **agriculture** and their alternatives and can evaluate their potential impact on the world's food production. SCN 3-03a	⌄	
Fourth Level	Through investigating the nitrogen cycle and evaluating results from practical experiments, I can suggest a design for a fertiliser, taking account of its environmental impact. SCN 4-03a		Having evaluated the role of **agriculture** in the production of food and raw material, I can draw reasoned conclusions about the environmental impacts and sustainability. SOC 4-09a

In the wider context, textual analysis shows that the related agricultural terms *farm, farmer,* and *farming* do not occur once within the Es+Os documentation. Table 4-2 below shows the results of a key word search of the Es+Os documentation. The reference to *urban* is in the context of a *People, Place and Environment* social studies learning experience (p. 289). 'Environmental' is referred a total of 19 times within the document, however in the context of this research only 12 of these relate to agricultural contexts. That is to say that they either refer to the general curriculum area guidance for teachers or they relate to secondary school level Es+Os within the context of being environment related. The same parameters apply to *The Environment*. References to 'Environment' included here a range of contexts including all references to 'The Environment' and 'environmental'.

The picture is more nuanced for 'food' references, which amongst Es+Os include reference to topics such as *food choices*, as relating to *diet*; *food and drinks*, as part of *healthy eating*; and as part of more general advice and guidance to teachers under the headings of *food and health*. References to 'Nature' were (surprisingly) largely religious in character, in relating e.g., to the *nature of God*, or in reference to the *nature* of learning experiences and languages; one reference was made in relation to *processes of the plant* and related this to the 'dynamic nature of Earth', including the impact of human activity on climate change (p. 263). Despite the dearth of explicit references to agriculture within formal documentation, there nevertheless exists the potential for interesting, informative and meaningful positive connections to agriculture and food production processes to be drawn across CfE by imaginative and empowered teachers and learners.

Table 4-2: Agriculture related word frequency within Es+Os

Word	Frequency
Agriculture	3
Farm	0
Farmer	0
Farming	0
Countryside	0
Rural	0
Urban	1
Environmental	12 (19)
The Environment	21 (31)
Environment*	110
Food*	80
Nature*	33

*these are not context specific

Acknowledging the reservations clinging to the Es+Os, and the negligible inclusion of explicit 'agriculture'- and 'farm'- related experiences therein, the curriculum relies on teachers and practitioners to tailor their teaching meaningfully to include agricultural experiences. Indeed, 50% of returned study surveys (n=24) indicated that teachers believe there are 'ample opportunities to link different curriculum areas together around agriculture'. However, a quarter of those also responded that they did not feel 'sufficiently confident to cover agriculture as a lesson topic' (full survey questions available in Appendix 4). Hence whilst the opportunities are there for teachers and practitioners to include agriculture more extensively, without direct positive references and a clear framework for linking Es+Os across various curriculum areas, it remains a time-consuming activity for uncertain teachers operating within limited constraints. This situation again highlights the importance of resources developed by sector organisations which are able to utilise their expertise in linking the sector into already existing Es+Os across multiple curriculum areas. Through this they can provide links to further sources of information for use in

the classroom or connect to partners who are able to deliver specialised content – or indeed offer an alternative space for the curriculum to be delivered.

As has been discussed earlier, an addition to CfE guidance in the form of the Benchmarks was more recently developed. Interestingly, the additional guidance contains one further reference to agriculture (the Sciences Curriculum area) not detailed within the Es+Os (Education Scotland, 2017a). It is illustrated in Table 4-3 (bold text added for emphasis):

Table 4-3: Sciences Benchmarks (Education Scotland, 2017b, p. 33)

| Through evaluation of a range of data, I can describe the formation, characteristics and uses of soils, minerals and basic types of rocks. SCN 3-17a | • Applies knowledge of the rock cycle to describe the formation and characteristics of sedimentary, igneous and metamorphic rocks and gives at least one example of how each is used.

• Describes the formation and characteristics of loam, sand and clay soil types, providing examples of their uses, for example, in **agriculture**, building and beauty products.

• Researches the formation, characteristics and uses of at least two common minerals, for example, quartz or gypsum and communicates their findings to others using a range of media. |

The Benchmark guidance also contains references to *farm* – in the context of a 'From Farm to Fork' organiser as part of a learning experience titled 'The Journey of Food'. The learning experience has been included within the *Food Health* Benchmarks (Health and Wellbeing (HWB) curriculum area) at all levels, progressing in depth and complexity across the curriculum, and relating to a number of different Es+Os from HWB.

Table 4-4 and Table 4-5 below detail the full 'Journey of Food' learning experience at levels 3 and 4 (bold text added for emphasis).

Table 4-4: The Journey of Food Level 3 (Education Scotland, 2017b, p. 14)

	Es+Os for planning learning, teaching and assessment	Benchmarks to support practitioners' professional judgement
From farm to fork Sustainability Influences on consumer choices	Having explored a range of issues which may affect food choice, I can discuss how this could impact on the individual's health. HWB 3-34a	• Explains factors that could influence choice of food, for example, media, poverty, peer pressure, seasonality, sustainability, environmental / ethical issues and potential impact on health.
Preparing food appropriate to learning	Using my knowledge of nutrition and current healthy eating advice, I can evaluate the information on food packaging, enabling me to make informed choices when preparing and cooking healthy dishes. HWB 3-36a	• Evaluates information on food packaging and uses it to make informed choices when selecting food for given situations.

Table 4-5: The Journey of Food Level 4 (Education Scotland, 2017b, p. 17)

	Es+Os for planning learning, teaching and assessment	Benchmarks to support practitioners' professional judgement
From farm to fork	Having explored a range of issues which may affect food choice, I can discuss how this could impact on the individual's health HWB 4-34a	• Identifies and explains different influences on consumer choice, for example, the environment, social justice, food security.
Sustainability	By investigating the different influences on the consumer, I can discuss how the consumer can be influenced by external sources. HWB 4-37a	
Influences on consumer choices	Having investigated the effects of food processing on the nutritional value of foods, I can critically assess the place of processed foods in a healthy balanced diet. HWB 4-34b	• Evaluates the role of processed foods for consumers, for example, cost, shelf life, availability, nutritional value.
Preparing food appropriate to learning	I have examined and evaluated food packaging and can understand the legal requirements for manufacturers. HWB 4-36a	• Identifies and explains legal requirements in relation to food packaging.
	I can explain basic legal rights and responsibilities of the consumer recognising agencies that can help. HWB 4-37b	• Applies knowledge about consumer rights and responsibilities and identifies where to get help.

Amidst chronic teacher concerns about CfE 'vagueness' (Hedge and MacKenzie, 2016; Priestley, 2010; Rutter, 2018), Benchmarks were developed to help teachers in their professional judgement on achievement, and to make more explicit what is expected of learners. As is evident from the Tables presented above, there is an extent to which these could be seen as creating a series of outcomes to be mastered and ticked off, resulting in a narrowing of the curriculum should teachers choose only to deliver and assess against those aspects presented (McEnaney, 2021). Whilst the inclusion of a *Farm to Fork* learning experience within formal Education Scotland published guidance may be welcome, there remain numerous opportunities for a more direct and radical inclusion of agriculture within CfE, particularly with reference to the ambitions set out by the Scottish Government in 2014 for the country to become a *Good Food Nation* by 2025 (Scottish Government, 2014). References to food across CfE provide excellent potential to tie in with wider agricultural experiences and illustrate good opportunities for IDL and outdoor learning approaches to agriculture within the curriculum. For me the link between food and agriculture is very clear: agriculture is integrally related to the sustainable production of food. However, this connection is often missing and perhaps the real benefits of an agricultural experience as part of CfE lie in building or forging ways for that link to be bridged.

Young people from less advantaged social origins, or lower levels of prior academic achievement, have historically tended to opt for, or be encouraged towards, subjects considered to be vocational or even 'easy' (Shapira and Priestley, 2018) – and this often does include rural skills and forestry. This enduring reality aligns with my personal experience and a common societal view that vocational or applied subjects such as agriculture, or those that are land-based, are somehow 'inferior' and 'second best' to those subjects grounded in strongly academic and theoretical (scientific knowledge) foundations pursued normally in school by high achievers (Bol and van de Werfhorst, 2013; Breslin, 2016; Londesborough, 2016; McInerney, 2014). To repeat and reinforce, Goodhart (2020) seeks to redress the balance here for an audience beyond the confines of professional educators. He challenges the views of vocational as second best by repositioning the opportunities, rewards and recognition towards what he terms Hand and Heart.

It seems that against this socio-cultural and economic backdrop there are two fundamental ways in which agriculture, and thus agricultural experiences, can be better and more enrichingly integrated into CfE. The first is through a far-reaching re-imagining of the real values that experiencing agriculture through everyday learning (including IDL and outdoor learning opportunities) can bring to school curricula, particularly across BGE. The second is a re-orienting of 'vocational' training within wider curriculum and assessment frameworks to establish and incentivise learner journeys that offer fulfilling, suitable and materially rewarding qualifications for those wishing to pursue rural sector careers of all types. These two approaches would not only offer enhanced educational experiences for all young people, they would also provide clear and desirable career paths into an exciting, dynamic and hugely varied sector. As signalled above, the subject choices that young people make within the secondary setting are patterned largely by parental social class, gender, and previous attainment and we need to do more to break down the prejudicial and stereotyped features of this cycle.

4.2.1 Agriculture and Curriculum for Excellence

I have identified through analysis of key CfE curriculum documentation and related guidance and advice documentation, as well as through engaging with the wider education discourse, that – whilst there is little direct or explicit inclusion of agriculture at secondary school level CfE – *food* (which by its very inclusion should imply agriculture) has the opportunity to be a means of opening up the delivery of agricultural experiences within learning and teaching.

In terms of where agricultural experiences *would* be best employed within CfE, I would strongly argue that utilising Es+Os based around food and social studies can provide a clear link to an interdisciplinary learning experience that raises the profile of agriculture and rurality. However, as discussed earlier, the advice and guidance around the types of learning experience that constitute IDL is unclear given that school subjects themselves are not considered to be disciplines. As also outlined previously, references to food within CfE have the potential to provide excellent entry points for the formulation of IDL projects around such topics as food and the consumer, food practices, food and tradition, food choices, food safety and food and environmental sustainability. Social studies learning under the three organisers also provides ample prospect for connections along the themes of people, place, environment, past societies, economy and business. There are obvious links to the opportunities afforded by outdoor learning here, too, from school grounds and local communities to further afield. How these projects would be implemented in practice is not for this study directly to prescribe, and each teacher or school would need to place such study within the context of their local situation and the interests of their pupils. However, some general principles can already be adduced *from the curriculum and its aspirations themselves*.

The curriculum, through the four capacities and their related capabilities and attributes, and alongside the four contexts for learning, aspires to give children and young people the opportunities to 'develop the knowledge, skills and attributes they need to adapt, think critically and flourish in today's world' (Education Scotland, 2019). The role of *agency* in this development is further implied throughout GIRFEC and the four capacities (Adam and I'Anson, 2020).

Agency encourages young people to 'imagine and act towards new ways of being' (Walker and Unterhalter, 2007, p. 6). Indeed Masschelein (2010, p. 44) talks of education as 'leading out, reaching out', and is thereby about becoming *attentive* in gaze. It is the state of mind of *attention*, he argues, that opens us to the world in a way as allows us to be transformed (Masschelein, 2010);

> to walk along a road implies a possible transformation ('the command of the soul'), the 'subject' of that walk is the subject of experience and therefore is in a certain way no subject (that has an object and an orientation) (Masschelein, 2010, p. 51).

Within the frame of this metaphor, food, and thus agriculture, can be understood as the transformational walk or journey, that encourages children and young people to transform their knowledge, skills and attributes, but also to reach beyond their own individuality: to feel and understand their place and sense of belonging in Scotland as part the wider world, to have self-belief and confidence in themselves and their personal achievements, and to want to contribute to their communities, be that in school or civic life more generally. McLean (2009, p. 16) describes these as the 3As: *affiliation* (belonging), *agency* (can-do), and *autonomy* (want to). Whilst in their wording these may be affined to the four capacities, Adam and I'Anson (2020) argue – employing elements of Biesta (2008) – that disproportionately focussing on the *individual* within the aspirations of the four capacities leads to the production of young people from a similar pattern mould: the mould being successful, confident, responsible, and effective, but potentially lacking in 'democratic agency' and with a potentially detached understanding of the 'ethical views of complex issues' (Adam and I'Anson, 2020; Biesta, 2008; I'Anson and Jasper, 2017; Priestley and Biesta, 2013).

The environment, countryside, rurality, agriculture, and thus food, have at their core people, animals and the land – the combination of which is a fertile ground for *attention*. By attention I mean challenging and enjoyable; emotive, ethical and moral; motivational, philosophical, illuminating transformative experiences. The extent to which our actions impact on our surroundings, and the ways in which we can mitigate or alter the effects of these actions are the critical deliberations and challenges of the present. Agricultural experiences thus offer the opportunity for young people to take a walk and to gaze with *attention* on

the seminal challenges of our time. Food and the depth and breadth of its reach into society and daily life – through e.g., climate change, animal welfare, health, politics, sustainability, history and culture – can enable us to critically engage and reflect on those facets that help us to belong, act, think, feel, interact, contribute.

The Es+Os outlined in Table 4-6 below detail those relating to the *Food and the Consumer* learning activity under the *Food and Health* organiser of the Health and Wellbeing curriculum area. There exists a range of possibilities to link food-based Es+Os such as, for example, HWB 3-34a/4-34a and 4-35a, to that broad intention of social studies to enable young people to,

> develop [their] understanding of the history, heritage and culture of Scotland, and an appreciation of [their] local and national heritage within the world,

and to,

> explore and evaluate different types of sources and evidence
>
> (Scottish Government, 2009, p. 279).

Given the wide range of possibilities here, there are numerous elements to other broader disciplines that would provide an excellent basis from which to link to food and thus its wider agricultural context. Sciences, geography, environmental science, mathematics, technology, media, nutrition, art, English literature – there are innumerable ways in which food forms part of our daily lives, and thus the examples given here are but a selection. This also accords well with the recent 'rediscovery' of food across a spectrum of academic disciplines and in popular writing, covering such topics as: cooking and eating traditions; cities and food; food, power and politics; philosophy of food; diet and nutrition; food and war; artificial flesh; foodie culture and social media, among many others (Bartsch, 2015; Bentley, 2014; Bittman, 2021; Cairns and Johnston, 2015; Carlisle and Hanlon, 2014; Collingham, 2012, 2018; De Vooght, 2016; Furrow, 2016; Herring, 2014; Johnston and Baumann, 2015; Leroy and Cofnas, 2020; Leroy and Hite, 2020; Leroy and Praet, 2015; Lofft, 2020; Pollan, 2011; Spector, 2020; Steel, 2013, 2020; VanDerwarker and Wilson, 2016; Wilson, 2013, 2019; Wurgaft, 2019). The COVID-19 pandemic has also led to a renewed focus on

issues of food security, supply, production and the relative locality and sovereignty of these processes.

Table 4-6: Food and the Consumer Es+Os (Scottish Government, 2009)

Third Level	Fourth Level
Having explored a range of issues which may affect food choice, I can discuss how this could impact on the individual's health. HWB 3-34a / HWB 4-34a	
	Having investigated the effects of food processing on the nutritional value of foods, I can critically assess the place of processed foods in a healthy balanced diet. HWB 4-35a
Using my knowledge of nutrition and current healthy eating advice, I can evaluate the information on food packaging, enabling me to make informed choices when preparing and cooking healthy dishes. HWB 3-36a	I have examined and evaluated food packaging and can understand the legal requirements for manufacturers. HWB 4-36a
	By investigating different influences on the consumer, I can discuss how consumers can be influenced by external sources. HWB 4-37a I can explain basic legal rights and responsibilities of the consumer, recognising the agencies that can help. HWB 4-37b

In addition to food-based Es+Os the *Food for Thought* resources look to be an ideal opportunity for including agricultural experiences, particularly given their aim as context for IDL, attentive to food and health (Education Scotland, 2020a). To say that the frequency of agricultural terminology is poor in the documentation would be an understatement. The resources consist of seven documents, one of which is a food related mind map. Table 4-7 below details the frequency of key terms. There is very little commentary I can add to

describe the results of the frequency at which the key terms are *not* included, except to say this is a major lacuna in curricular thinking.

Table 4-7: Word Frequency: *Food for Thought Resource*

Document Title	Key Term					
	Food	Agriculture Agricultural	Farm	Farmer	Farming	Rural
Food for Thought (5 pages)	77	1	1	0	5	0
Food for Thought Skills Progression: practitioner support (16 pages)	109	0	0	0	0	0
The Way We Grow and Catch Food in Scotland (5 pages)	48	3	2	0	2	0
Scottish Food Industry (5 pages)	67	1	0	0	0	0
Scottish Food and Health (5 pages)	95	0	0	0	0	0
Grow, Cook, Eat (5 pages)	54	0	0	0	0	0
Total word frequency	450	5	3	0	7	0

Aside from truly grim representation of agricultural terminology, what is most disappointing is the *total* lack of reference to farmers; the people who produce our food. Food is obviously an essential facet of life; sustaining our very existence on this earth and the only – *the only* – way in which we are able to eat food is the effort of the people who grow and rear it for our consumption. Nevertheless, in spite of the absence of agricultural terminology throughout the entire resource, there are many opportunities to link to agriculture and

agricultural experiences to it. I argue, however that the entire resource needs to be reviewed before it can be utilised as one that claims to discuss 'the way we grow and catch food in Scotland'.

Whilst food is the most obvious route in terms of enhancing learning around agriculture, there are also other methods, including centring the learning around topics such as geography or science as detailed in Table 4-8 below. All of the examples given here provide breadth for learning to develop about agriculture through a more indirect approach (aside from SOC 4-09a) – such as learning to interpret maps and linking this to agricultural land use, topography, and comparisons with other parts of the world[10]. Other links to aspects of the sciences include an evaluation of soil science[11] and related data, bringing in agricultural and mathematical and statistical elements to the learning activities. The examples given below are only illustrative of the many ways in which elements of the curriculum can be oriented to include deep and authentic agricultural learning in the context of major educational and environmental questions of our era. Appendix 10 further details Es+Os from across all curriculum areas that I believe could be utilised to support extended inclusion of agriculture within curricula.

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[10] Interesting interactive maps include: https://map.onesoil.ai/2018/gb#5.14/55.74/-3.445
https://data.worldbank.org/indicator/AG.LND.AGRI.ZS?view=map
[11] Scotland's Soils - https://soils.environment.gov.scot/maps/

Table 4-8: Social Studies and Sciences Es+Os (Scottish Government, 2009)

Social Studies		Sciences	
Third	Fourth	Third	Fourth
	Having evaluated the role of agriculture in the production of food and raw material, I can draw reasoned conclusions about the environmental impacts and sustainability. **SOC 4-09a**		I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. **SCN 4-01a**
	I can carry out a geographical enquiry to assess the impact and possible outcomes of climate change on a selected region and can propose strategies to slow or reverse the impact. **SOC 4-12b**	Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in agriculture and their alternatives and can evaluate their potential impact on the world's food production. **SCN 3-03a**	
By comparing settlement and economic activity in two contrasting landscapes, I can reach conclusions about how landscapes influence human activity. I can explain my findings clearly to others. **SOC 3-13a**		I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. **SCN 3-05b**	
I can use a range of maps and geographical information systems to gather, interpret and present conclusions and can locate a range of features within Scotland, UK, Europe and the wider world. **SOC 3-14a**	I can use specialised maps and geographical information systems to identify patterns of human activity and physical processes. **SOC 4-14a**	Through evaluation of a range of data, I can describe the formation, characteristics and uses of soils, minerals and basic types of rocks. **SCN 3-17a**	

There are a plethora of teaching resources, inspiration and ideas that have been put together for teachers to exploit, covering all strands of the curriculum and for all age groups – some of which have been developed by agricultural organisations specifically to correspond with CfE. Included here are a selection of organisations producing resources and initiatives: RHET, QMS, Scottish Environment, Food and Agriculture Research Institutes (SEFARI[12]), Countryside Learning Scotland (CLS), Linking Education And Farming (LEAF Education) via Countryside Classroom, amongst others.

The resources available through RHET's teacher portal include ideas and links to external teaching aids and are aligned to the individual Es+Os set out in the Benchmarks and could thus be used in a variety of ways to help teachers with their planning of learning – including IDL – and as a basis for outdoor learning. The purpose of RHET's work is to,

> bring farming and the working countryside and its practices to
> life for young people (RHET, n.d.).

RHET pursues this work through a network of 12 Countryside Initiatives (including the RNCI covering Aberdeenshire, Aberdeen City and Moray local authorities) and a large number of volunteers who support their delivery of free educational experiences linked to CfE. These include farm visits, classroom speakers, and other experiential learning opportunities delivered largely through volunteered time, and their successful Education Tent at the Royal Highland Show. Given that the Benchmark documents are recommended as a key resource for teachers in their curriculum planning, the work that RHET has done to showcase the wide array of learning that can be accomplished through the embrace of agriculture is hugely valuable.

A national portal of resources and training materials developed as an outcome of the *Good Food Nation* policy was announced in February 2021, but is currently only accessible via pre-registration with a GLOW or local authority email address

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[12] Consortium of six research institutes delivering research on 'Leading Ideas for better Lives': The James Hutton Institute, the Rowett Institute, Moredun Research Institute, Scotland's Rural University College, Biomathematics and Statistics Scotland, and the Royal Botanic Garden Edinburgh (SEFARI, n.d.).

(QMS, 2021). The training initiative has been developed by the Good Food Champions partnership, consisting of,

- RHET
- QMS
- Food and Drink Federation Scotland (FDF Scotland)
- The Rowett Institute at University of Aberdeen,

and has been partly funded by Education Scotland (QMS, 2021).

FDF Scotland is the membership body for food and drink manufacturers in Scotland and is an autonomous division of the Food and Drink Federation. Whilst listed as a partner at the initial launch, it surprises me to see FDF Scotland as one of the partnership organisations since the FDF is a corporate-controlled lobby group which, for example, lobbied against a Scottish Government health initiative to restrict junk food promotions – despite the initiative being backed by leading medical experts (Lo, 2019). The Rowett Institute has also produced a number of food-related educational learning resources which are mainly aimed at primary school aged children and are produced through their *Knowledge Exchange* programme. The Institute's recent focus has been Scottish Government funded research on 'the relationship between food, diet and human health; in particular - how to prevent disease and ill health through improved food and nutrition', (The Rowett Institute, n.d.-a), as well as a focus on animal health. It provides evidence for policy development and supports the industry to gain market edge through the creation of new products (particularly pharmaceutical and food industry) as well as contributing to 'education in nutrition and health' (The Rowett Institute, n.d.-b). These resources have all been developed separately and as such there is replication and overlap in their content; some direct teachers to external websites and some are in-house worksheets and datasets. This is compounded by their location deep within websites that are not particularly user-friendly. Unlike the Outdoor Learning Directory, there is no hub or portal detailing all of the available resources and given that the newly released Good Food portal is behind a wall, I cannot comment as to its contents or structure.

Beyond the topics identified in the Benchmarks, my analysis points first to Es+Os that relate to food since these provide the most direct and obvious route to agriculture as the science and practice of farming. They expand on the Es+Os that comprise the Benchmarks, and also mitigate any potential narrowing of the curriculum in choosing only those elements outlined by Education Scotland. Appendix 10 details a list of Es+Os identified from across CfE that would be best employed in order to increase agricultural learning within CfE. I argue for '*would be best employed*' here because I believe that this is the best fit under current circumstances, one which accords with the existing structures and documentation for CfE learning and teaching. The question of where agricultural experiences *could* be best and most optimally employed requires a more involved and radical approach, whereby some of the cultures, structures, and traditions of secondary school education might need to be searchingly re-thought.

My explorations for examples of good IDL resulted in no clear and easily identifiable instances of 'best practice' advice at a national level on the practical elements of beginning to develop an IDL project. However, it is clear that some schools are developing successful projects. The examples that I found were (Education Scotland, 2020b):

- an IDL project experience resulting in an end goal such as organising an event, producing a movie, or designing an activity
- an ongoing IDL year-long project with the Commonwealth War Graves Commission at senior phase
- an ongoing engineering project in partnership with local employers at senior phase.

The very principles at the heart of approaches such as IDL, and as informed by such successful examples, show that, with planning and partnerships, there is scope for a successful agriculture, farming, or food and drink based IDL project work or longer courses of study. It is clear that these projects or courses need to be localised in their context, and/or tailored to the particular group of young people wishing to take part. Thus, a one size fits all agriculture-based model is not the most appropriate path within the realms of IDL. However, this does not

mean that there should not be a basic and general framework for schools to draw on. As discussed earlier, one of the difficulties in implementing successful IDL in secondary schools is a lack of cultural and structural flexibility in relation to e.g., timetabling and teacher collaboration. Thus, real success in the implementation of agriculture IDL cannot simply be solved in the identification of key curriculum 'subjects' that can be linked to agriculture. It instead relies upon some of the fundamental and underlying structures being adapted and re-oriented towards a secondary school BGE that flexibly utilises the mechanisms of CfE. This can then deliver a fulfilling and localised BGE curriculum for all students, one which recognises its purpose in developing young people who embody the four capacities, and who are fully literate in 'where there food comes from and how it affects their health, the environment and the economy' (Scottish Government, 2014) as outlined in the *Good Food Nation* policy of the Scottish Government.

IDL and outdoor learning can align very well with agricultural experiences, and indeed there are many engaging and exciting resources already published as indicated above, and also through other agricultural organisations. Arguably the integral role of LfS as embedded within CfE in numerous ways, including outdoor learning, also gives a strong motivation for the inclusion of agricultural experiences, as has been discussed in Chapter One. CLS is another organisation working to expand opportunities for education in the Scottish countryside. They aim to,

> engage people with the countryside and its social, economic and environmental benefits and opportunities (CLS, n.d.-a).

CLS differ from RHET in the delivery of its programmes in a number of ways. It is specifically targeting secondary school-aged young people with the aim of highlighting rural qualifications and careers and it delivers this through Countryside Day experiences, residential learning opportunities, and their flagship *Pathways to Rural Work* programme. The CLS approach to this area is regionally targeted and aims to create a more localised and efficient programme. Pupils gain initial engagement at Countryside Days, which can then feed in to *Pathways to Rural Work*. The initiative is currently running in some regions across the country, acting to engage young people with the rural sector

and to deliver a stepping stone into Further Education across all areas of rural life (CLS, n.d.-b). I argue that this more hands-on, experiential approach is more reflective of where agricultural experiences *could* be best employed within the curriculum and where they would enrich secondary school for those choosing a rural career pathway. However, I would also argue that these are important experiences *especially* for all young people regardless of career goals. Opportunities like farm visits, Countryside Days, and residential trips provide real-life experience for pupils in new environments, including tactile interaction with objects, things, and beings that young people may never otherwise have the occasion to encounter.

Farm visits and other countryside experiences have the potential, I believe, to be life affirming and life altering, encouraging young people to develop attributes beyond those of the Four Capacities. Farm and countryside-based experiences require us to act with dignity, humility and display self-assurance in situations that are unpredictable and potentially risky – all of which are hard to replicate in the classroom. These types of experiences thus contribute to the cultivation of grit and resilience, empowering young people to adventure out of their perceived limits of comfort (Fairclough, 2016). The scholarship on outdoor learning, education, and adventure is rich and varied (Gibson and Nicholas, 2018; Mutz and Müller, 2016; Quay, 2013; Sheard and Golby, 2006; Stonehouse, 2016, 2020; Thorburn, 2018). However, my efforts to source scholarship on the links of these areas specifically to agriculture, food and rural pursuits indicate a gap in the literature and in the practice it mediates. There may even be in places a possible *estrangement* between the declared ecological and LfS ethics of learning outdoors and the perception of an environmentally questionable agribusiness sector at odds with these ethics. All of this suggests that there are multiple opportunities for future research as relates to CfE, food production (agriculture), rural pursuits, LfS and outdoor learning, education and adventure.

Following the earlier discussion regarding Scottish Government Directorate support for the Outdoor Learning Directory, and the often environmentally protectionist stance of those organisations, it is surely pertinent to return to these questions in this section in relation to the issue of educational resources. The omission of agriculture-related resources and terminology is part of a bigger

trend that I have noticed in my engagement with Scottish Government policy, which prefers to employ the term 'Scottish producers' with regard to food production (agriculture) rather than making reference to farmers or farms:

> Scottish producers ensure that what they produce is increasingly healthy and environmentally sound.

> (From *Good Food Nation Policy,* Scottish Government (2014))

Whilst I recognise that 'food production' is a wider term and does, in reality, have a broader remit than 'from a farm' – and that it includes the processing of raw materials into foodstuffs – language, discourse and the way in which these are employed have the power to alter narratives.

Crops and animals are grown and reared by people who implement the science of farming, and work as a collective network to ensure a steady and nutritious supply of foodstuffs that nourish and sustain us to live, learn and work in villages, towns and cities across the world. Farmers rely on the natural world to do all of this, and are thus an integral part of the countryside, the mountains, water-systems and landscapes that we call 'The Environment' (a term coined by the Scottish philosopher Thomas Carlyle (Jessop, 2012)). Thus, any construction of agriculture as being 'against' the environment seems an odd juxtaposition when agriculture is very much part of collective human effort and survival. Increased recognition of our global impacts on the planet has it seems led in places to an *anti-farming* sentiment among some groups in society. This is largely in relation to livestock farming, and whilst it is often portrayed as an issue that occurs on a global level, the reality is that farming practices are deeply engrained within, and conditioned by, their local topography and climate. An 'anti-livestock' sentiment is discussed in greater detail later in this Chapter. However, we can recognise even at this stage that a global 'one size fits all' attitude and approach towards livestock farming degrades from the outset the often positive impacts that can be associated with farming and livestock rearing, particularly in Scotland where the environmental impacts of consuming British (or Scottish) beef or lamb are less damaging to the environment than the human consumption of imported alternative products.

Whilst discussions around the environmental sustainability of livestock farming often concentrate on greenhouse gas (GHG) emissions, it is important to remember that all food items have an environmental impact and that these extend beyond GHG to include those such as water use, soil erosion, soil quality, air quality, and biodiversity. Thus, the relative impact of livestock farming is contingent upon a wide range of factors including geographic location in the world (Capper, 2020).

The framework generated for secondary school teachers as a result of this research (Objective V) will build on those Es+Os that I have identified alongside the resources and initiatives available, aiming to showcase and link up the excellent work that is being done, but that currently exists discretely and lacks a cohesive rationale and practice. The opportunities for agricultural experiences as IDL projects or courses are multiple and using outdoor learning and the countryside as a space to learn provides latitude for a range of practical experiences. Concepts such as Outdoor Adventure Learning and risk taking, provide a solid foundation from which to consider the ways agriculture in the outdoors can be better incorporated into CfE. I believe that agriculture has much to offer as a learning and teaching experience, and that whilst its vocabulary itself is not highly utilised within CfE, there is potential for greater inclusion simply in interpreting agriculture as implied in the multiple discourses that surround food. This is a minimal effort strategy that requires no radical re-orientation of the cultures and structures of current teaching practice but which at the same time ensures increasing integration of agricultural literacy within CfE. I do not ultimately believe that this approach goes far enough to address the due recognition, credit and value that our rural and farming communities merit for their contributions to food security, but it may well serve as a constructive start. The attitude and perceptions of society towards food do not translate or are not understood in the last analysis as properly part of the processes of agriculture, and I believe that a fundamental shift needs to happen in the way in which media, policy, education and people discuss and debate these topics if such longstanding deficiencies and injustices are to be redressed.

4.3   The Benefits and Challenges of Agricultural Experiences

> *Seek stakeholders (agricultural sector and school-based environments) views on the benefits and challenges of agricultural experiences.*

A driving force for this research was involving stakeholders located in rural sector and in school-based environments and seeking out their views and opinions on 'agricultural experiences', as defined here in the Introductory Chapter. As a result of my wider reading for the preparation of my interview themes, I identified a number of key areas that I wished to discuss in terms of thinking more widely about the inclusion of agriculture within education. These included definitions of agriculture; personal connections to agriculture; perspectives of society towards food production processes; engaging with agriculture; and advice for inclusion within an agriculture-based learning experience for secondary school pupils. The most striking feature of the many interesting and enlightening conversations and discussions that I had throughout the interviews was the unexpected themes that stakeholders brought up. Included amongst these were: the media (including social media) and vegan and anti-farming sentiment. A number of these themes are elucidated further through narrative analysis of participant interview data, using the words of participants themselves to support and showcase the emergent points. The willingness of the rural sector to be involved in this research, I believe, reflects the hurdles and challenges that often need to be overcome in engaging young people in rural sector careers, alongside a consciousness of exclusion from public debates.

4.3.1 Definitions of Agriculture

I define agriculture within this project as being 'the science and practice of farming' and have limited this definition to farming as understood to be the cultivation of soil for crops and livestock. Broader definitions include forestry and horticulture, and whilst reference is made to these across the thesis, they have been excluded from my policy analysis in order to keep the scope of the project contained and focused. It should be recognised, however, that they remain key facets of the wider agricultural industry; forestry in particular, with reference to rural careers; and there is much work being done to attract young people into the forestry sector in Scotland (NatureScot, 2021).

This question on definitions was the first that I asked the stakeholder participants prior to the wider discussions that took place in the interviews. I included this question within the interviews as I was intrigued to see whether understanding of agriculture varied between urban and rural populations, and whether young people interpreted the term in a different way to adults, or if those who worked within the rural sector framed or identified with the concept differently. The group to which the stakeholders belong is outlined in Table 4-9 below (which is also found in the Methodology Chapter).

Table 4-9: Adult Participants

Local Authority	Category	Background	Pseudonym
Dumfries & Galloway	Farmer	Dairy farmer	William
Dumfries & Galloway	Stakeholder	Quantity Surveyor with family farm upbringing	Craig
Highland	Stakeholder	Agricultural Engineer with family farm upbringing	Charlie
Highland	Stakeholder	Careers Advisor with interest in rural careers	Roger
Highland	Farmer	Mixed Farmer	Mark
Highland	Farmer	Sheep farmer	Beverly
Moray	Teacher	Keen interest in horticulture	Joanne

The definitions that the participants gave were wide ranging; some were very broad including wider diversified activities, and some were very concise and precise.

Beverley- It's really wide.. From ehm, really getting your hands dirty... through to the absolutely... ehh... what I've been doing today which is sitting in my office.. And everything in between and agriculture for me is everybody that I deal with from businesses, merchants, through to vets... through to researchers like yourself so it's really wide for me.

Mark- Agriculture is evolving over time and it would have been very much mainstream I think it would have been producing food. But I suppose it's evolving all the time and there are other factors now coming in to play than they used to be, so along with mainstream food production and production of protein, and cereals... protein being for us beef and lamb but you've obviously got other proteins as well, but beef and lamb that affect us here at [the] Farm but we also produce cereals so that's good for the distilling and malting. But for us really the agriculture side of things it's more than that, it's environment, it's tourism, and it's wrapping the whole thing up in one... it's people... involved in the industry, it's a worldwide industry and going forwards it's managing to become more business minded whilst still maintaining its traditional values that agriculture and the wider industry has. Probably not defining agriculture very well, but...it's all encompassing, it's everything that happens in the rural sector... it's not just mainstream farming activity now it's much wider.

Roger- erm.... I'm just struggling a wee bit in terms of how broad a category that is... and I wish I had Latin and I could derive... *agri*... and I would discount fish... I would say it is land based production of food and plant material, animal... that basically that goes into food and drink. So, that would be how I would look at it. But I qualify that immediately by saying that the diversification of agriculture in the time I've been in the Highlands. There are much more diverse businesses that are using the land resource in many ways. In retail ways, in hospitality ways, in recreational ways. So, it is a complex business and also it's something that we may be very unaware of. Something that goes on out with our knowledge or our 'ken' and that's something that young people are lacking in awareness of what it does and how it impacts in their lives. So that's my thought.

Craig -   Oh – wow, eehh – I would define it as being absolutely the backbone of the whole of the UK in particular, super important…firmly believe it is the backbone of the country and feel it's let down by numerous sectors all over the country, but yeah – super important. I would still rate it very highly even though I left, out of personal choice, but yeah I think that sums that up pretty well.

Joanne-   It's the growing of things, it's the production of food… and it's, I think, a vital part of our lives… erm, I think it depends where you are in the world as to what it covers. I think certainly in Britain it covers meat, and fruit, and vegetable production, and also animal feeds like grains and things like that… and animals… cattle, sheep.

Charlie-   Er… well agriculture's any sort of food production from the land. Pretty much.

William-   Agriculture is the, erm… science and the study of err… growing crops and livestock for food production and also for the environmental benefits to the wider local area.

Largely the definitions given aligned with traditional understandings of what agriculture is, and I found it interesting that, for Beverly and Mark, *people* were central to their narratives, whereas for others it was simply about the processes and products that are generated as a part of wider food production sector. Most stakeholders included the link to *food* in their definitions, and a number framed agriculture as existing within a network of some description, whether that be as part of a 'global industry', as 'businesses that use the land resource', or providing 'environmental benefits to the wider local area'. Roger's definition reflected his detachment from working directly in the rural sector, suggesting that agriculture is something that happens 'outwith our 'ken''. In the opposite vein of experience and understanding, Craig comments that agriculture is the very 'backbone of the whole of the UK'. The expansiveness of the definitions offers an indication of the very wide and varied opportunities that the rural domain has to offer. Rural jobs and careers are not just about tractors, there are many adjunct sectors that overlap and support rural and countryside based businesses and organisations: tourism, hospitality, merchants, and environmental studies and sciences, among others not detailed here (LANTRA Scotland, n.d.).

The definitions provided by the pupils who took part in the focus group are listed below and differed in some perspectives from the adult stakeholders. However, the reference by Joseph to agriculture being part of the 'cycle of the food we eat' and as having a role in the production of medicines; and that by Lillian as 'taking care of the land', struck me as particularly holistic framings of agriculture with reference to the wider social structures within which agriculture operates more globally, and outside of the traditional or conventional understandings presented above.

Alex-　　　I think it's like farming basically... about crops and animals and stuff... I think it's about making money as well...

Clemence-　I would say it's about the production of crops... erm... maybe I would say, for food... you've got the plants and... you've got the livestock...yeah...

Keera-　　Erm... I would say it's like... something that you put your head to and like... I don't know... eating is important so... I think farms are magnificent, and I really respect them for all their hard works... it's hard...

Joseph-　　Erm... farming is the cycle of the food that we eat.. like.. and also, it can be like clothes as well for example.. like, err... sheep give us wool – that could be used for multiple things... different plants can be used for different medicines... and erm... different foods, different ingredients, the way they grow... and different parts of the world where our food comes from as well... depending on the climate of the country...

Ilona-　　　I would say that agriculture is the production of food crops for money...

Lillian-　　I'd say it's taking care of the land, and also providing, like, better food for people.. rather than like fast food...

Mia-　　　Using nature to our advantage to like, make the things that we need...

It is hard to comment that conclusively there is a difference here in the understanding of agriculture between generations given the small sample size. However, Roger's proposition that young people are increasingly unaware of the impacts of agriculture in their daily lives is certainly also suggested in the data

constructed and in wider scholarship (Barry, 2009; Oke *et al.*, 2020; Place, 2016). In particular, the comment on agriculture being the production of 'good food' as opposed to 'fast food' shows an unawareness of the real role and impact of agriculture within daily eating habits. The references to food by the pupils were more detached in nature than those of the adults, with a transactional framing of agriculture as being 'food crops for money' or about 'making money'.

4.3.2 School-Based Stakeholders

4.3.2.1 Pupils

Seeking out the views and opinions of pupils was, for me, the main driver in this whole project. Their judgements and perspectives contributed to the research in the form of a focus group and short surveys completed before and after the focus group, and it is these data that are drawn on across this section. I was keen that they were consulted, partly as I believe that young people have the right to be included in decisions made about their learning, and partly because of my own personal experiences and the knowledge and skills that they impart. They form some of the most significant and formative experiences on which I continue to draw time and time again, and have shaped me into the person I am. I use these experiences not only in informing and driving my food and wider consumption choices, but also to critically challenge, explore and question the world around me. There are many myriads of reasons why young people may choose to pursue or seek out careers in any sector or part of the economy, indeed anybody at any point in their lives can do this. However, if there exists no baseline from which to draw on for experiences of agriculture, then there will forever be a gap in the 'ken' of wider society as to the detail and nuance of the single most fundamental process in ensuring people have food on their plates.

The pupils placed strong weight on the importance of agriculture as part of life in Scotland, as well as the important role that farmers play in society, as presented in Table 4-10 below. This was despite the more detached understanding of the impacts of agriculture in relation to food production included within their definitions listed in the previous section. They also indicated that they valued and cared strongly about where their food comes

from and knowing how it is produced (Table 4-10 below). This further suggests that, although young people may not be fully aware of the processes at play with regard to the role of agriculture in how their food gets to their plate, they do intuitively value and are interested in the associated knowledge and skills.

Table 4-10: Pupil Attitudes: Agriculture and Food

Pupil Attitudes: Agriculture and Food	Mean [n=8]	Median	Mode	Range
Agriculture is an important part of life in Scotland [score 1-10]	8.13	8	10	4
Farmers play an important role in our society [score 1-10]	8.50	9	10	5
Knowing where my food comes from is important to me [score 1-5]	4.13	4.50	5	2
Knowing how my food is produced is important to me [score 1-5]	4.75	5	5	1

These attitudes were echoed and enlarged throughout the focus group discussions, with the overwhelming group response being that the pupils thought it was hugely important to be able to *experience* agriculture at school:

Lillian-   …I think it's also really important because people might, like, be more aware of like, what they're eating and where their food comes from.

Mia-   I think a lot of children, like, don't understand where what we have comes from… And I think that once you know of… that like, everything we have comes from nature that you can expand on that and learn from that in other scenarios in your life…

Joseph-   …and like, I feel like the actual experience is more important than just being taught stuff…I feel like if there was more opportunities for people to actually experience things I think people would actually benefit from that.

Keera-   I think also, it's really important for the younger children. Like, I was doing gardening and farming at school since I was 6 or 7… and you were so happy when you were able to take home to your mum like… 'here I grew you half a potato' but you were so happy with yourself, and you were really proud of it and I think that was quite a good confidence boost…

Ilona-   I think that farm trips... like visits to actual farms
              when you are quite, like, young still... It's quite
              important... even if it's just like, a day thing.

Pupils felt that a benefit to learning about agriculture in school is that everybody learns more about the processes through which food comes to the table. Keera and Ilonas' comments on the confidence and pride gained as a result of growing food as children were insightful and show that they have already been impacted by agricultural experiences that have left an impression on them. Some of the pupils had taken part in skinning and tanning workshops, which gave them an appreciation for the ways in which all parts of husbanded animals can be used, including the meat, leather, wool and so on. This led us to an interesting discussion about the disassociation of animals and the food they then become in the 'farm to fork' journey, and their assertion that this is leading to society becoming increasingly out of touch with a lot of food production processes. The following is an excerpt from a longer exchange between a number of the pupils; Clemence and Joseph (who attended the tannery workshop), Lillian (who is a vegetarian), and Ilona, Mia and Alex. I include a longer extract to illustrate the tensions and the rich sense-making that occurred for the young people throughout the focus group:

Clemence-   I think that it's really important that if you eat
            meat... I was telling some of my friends... last year
            about my work experience with skinning and
            tanning, and they were like... 'urgh that's so
            disgusting' but they ate meat... and I was like 'you
            can't deal with this but you eat the meat? I don't
            think that's okay that you aren't able to cope with
            the whole process'

Ilona-   ...like yeah, people are like 'oh here's my nice piece
            of chicken breast' like, they don't think about the
            whole animal like... feathers of... like... I think people
            just cancel that out when they are eating breast...

Clemence-   ...exactly...

Lillian-   ...going on that point it's kind of like if you don't see
            the animal... like, being killed or eaten... or you don't
            see it in the shape it is... Then you just kind of like,
            think it's a completely different thing... like, it just
            comes from somewhere else. You don't actually think
            about the cute little chickens running about...

Mia-   ...and I think because people don't take part in the killing of animals, and the production of animals to eat... so I think that people don't know what goes on...

Alex-   ...also, I think the reason there is so much mass production of stuff is probably money... because if you think about it... it's a lot faster to have like, 10,000 cows than having 50... and its faster... You kill more of them... and you don't really sell them for less expensive... so you get a lot more money from... like, with lots of production than with few cows on a farm... and...

Ilona-   ...just going back to Mia's point... it kind of goes back to the education on it... like, not like, this unawareness of where it comes from and like you are plainly just seeing that when it's in front of it... So, then it kind of circles back to then maybe... from a young age being able to have more experiences... not only like... like planting stuff... Like farming, not just planting stuff... but like animals too...

Joseph-   ...going back to Alex's point another point is that its seen as a product and not a natural living thing... my granny used to say to me you don't name them... as you naturally become attached to them and you don't want them to die... I'm not saying that this is the way to go.... But if we named our animals and really got to know them we would be less likely to kill them...?

Clemence-   ...I would also like to go back to Alex's point.. To the fact that the non-organic, non-free-range meat is A LOT cheaper... and I think for a lot of people erm, it's... they would like to change how they eat, but it's just not affordable.. They can't afford to do that... I don't know what can be done about that.. But we could make more awareness of that.

I found the exchange to be very interesting. The conversation that the pupils had was wide ranging and informed; even sometimes passionate and drawing links to economic and commodification questions about food. Their dialogue was rich in sentiment, imagery and symbolism. Clemence's friends' retort of 'disgust' – itself a strong emotion of revulsion – at her participation in the skinning workshop showed their relative unfamiliarity with the processes of agriculture, but also her strength of conviction. She was very confident in her own judgements throughout the focus group, informed by personal experiences of

skinning and tanning, and fully aware of the full lifecycle of livestock and the implications of only engaging with a small part of the cycle and unafraid to challenge or inform those around her. Whilst a rich discussion, it was clear to see that each of the pupils' personal viewpoints were influenced and shaped by their experiences as younger children; particularly by family and friends, but also the impact that their knowledge and learning was able to have on friends and family. Clemence later commented:

> I actually did skinning and tanning with Joseph, and yeah I've found it really useful… Like my mum screeched to the side of a road and picked up a pheasant 'heere you go deal with this in the evening' it was really useful…

The slaughter of animals is a technical process within the production of meat, however, use of the term *slaughter* in almost all other scenarios generally invokes a much more brutal and heavy emotional response particularly with relation to e.g., massacre, terrorism, war. I therefore found the pupils' exchanges on the topic of animal death interesting. The exchange itself was not emotionally laden and was more matter-of-fact in delivery. Although there was tension between those who ate meat and those who were vegetarian, they collectively made sense of some of the key ethical issues that are implicated in food and food production. In our wider discussion this narrative also touched on the way in which approaches towards farming have changed over time. We explored the different approaches currently taken in 'mass farming' [intensive agriculture] versus smaller-scale high-welfare farming. Animal welfare was a concern of all the students, and despite their different personal beliefs – from vegetarian to participating in skinning activities – they were all of the clear impression that having practical and hands-on experiences of agriculture, and very specifically of animals and livestock, whilst at school would bring them benefits in their later lives regardless of whether they would pursue rural careers or not.

The idea that if the challenging facets of food production are out of sight, they are therefore out of mind, was particularly interesting. They were also astute, even as high school pupils, in their observation that higher welfare, and more sustainably produced food and goods, are more expensive and thus it is not practicable or affordable for everyone to eat in the way they might wish to. The

sense-making of the long group extract above is crystallised in Mia's comment below:

> Mia-   I think it's really important that everyone learns more about where their food comes from… so that everyone's more aware of what they are buying, and what's… the process that the food has gone through.

The group exchange highlighted, also, the value of collective discussion and of disagreeing with one another in a respectful and ordered manner. Given their very different personal beliefs and personalities and the tensions that these differences bring, I had expected our exchanges to be more fiery in areas. They understand clearly, however, the need to be held accountable for our actions. Whilst the challenging aspects of farming are often out of sight and out of mind, they understood that in continuing to shy away from difficult and sometimes emotive conversations about animal welfare and slaughter, important changes in food systems and consumer behaviour are not likely to occur. These changes might look like, for instance, increased agricultural literacy empowering consumers to make more sustainable or climate conscious food choices.

In terms of whether pupils thought there would be any challenges entailed by an agricultural experience at school, participant comments and discussions largely focussed on the recognition that not all teenagers may be interested in, or motivated by, the topic itself, and that young people may not get much support to pursue the topic – particularly given that,

> Alex-   It's really important – apparently - to be really good at Maths and English, but you're not really going to be viewed as getting very far if you are good at farming.

They also very briefly touched on the health and safety and monetary costs of trips and experiences, in addition to time spent out of the classroom. They also highlighted building lasting partnerships with farmers, as being potential issues for schools and teachers. However, these points were only made in passing and the overall consensus and attitude of the group was that the benefits of the experiences would outweigh any obstacles. The results of the short survey data and analysis of the rich qualitative data generated through the focus group

narrative analysis demonstrate that young people are interested in where their food comes from and how it is produced. This then also serves to highlight the benefits that young people could gain as a result of secondary school agricultural experiences.

Wider analysis of the focus group data also shows that the intersections of agriculture with other aspects of learning and teaching within the curriculum, such as LfS, are absolutely key in ensuring that balanced content and critical thinking come together to enable young people to develop and build their knowledge and understanding of environmental issues associated with the production of food. As a small group of pupils with a uniquely diverse range of personal interests – tanning and skinning was not a skill or experience I anticipated – their insights and astute observations underline that young people are not passive or disinterested in what their future looks like. Mia in particular was very articulate in her responses throughout the focus group, recognising in the interaction of agriculture with other facets of life the value that this brought to understanding how food is produced and the choices we make and the actions we take to ensure it is then done sustainably.

4.3.2.2 Teachers

The views and opinions of teachers were the other school-based driver in seeking out the perceived benefits and challenges of agricultural experiences. As indicated in the Methodology chapter, the views and opinions of teachers were sought through school postal surveys and interview, and the combination of this data was drawn upon to inform the following section.

It has been previously highlighted that secondary schools are often exposed to the more bureaucratic nature of current CfE structures. This was also reflected in the low response of schools choosing to participate within the research, indicating that there are perhaps issues in the wider structures of schooling, including a shortage of teachers, which raise questions about the role of research as an innovating tool within education in Scotland more generally. Interdisciplinary Learning and Outdoor Learning are both key priorities for teachers and as the main areas of study here, investigating the attitudes of

teachers on them was important. Table 4-11 below details the attitudes of teachers to the outdoors and agriculture, including agricultural experiences.

The results of the postal survey suggest that overall teachers believe that agricultural experiences would benefit their pupils, however there was one outlier indicating that this response was not universal amongst the respondents. Teachers felt that on balance it was not riskier to take pupils on farm visits as opposed to other outdoor trips; there was also one outlier to this response who felt that these types of visits are inherently riskier than other outdoor trips. Whilst there was strong agreement that teachers felt an important part of their role as a teacher is to support pupils' outdoor learning opportunities, one outlier disagreed. The same outlier did not enjoy teaching in the outdoors (with a further additional outlier, the same outlier who did not agree that their pupils would benefit from an agricultural experience) against a larger consensus of those who do enjoy using the outdoors for teaching.

Beyond the attitudes of teachers to agriculture and the outdoors in their teaching practice, I was interested to gauge whether personal enjoyment and memories of agriculture and the outdoors would interact with teachers' decisions about their teaching practice. By and large, enjoyment of the outdoors in teachers' free time was an indicator for enjoyment of teaching in the outdoors, with the reverse also holding true. There was one outlier to this trend, who indicated personal enjoyment of the outdoors, but did not enjoy teaching in the outdoors. There was a broad range of responses to whether or not teachers had strong memories from their own school experiences, and most teachers indicated that they did not have specific memories of farming or agriculture from school; there was one clear outlier of a teacher who did have strong farming memories from school.

Table 4-11: Teacher Attitudes: Agriculture and the Outdoors (Survey Data)

Teacher Attitudes: Agriculture and the Outdoors [score 1-5]	Mean [n=24]	Median	Mode	Range
I feel my pupils would benefit from an agricultural experience	**4.13**	4.5	5	4
It is riskier to take children on educational farm visits than to other outdoor locations	**1.58**	1	1	3
I think it is important in my role as teacher to give children outdoor learning opportunities	**4.42**	5	5	3
I enjoy teaching in the outdoors	**4.13**	5	5	4
I enjoy spending my free time in the outdoors	**4.50**	5	5	3
I have strong memories of outdoor experiences from my own time at school	**3.33**	3	5	4
I have specific memories of farming and agriculture from my time at school	**1.63**	1	1	4

There were two cases that returned outlier responses in more than two questions within this section on attitudes to agriculture and the outdoors. The first of which was identified as teaching Pupil Support and therefore less likely to be involved in the planning of learning experiences, and the second was a practitioner who did not believe that agriculture was a topic they would consider in their learning and teaching. Overall, teachers indicated positive attitudes towards agriculture and Outdoor Learning in general, however the positive average scores did mask a more nuanced mixture of attitudes with regard to the respondents in this particular sample.

Further to teacher attitudes on agriculture and the outdoors, the aim in conducting the interviews was also to hear and understand from those actively involved in curriculum making and teaching. To include their views and judgements on any perceived benefits and/or challenges that they thought might result from embracing agricultural experiences. Given the lack of teachers who engaged or responded to the call for interviews, the data generated from interviews relates to one teacher and as such does not represent the wider

teaching body or provide any generalised insights. In our interview, we discussed the many benefits that Joanne felt young people can gain from experiencing agriculture at school, including self-confidence and the recognition that you can earn a living from the land:

> I want the kids to feel that they have that confidence to just grow something if they want to…

We also discussed the commonly held idea that these types of hands-on experiences are usually recommended for those who are deemed to be 'less academic'. She believed that this was a misconception:

> Some students learn much better hands on… it's not dependent on academic ability, people always say, 'oh the less academic, they can do the hands on stuff, they can do the gardening…' and I don't think that's actually true. I think it's; some people learn better with the hands-on skills.

In addition to experiences of agriculture being about hands-on experiences that young people can put to use within their own lives, Joanne also discussed the value of expert judgement and input, and the real impact that hearing someone who does a particular job can have on encouraging young people to engage and interact with that domain. We discussed the ways in which experiences can make lasting impressions on young people and the importance of knowing what it is that you are aiming for as a young person:

> I think it's personal… it comes down to people and personality… however many films you saw on shepherding, for instance, to actually have someone come in with their sheepdog and talk to you about what actually happens to the fleeces… where they go and what they get used for, why you take them off… is going to totally outweigh a beautiful, colourful film on sheep shearing really…

> I think it always will come down to the personal… Like when you came in… I think you've had more of an impact talking about what this is all about… For me personally… its always… especially with teenagers… I think… They are always looking to what they are going to do… How are they going… Looking for role models… And if your role model is…, I don't think it's going to have the same impact as if someone actually comes into your space, or you go into their space… So, I think that the interaction is more important than anything.

> As a teenager… you want to know what you are aiming for… So,
> you want to see that that's where you can get… we don't have
> any idea until we know something… So, as they know nothing
> about it… To see a progression makes them think 'yes, I could do
> that'.[…]

> Yes, you can grow herbs and make a living. Yes, you can grow
> Christmas trees and make a living… Yes, you can be a head
> gardener and rejuvenate an incredible walled garden so that it
> serves both the cafe and pays for itself, and the public can come
> and see it… so I think it's really important that students can see
> that… Or anybody, really, sees that it is a viable way of life. […]

A close narrative reading of Joanne's interview shows it was clear that experiential learning was a key component not only to her teaching, but also to her *personally*, and her way of life: a passionate defence of having a worthy and 'viable' livelihood that is built on and reliant upon the land. Joanne was able to articulate and impress the importance of human connection throughout her interview, continually bringing the farmer, or the shepherd, or me, or her pupils into the conversation. This was central to the strand of Joanne's story that was built around the idea of *interaction*. Interaction with the land/soil and interaction with people. For Joanne, the benefits of pupils experiencing agriculture, particularly through the children growing food and vegetables, was very important. In her experience, the hands-on elements involved in the processes of growing give her students confidence and transferable skills that they can take with them into their adult lives.

In addition to the 'dirty hands' element of interaction, it was important to Joanne that interaction also included people. She believes that teenagers are always searching for role models or people that can illuminate and elucidate their unknowns, and to show what personal progress can look like. For Joanne, an important part of interaction is that of space or *place*; whether that be young people experiencing other spaces and places, or whether that be someone 'expert' coming into their space. A further strand within Joanne's narrative was that of balance; a recognition that there is a bridge to be built between environmental concerns and those of farming, and, again, that representation of people and rural sector jobs is important:

> I think that it could broaden them out farming in a totally
> different way. Nowadays this whole environmental thing is really

> big on peoples' awareness… A lot of the kids were talking about growing organic and not eating meat and all that… if you come in from that aspect and showed them what the world of farming and agriculture is like… I think you then will catch them… like rural pursuits… or even rural activities…? If they actually had a chance to… I don't know… go out with a gamekeeper… It might make them think 'hey, that's a job, that's a job-and I get paid for that' you know...?

Joanne was thoughtful and considered throughout her interview, conveying well the meaning of the complexities inherent in building learning experiences for young people that are both informative and sensitive to the impressionable natures of children and young people. Amongst all of this, however, Joanne was confident that horticulture and agriculture are important mediums for delivering powerful learning experiences and life long learning, which ultimately benefit young people regardless of the career paths that they eventually pursue. The argument that experiential and impactful learning experiences can have a profound influence on young people, and that there are many forces at play when it comes to shaping and building curriculum and learning as relates to agriculture and careers, are therefore supported by Joanne's narrative.

Her narrative also provided a rich defence for the value of experiential learning within her teaching. Experiential learning is a philosophy and methodology whereby knowledge, skills and values are developed by the learner through engagement in direct experiences and focussed reflection (Smith and Knapp, 2010). Hands-on, direct contact with animals, soils, seeds, water, and so on, builds a level of practical wisdom that cannot be learned only from books. Experiential learning in this way thus bridges the gap between theory and practice – Head and Hand work as per Sennett (2009) and Goodhart (2020); helping students to build and develop their internal knowledge and awareness (Beebeejaun-Roojee and Congo-Poottaren, 2015). Higgins (1996a, 1996b, 2009) argues that connection to place – local communities, place within the world, and so on – is an important part of experiential education, and that where these connections can be well made and linked to the 'understanding of the consequences of actions' then an 'ethic' of rights and responsibility, as well as 'care, for self, others and the environment' might result (Higgins, 2009, p. 48). An *ecophronesis* if you will, or indeed **agricultural phronesis** as in this case of

agricultural experiences could thus become a framework for a revised 'Ethic of the Land'; or environmental virtue ethic, after such works as Aldo Leopold, Henry David Thoreau and the US Transcendentalists, and on to Rachel Carson and the tradition of environmentalist campaigning (Cafaro, 2001).

Ecophronesis is described by Xiang (2016) as being,

> ecological wisdom [that] connotes both Platonian *sophia*
> (theoretical wisdom) and Aristotelian *phronesis* (practical
> wisdom) (Xiang, 2016, p. 53).

Xiang coined the term with reference to ecological practice, but also envisioned it as an opportunity for both ecophronesis and an 'ecophronesis-knowledge-action approach' to contribute to innovative and transdisciplinary research, including potential principles of ecophronesis – and as a paradigm or form of knowledge inquiry (Xiang, 2016). Furthering the concept, he believes, could enable it to act as a bridge between scientific theory and ecological practice, as well as enabling actionable science[13]. Whilst Xiang envisioned the concept within the frame of ecological practice in an urban planning context, I believe that it has traction as a concept within the wider parameters of this research and what it is setting out to achieve. The concept of phronesis, alongside an ethic for the land, and its potential for carrying forward elements of this research will be returned to later in the chapter.

In terms of the challenges that teachers perceived in relation to agricultural experiences, Figure 4-1 below details the results of the relevant survey questions showing that the two barriers most frequently cited by teachers (>50% frequency) were timetable limitations followed by transport. The other barriers were considered to be less of a challenge (<25% frequency), of which 'not knowing any farmers' and 'other costs' were the biggest (>12.5% frequency); and with 'health and safety' and 'difficult to organise' the least frequently rated barriers.

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[13] *actionable science* - data, analyses, projections, or tools that can support decisions in natural resource management; it includes not only information, but also guidance on the appropriate use of that information (Beier *et al.*, 2017).

On the basis of wider contextualisation within CfE, certain strands to these results were anticipated, particularly given the cultural and structural difficulties outlined regarding IDL, and thus it was no surprise that timetable related limitations were the most frequently indicated. The surprising results were that health and safety was not as frequently cited as a barrier as I had anticipated, and that despite timetable limitations being referenced most frequently, overall, teachers did not rate 'difficulty to organise' as being a particular challenge in the round. That teachers on the whole do have connections or are aware of organisations they can approach suggests that among the surveyed population the barriers to giving their pupils agricultural experiences are related to wider enabling structures of curriculum and resources.
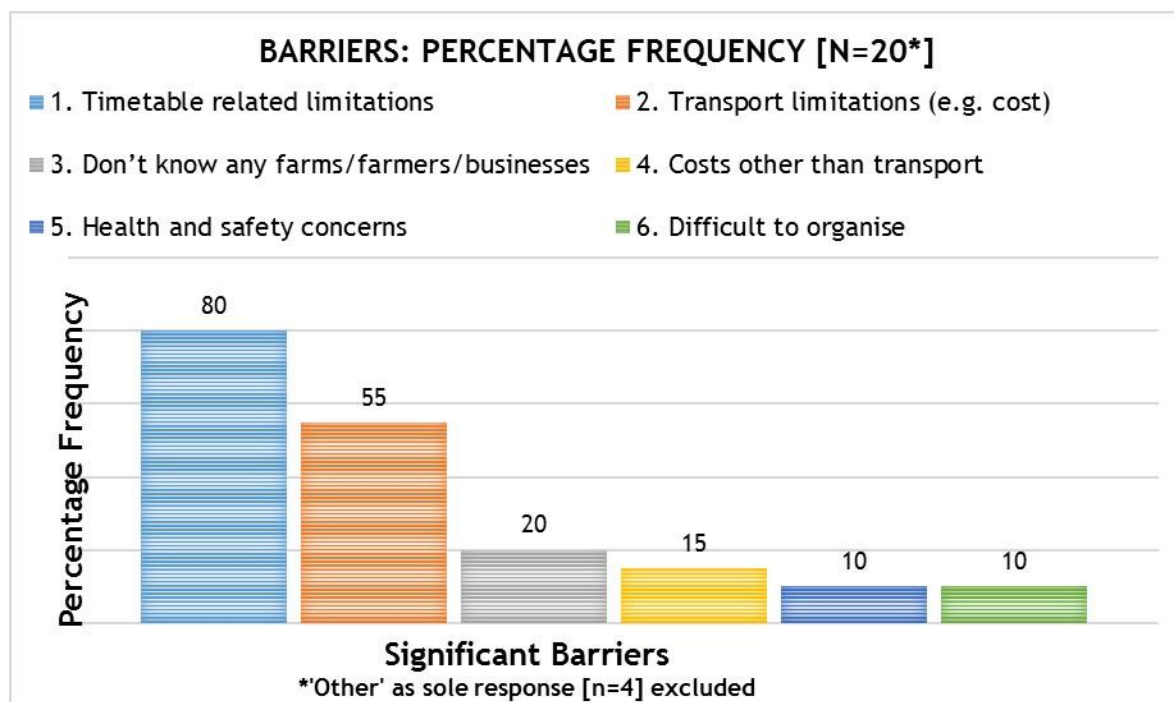
Figure 4-1: Agricultural Experiences: Barriers (School Survey Data)

Excluded from this table due to individualised comments is the 'other' barrier category that I included as an open ended option, to ensure that any other concerns or issues could be captured within the survey. The responses given by teachers here were of particular interest given the very broad and often opposing views and opinions that they contained – especially in combination with the wider dataset and case by case views and opinions:

- The main barrier is me getting my finger out and doing it.
  We have lots of crofts but no large farmers so the
  experience would be different.

- As an independent school in a rural location, there are no
  barriers and pupils gain field experiences in agricultural
  settings in a number of school trips.

- At [x] we have far fewer of such limitations, but
  cost/timetable would be most significant.

- Syllabus content at secondary level.

The responses returned with the only variable of 'other' selected in relation to barriers (which accounted for 16.66% of total returned surveys [n=24]) largely indicated that the teachers in the survey sample are aware of both the benefits and barriers that exist in terms of agricultural experiences, and that the only real obstacles to their pupils having these experiences lay in their capacity to organise such trips. Perhaps the most interesting response given in the dataset is that a barrier to agricultural experiences is that the Secondary School syllabus does not contain relevant content. In context, this is of note because the survey respondent was also the only person to indicate that they did not think that their pupils would enjoy an agriculture based IDL project. There is little depth or further context that can be inferred from a single case; however, it is clear that not all schools or teachers have the inclination or vision or confidence to include agriculture within their school curricula or learning and teaching. It would seem that even in the case mentioned above, which is classified as being a Remote Small Town (Urban Rural Classification 2 within Scottish Government six-fold scale) and does offer a Rural Skills qualification, elements of agriculture have not been actively drawn out despite their relative proximity of 'rurality'.

Alongside respondents who responded with 'other' as the sole category, a number of respondents chose to use it to provide additional context or opinion on the barriers that they identified.

- No major limitations for my school.

- I feel, for me, there are few limitations to farm visits

- All are potential barriers at different times. No two trips are the same

- The hours of admin required to organise a field trip that teachers must use their personal time for. It does not form part of our working time agreement despite outdoor learning being a key target.

- Teachers complain about pupils missing from their class and cover implications to take teachers' other classes when they are out on an 'educational visit'.

The range of responses again indicated that, whilst some schools are and have been giving their pupils agricultural experiences – and they see no real barriers or challenges in doing so – a number of teachers are limited by the structural and cultural inhibitions of their schools, by limited curriculum making and outdoor learning in general, rather than by the specifics of experiences relating directly to, or only to, agriculture. That organising a field trip for pupils falls outside of any working time agreements was surprising, particularly given the key priority of Outdoor Learning within CfE and LfS and its ability to provide enriching and hands on learning experiences. The comment on the complaints of pupils missing from other classes and the implications of covering classes was particularly revealing of these basic cultural and structural challenges.

In my interview with Joanne, we discussed the challenges that she comes across in her learning and teaching practice. Her responses were similar to those of the school survey, in that timetabling impacted on the availability of staff to accompany pupils on trips, which could leave the school short of teaching staff. We also discussed agricultural experiences as a form of work placement within the local school area, where there were additional challenges such as the age of pupils, health and safety, and the attitudes of some farmers and rural sector stakeholders:

> …and the… I would say… a bit of reticence from the farmers or agriculturists who don't know really what they are getting in to, to have a 14-year-old or a 15-year-old boy or girl… They are worried the work might be a bit heavy… they're not used to it, so they'd rather say actually it's not for us… rather than try and tailor something for the student.

I asked whether she thought that the formation of an IDL project around agriculture would be a way in which to create space for the topic of agriculture; we discussed the mixing of different subjects that current IDL projects are framed around which were linked to geology and outdoor pursuits. Joanne concluded that in terms of agriculture it was,

> … perfectly possible that something like that could be combined… And it would be within the school's ethos to do something like that… if it could be worked out.

There were, she believed, ample opportunities for outdoor learning and school trips as part of learning about agriculture, with greater opportunities linked to IDL projects such as the chance for adventure and independence-building experiences. The pupils regularly take part in growing activities in the school and local area and are involved in opportunities to cook and make food from the vegetables and plants that they grow.

As part of my exploration into the best place to employ agricultural experiences within CfE, and to link these to outdoor learning (Objective I), I included in the postal survey a question on Outdoor Learning and school trips, asking teachers to indicate the range of different trips or outdoor settings they would utilise in the planning of an agriculture learning experience. The results as percentage frequency can be found in Figure 4-2 below. The most frequently cited trip or activity to complement an agricultural learning experience was a countryside walk followed by bringing in a classroom speaker. This was the result that I had expected to find, as I included these as examples of trips considered to be low risk, and that have the potential to fit in with the current structures of secondary school timetables and wider learning organisation.
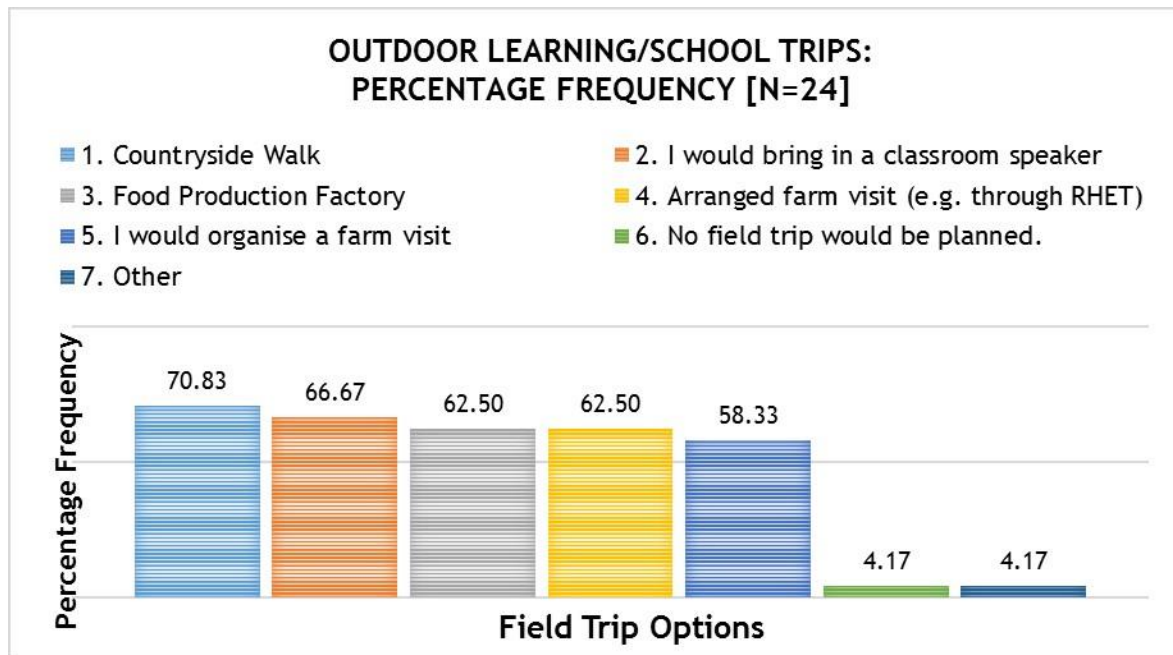
Figure 4-2: Agricultural Experiences: Outdoor Learning/Trips (Survey Data)

Food production factory and various farm visits were the next grouping of options and, although a less popular choice, still scored a high frequency of responses. Only one response indicated that no school trip would be planned, however this response is discussed above and is explained by the job role of the respondent (Pupil Support). In the same manner as the question relating to barriers, I included an open ended option of 'other' to capture any additional view or opinions the teachers wished to include. One teacher responded solely with this option, indicating that,

> I can't see any instance when I would be planning a learning experience around agric.

This view continues the same sentiment that this particular teacher had towards agricultural experiences and also aligns with the quantitative elements of their survey response.

The option was also used by a number of teachers to include additional comments and information relating to activities that they already carry out or would adapt to suit their local context. A number simply indicated that all and any of the experiences included would add value to the educational development of their pupils, and others used the space to illustrate other

examples such as river catchment fisheries, the Royal Highland Show, Cream o' Galloway, Whitmuir Organics, and local nature reserves.

— At [x] we are open to any type of experiences that might help our young people!

— Our school uses [x] near Edinburgh for our farm trips.

— I would organise a croft visit.

— Moray runs an annual Land Based Sector Day for S3-S6 students.

— I attend weekly farm visits with my group and host visits at my farm.

The additional information given illustrates that there is already a breadth to the agricultural learning activities taking place across the country, but particularly across those areas considered to be more rural in nature. The school organising a croft visit is based in Comhairle nan Eilean Siar (Western Isles Council) and is designated Remote Rural (Urban Rural Classification 6 - Scottish Government six-fold scale); the school teacher attending weekly farm visits is based in Dumfries and Galloway, and their school is designated Accessible Rural (Urban Rural Classification 5 - Scottish Government six-fold scale). The schools in Moray, Eilean Siar, and Dumfries and Galloway Local Authorities that responded with the additional examples listed above are all located within rural communities, their schools surrounded by Accessible and Remote Rural countryside, supporting and contributing to the rural economy. The map below gives a clear visual representation of the urban rural make-up of Scotland's countryside.
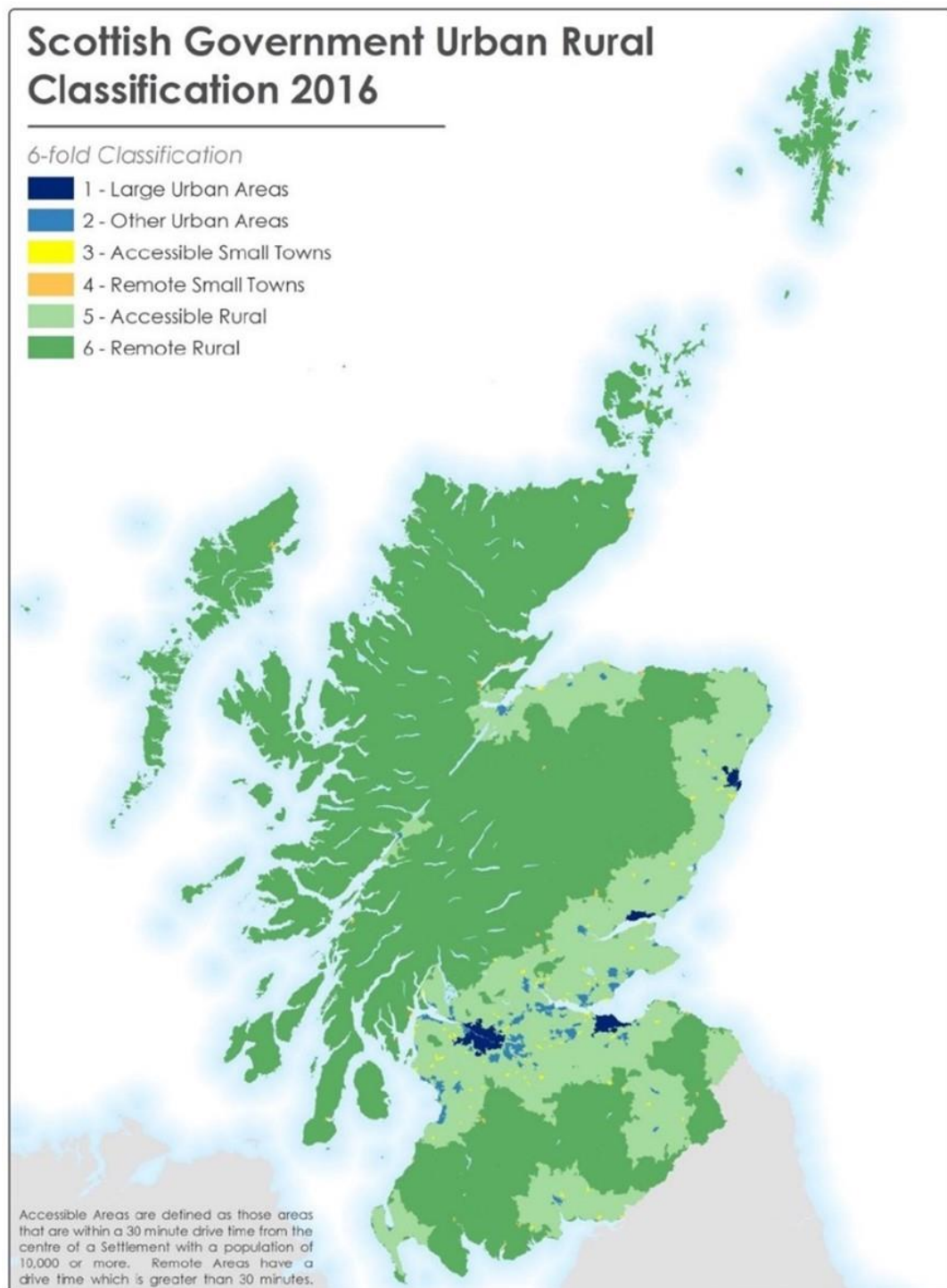
Figure 4-3: Map of Scottish Government Urban Rural Six-Fold Classification 2016 (Scottish Government, 2018a)

4.3.3 Rural Sector Stakeholders

It was of crucial importance to me to ensure that the views and opinions of the rural/agricultural sector were sought alongside those of the school-based sector. Whilst it is vital that any benefits and challenges of agricultural experiences are considered from the school-based perspective, the education system itself exists – among other objectives – to open doors for young people into the workforce and thus any agriculture based experience must be of eventual benefit to the sector itself. Such benefits come in a number of ways – including increased support for British and Scottish grown produce, increased public awareness of farming and rural life, and a level of increased awareness for the role of people across the food supply chain. The views and opinions of those in the rural sector were gathered through interviews, and the participants completed short surveys before and after taking part in an interview. In their responses outlined at the start of this chapter, those in the rural sector offered broad definitions of agriculture, with some choosing to keep it concise and succinct, and others offering up wider and more expansive explanations of their own perceptions. Given those broader perspectives, it became clear that agriculture can be understood as being part of a network and community of people operating at various levels or strata, and on various scales, from local to global.

4.3.3.1 Benefits
Understanding the complex relations within agricultural networks, and the processes whereby food comes to be on our plates, requires a clear understanding of what these processes are. Thus, education is a vital tool in informing and encouraging society and the consumer to value and appreciate the role that agriculture plays in ensuring that human life is sustained. As outlined in the introduction to this chapter, I utilise the metonymic phrase 'farm to fork' with the full awareness that it stands for a multiplicity of additional, broader, considerations – including management of the land, environmental stewardship, rural work, and climate-related concerns. In the short survey completed by rural sector stakeholders, 100% indicated that they believe farmers play an important role within society. As indicated in Table 4-12, there was also unanimous agreement that more needs to be done in terms of re-educating society about the processes and practices of agriculture and food production. I specifically

phrased this question around a notion of 're-education', because I think most people would feel, broadly speaking, that older generations are more educated in knowing how, where and when, particular foods are grown and produced. Intergenerational education and learning has become a focus of a number of policy areas aiming to share skills, values and knowledge, and as a way of promoting greater understanding and respect between generations (Mannion, 2012, 2016). Farmers often possess informal or tacit knowledge that, in combination with classroom learning, can contribute to increased understanding of environmental questions (Mannion, 2016; Mannion and Lynch, 2016; Šūmane *et al.*, 2018), with food initiatives such as the *Food for Life Get Togethers* programme endorsed by The Soil Association, Generations Working Together, and other partners[14]. The rural sector stakeholders in this study believed that, on balance, agriculture should be an essential part of education in Scotland, and also broadly supported a requirement for the compulsory experience of agriculture at secondary school – although they valued the compulsory factor slightly below that of an 'essential' educational dimension for all Scottish pupils.

Table 4-12: Rural Sector Attitudes: Agriculture, Education and Society

Rural Sector Attitudes: Agriculture, Education and Society	Mean [n=6]	Median	Mode	Range
More needs to be done to re-educate society about agriculture and food production.	**5.00**	5	5	0
Agriculture should be an essential part of all school pupils' education in Scotland.	**4.33**	4	4	2
Secondary school pupils should have a compulsory agricultural experience as part of their education.	**4.17**	4	4	1
Rural Skills should be offered in every school.	**4.50**	4.5	5	1

The aim in this section of the questionnaire was to gauge the value or support for a level of specificity within education about agriculture, and how this might

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[14] https://www.fflgettogethers.org/

relate to beneficial experiences for pupils that result in an advantage also for the rural sector, as well as for learners themselves. The provision of a Rural Skills qualification at every school has the added benefit of recognised accreditation and so has the potential to act as an entry point into rural sector jobs and career pathways for pupils who might not have been afforded any other experiences of the sector.

Through thematic analysis a range different threads emerged from across the interview discussions in relation to the benefits of agricultural experiences for young people and the sector. Helping all young people to gain a general understanding of the fundamental nature of agriculture in getting their food to their plates, and ensuring that young people are enabled to have positive and practical experiences of agriculture which then empower them to think about the role of agriculture in their lives, was the main benefit to agricultural experiences identified by participants:

Craig-   Just to have a fundamental understanding of how, and where, their food comes from, and how important farming actually is or agriculture in general, to their life. Because they won't know that, we've touched on that before, but they just won't have a clue how important it could be, and going forward, I'd like to see that turn into how you can help agriculture as much as how agriculture can help you.

William-   I think it's very very important… […]

We talk about RHET taking the country to the classroom so it's important that we try and do that and you know I think young people coming out to a farm visit, as much hands on stuff as possible, you know, letting them see the calves, feed the calves...help put [milking] units on [the cows]… we've got rural skills class coming so we'll have them tagging calves, putting units on and we don't do that so much with primary school but you can have them standing watching first row of cows coming into the [milking] parlour, sticking their fingers into the units and all these kind of things… as much interactive stuff as possible.

Mark-   I think it's really important they [secondary school pupils] get out on to farms, and they understand where food comes from and they understand the opportunities in the agricultural sector and the rural

> industries is huge for them moving forwards… you
> know… We've got a challenge ahead of us in terms of
> feeding the world, and we need young people of all
> abilities joining our industry at various different
> levels, doing various different things. We need guys
> that will do the more manual tasks that don't
> require so much thought, but we also need people
> that can think a little bit… And are… Passionate
> about what they do.

These contributions highlight the overall consensus across the interviews that agricultural experiences are beneficial for young people, and that it is important that they have these learning experiences at school. Craig was clear throughout his interview regarding his position on the importance of agriculture to society, and the very real need for agriculture to be better included in education; he was not shy about voicing his opinions on the urgency with which this should be remedied. He also believes that whilst agricultural experiences provide benefits for young people, ultimately this benefits agriculture as a sector, since increased understanding has the potential to show the public how they can support agriculture. Both William and Mark were clear about the experiential learning benefits that the interactive elements of agricultural experiences offer. Not only do the interactive elements offer rich learning, but they also provide young people with the opportunity to see first-hand the many different opportunities that the rural sector can offer them. This corroborated Joanne's earlier assertions that agricultural experiences as part of secondary education can help young people to see the worth and viability of rural sector careers.

As a farmer actively involved in RHET farm visits, William strongly believes in the need for, and value of, school-based experiences of agriculture. He felt however that it would be a difficult task given the current state of disconnect between society and agriculture, a key theme that emerged from thematic and narrative analysis and which is discussed in greater detail in a later section of this chapter. William also believed that with more hands-on experiences delivered through changes in the curriculum, young people would be better able to understand the processes of the 'farm to fork' journey. The increasingly technical and electronic nature of agriculture was also raised by both William and Mark, and to a certain extent Charlie in his discussions of the transferability of skills into, out of, and within jobs/careers in agriculture and the rural sector.

Mark was keen to demonstrate how, in some instances, the role of the shepherd has changed across time:

William-   I think there's nothing better than getting out and about, getting stuck into it and you know… whether the school curriculum needs to be changed a little bit so that there's more involvement, more agriculture on the curriculum […] It's about hands-on experience, I think more of that that we can get the better its… all about re-educating … so I don't know how easy it's going to be to be honest because we've moved so far away from it over the last 50 years so to try to turn that around isn't going to be easy, and let's face it farming is becoming far more electronic as well, there's going to be less people working on farms, it's just the way it is… we're going to be increasingly robots and technical stuff that make life quicker and well supposedly quicker and easier…

Mark-   And you know, I'll take one role we've got, for example. A shepherd's role. You used to be all about really good stockman's skills and training a dog, and you know - looking after sheep really well, but now there is so much more to it.. There is understanding a £20k piece of kit that'll read an ear tag and send sheep three or four different ways as you tell it to… there's understanding growth rates, erm… grass and how to manage grass… and how to maximise protein from grass. There is understanding worms, and how to control various different parasites and you know, health issues… it's pretty technical, there's… you know… working mobile phones to communicate with the guys crunching numbers in the office, you know, what the lamb growth rates are like… there's so much to do now… its quite a big job.. It's actually quite a well-paid job.

Charlie-   You're there to stand in a gateway to stop the sheep coming through that's what you're doing just now but as soon as that's over you'll be asked to do the… the water troughs not working so if you can… so you… You're learning on the job aren't you, that makes you very employable to somebody else because you'll try anything, you'll not be stuck! And simply because you've been trained that way, haven't you, you haven't been trained that when 'that doesn't work' you just stand around and wait for another job… so any training like that in… that's what happens in nearly any rural job because it's not just… you can be employed as a stockman today and you'll be digging a drain tomorrow.

These perspectives of William, Mark, and Charlie challenge the misconception that careers in agriculture and farming are 'unskilled' by highlighting the huge variety in the level and type of work available across the sector, as well as the transferable 'problem solving'-type skills that are often developed as part of rural sector work. In his response, Mark used the example of shepherding to illustrate that roles often perceived as 'traditional' are increasingly *skilled* both in terms of the technical knowledge required to carry out the role, but also the combination of this information with digital technologies, creating a role that can command a generous salary.

William's comment on the distance element of the disconnect that has been travelled in the last 50 years was interesting. His perspectives, given he is a dairy farmer, are thus likely shaped and influenced by the huge advancements that have occurred during this time. As part of a sector often stereotyped as manual, the dairy industry has embraced the role of automation and robotics alongside *smart* technologies – the first automated milking parlour was installed in 1992 (Caria *et al.*, 2014; Riley, 2019; Rodenburg, 2017). Thus, for William it is 're-education' that is a requirement of bridging the disconnect that has emerged. Not only do young people lack an awareness about the processes of agriculture, but agriculture has itself advanced, thereby increasing the gulf to be overcome.

Rural sector stakeholders felt in general that there is little recognition of the real role of agriculture within the economy. For children to be 'agriculturally literate', and to be able to evaluate critically the contribution of food and drink within wider society, and its fundamental foundations in agriculture, is thus of immense value and benefit to understanding the contributions of agriculture to society at large. Increased understanding of the contributions of agriculture also allows for increased understanding of agriculture's interactions with, and impacts upon, wider global challenges and systems – environmental, social and economic; all of which are key elements in LfS and in environmental education more broadly conceived.

4.3.3.2 Challenges

Rural sector stakeholders felt that schools do not engage well with agriculture (mean = 1.2 [n=6]), and that this is a barrier to ensuring that young people gain productive experiences of agriculture whilst at secondary school. Thematic analysis of interviews revealed a host of challenges that farmers felt were barriers to getting young people out into farms and experiencing agriculture. These included willingness on the part of teachers, building learning experiences that ensure a farm visit is not a novelty day trip, transport issues, and the suitability of individual farm types to hosting visits. Mark articulated the challenges he believes must be overcome in order to give young people such positive experiences:

> Mark-   I think you've got to get teachers to want to have the kids out on the farm in the first place… and if you happen to have a teacher that for whatever reason… possibly, maybe… The wrong phrase… but 'anti-farming' they will get those points of view, and that mindset on to the kids, so it's working closely with the school - that's the big challenge that we've got, and… and making sure that these teachers know that we are there and we want to work with schools.

> William-   I think a farm visit is fine but I don't think they're here all that long and I think they probably need to be a bit more of a follow up on it...err...you know it's almost as if they come out for a couple of hours and then that's it job done, but it needs to be a lot more in detail and a lot more in depth than that. […]

> We haven't had a lot of secondary school kids out, but we did find when we had one particular school that they were very difficult to hold their attention. The younger ones are much keener to ask questions and get involved whereas secondary tend to be sort of grumpy teenage types and they stand around in their little groups trying to be cool and not answer questions so… they were a bit more of a challenge.

Mark's comment really summarises a key thread that emerged from all my interviews with rural stakeholders – which is that they are willing and open to working with schools and to building partnerships. They have a desire and interest (not only in terms of self-promotion) in ensuring that all young people are given the opportunity for a balanced and well-rounded perspective on how agriculture fits in to a world that is focussed on a heightened and 'enlightened

understanding' of the impact of human activity on nature and the environment. William's perspective built on this, reflecting that oftentimes the pupils only come to the farm once, rather than as part of a deeper, more extended learning experience. He also commented that it can therefore be difficult to engage teenagers when they are visiting, which can in turn be challenging for the farmer hosting the visit.

Beverly also outlined the challenges that she felt might be barriers for teachers, including the recognition that not all farms are able to host the types of visits that may be of most benefit to pupils themselves:

> Beverly-   I would say that there will be restrictions with the transport, getting them onto farms, health and safety - you need to be so careful... and the... err... just willing famers... and err... maybe the type of farm... the type of farm I have is... hill farming, but it's like.. sheep farming, it's quite hands on.. You can't have maybe on an arable farm the same types of experiences that I can give students visiting here with the practical experiences as well, with small animals.

The perceived barriers outlined by Beverly aligned with those participants who responded to the school survey: transport limitations being the second most frequently cited restriction (Figure 4-1). Farmers indicated a high level of inclination to take on young people for school work placements (93.33%; n=3), again highlighting the willingness of the sector to engage with young people. At the time of interview, Mark had two Modern Apprentices in his team and was of the firm belief that inclusion of agriculture and farming needs to start with very young children, where the 'seeds are sown'. This, he suggested, should be encouraged to grow over time, leading on the one hand to young people who are agriculturally literate around where their food comes from, how it is grown and the job opportunities that are available, and on the other hand speaking to those with a desire for a career in the industry that can be supported with informed guidance. The agrarian metaphor should be taken seriously given Mark's familiarity with the real consequences of sowing seeds. As a phrase widely used outwith its agrarian context the language can materialise rich imagery, but the reader can also deal with the implications of this; growth is not always straight forward and can be impacted or influenced by e.g., weeds or the weather,

however *en masse* they lead to a bountiful harvest. That children should be considered like seedlings is thus significant within this farming context.

In terms of whether stakeholders felt there were multiple barriers preventing young people from getting into agricultural careers, the response was more varied. The farmers neither agreed nor disagreed (all scored 3 on the Likert scale of 1-5; n=3), with one commenting that part of the reason for these barriers was 'society and farmer attitudes'. Other stakeholders were more polarised, scoring 1, 4, 4 respectively (5 = strongly feel multiple barriers exist). Whilst the overall response on multiple barriers to agricultural careers was therefore mixed, it favoured a view that barriers *do* exist for young people. Attitudes towards agriculture are discussed in the next section of the chapter, including in careers.

In our interview, Charlie and I discussed ITE and the role it plays in raising agricultural literacy amongst children and young people. His view was that there is a wide gap in the inclusion of agriculture within teachers' learning and training, and that ultimately this impacts negatively on the way in which teachers are able to include it within their teaching practice. I include a longer excerpt here as it was interesting to witness Charlie's response crystallise as he was speaking. I found it to be a particularly pertinent response considering the GTCS regulatory requirement for practitioners to embed and demonstrate LfS within their teaching (GTCS Professional Standards for Teachers):

> Charlie-   I have this theory that teachers have only been in academia so how do they know about anything else? And they just... it... like... They repeat what went before, don't they? [...] At some point in teacher training I think it would be tremendous for teachers to be asked what do they think... to be asked some basic questions about the rural environment because I think erm... and how is it relevant to children today... because I think loads of them wouldn't know and I think that would be a... hopefully, certainly young teachers that tend to be enthusiastic people who want to know and maybe it will make them want to know and information today is available so easily... So... it would need to be, I don't know...
>
> It would just help if more teachers knew more, a little more about what goes on in the rural environment, it's because they don't... they went to

school they left school, they went to university they
left university, they went to teacher training and
then they went into teaching, so they only know
about where they were brought up, the environment
they were brought up in and if that happened to be
in a farm then they know about farming but if it
wasn't, if they were brought up erm… next to an oil
yard then they just know about big machines moving
about and that's it… they don't know nothing about
anything else, and they only know about their
education and then they go on and they become our
educators, so it's unreasonable to assume that these
people would know anything… and would be able to
teach anybody anything about the rural environment
so it has to be… it has to be that at some point it has
to be put into our education system so that these
people erm… tomorrow's teachers, would learn about
the rural environment as they were going through
school and their education system so that when they
went and re-entered the education system they
would be able to teach the next generation but it's
just missing…

Charlie was firm in his assertions that the curriculum would be enhanced and enriched by the inclusion of rural focussed information and learning, but he was also clear that simply altering CfE does not really go far enough. In terms of meeting this challenge Charlie believed that 'tomorrow's teachers' deserve to be given the opportunity to become agriculturally literate through their school education journey, and that the way in which to overcome this gap is to ensure that today's teachers are provided with the tools and knowledge. In including an element of rural knowledge and training at the ITE stage, teachers could give greater visibility to the rural way of life and feel empowered to cultivate agricultural literacy. Whilst aspects to Charlie's perspective are not necessarily wholly reflective of the effort that some teachers go to in order to include agriculture in their teaching, and certainly there bound to be instances of excellent teaching for agricultural literacy, it nevertheless illustrates that there is perhaps an imperative for a re-examination of the ways in which LfS delivers on topics such as agriculture, the rural economy and agrarian livelihoods. This also seems particularly pertinent given the role of food systems within the context of current environmental challenges and the climate emergency.

The above discussions on the benefits and challenges of agricultural experiences, placed within the wider themes of this research, are intended to consider the opportunities for agricultural experiences within CfE, and to place these within related learning structures and concepts, the following contribution from Beverly struck a personal chord with me and my own memories of agriculture from school:

> Beverly- My experience is that err… people like to make it over complicated and like to get learning that comes with achievement and everything else, which is fine… but sometimes it's about the experience, and that experience can last somebody for their whole life. If you can make a difference and it doesn't matter if they've maybe not got tick the box educationally, but if you've maybe given them hope […] then that for me is pretty immeasurable…

For me, there were no school-related 'assessment outcomes' linked to my agricultural experiences that I was explicitly aware of as a child, yet my teacher felt that they added a value and breadth to my education. Pulling a plough with my classmates, mucking out stalls, and milking a cow remain some of my most grounding memories today. Such experiences continue to bring value to me by showing me my place within the global ecosystem, connecting me to nature and landscapes, and reminding me that however small I may feel in the grand scheme of things, my actions always have consequences.

4.4 Attitudes to Agriculture in Scotland: Discussion

Look for any differences, or specific challenges, between rural and urban stakeholders

In addition to a desire for this research to seek out from stakeholders the perceived challenges and likely benefits of agricultural experiences, the research also set out to see whether there were any particular differences or challenges between urban and rural stakeholders. Again, the willingness of rural stakeholders to discuss these issues highlights the disconnect that they often feel society has formed from agriculture and food production processes more widely, as well as why such attitudes may persist. This section is thus structured around these societal attitudes, those unanticipated themes that arose from this specific thread of the interview discussions, and those of CfE.

4.4.1 Society

A problem in considering agriculture as part of Scottish education in this research was connecting both agriculture and education to wider cultural and societal contexts. Policy towards agriculture over the past century in the UK has largely been shaped by economic and political factors, ranging from wars to the Common Agricultural Policy (CAP) and including the UK joining the European Economic Community (now EU) (Collingham, 2018; McInemey, 2002). The role of the farmer has, for the last 70+ years, been defined and characterised by productivist efforts for raising food production efficiency in order to achieve maximum productivity for economic gain. All of this took place within a policy framework – supported by government and, generally speaking, the public – of protected markets, high support prices for commodities, and new innovations in technology (Jones, 2017a; McInemey, 2002; Provenza *et al.*, 2021). Despite this integrated policy focus, and the intensification of agricultural practices, one of the strongest 'cultural scripts' of agricultural rural life has remained the continuity of the family farm, which often results in an emotional investment and connection to land, and an embedded sense of responsibility towards maintaining its honour and status (Silvasti, 2003). The term *hefted* is used in shepherding to describe the innate connection and attachment that sheep have to a particular piece of land, which is passed from ewe to lamb through the

generations (Rebanks, 2015, p. xi). Thus, in the main, productivist agricultural practices, as they have evolved, have been deemed good and have passed down through the generations.

There is today a growing body of 'good farmer' sociological literature exploring farmer attitudes and behaviour, commonly shaped by Bourdieu's concepts of field, capital, and habitus (Thomas *et al.*, 2019). Field can be understood to be a network wherein actors seek to maintain their position through the accumulations of capital or resources pertinent to their field. Capital – cultural, economic, and social – is at the centre of Bourdieu's theory and each can be produced and reinforced by way of related symbolic concepts such as family relations, skills and knowledge, physical goods, educational qualifications, and access to social network (Bourdieu, 1986, 1997; Lavoie and Wardropper, 2021). Through this, the symbolic forms of capital come to be associated with positive ('good') reputation, or even prestige, shared amongst those within a social group (field) who share a habitus (Adams, 2006). Habitus is thus established by the transfer and exchange of those personal values, experiences, and skills across the generations (Bourdieu, 1986). 'Farmer habitus' in this context is thus developed from a combination of interactions including farm structures, personal experience with farming, farming heritage, and farm household socialisation (that is to say socialised during childhood) (Burton *et al.*, 2020; Lavoie and Wardropper, 2021; Sutherland and Calo, 2020).

Practices that may seem purely functional to those outside of the sector often have value-laden and deep symbolism that is understood within the farming community (Burns, 2021; Burton, 2004a). Being understood as a 'good farmer', then, is not perceived to be primarily about public perception but is in essence a distinction made among those within the field and the habitus of agricultural life (Sutherland and Calo, 2020). The good farmer identity concept thus holds that it is the symbolic elements of capital gained by farmers, through their working practices, that influences their identity within their field and habitus (Lavoie and Wardropper, 2021; Naylor *et al.*, 2018). When farmers are no longer displaying these symbols, this comes at a cost, and thus they tend as an industry to resist changes even where they may bring economic advantages to them (Sutherland and Calo, 2020).

These concepts have been utilised largely in a bid to understand productivist versus conservationist farmer identities – including agri-environmental behaviours and organic conversion (Burns, 2021; Burton *et al.*, 2008; Huttunen and Peltomaa, 2016; Saunders, 2016; Sutherland, 2013; Sutherland and Darnhofer, 2012). However, they have also broadened in scope to include other features such as livestock husbandry, and farmer age and gender (McGuire *et al.*, 2013; Naylor *et al.*, 2018; Riley, 2016; Shortall *et al.*, 2018; Thomas *et al.*, 2019). Historically within the farming community, it has largely been those productivist practices and values such as straight, large, and weed-free fields, healthy well-conformed livestock, a tidy farm appearance, and land ownership, among others, that have signified the 'good farmer' (Burton, 2004b; Burton *et al.*, 2020; Lavoie and Wardropper, 2021; Sutherland and Calo, 2020). It is these same practices, however, that have afforded us cheap and plentiful food – primarily produced as a commodity with market intervention support in the form of government subsidies, which thereby skew the real cost and value of production. Food produced with greater ecological concern, it is clear, costs more, and thus society has become further disconnected not only from the 'true cost' of food but also from those whose livelihoods depend on producing food in this irrational setting. We have thus, in the main, become conditioned to believing that the 'final version' products we buy come from corporations rather than the earth and farmers, thereby leaving a false impression of a global system that is both homogeneous and anonymous (Cliath, 2007; O'Kane, 2012; Pretty, 2002). There has thus come to exist a perceived disconnect between society and the livelihoods, practices and processes involved in producing food.

Public awareness, perception, and consumer demand have for some time been looking for change in the ways in which our food is produced; the extent to which it is then processed, however, is also part of wider food related discourse (Boseley, 2018; Monteiro *et al.*, 2019; Scrinis, 2020; UNC Global Food Research Programme, 2021). The productivist and intensive practices embraced post-World War II are no longer compatible with the ecological ethics expected of primary food production. Current agricultural practices are increasingly being presented as at odds with the wider planetary challenges of sustainability, climate change, land use and ownership, animal welfare, and the fair and equitable use of natural resources. Hence I sought to find out from stakeholders

whether they thought that society had become further disconnected from agriculture and rurality, and why they thought this might be. I was also interested to hear their views and judgements on society's perspectives and attitudes towards rural sector careers, particularly related to my investigation of vocational training and the value of 'knowledge' within the agrarian economy. There was a range of perspectives on the theme of disconnection in the responses given:

> William-   I think we're in danger of actually losing the connection with agriculture and the wider population because there's so few people nowadays that have got a direct input into it… it used to be that you'd have grandfathers and you know… elder… you know, further back in the generations that have been involved in agriculture and now you know it's sometimes two or three generations that there hasn't been any involvement in agriculture so you know when we were at [x] Estates at the farming day, [they] asked everyone to put their hand up who had a parent that was involved in agriculture and there was very few… and put your hand up if there is a grandparent and you know, a lot of hands went up. But, you know, what's going to happen the next generation…? we're going to get further and further away so I think we're losing touch with what's actually happening in terms of agriculture and population.

On the theme of loss in connection between agriculture and wider society William's perspective was by far the most damning, and also underlined that a loss of connection may also become an issue for farmers and farming heritage, if over time the generations lose their socialised knowledge of farming.

A broad range of perspectives emerged on the topic of society and the connection to agriculture, or lack of connection, and was among the most wide-ranging of all the points discussed:

> Mark-   I think it might be more connected than it was 5-10 years ago… But I think society has got to show a demand for knowledge, and I think as an industry we've got to respond, and improve our communication techniques and network with society, and it's much easier to do with social media than

ever before… I think we will react to demand… and if society wants to know more… because we've got such high farm assurance standards. We are already operating at a very high level…

Craig- When you say to Joe Bloggs up the street 'agriculture', they think of tractors and 'that's nothing to do with me' but, erm… if you can make that link between what you're having for your dinner tonight [and agriculture] then yeah, I think there has to be, eh… it's a lot better that what it was but I don't think it will be scraping the surface at the moment…

Beverly - Yes, aye… definitely, definitely… that's why my social media is just kind of trying to relate what we do community wise… yeah, it's the food we put on plates.. But it's also… the job opportunities, and fragile communities like mine here… how it's really important to use… To look at all the skills you have… and how important it is to keep lights on, and people spending their money in the local community, keeping shops going… So, it's telling the whole story. It's a whole disconnect, not only of the food, but of the community side of rural.. Which I suppose… when you are in a city… You don't maybe understand the same…

William- I think the disconnection gets less as you get into the older generation, but certainly we had Mairi Gougeon who is the new Minister for [Rural Affairs and the Natural] Environment here about a fortnight ago, and she was here on a fact finding mission. Basically to learn, which is great - but you know when you've got the minister that's responsible for the farming and various, you know, laws and regulations that's needing to come out and isn't all that up to speed… […] I think she's very good actually, I was well impressed and I think that she's very very keen to learn which is good but I think that's just an example of the disconnection that we are getting, that some of the politicians that are in charge of it aren't up to speed or aware of it.

Charlie - There's a barrier… there seems to be a total disengagement between people in the towns and people in rural businesses… and erm… and there's a 'them' and 'us' thing going on you know, there's a… I honestly don't know how… it's such a huge thing to break down… it can only be broken down in little bits.

Whilst there was most definitely antiphony across the individual narratives, the chorus was strong in its assertion that there does indeed exist a disconnect between the general public and the processes of agriculture. Reading deeper in to these narratives on disconnect, it was interesting to note the different personalities and, knowing each of the participants' characters, the ways in which their life experiences shaped the ways in which they come to understand and present their story of disconnect. Individuals are formed in context, and therefore overlapping contexts can shape who a person becomes both personally and professionally (Sommerlad, 2007; Stetson *et al.*, 2020). It was therefore interesting to analyse how each of the participants' thoughts and judgements in relation to the key general points about disconnection incrementally unfolded. Much like an 8-part close harmony clashing at key points of suspense and tension, and releasing into comfortable accord, so too did the narratives of disconnect. Social media being a key crunch point, the relative disconnect between the old and young being another. Moments of accord, paradoxically, in the gulf of understanding between town and country; the first hand rural experiences context within which each participant has been shaped subtly emerging and reflected in their stories.

Mark's view is that although society is better connected now than it was a decade ago, it is society itself that needs to show a demand for reconnection by seeking out farming and agriculture related knowledge and information. I believe that this is a slightly siloed way of thinking, because it leaves society open to manipulation by those with the power to enforce their views, ideology and agenda. This has, to a certain extent, already happened in terms of the 'greenwashing' of food product marketing and labelling. Society has often been misled as to the environmental 'benefits', and arguably the health benefits, of e.g., ultra-processed foods (UPF) (Krystallis *et al.*, 2012) – a point covered in more detail later in this chapter. There is, as Mark goes on to say, a definite need to improve the ways in which agriculture responds and communicates with society. I argue further that there needs to be a strength or conviction to any such response, and that this should highlight the essential role of agriculture as the primary producer of high quality, high value 'good food' produced for a social good i.e., the health of the nation. Scottish farmers produce high quality food and should be recognised for the good that it delivers. I, of course,

recognise that this is a small part of a much bigger public health conversation relating to diet and nutrition, which is not within the scope of this research.

Craig's perspective on the underlying disassociation leans into the fundamental detachment of agriculture understood as the production of food. A connection or interest in food, in other words, does not necessarily equate to a connection or interest in agriculture itself, particularly as this relates to the true cost and value of food production. I found this to be an especially pertinent observation given our food-obsessed culture, and the ease with which some make judgements about eating habits as a marker social background (Vogler, 2021). The habitual *foodie* obsession of our society with things such as recipes, cuisine trends, new restaurants shows that awareness of food does not necessarily equate to awareness of agriculture.

As someone who chose not to take on a family farm, Craig's viewpoint is interesting in the sense that his lived experiences have afforded him a high level of agricultural literacy which, combined with his chosen non-farming career path, perhaps intensifies his feelings and observations of disconnect between his socialised knowledge, and those of his current work and personal environments. Craig often included himself within the agricultural sector – '*my farm*' – before correcting himself, a tension I can fully appreciate. It was clear that Craig still held an emotional stake and *heft* to his farming background despite his decision not to take on the family's farm. Thus, it was often hard for Craig to relate to the critique and 'othering' of agriculture that he is now faced with on a daily basis.

Further to these observations, Beverly's point of view is that whilst there is indeed a definite disconnect, it is expressed not only in terms of food. She believes that the wider rural way of life is very different to living in a city, and it is this that is her main motive for sharing farming life via the platforms of social media. Her local community relies on the skills and strengths of those people who live there to keep shops open and lights on; it is this dimension that she believes is harder to grasp or appreciate from the urban perspective. William also felt that the disconnection lessened as age increased but insisted that there also exists a further level of detachment in terms of the awareness and

experience of the Ministers who represent agriculture in policy-making. Anna Jones' (2022) forthcoming book *Divide: The Relationship Crisis Between Town and Country* explores many aspects of the urban/rural divide including the need to recognise and respect the differences in social, cultural and political outlook that can exist between town and country people.

Charlie's perspective, too, was rooted in the sense that the disconnect is greater than just food, expanding to a sense of 'us' and 'them' in relation to rural and urban living. He went on to highlight that the urban perspective of what constitutes the countryside often omits the very people who care and maintain the land itself. The rural environment is, after all, home to those people who look after the land, along with an extensive network of other workers, and Charlie believes that facets pertaining to rural life such as the rural economy and countryside management should be included within the curriculum. Only through the education system, he maintains, can changes in attitude be cultivated and thus re-connect people living in towns with rural life and the rural environment:

> Charlie- I don't have… I don't have the answer, I think the only way is… I mean people from the towns do come out and they have recreational time in the countryside… and they must like the countryside the way it is… and the reason it looks the way it does is because of the people who work in the rural environment and they manage it in that way and I don't think there is an understanding of the country at all really… that the reason that the country looks the way it does is because it's managed… even the wild hills are not wild, you know, there's sheep running around on them and deer and all the rest of it…
>
> The start of changing that has to be through the education system, it's much harder to change the views of an adult who's grown up with a set of views and to get them to change the way they think….it's much harder… it would be a lot easier to change the way kids think… and I think if we can get agriculture and maybe the rural economy and environment, maybe it's not just agriculture, the whole thing if we can get into being part of the curriculum for everybody then… then maybe there won't be this barrier between, you know, reduce it… you'll never

> do away with it, but maybe reduce this barrier
> between the rural people and rural environment and
> people in the towns.

Charlie's perspective, much like Craig, has been influenced by high levels of agricultural literacy resulting from socialised agricultural knowledge accumulation. However, unlike Craig, he was the youngest sibling and therefore did not inherit the family farm. Charlie's socialised knowledge combined with his added working experience in wider rural sector employment meant that he brought a rather broader lens to his testimony, often referring to economic matters and the importance of the wider rural economy; influenced, I would suggest, by his role as a rural business owner and employer. He was an animated participant, and very open in sharing his story, which comes across in the often long-winded nature of his responses. Despite this, Charlie was overtly aware of the nuances, subtleties, and complexities of the topics we discussed, particularly with regard to the disconnection from agriculture and agricultural and rural careers. He was acutely aware of all those forces and experiences that shape and mould us into who we are, and a recurring but sometimes nuanced thread throughout his narrative was an awareness of the intersections of agriculture with every other facet of life. Ensuring that, through their education, children understand all of these connections, Charlie hoped that the disconnect and detachment from rural life could be mitigated.

Thus, a further feature to emerge along the axis of 'disconnection' was a sense of society's detachment from rural work and rural careers, on top of the wider gulf in awareness of general food and food production processes. The idea was highlighted that work carried out with hands (manual) somehow has less value or is less worthy work. This perspective reflects Goodhart's (2020) suggestion outlined in Chapter Two that as a society we need to re-evaluate and challenge those perspectives and systems by which Head work has come to be dominant over Hand and Heart work in terms of perceived value. Richard Sennett also discusses the connections between Hand and Head, his proposition being that modern society no longer honours the skill of doing a job well for its own sake regardless of whether the work or activities are manual or mental (Sennett, 2009). He also comments on the lack of value to the job market of the social capital of context and contextual knowledge within manual work - such as tacit

or informally-acquired knowledge of workplaces and people. This has led to a denial of its importance and contributes to feelings of insecurity and resentment amongst manual workers (Sennett, 2013). My participants demonstrated their emotional knowledge and investment time and again reiterating, with various levels of subtle and overt language and tone, that farming *matters*. Not only does farming matter, but that it is *important* and if children where to have more practical experiences highlighting this, then there exists the possibility for change.

Farmers work collectively to produce food for the good of society. When the collective goal for good work becomes empty or narrow, or disabled by sheer competition, this can lead to demoralisation and depress workers (Sennett, 2009):

> Charlie-   I think it's a cultural, British thing... there's bound to be other countries in the world... but erm... for some reason in this country we have a 'white collar work' or 'blue collar work' division where anybody that does anything with their hands is deemed to be a lower class citizen. That somebody that writes with a pen and... erm that's the problem.
>
> Whereas an awful lot of people that work with their hands in any..., in anything at all, have the same value as somebody who works with a computer or a pen, they are not better they are not worse they have the same value erm... they are not going to be at the top of a bank getting 10 million pound bonuses - I do realise that but these people are in the minority and... maybe they shouldn't be there at all, but they're still in the minority, the majority of people erm... a friend of mines is a lawyer... erm... there will be guys who fix tractors that earn as much as he does, he's not any better or any worse than them he's just... he just has a different career erm... they can't do his job and he can't do theirs...

Charlie was very clear that rural work *is* indeed perceived to be worth less, both in terms of esteem but also financially, despite the realities of higher salaries for 'Hand' work in some rare circumstances. His comment that neither head nor hand work are any better or worse than the other reflects my earlier discussion around the relative comparability of 'success' within vocational and academic assessments.

In addition to the adult participants, I was interested to hear from the pupils about their perceptions of careers in the rural sector and their views and opinions given their relative lack of life and working experience in comparison. The exchange below touched on a number of key and interesting observations:

Ilona-   I feel like there is a perception of it being like really physically hard work… like, you have to go dig out… like, I know you don't, but I think that there is this idea that its really physically labouring and… like, people can't be bothered…

Lillian-   I think also that people like to get a lot of money. Like, in society… I know you don't really think of someone like a farmer being someone that you look up to, that is really like, necessarily like, I don't know… a lawyer… you kind of feel like they are really smart and they get a lot of money…

Alex-   I agree with what Lillian said.. They [schools] don't really support the idea of you becoming a farmer… there is this huge thing about females doing engineering and stuff… but farming… they don't encourage you to become a farmer.. Because it doesn't look amazing… And you don't really get as much money compared to like a really famous lawyer or something…

Ilona-   …you'd be surprised how much money you can get being a farmer…

Joseph-   …like, you can make millions… but because of the world that's advancing… there is a lot of technology going into these things… like, machinery… like, every year there is new machinery for farming… You can get fertilisers that cover fields in like a couple of minutes… farming is getting a lot easier that it used to be.. But you still need people in farming.

This was a rich conversation, and participants showed a real and mature appreciation for the complexities and nuances that exist in the commerce between what they recognised to be perceptions and indeed stereotypes, and what they knew to be real. Their inclusion of the financial considerations in relation to earning high salaries, and the value of different occupational roles attributed across society, was interesting – particularly with regard to the knowledge economy and the way in which we value how 'smart' we are perceived to be. The link of modern agricultural practices to technology and

technological advancement was clearly stated, yet contributors did not lose sight of the fact that 'you still need people in farming'.

Roger also felt that there could be a tendency for agriculture more broadly to carry a negative value judgement over other career pathways or sectors, but what the reason for this might he found hard to describe:

> Roger-   I think there is a tendency to see agriculture as something that is... yes, lower down the hierarchy than engineering or medicine, or... yes, there probably is a value judgement that is slightly negative on agriculture. And I am not sure what it is based on. It may well be that there are some objective reasons to be critical of a 365 day a year business, but equally most businesses, when you think about, operate all the time, it's just different staff.

Roger also reflected on the perception of farming as being something that is 365 days a year, and then qualified this by commenting that most businesses operate on this basis, albeit with a team of staff. What the role of the farmer within society could be, and its relationship with 'esteem' was contemplated by Mark:

> Mark-   ...I'm not sure that whilst we still have subsidies, in the years gone by farmers would have been held in very high esteem along with lawyers, doctors, erm... now - a doctors probably still held in high esteem. A banker or a lawyer or us are definitely not. A footballer now is probably held in quite high esteem, but often they don't really provide the role model that we as farmers could do...
>
> For us... what role model could a farmer be? It's someone who looks after the environment, livestock, erm... they are on the whole upstanding members of their communities, and do a lot in their local communities, we maybe just don't... The Scots in general are not good about promoting what they do, and you know.. Maybe we need to be a bit better about that...

I found it interesting that, for Mark, his position within society was conditional upon his receipt of taxpayers' money in the form of agricultural subsidies, even though he went on to outline the very core characteristics of what might make (most) farmers excellent role models for young people. Mark also stated that

while Scots are proud, they are often not great at promoting what they are good at doing. The problematic role of media in this aspect of food and farming is discussed later in the chapter.

Subsidies are of course a key component to any discussion of agriculture within the UK and the EU and have been a topic of increased scrutiny during the lead-up to Brexit and the longer-term changes that Brexit will bring to agricultural policy in the UK (Helm, 2017; Hubbard *et al.*, 2018; Whitfield and Marshall, 2017; Whitman, 2017). Agriculture and the environment are devolved matters and so the Scottish Parliament and Government have the power to legislate on these questions. This means that it is likely agricultural policy in Scotland will diverge from the agricultural policy of England and Wales (Bell, 2017a, 2017b; Birrell and Gray, 2017; Reid *et al.*, 2018; Whitfield and Marshall, 2017). The *Agriculture Act 2020* received royal assent in England in November 2020 and replaces the Basic Payments Scheme of the Policy (CAP) and will be phased in over the years 2021 to 2027 to allow farmers and land managers to adapt to the new system. Scotland has pursued a different route and has chosen to retain the payment systems of the CAP until 2024, at which time a new farming and rural support policy will be introduced. The *Agriculture (Retained EU Law and Data) (Scotland) Act* came into force in October 2020, enabling ministers to provide financial stability during the uncertainty of final Brexit negotiations and throughout the ongoing impacts of the COVID-19 pandemic. There is also concern that the recent *UK-Australia Free Trade Agreement* will negatively impact UK farmers and food producers, as well as undermining the UK's commitment to high environmental and animal welfare practices (EFRA, 2021).

The Scottish Government, in 2017, also appointed four Agricultural Champions to advise on future agricultural strategy and policy post-Brexit. Their report (Scottish Government, 2018b) was wide-ranging and set out strategic ambitions for Scottish farming, as well as recommended actions for delivering on the strategy. Topics include Natural Capital, public value, production efficiency, transformational change, supply chains and careers. Rural sector careers was a key target of the final report, with a number of recommendations made – including some aimed at secondary school-level education:

> Scottish farming must be more visible as a career option and must attract more young people, which will need a huge increase in focus from schools onwards (Scottish Government, 2018b, p. 7).

Further details of the career and educational recommendations of the report are set out in [Appendix 8](). The report also recognised that an area for future consideration is that of public attitudes to farming. Recommendations also pointed to the importance of robust and resilient supply chains that capitalise on utilising best practice, high standards and transparency to protect the provenance and integrity of Scotland's excellent 'natural larder' (Scottish Government, 2018b, p. 14). The potential of businesses to have a positive effect in these areas is huge, as Craig commented:

> Craig-   So I genuinely believe more people [businesses] seem to be making an effort – probably because they have been forced into it – but something like McDonalds, has a real input, and even their adverts, Morrisons adverts, stuff like that – they're showing actual Jimmy oot on the farm picking his tatties – that's got to help because they didn't see that before. Whether anybody's paying attention to it or not I'm not sure. But they're big players in the game, so when its leading from that I'd like to think that's the way in towards some more of that certainly.

Change is happening slowly and albeit elements may essentially be acts of corporate social responsibility, some of these do contribute to altering public perceptions, attitudes and behaviours. There is much that advertising can do in positive terms to raise awareness of Scottish produce. The challenges that modern agriculture faces in meeting the food demands of the population against a backdrop of increasing climate concerns and tightening guidance and legislation are also significant. The COVID-19 pandemic exposed to many people the intricate and sometimes precarious inter-reliance and complex nature of the UK food system, including flagrant inequalities at both the consumer end (e.g., increased use of food banks), and the farmer end (e.g., exploited as part of for-profit system, disruption to trade and livelihood) (Benton, 2020; Hendrickson, 2020; Heron, 2020; Power *et al.*, 2020). Part of challenging attitudes and behaviours is achieved through education, and that relates to many aspects of agriculture, including its wider contributions and role within the economy,

increased awareness of consumer impact, and a greater understanding of the careers market within rural sector and agricultural work – as well as the domain's overall position within the wider global ecosystem and food geo-politics. There is no doubt that agriculture has significant impact on the environment, and this covers plant-based produce as well as the habitually demonised livestock sector. If Scotland is to meet its target of net-zero emissions by 2045 (Scottish Government, 2020a), there needs to be a shift in the way *all* aspects of agriculture are perceived from *all* angles:

> Our agricultural system doesn't have to be a climate villain or a victim, instead it should be considered a big part of the solution as we face the challenge of climate change. In a net zero-focused Scotland, agriculture is the sector with potentially the most to lose, and possibly the most to gain. If it becomes a loser then our net zero ambitions will be lost along with it (Reay *et al.*, 2020, p. 3).

Improving environmental impacts and increasing agri-environmental practices must become a valued and prized element of the 'good farmer' concept. Supply chains must adequately reflect the true cost and value of food as part of just livelihoods; and, consumers/general public must get behind those products and processes that advance a progressive and benign construction of our agrarian future. The Long Food Movement report (Mooney *et al.*, 2021) discusses in detail a number of scenarios of '(agri)-business as usual' to 2045, and imagines what food system transformation could look like with authentic radical change. Education thus has an integral role to play in ensuring that young people develop balanced understandings of environmental and agricultural processes that reconnect food back to its origins, including the people who grow it.

Following stakeholders' views on the disconnect of society with agriculture and rural life, I was interested to find out what they felt could be done in moving forward, to help society re-engage dynamically with agriculture and the rural sector:

> Mark-   I think for us forging partnerships… be more open to forging partnerships with others in the industry further down the chain… or along the chain.. It's not up or down… for example working with our local butcher to promote our lamb, is really important for us, and tapping into his customer base - and letting

> his customer base understand what we do as a business, and you know… Promoting our culture and values to those who buy our product.

Roger-   Well, I think the thing that I would like to see would be agriculture establishing its place in terms of its contribution to the economy… but I think it would be providing that information, and every child would know that about agriculture – one of the challenges I had when I was looking at it was that food and drink is the area that people are interested in – as it is in the top 3 – so agriculture and land based industries get lost in that.

Joanne-   I think there should be more people from the farming world coming into schools actually… to do talks and presentations - I think, erm, depending on where one is… a school class could be taken to a local showground… erm… It's always really helpful to have someone come in from their profession and to talk about their world… as opposed to a teacher talking about that world that they don't necessarily know… so it would be lovely to have people from the farming and agricultural world come in and talk…

The discussions that I had in direct response to this question were diverse given the range of stakeholders, but there were elements within the theme to be found throughout many different strands of the conversations, including the sub-theme of increased communication. This is summed up by Mark in his comments about building better links with direct partners and consumer networks, and described by Roger as requiring work to establish and raise awareness of the place of agriculture and agricultural careers within the economy and society, and also within education – through partnership and representation of farming and rural professionals within the classroom. For Joanne as a teacher, a critical aspect to re-engaging with agriculture related to making sure that young people had direct and hands-on experiences with those professionals in the rural sector. Their tacit knowledge and understanding of agriculture and farming cannot be as readily imparted to young people by a teacher who is not immersed in that world. This perspective was a key thread in Joanne's narrative, and intersects with many other emergent points from the analysis.

William's judgement was that in order for the agricultural sector to re-engage with society there needed to be focus on adult attitudes and behaviours in

addition to children and young people, and that part of that might be an increased awareness of the distances that cheaper imported foods travel and the relative carbon savings that can be made in supporting more locally produced foods:

William-   I guess organisations like RHET… I think maybe that's dealing with younger people but maybe… need to try to encourage some of the older people to get involved as well, maybe NFUS [National Farmers' Union of Scotland], there's maybe room for them to do a little bit more to try and engage with the public.

I think the farmers market is certainly a step down that direction but we maybe need to try and do more local branding and… try to get people to understand about food miles, it's maybe something the government has to look at as well in terms of taxation or you know if you make something more expensive they ain't going to buy it… so if we're worried about carbon and food miles and all these sort of things we might have to think about doing something along those kind of lines.

In the context of food, agricultural impact and the climate emergency, William's was a salient point. The carbon emissions impact of imported food is an important consideration within the context of achieving net-zero GHG emissions, because a balance has to be struck between those domestic and imported emissions (Matthews, 2020). Emissions within the UK have been falling, however those emissions attributed to imported (i.e., grown abroad) food are increasingly rising, which means that we are essentially 'offshoring' our food emissions to other parts of the world – the legal climate change obligations of the UK only cover domestic emissions (Matthews, 2020). This highlights the current complexities of the global food system within which a balance needs to be struck between maintaining secure and plentiful food supplies whilst also working to minimise environmental damage and enabling a just livelihood for workers. It is thus important that education can reflect the complexities of these issues in a balanced manner, which then encourages young people to think critically about the impacts of their own consumption habits. In terms of increasing agricultural literacy this is a useful example.

When I asked Beverly what she felt farmers could do to engage people better, this was her answer:

> Errr… I think… speaking from the heart and keeping it real, and actually you know… They've [people] been open to what we're doing, and actually celebrating the good stuff we're doing as well as like, trying to be better at not doing so much with the stuff that is negative, with a view to give a better understanding of the sector.
>
> Err… it's… err it's, ah…. we're in the food industry so we need to remember that because sometimes I think it's been viewed in the past that we're in the subsidy sector, and we're there to farm subsidies and that's disappointing and just actually to realise that we've got a great food industry that we're involved in, and get involved with that and I think that would help to make the whole story… you know and there's a reason why it can be said it looks like it does because it's been farmed in a certain ways since hundreds of years and that's… you know the… what we need to tie the whole story together.

Beverly's comments struck a chord with me, and I have returned to and reflected on this comment numerous times. The story of food, and the stories of the people and the land that came before, are all part of the rich cultural heritage that comes with farming life – particularly for Beverly and the relationship that she experiences to the animals and the land that she farms. As a woman, Beverly's journey to becoming a sheep farmer was not as clear-cut in comparison to the other male farmer participants. Succession, as I outlined earlier, is a complex and highly emotive topic within farming and due to difficult circumstances, is something that Beverly had to negotiate and contend with in order to continue her farming inheritance. Thus, a prominent thread throughout her story is *connection*. Connection to her land, her local community, her story, and with the rich tradition of farming that she feels privileged to continue. In telling her story, and in being transparent about her practices good and bad, Beverly believes that the public are more likely to reconnect with the processes of food and farming.

I think that a further part to all of these interrelated factors lies in raising critical awareness of the broad nature of agriculture and the wider rural sector. Yes, food is the key primary product, but the wider industries are equally important in ensuring food security and environmental protection. Referring

back to the example of a lawyer: lawyers do not practice law within a vacuum, they are supported by a vast web of support staff and professionals that make up the legal assistance system; this itself then feeds into the wider judiciary service. Agriculture is no different and there are so many key and pivotal jobs and careers that can be pursued at any point of life, many of which are based on transferable skills such as engineering and research:

Craig-   Of my mates that went to uni to get away from agriculture they ended up doing engineering and then ended back up in agriculture... I've got tens of friends that are in them both, and there is a clear link, like whatever happened from leaving school to go to do engineering, something happened at uni to make them want to come back, and they're the guys that are pushing on agriculture mainly the diversification, but is a huge part of it. These are the guys that seem to get told about the opportunities that are there... The diversification, the grants, the new entrant grants. So, the guys that are at uni level they get told all that, whereas the guys at school level will not have a scooby about...

Charlie-   I worked in the oil industry, as engineering – it's any sort of engineering... it's err... transferable.. it's a transferable skill, so I worked in the oil industry for about 3 or 4 years.. and then came back to work for a small agricultural engineering firm in sales, so I started with them, and did that for a few years down in Fife, and then I took a job up here [in agricultural engineering], and I worked for them for about 7 years, their business closed – two of the directors were retiring, and I started my own.

William-   I don't think agriculture gets great press in terms of career choice, I think it's unfortunately been looked upon as a sort of place for people that are not quite as academic to follow their career, and that's a bit unfortunate as I think there are endless opportunities and some of it is pretty high tech stuff now. People that have got academic ability are pretty able to make a good living out of agriculture... and I don't think that we get the message out that the careers in agriculture can end up being well, very well, paid so... it's probably overlooked as a career choice by a lot of people. [...]

           I guess we just need to get the message out there a bit better!

Mark-   I think one of the things.. it opens up so many career paths for you...if you've got a basic grounding in

> agriculture you can go anywhere in the world... the
> world's your oyster, you can do whatever you want -
> there's so much out there!

Craig observed that many of his friends decided to attend university rather than stay in farming, only for them to come back to agriculture after gaining their degrees in disciplines such as engineering. Many are now leaders within their local communities, driving agriculture forward through diversification ventures. He also suggests that those who leave and pursue other avenues are also the ones who return with revitalised approaches and drive change or diversification within agricultural communities. Charlie believes that there are a lot of skillsets and careers that are transferable into the rural and agriculture sectors and that, with a little more awareness-raising, the sectors can provide attractive and fulfilling careers for people regardless of whether they themselves are from a farming background. In a similar vein, William commented that there are endless opportunities for people of all abilities to get involved in agriculture, and that perhaps the sector needs to be more vocal about the range of options that are available. As summed up by Mark, a basic grounding in and understanding of agriculture can get you a job anywhere and doing whatever you want. Conducting this research has highlighted to me the very many other ways in which a research career can connect agriculture with society and vice versa, and that there is an immense richness and depth to be found in talking with people from across all aspects of society about their relationships to farming, land and food.

4.4.2 Unanticipated Themes

This section relates to the unanticipated topics that arose during the interviews and focus group, and which I consider to be a vital inclusion given their implications for the wider social and cultural contexts in which food and agriculture function. There was, for example, a feeling of anxiety at the extent of vegan campaigns within agricultural circles – particularly in relation to media and social media, and thus it is important that these discussions are included here, particularly with reference to young people and the increasing use of social media as sources of information and 'fact'. There was much cross-over between these two topics, however part of the wider discussions surrounding veganism and perceptions of 'anti-farming' related to elements of the circular economy concept, and wider food systems. So, I present here results and discussion under the two themes of *Veganism* and *Media*. Despite the separation of the themes, they should very much be considered as being intimately and unequivocally linked, interwoven and meshed together as a single fabric of conversation.

Veganism and Food Systems

In the groundwork for creating the project data collection resources, and as part of wider investigations, I was prepared for the inclusion of an 'environmental agenda' within the interview and focus group question themes and the research write-up. However, I chose not to include specific vegan lifestyle and plant-based diet elements within the themes and questions because my initial literature review suggested that these would still be minor peripheral topics that had potential to be discussed at the fringes of other topics, or in passing. I did not anticipate that veganism would become a thread winding its way into the discussions and conversations in as strong a manner as it did.

Veganism is understood as a lifestyle choice or philosophy which excludes all animal products for food, clothing, and otherwise on the basis of animal cruelty and for the benefit of animals, the environment, and humans (Cross, 2014; The Vegan Society, n.d.). The Vegan Society also adds that 'in dietary terms it denotes the practice of dispensing with all products derived wholly or partly

from animals' (The Vegan Society, n.d.). Veganism has become a widespread phenomenon in Western societies, and whilst considered 'extreme' in some instances, increasingly plays a mainstream role as part of so called environmentally friendly, conscious, healthy and modern lifestyles (Cole and Morgan, 2011; Jallinoja *et al.*, 2018; Kalte, 2020; Wright, 2018).

The motivations for veganism have expanded in the past few decades from an ethical or moral position on animal rights and welfare to include wider environmental and health concerns (Cooper, 2018; Dyett *et al.*, 2013; Hancox, 2018; Janssen *et al.*, 2016; Kerschke-Risch, 2015; Wright, 2021). Veganism now routinely positions itself as part of the solution to environmental degradation and those elements of climate change attributable to intensive livestock agriculture. Thus, for the vegan movement, an animal product-free diet and outlook has become the ultimate 'environmentally friendly' way of life. Wright (2021, p. 5) goes so far as to suggest that veganism constitutes an identity category akin to 'race, sexual orientation, national origin, and religion'. Whilst Wright's is a controversial view, it gives a glimpse into the magnitude and force of conviction behind the shift to lifestyles and diets that reject meat, usually in favour of plant-based alternatives. Many brands, influencers and celebrities play a role in promoting and advocating for a vegan lifestyle on social media platforms from the newer perspective of healthism and clean eating, often framed within discourse around body shape and plant-based eating (Aleixo *et al.*, 2021; Chalmers, 2017; Crawford, 2015; Dorard and Mathieu, 2021; Hanganu-Bresch, 2020; Jallinoja *et al.*, 2018; Kirkey, 2019; Nguyen, 2017; Phua *et al.*, 2020a, 2020b). The role of media and social media in the information-seeking of young people is discussed in the following section. Whilst I largely focus on food items here, I recognise that veganism is also increasingly utilised in textile and garment labelling, which in some instances in tension with the deeper-rooted environmental concerns held by many vegans.

Beyond even this expanding compass of lifestyle adoption, powerful aspects of vegan values and ethics have also become key drivers in a philosophical critique of the Anthropocene. These urge a complete rejection of the heritage of human privilege and exceptionalism in favour of a new, decentred and species-esteeming 'posthuman' morality antipathetic to the exploitation and

consumption of other living systems in the manner in which, of course, modern agriculture is largely predicated (Fagan, 2019; Jeong *et al.*, 2021; Lövbrand *et al.*, 2015; Ulmer, 2017):

> William-   I think one of the concerns I have at the moment is the rise of vegetarianism, veganism all these sort of things, there's nothing against any of them but I think they need to actually be sure that the facts that they [pupils] are getting are actually correct and I think we're in danger of being so far removed from farming and actually seeing animals first hand, and actually understanding the whole process from when animals come into the world and, you know... go through to slaughter house and actually end up on the plate that it becomes a little bit... unsavoury, if that's the right way to put it. If you're in amongst it and you understand it, you're not so bothered about... you know, having a good piece of steak. But when you start to think about... you know, the slaughter process... and kids getting so far removed from it, it becomes almost a taboo and I think we need to understand better.

In William's opinion, the concerns about the rise of vegetarianism and veganism were linked to what he sees as a lack of understanding around the whole lifecycle process of animals. For William, when children are not adequately presented with all of the facts, the danger is that they become so removed from the processes that it becomes a taboo or toxic subject. Whilst his view here does not include reference to any concerns that children may have around areas such as animal welfare, he was pragmatic about the 'unsavoury' dimension to such topics and the need for children to understand the whole picture. Later in the interview we discussed the contribution of livestock in maintaining and defining Scotland's landscapes, and the often unmentioned role that grazed grassland can have in carbon sequestration. This led to an exchange about animal husbandry, which, whilst acknowledging that there are undeniable problems associated with intensive farming, argued also that animals may lead a better quality of life than in an alternative 'free range' type setting:

> William-   There are problems with intensive farming there's no doubt about it, but you also can go to some very intensive farms were things are done fantastically well and you know, the husbandry of the animals is far better than some of these ones that are running about up to their hocks in mud and, you know, on

> wet hillsides... so there's a balance from both sides really...

William's argument for balance, corroborates with my early assertions on the need for a balanced approach to environmental education. He was articulate throughout the interview, reflecting his active role in agricultural societies and public facing situations and approached his narrative in a pragmatic and almost practiced manner. We can recall here the 'good farmer' identity concept, and the role of the forms of symbolic capital, such as animal husbandry, underpinning the social standing of farmers within the farming community. Charlie echoed the pragmatic approach of William with regard to the treatment of animals:

> Charlie-   A farmer is a businessman and erm... I mean these things with the animals, I keep saying to people... you always hear it 'aw that, he mistreated that animal'... I say, well, he didn't, if he mistreats his animals he won't have a business, you know, the farmers are desperate to do the best for their animals, and yes they go to the abattoir, most of them are sad to see them go to the abattoir but they go because that's their job...

Charlie's opinion on veganism and vegetarian was largely neutral, but he felt that what was missing from the majority of reporting and discussion was the sheer scale of the land-use change that would be required to support a vegan world population. This would also have huge impacts on those same populations – not to mention those parts of the world and their inhabitants (such as the carnivore indigenous Arctic Peoples) where the climate is not conducive to growing plants and where their cultural traditions for e.g., seal predation continue to thrive (Lincoln *et al.*, 2020; Paley, 2014). Whilst open and easy-going, there was an inkling of a provocative under-tone in Charlie's responses which I attribute to his passionate belief in agriculture as a vitally important yet hugely misunderstood and underestimated part of everyone's lives.

> Charlie-   I think that if you're a vegan or a vegetarian it's a choice, a personal choice, I think that's great, but I think that if the whole world went to become vegans and vegetarians we'd have to have a big population reduction in order for there to be enough food to feed everybody or certainly we wouldn't have any forest left because none of that rain forest area

> would still have forest... and they'd be on... where
> they are now on the wet bits where you can't grow
> anything else... there's not enough to feed the world,
> and I think why don't we hear that in the media?
> Because it's not a headline, because it's not a story.

Agriculture was immensely important to Charlie, but he was not particularly chained to a defence of livestock, instead his main vexation was in how agriculture is perceived and how misinformation is leading to a skewed understanding of the wider intersections of the rural sector.

In comparison to Charlie, the strongest view on veganism was offered up by Craig, whose concerns were not necessarily aimed at those choosing to live a 'genuine' vegan lifestyle, but towards those vegans who in his perspective choose to engage in provocative and inflammatory actions and interactions hostile to the farming community. I recognise that whilst there are bound to be farmers out there who respond in equally provocative ways, the tone and language used, and volume of anonymous or faceless social media accounts that direct negative, demeaning and derogatory comments at farmers is, in my estimation, reflective of, at least in certain quarters, a deep-seated antagonism:

> Craig-   Something that's not really on your topic but
> something that really annoys me there's the whole
> vegan movement that's kicking off at the moment as
> well... [...]
>
> The term vegan warrior... that's a problem. Like
> genuine vegans have a million reasons for wanting to
> be vegan, but the vegan warriors go to war, - and go
> to war with everything and anything and that doesn't
> help anybody, it doesn't help their own cause never
> mind anybody else's.

To an extent Craig's comments reflect the feeling that perhaps farmers and agricultural workers are, in a sense, unfairly blamed for some of the consequences of their practices, and that along with a disconnect from food production processes, there also exists an ignorance amongst some influential media elites and other groups of people of the ways of rural life, and the value and worth of a rural sociocultural identity:

> Craig-   Anything that gets talked about food or veganism, or
> stuff like that, it always comes down to an eco-
> warrior pipes in or something. I could if I wanted to,

go to my farm and get a cow butchered fairly
locally, be eating that cow if I really wanted to – but
the fruit and the veg that's imported from half way
across the world and stuff like that – it's just
absolutely nonsense. So, I think there is a real
problem there as well.

Craig continued by commenting on some of what he perceived as the hypocrisies
of an eco-lifestyle, which in his view would reject a local product in favour of
one that is flown across the world.

The notion of the 'sustainability' of the environment as a key concern of vegans,
but seemingly based in lack of argumentative logic, was a point of real interest
to Charlie. Charlie is passionate about the bigger picture of agriculture. What
follows is thus an extensive extract, but I feel that Charlie's enthusiasm and
ability to see beyond the 'disconnect', and to visualise the full picture of what
agriculture *could* deliver as part of a larger and challenging learning experience,
merits fuller representation:

Charlie-   I was just thinking there, if you want to make it
relevant… relevant to right this minute… look at
what's happening to our environment with plastics…
Now, we used to erm… I mean, agendas get… the
vegetarian guys have got… they seemed to have…
they've got this… they're able to project their
message very well, and now we're onto vegans
projecting their message very well, it's all great an
this… but what is… why is it that we've…

Our shoes are made of plastic now and we're making
all sorts… our clothes are made of plastic and it's a
problem for the environment, whereas when our
clothes were made of cotton and wool, and our
shoes were made of leather it was never a problem
for the environment and, why are… why not?

We push that message, listen, that would be part of
the thing to get kids… to… if you got kids to engage
in… thinking about agriculture and food production
and, it isn't just food because a carnivore beast is a
classic isn't it? It's what *could* we use it for and pigs
and that… was always the joke wasn't it, the only
thing you couldn't use out of pigs was its squeak
and…

So it's not just that, it's not just eating the animal…
it's the bones, they used to make animal charcoal

> out of the bones, and then the fat used to be used
> to… it was used to produce electricity and the skin
> was then used to make clothes and/or footwear and
> whatever and so really that would be the agenda to
> push, what all can we do with this animal after…
> we're not just going to eat it we're going to… so how
> many pairs of shoes won't have to be made out of
> plastic if we used the leather? and so and so forth…
>
> I just think we should be looking into our past to see,
> we didn't… we [now] have this terrible effect on the
> environment that we need to do something about
> but doing nothing about it is going to get an awful
> lot worse. People are already trying to do something
> about it, but simply by using more of… more…?
>
> Agriculture isn't just about food production, I mean,
> we grow cotton, we grew jute, we grew all sorts of
> things to help us live our lives I suppose…

Charlie elaborates on the cyclical nature of animal-source products, as well as the potential for (almost) every part of a carcass to be for something else, *in addition* to food. He questioned why we make clothes from plastic, when, in the past, garments were largely made from wool and leather and did not lead to the same environmental problems that we face today in terms of, i.e., the build-up of plastic and synthetic fibres in the environment. In asking *why this is*, in terms of e.g., the biodegradable properties and multiple uses of animal-source products, Charlie proposes that this could open up space for children and young people to discuss what the products of agriculture *could* be used for. Agriculture is, after all, not just about producing food, and thus there is potential for those other products to be used to support living in a more sustainable, less-impactful manner. In addition to asking *why* or *how*, he suggests that there are some lessons to be learned, or indeed 'unlearned', from reflecting on the past and challenging the idea that we should be using *more* of anything in order to solve environmental issues. Charlie thus believes that learning through agricultural experiences offers children and young people the opportunity to critically engage with agricultural processes and practices past, present, and future, as a means to examine our actions, consumption and behaviours as they relate to many facets of our lives.

Charlie's narrative here is centred on his belief that there is an argument to be made in defence of agriculturally produced crops and animal-source products,

because in his view they have the potential to be both an efficient use of resources, and less impactful on the environment than plastic-based items. Creating and designing products that take into account their whole lifecycle, or that can biodegrade or be mended, as well as contributing to environmental renewal e.g., soil regeneration, is central to the concept of the circular economy. A circular economy is achieved,

> by designing products smartly with their whole life cycle in mind, re-using and repairing to extend their useful life, and then when their life is deemed over, remanufacturing to create new products from old (Zero Waste Scotland, 2021).

As a sheep-farmer this conceptual area was also addressed by Beverly, who mentioned wool and wool products a number of times throughout her interview. In addition to wanting to see more wool products, she also recognised that these products are often luxury and thus very expensive:

Beverly-   Yeh, there has to be a balance... and like there's nothing better for me than a woollen fleece that's grown... and you know... and like there was a New Zealand guy doing over in... so he was going about it with a pair of wool shoes which like why can't we get wool shoes you know that would be brilliant but you know that's the thing it's the balance... it's the consumer driven drive errrm... for, for products and for cheap quick stuff... it comes at a cost. [...]

They were like were 'oh no its too expensive' and I was thinking... you can't... you can't say that and you're a wool producer... how can we sell that to the general public?

Wool is durable and decomposes in as little as a few months, and therefore there is an argument for its role as part of a more sustainable and circular model. There are many benefits and uses for wool including carpets, insulation, apparel, hobbies and crafting, interiors among many others (British Wool, n.d.).

There is across these interviews growing recognition of the complexities and impacts of consumerism, and the way in which consumption as a signature feature of the late capitalist world order drives modern agricultural practices (Thompson, 2015). The criticality of consumerism to the capitalist model relies on access to more, as opposed to sufficiency or 'enough'. Agriculture and agri-

politics (globally) are driven by consumerism, influencing agricultural practices such as deforestation. I expand the term agricultural practices here to both the agricultural production of 'raw materials' and the ever more ultra-processed products (often labelled as plant-based) and their links to questions of human and animal health and the environment. Meat, as some suggest, has become a convenient scapegoat for some of these anxieties, exacerbated by selective media exposure to the very worst and most graphic examples of poor animal husbandry and livestock production, and amplified over the last decade by the rise of orchestrated campaigns on social media (Jallinoja *et al.*, 2019; Leroy *et al.*, 2018, 2020).

On the question of livestock farming and sustainability, however, livestock can be a hugely beneficial part of, or even addition to, an agricultural system. As part of a well-managed system, livestock provides manure for soil health and turns low quality grasslands into high quality protein, in areas that may otherwise remain barren (Broom *et al.*, 2013; Eisler *et al.*, 2014; Leroy *et al.*, 2020). Livestock also again provides livelihoods and food security for many people across the world (Randolph *et al.*, 2007; Robinson *et al.*, 2014; Varijakshapanicker *et al.*, 2019). Discussions around livestock, and its reported inefficiencies (feed/food competition), often fail to mention the diversity and varying levels of efficiency in production systems around the world. This can lead to the information being absorbed uncritically by the public or to policy made without informed reference to its geographic and other contexts (Godfray *et al.*, 2010; Mottet *et al.*, 2017). Eliminating livestock from food production systems, and thus from human diet, in other words, comes with its own potential set of challenges, including widespread soil degradation and increased usage of fertiliser to combat this – in addition to wider cultural problems for societies which currently rely solely on animals and animal products for their livelihoods and cultural identity (such as Inuit and Greenlanders). Meat itself has long formed part of human evolution both in terms of biology and culture; the consumption of meat for physiological fuel and brain development has so far been central to advances in human evolution (Randolph *et al.*, 2007; Urrego, 2014; Williams and Hill, 2017). ASF provide dense and readily bioavailable vitamins, minerals, energy and protein, when compared with plants and deliver multiple micronutrients simultaneously that are sometimes completely lacking in

plant-based foods (Varijakshapanicker *et al.*, 2019). 'Meat traditions' remain central to, and entwined within, many different social gatherings, interactions and whole agrarian societies the world round (Leroy and Praet, 2015).

The UN Food Systems Summit (UNFSS), scheduled to take place in October 2021, is considered to be a key event in the global transformation of the world's food systems. However, it has already come under increasing criticism and a number of civil society organisations are threatening to boycott it (Gatundu, 2021). COVID-19 has at the very least highlighted the fragility and the inequalities associated with runaway climate change, conflict, poverty, malnutrition, and hunger. These realities are present throughout the global food system, and few would argue that a transformation of the systems in which food of all types are produced is likely to be straightforward. It seems also that the summit is likely to be 'captured' yet again by 'a powerful alliance of multinational corporations, philanthropies, and export-oriented countries to subvert multilateral institutions of food governance and capture the global narrative of "food systems transformation"' (Canfield *et al.*, 2021, p. 1; Chandrasekaran, 2021). There is for instance concern at the strategic partnership signed between UNFSS and the World Economic Forum (WEF), and the lack of space for discussions on 'deep food systems analysis' within the narrow working Action Tracks proposed (Canfield *et al.*, 2021; Chandrasekaran, 2021). The WEF has started *The Great Reset* initiative, envisioned to improve the state of the world though the cooperation of global stakeholder capitalism (Schwab, 2021).

The 'Plantary Health Diet' which is a near-vegetarian diet developed by the EAT-*Lancet* Commission (Willett *et al.*, 2019), is the preferred dietary model of the WEF. The EAT-*Lancet* report from which the Planetary Health Diet comes, highlights again that a 'Great Food Transformation' needs to take place, and suggests that this can be achieved through the adoption of its 'universal healthy reference diet' (Willett *et al.*, 2019, p. 485). Criticisms, however point to a number of concerns, such as the diet being perceived as nutritionally deficient; a lack of clarity in the methodology applied, and likely ethical, cultural, and even colonialist implications involved in a group of mainly white, wealthy and privileged people suggesting a universal or global dietary solution to our shared problems (Burnett *et al.*, 2020; Harcombe, 2019; Katz-Rosene, 2020; Rodgers,

2019; Rodgers and Kresser, 2019; Zagmutt *et al.*, 2020). Whilst the report does not make mention of food miles, the authors do make reference to an ideal scenario being one where a system of 'unimpeded food trade and [where] all countries possess sufficient foreign currency to purchase food' is more preferable to the approach of 'food sovereignty' founded in local, autarkic systems (Katz-Rosene, 2020; Willett *et al.*, 2019, p. 465). The Founder and Executive Chair of the EAT Foundation has also been appointed to the leading role of Chair of Action Track 2, 'sustainable diets', of the UNFSS, saying,

> Our goal is therefore to take full advantage of the Summit to build an unstoppable global movement for change that we can keep growing well beyond the Summit, to force the kinds of far-reaching changes that the world now desperately needs (Stordalen, 2020).

Concern with the involvement of WEF, the EAT Foundation and their wider networks, in the UNFSS, is a reaction to the focus and emphasis on corporate multi-stakeholder technological and Big Data strategies, rather than on the real stakeholders of food – farmers, food workers, and those that are food-insecure (Mooney, 2021). Put bluntly, Mooney believes that the lives and livelihoods of these people are at stake unless we can alter the trajectory of food, finance and governance systems in world agriculture, reflecting the participants' concerns about the potential impact of extreme perspectives on their lived experiences.

[The Long Food Movement Report](#) (Mooney *et al.*, 2021), cited earlier, sets out pathways for systemic and political change. Food is a shared necessity, and there is thus a real imperative and urgency for increasing the agricultural literacy of Scotland's young people and other young people all across the globe. In order that the moral and ethical issues of food and agriculture become part of the shared thinking of civil society, and that due recognition and value can be afforded to those whose achievements and contributions ensure the sustainability of our local food systems, we need a re-orientation in all aspects of agricultural education.

We must of course acknowledge that veganism and plant-based diets are attracting increasing scholarly attention from a range of perspectives. This includes nutrition and healthism and also as part of an ethical environmental

solution to the climate crisis (Beck and Ladwig, 2021; Kortetmäki and Oksanen, 2020; Springmann *et al.*, 2016; Willett *et al.*, 2019). The terms 'vegan' and 'plant-based' are often used interchangeably in these settings, however those choosing a plant-based diet do not necessarily exclude animal products (Domke, 2018; Hemler and Hu, 2019; Thomson, 2017), and vegan-labelled foods are not necessarily a healthier alternative to ASF. There tends to be greater focus on whole foods within the plant-based diet, and whilst vegan-labelled products are usually 'plant based', there exists a propensity for these to be processed and ultra-processed food items and thus less healthy (Katz and Meller, 2014); eating processed and ultra-processed foods has been shown to be a factor in weight gain (Hall *et al.*, 2019).

WEF and the EAT Foundation form part of a large web of corporate multi-stakeholder food multinationals and vegan food producers of ultra-processed products, including the Livekindly Collective, Beyond Meat, and Impossible Foods. The main remit of the latter two is to eliminate *all* livestock farming by 2035 (Leroy *et al.*, 2020), and they have been rewarded by UNEP in the form of the UN's Champions of the Earth award in 2018 (UNEP, 2018). These companies work hard to develop and spin marketing campaigns that 'greenwash' the unpalatable and unsustainable elements of their networks and production processes. Greenwashing is a marketing calculation whereby a false impression is created of − or misleading information is communicated about − the extent to which companies, organisations, policies, and products are environmentally or health beneficial. The misleading use of terminology such as 'clean', 'natural', 'nature', 'green', 'earth', and to a certain extent 'plant-based', are often clever marketing terms that persuade the consumer that the products, company or campaign to which they are attached adhere to high levels of sustainability and ethical responsibility. Agriculture on a global scale is of course by no means exempt from any of these types of claims; the meat and dairy sectors have their own lobbying organisations and campaigns, and there is no denying that these industries also wield power.

The 'issues' or problems highlighted by developments such as the vegan lifestyle and the Planetary Health Diet are all ultimately challenges linked to the people, the environment, the soil, diet, health and livestock realities of modern farming.

They therefore must be addressed through collaboration, innovation and renewed connectivity. People and animals must work *with* nature rather than *against* it to develop balance and best practice that improves and regenerates the land and the ways in which we relate and interact with it (Leroy *et al.*, 2020; Mooney *et al.*, 2021). It is therefore increasingly important that young people, whether on vegan journeys or not, are afforded the opportunity to critically evaluate for themselves the impacts that their consumer choices have on the environment in relation to food and other goods. In order for this to be achieved, young people need to encounter a balanced and localised understanding of the context of concepts such as ASFs, 'plant-based', and what these choices mean as part of their local geography, economy, ethical, health and nutrition *foodscape* outlooks. Future foodscapes, thoughtscapes, landscapes and even socialscapes will become important templates for ensuring humanity meets its individual and collective needs for purpose, provision of adequate nutrition, and societal harmony (Leroy *et al.*, 2020).

Young people and the wider general public should feel empowered to make such informed choices, and not just unseeingly follow the hidden agendas of those who have personal vested interests and who stand to gain financially from forcing ordinary people to make sacrifices in their lives, yet who are unwilling to make the same sacrifices in their own lives. The influence of individuals and their wider corporate ties within the environmental, food and health arenas at a global level cannot be underestimated, and the motivators for action, whilst on the surface often presented as philanthropic and for the greater good, are often intimately bound up in complicated corporatocratic politics, ranging from land-grabbing in the name of wildlife protection to the entire elimination of livestock agriculture. This is an area of interest for future research that I feel highlights a small portion of the hidden networks at play in representing and misrepresenting the positive contributions that agriculture, including livestock farming, can make to the environment.

Media

The role of media is an important aspect of many topics within this study to which the research respondents reacted. However, it plays a particularly

significant role in the perpetuation of a discourse that frames agriculture as being anti-environmental, and further exacerbates the disconnect between society, food, the processes of agriculture and wider rural life. For example, the role of social media is increasingly important as a tool to promote agricultural businesses and information, but it can also be employed as a means to tackle misinformation and biased advertising and campaigning. In an increasingly digital world, access to fast and reliable broadband in rural Scotland has long been a priority of rural development policy, especially the Scottish Government's digital strategy to ensure every premise had access to at least 30mbps by 2021 *Realising Scotland's full potential in a digital world* was launched in 2017.

Internet access and digital technology are very much a key aspect to modern life, and have transformed the ways in which we entertain, communicate, learn, work, and access public services and information (Sanders, 2020). Despite its integral role across all facets of daily life, access remains uneven, leading to some groups in society, particularly those people living with pre-existing inequalities such as rural areas, becoming digitally excluded (Halliday, 2020; Shucksmith *et al.*, 2021). Digital exclusion is not simply a lack of access to broadband, but also includes the capacity or knowledge to use and interpret the Information, Communications Technologies (ICT) that are essential to full participation in an increasingly digitalised society (Schejter *et al.*, 2015; Selwyn, 2004). The wellbeing of those in rural areas is impacted heavily by digital exclusion; those dwelling in isolated areas can be further disempowered by social and digital isolation. For example, the welfare system is increasingly digitalised and centralised, and there are barriers to self-employment and the development of small rural businesses in digital disadvantage (Shucksmith *et al.*, 2021). In their study, Shucksmith *et al.* (2021, p. 7) found that 13% of Scottish premises do not have access to superfast broadband; in Perth and Kinross this increased to 24% of premises, and then again to 46% in the Western Isles. That even 13% of premises do not have reliable access to broadband is shocking statistic, particularly when compared to the 5% of premises in England that lack access. The issue of reliable access to broadband and the affordability of ICT equipment in Scotland is more salient than ever given the digital requirements of home-schooling and working from home that became essential throughout the

pandemic, and which still remain vital to the many still working and learning remotely.

Unsurprisingly, media was a theme raised by stakeholders. Whilst I knew it would be an essential part of the research, in terms of understanding the ways in which agriculture, farming and rural life are framed, I had not anticipated the extent of the concerns with news and social media raised in the discussions. Opinions towards the traditional media were mixed. Some suggested that TV programming through programmes such as the BBC's *This Farming Life*, *Countryfile*, *Landward* and Channel 5's *Our Yorkshire Farm, Friday on the Farm* and *The Yorkshire Vet* act as good connecting points between farming, society and food. On the other hand, there was definitely a thread of concern at the misrepresentation of British agriculture within media, and the impact that this is having on the way in which people perceive the sector. It was often the translation of this into behaviour and attitude change that was questioned:

Mark-	I think there is a lot of good programmes on TV, that are linking society with us as farmers… erm… I think people genuinely are interested in where their food comes from. Whether they are willing to pay a premium for local produce I would question… but we are swinging towards that… erm… Yeah I don't think it's as bad as it was… but there is still room for us to forge even closer links though…
Charlie-	Oh it's so difficult… the problem with the media is that, it's that they are always looking for a horror story and the lack of engagement… in this… […]
	I mean the BBC just ran some.. I didn't see it but… recently they had something about calves being exported and how inhumane it was and all the rest of it, and some of the footage.. It turned out… they didn't say it was footage from Britain, but it was suggested that this was what was happening from the UK and it was some abattoir in Romania and Egypt that they did their filming in… and erm this was the BBC! […] The BBC have apologised but the NFUS are not going to let… that's not enough… and… all that did was fuel a fire, all it did was make the walls higher, I mean some people have seen that and not heard the apology…

Mark also pointed out that there is still more that could be done to create better links to wider society, and he later goes on to talk about the importance of social media in lending agency to farming communities themselves. Charlie had concerns at the way in which news reporting is always looking for horror stories. He also felt that public attitudes and behaviours may have been influenced by a recent livestock programme shown by the BBC which misrepresented Scottish agricultural practices, and that whilst the BBC apologised for this, there will be people who have not seen the apology, but whose behaviours may be changed by the viewing. William's views were very similar to Charlie's, and indeed the same BBC Programme was also brought up by William. He too felt that any apology offered by the BBC was not done to a great enough extent.

For clarity: although the NFUS filed a complaint about the documentary, this was not upheld by the broadcasting regulator Ofcom, who ruled that it had been edited fairly (Ofcom, 2019). This was despite the distressing footage being of Hungarian calves being transported in Romania; and an abattoir based in Egypt (Dean, 2018; Pate, 2018). The programme was felt by many in the farming world as being misrepresentative of the high welfare standards they uphold. This has been compounded by more recent perceived anti-farming sentiment both in aspects of BBC news reporting and for some of its TV programming, including the prime-time aired *Meat: A Threat To Our Planet?* which was subsequently removed from the BBC's streaming service due to alleged lack of impartiality (Osbourne, 2020). The overwhelming sentiment that I registered from farmers was that media reporting consistently misrepresents farming, and at the time of interviews the BBC[15] bore the brunt of their frustrations.

This appears to be part of a wider concern of the farming community with regard specifically to the BBC, and what they perceive to be its unbalanced and inherent bias against farming. Some of this sentiment stems from a recent review into BBC coverage of rural affairs, the recommendations of which many in the agricultural community feel have still not been addressed today (Smith, 2020). The report found that whilst overall coverage from the BBC was of good quality, it lacked the depth of analysis that could come from specialist Rural

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[15] No references were made to BBC Radio Programming such as BBC Radio 4 Farming Today, or the Archers which I recognise are longstanding and often very positive representations by the BBC in terms of wider outlook, and the breadth and depth of perspectives covered.

Affairs reporting, and that in practice coverage was often 'tilted towards an environmental lens' (Hancock, 2014, p. 53). It also found that rural topics tended to be presented in a polarised manner rather than a 'wagon wheel' of views (Hancock, 2014, p. 77), and that a narrow list of organisations were disproportionately called on to comment on stories, which is limiting to breadth of opinion, including the National Farmers' Union. Without the flagship programmes *Countryfile* and *Farming Today*, rural coverage would lack any breadth. The report concluded that there was an urban or 'metropolitan' focus to BBC coverage that, whilst not discernible to urban viewers, was noticeable to rural viewers who only see a partial representation of their experiences (Hancock, 2014).

William-   I think the media has a lot to answer for really, and I think unfortunately farmers are not very good at counteracting when they've got a debate going on... it seems that when you listen to the debate on the television that it's all the vegans way and farming is all wrong you know, and that they don't actually... they're not able to defend themselves, they could really do with somebody, almost a champion for agricultural rights, if that's the right way to put it, that can stick up for you know against some of these guys, and the media unfortunately is great at reporting on all the sensational stuff and misses out on a lot of the facts, and I don't know if you saw the television program about the bull calves not so long ago, I mean a lot of those facts were complete nonsense, you know, a lot of it was actually untrue... but you know, the unfortunate thing is that anybody that watched that probably hasn't bothered or hasn't realised that there's been a backlash about it and all the stuff you know, they probably missed all the counter-arguments and a lot of the, you know, the fact that, I think it was BBC or the television company had to put in an apology, well that wasn't really reported to the same extent as the tv program was itself.

William pointed to the need for an Agricultural Champion within the media who is able to succinctly monitor the misrepresentations of farming. Jones (2017b, p. 43) found in her research that an 'urban bias is endemic' in mainstream media, one which is affecting the ways in which agriculture is understood and leading to oversimplification and an ideological bias against conventional farming. She recommends that the media act with integrity in order to regain trust. She also

found that whilst media reporting was often biased in this way, the farming community **must** better engage with journalists and the media by responding with openness and transparency, while championing and defending their production systems.

The National Farmers' Unions of the UK – the NFU, the NFU Cymru, and the NFUS - are vocal in their defence of British Farming, however as membership representation bodies, they exist to lobby for these interests. In positioning themselves as the 'voice of British farming' they risk dominating public narrative, thereby drowning out the voice of those at the farm level with industry level politics (Jones, 2017b). Does treating 'a farmer' and 'the farming industry' in media add to a sense of estrangement? In my estimation it likely does – both for the general public and for those farmers who perhaps could provide a counter or alternative perspective. However, as professional organisations, these bodies are likely to be an accessible, responsive, and articulate source for journalists (Jones, 2017b). Anna Jones, journalist and TV producer, set up Just Farmers in 2018 as a communications project to help media increase their rural reach. It is a register of individual farmers who are supported to build their confidence and communications. It is a non-political, non-industry initiative which aims to help the media deliver diverse, personal representations of British farming (Just Farmers, 2021). The now BAFTA award winning *This Farming Life* launched by the BBC in 2016 explores the highs and lows of farming life throughout the year and is currently recruiting for its 5th season. The popularity of the show, and the connection that viewers have gained from watching the challenges farmers face, has provided hope to some farmers that the general public are supportive of agriculture and can perhaps be encouraged to get behind farmers as the leaders of change rather than as having constantly to be defending their positions (Campbell, 2021).

Alongside the more traditional forms of news media and television, the role and influence of social media has become an important part of business and advertising across all sectors and industries in rural society. Beverly is extremely active on social media and has amassed a large following on Instagram and Twitter, regularly posting photos and videos of her life and farm:

> Beverly-   People are so dis-engaged from the… From what we do as an industry, so I took to social media to show… to share what we were doing… And people have quite a big appetite for it… and people need to… want to engage with what you do, yes you get criticism, but there's lots of good things.

In our wider conversations we talk about other farming and agricultural social media accounts such as The Red Shepherdess, who gives an open and honest insight into her life farming and as a contract shepherdess (Jackson, 2021), and James Rebanks, a sheep farmer and Oxford University graduate based in the Lake District who has written two very well received and critically insightful books on life as a farmer: *The Shepherd's Life* (2015) and *English Pastoral* (2020). Other wider media and marketing campaigns impacted Beverly, and she spoke about the PeTA (People for the Ethical Treatment of Animals) campaigns and videos that they produce:

> Beverly-   I don't recognise it as my farm.. but it's obviously happening… it's obviously very sad that that is acceptable behaviour. But I also saw a picture of a cow in a pen with silage in front of it, and it was saying how cruel it was… well on a wet snowy day in January… I'm sure the cow would be thinking it was actually quite a good option to be sitting in a bedded pen in with silage in front of her.. so, it's the extremes of it I suppose… like Donald Trump and the fake news… and how you balance that…

This allegedly extreme level of misrepresentation really upset Beverly, who works hard to ensure that the behaviours and actions that she makes or records for social media can be understood by the general public:

> Beverly-   You know… just look at what's happening and what you're doing, and actually look at it through laymen's eyes. So, I'm really careful when selling sheep – you make noises and you make taps to waken them up… you know, you tap the ground with the stick… doesn't look great when you are reviewing it.. so, you need to be really aware of what you are projecting. It's okay from the farming perspective to understand it, but then if the general public don't understand it then you're not helping yourself.

Whilst Beverly was upset about the misrepresentation of agriculture in the media, she also recognised that media works two ways, and that whilst her livelihood was under attack from some campaigners, they are passionate about what they believe in the same way she is about her values. Helping people to understand her farming and processes is the reason that Beverly shares her farming life on social media. Mark, too, believed that whilst social media can be a great tool for communicating agricultural information to the general public, it also comes with a downside:

> Beverly-   It's pretty hard just now, you are getting pretty big attacks from vegans... and I can totally understand their passions, but I equally have the same passion about what I do... and I think sometimes we have to agree to disagree. I think farmers maybe sometimes need to be less aggressive at slagging off vegans and other people that don't understand what they do because we equally don't understand a lot of maybe the outside world too as well. Social media for me is very key.

> Mark-   I think social media whilst being a very powerful tool can also be very negative. We've got some really strong erm... messages getting put out there from people with a fairly biased viewpoint of agriculture, and I think... You know... There is no point in us retaliating in the same way. We've got to come back with balanced viewpoints - and it's the same as the diet, it's all about having a balanced diet with a bit of everything in it...

These comments by Beverly and Mark mirror the central aspect to my earlier discussion on the breach with agricultural processes and they highlight the need for education to ensure that balanced viewpoints, perspectives and experiences are available to children and young people.

In a similar vein, Roger made an interesting comment about children's media and entertainment, and the impact that consuming media has on children's choices in later life. It would be interesting to look at the portrayal of farming in children's literature at various age groups to understand whether stereotypes have persisted in terms of e.g., gender roles and a rural idyll stereotyping.

Roger-   …the impact of CSI on children wanting to do
              forensic science… maybe agriculture needs 'Fireman
              Sam' and 'Postman Pat'

The presenter JB Gill from *Countryfile* – once a member of the popular boyband JLS – has a children's programme set on his farm. *Down On The Farm* is described as a series that looks at what happens on farms, where food comes from and how it's grown. However, as a CBeebies programme, it is aimed at ages 2 to 6 years, so not appropriate for the young people within the scope of this study. But it could be valued for providing a good early years example of a farmer alongside the likes of Fireman Sam, Bob the Builder, and Postman Pat (all four of whom, however, are male stereotypes).

In response to the COVID-19 lockdowns, school closures and a move to remote home-schooling, a number of farmers and other wider rural sector workers including in science, research, engineering, and journalism took to social media themselves, or as part of NFU and EatFarmNow's #LockdownLearning initiative to provide livestream and/or educational videos on all aspects of farming. The videos covered everything from livestock to arable, soil to sunflowers, lambing to meat, in order to show children and young people, and their parents, the types of activities and jobs that take place on farms and the rural sector across the UK. These have been hugely well received, encouraging children and young people to engage with farming in a way they perhaps never had before, and have resulted in an extensive archive of videos and information that is available for use (EatFarmNow, n.d.; NFU, 2020).

More people are relying on social media as their primary source of information, which is itself vulnerable to being an 'echo chamber' or 'information silo' for misinformation and disinformation (Höttecke and Allchin, 2020; Trethewey, 2020). People are more likely to be drawn to falsehoods and conspiracy theory where they lack the knowledge and understanding (Demestichas *et al.*, 2020). Given the sheer volume of information available through social media, it can be hard to tell whether it is informed by reliable and evidence-based sources or not (Naeem *et al.*, 2020; Trethewey, 2020). Teenagers are vulnerable and impressionable and can thus find it hard to see through the quagmire that is social media which can then lead to believing fake realities (Fabian-Weber,

2019; Lofft, 2020) – as are indeed many adults. There is a large body of literature on the impact of social media on, for example the spread of health and nutrition misinformation (Lofft, 2020; Monteiro *et al.*, 2019; Naeem *et al.*, 2020; Rounsefell *et al.*, 2020; Scrinis, 2020; Trethewey, 2020; Walter *et al.*, 2020), disordered eating, body image, and exercise (Holland and Tiggemann, 2017; Jin, 2018; Lupton, 2017; Saunders and Eaton, 2018), in addition to well-being (Burke *et al.*, 2010; Orben, 2020; Orben *et al.*, 2019; Verduyn *et al.*, 2017). This tide of information has often left people increasingly confused as to what constitutes healthy or unhealthy food and diets (Demestichas *et al.*, 2020).

In addition to the focus on human-related concerns, social media platforms are key locations for activism, debate, discussion, campaigning, and information exchange as relates to environmental, climate change, animal welfare, farming, amongst other related contemporary concerns (Anderson, 2017; Anderson and Huntington, 2017; Andersson and Öhman, 2017; Barnes, 2017; Brossard, 2013; Buddle *et al.*, 2018; Lakoff, 2010; Lyon and Montgomery, 2013; O'Brien *et al.*, 2018; Pearce *et al.*, 2019; Reed, 2020; Segerberg, 2017; Stevens *et al.*, 2018; Zhang and Skoric, 2018). As sites of conflict, information, opinion, knowledge, and misinformation, social media can be a rich if volatile source of informal learning for young people. Pathak-Shelat (2018) argues that social media can help to facilitate global citizenship education (GCE), which is a key aspect to LfS. She suggests that this can be done both through informal everyday social use, and through experiences that are pedagogically teacher designed (Pathak-Shelat, 2018). Experiences that are teacher designed might include such activities as creating an online campaign, building a blog or podcast, developing a discussion board, among many others (Pathak-Shelat, 2018). When framed around food or agriculture, these types of experiences could enable young people to engage critically with the wider historical and geo-political backdrops to our food systems. To engage with the tensions that exist between the urban and the rural, the local and the global, and the structures and inequalities between peoples and nations around the world. Pathak-Shelat, however, cautions that these should not,

> leave the youth either with a crippling guilt about their privilege
> or a crippling anger at the history of injustice. These emotions
> rob individuals of the will to exert their political agency because

of the overwhelming feeling of 'nothing can be done' (Pathak-Shelat, 2018, p. 552).

The contribution of sensitively planned activities as above could help to increase the agricultural literacy of young people and encourage them to pursue sustainable and ethical consumption and behaviours. As we have seen throughout this study, the role of education is thus vitally important when it comes to developing Scotland's young people into successful learners, confident individuals, responsible citizens, and effective contributors. Particularly with respect to being confident individuals and responsible citizens, underlying attributes and capabilities (the full list can be found in Appendix 9) include:

- confident individuals and responsible citizens
    - secure beliefs and values → relate to others and manage themselves; develop and communicate their own beliefs and view of the world
    - commitment to participate responsibly in political, economic, social and cultural life → make informed choices and decisions; evaluate environmental, scientific and technological issues; develop informed, ethical views of complex issues.

- successful learners and effective contributors
    - openness to new thinking and ideas → make reasoned conclusions; link and apply different kinds of learning to new situations
    - resilience → apply critical thinking in new contexts; create and develop; solve problems

Young people have the right to come to their own conclusions in making the right choices for themselves, and further inclusion of, and exposure to, agriculture within the context of CfE and the formal education system affords great opportunities for this. But this essential aspect surely extends beyond simply increasing references to agriculture within CfE, or even the creation of a framework to help teachers better engage with the topic. I believe that a balanced and pragmatic understanding of agriculture in Scotland, and as part of the global food system, should be a critical and central feature of Scottish

education. The common theme to many of the concerns outlined in the above discussions is, again, *food*; how we grow it, how we transport it, how we process it, the social interactions we base around it, how we treat the people who grow it, the land it requires… Ultimately the value that we extend to food and all of these processes is part of the ways in which 'food can save the world' (Steel, 2020, p. 2). In our search to solve the wicked problems that we face, we are increasingly looking to find a panacea solution to global problems that are interconnected, multifaceted, and highly complex networks and environmental systems. This insight is crucial to the more radical aspects of my arguments in Chapter One and necessitates a fundamental re-imagining of the BGE Phase of CfE, tackling some of the structural and cultural challenges of curriculum-making across the secondary school levels.

4.4.3 Curriculum for Excellence

Drawing from the above discussions and taking a wide view account, CfE could be understood as (inadvertently) occupying an anti-rural position. This position of urban-centricism often overlooks the particulars of rural contexts in policy (Gristy, 2014; Howley and Howley, 2014; Redford *et al.*, 2020) and research (Corbett and White, 2014; Gallo and Beckman, 2016). There are hence increasing calls to 'rural-proof' social policy generally, both in terms of accessibility e.g., the welfare system (Shucksmith *et al.*, 2021), and in terms of a wider Scottish Government strategic approach e.g., National Planning Framework (NPF) (Mackay, 2021).

The NPF is a long term plan for Scotland setting out where infrastructure and development are required 'to support sustainable and inclusive growth' (Transforming Planning Scotland, 2021). Scheduled to be launched in late 2021, the position statement of the NPF4 has come under criticism for not having a big enough vision for rural Scotland within its aim of a 'long-term strategy [that] will be driven by the overarching goal of addressing climate change' (Mackay, 2021; Scottish Government, 2020b). Defining the re-population of rural areas as a key outcome was generally welcomed, however reconciling this with the very different structures of rural life raised suggestions for further 'rural proofing' (Highland Council, 2020; Lawrence, 2021; Scottish Land and Estates, 2021). For

example, a blanket policy to only approve new housing within the 20-minute neighbourhood concept[16], may very well continue the trend of rural de-population rather than the intended aim of increasing working populations in rural areas (Mackay, 2021). Rural communities contribute to climate change targets in very different ways to urban communities, and it is therefore vital that any policy with a national applicability thoroughly and holistically considers the often specialised or alternative solutions that enable rural communities to flourish.

Policy leaders in education must thus consider the alternative and diverse ways in which agriculture can contribute to enabling Scotland's young people to flourish. Climate change, animal welfare, sustainable consumption, the cost and value of goods – all of these things are also deeply important to (most) farmers, as our data has shown. They are human beings and as consumers of their products we all form part of the networks that support and empower their businesses to thrive or make ends meet. Addressing the climate emergency as it is now commonly and accurately referred to, relies on the transformation of agricultural processes – and thus farmers need a society that as a whole takes informed actions to drive this transformation. Scottish Education, its purpose, and the values it seeks to instil through the four capacities, must thus extend beyond the human/environment or human/nature dyad to a more truly ecological understanding of our moral and ethical position *within* our environment/nature. Education as a social good could then serve as a catalyst deeply rooted to our place within the boundaries of our local ecosystem. At this pivotal juncture in human history there is indeed an argument that we urgently require to 'unlearn' some of these human/environment behaviours and attitudes that have so far enabled us to perceive of ourselves as masters or conquerors of nature (Adam, 2016; Adam *et al.*, 2020; Himpens *et al.*, 2020).

Roger was a philosopher of sorts and had clearly spent time prior to the interview taking place preparing and developing his own thoughts and judgements on what it was that he perceived my project to be about. As a careers advisor, Roger was the most uniquely placed of my participants in terms

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[16] 20-minute return walk to key amenities including to public transport links; diverse range of housing including genuinely affordable and social housing (Sustrans, 2020).

of a detachment from being directly involved both in teaching and the rural sector, but with a keen interest and desire to see the rural economy and rural life fully appreciated and understood by the young people he serves. Our conversations and discussions were rich and varied, but central to breadth of topics we talked about was the depth of Roger's convictions and beliefs, and these consistently came across in his narratives:

> Roger-   I think it would be so empowering if people had some kind of overview of it [agriculture], and then they could discuss: What's our role in it? How could we be part of changing it in some way...? And taking a little bit of ownership of it. Things like understanding the agriculture here [locally], the link to the distilleries...
>
> I'd just like people to be able to see those connections. And when I am at my most frustrated about competence based employment, I feel that if I was interviewing somebody... and if I had a job, and a young person couldn't orient themselves around the local labour market, I would be disappointed.
>
> Eleven years of education and if you can't get to that what are we doing? But other people would say 'oh that's not a priority' but maybe it's the distortion of working in careers, you start to over emphasise the importance...

Much like Charlie, Roger could see the bigger picture within which society, the education system, and food and agriculture operate, both at a local level and in the nuances to the ways in which people themselves form part of these bigger processes:

> Roger-   A recognition that we need it, it's very important and young people should be aware of the role of food production within their community, and this... somehow measuring an active awareness of it. In terms of animal welfare, quality of food, use of the environmental impact of farming so I like the idea of living in society where more people are saying 'yeah I want to see improvements in that, and I have an understanding of where I would find that', so it's political with a small 'p', and active... I want it to be slightly activist, but that's what I feel... but it will be interesting how when you are presenting that to education, what does education do? 'ach great, we don't have time for that' but what do we have time

> for? That's the bit that's quite interesting... what
> drives it forward. Is it more just survival...?!

The real nub of most of Roger's testimony was the requirement that, in order for there to be real transformative change, and indeed the actions that bring this about, people need to be more informed and empowered (a central moral tenet, surely, of a 'reformed' CfE). Roger made an interesting link between what education perceives its purpose to be, and the time that it spends achieving that purpose. This made me ask: what *is* the purpose of education at a time like this? And, how can an education fit for this time be better cultivated through CfE?

The analysis of attitudes earlier in this Chapter show that there is real gap to be filled in terms of the ways in which urban society has largely detached itself from agriculture and rural life. Given this, there is a need for the education system as a whole to meet that need through the inclusion of learning and educational experiences that enable diverse children and young people to bridge the divide. Our impacts on the environment are many, as we have established, and, whilst the cultures and structures of individual schools – location, and the confidence and enthusiasm of staff members – may enable them to engage well with the natural environment, land, and outdoor learning, if we are to unlearn and transform our unsustainable behaviours then authentically pragmatist philosophy needs to be applicable and practical for all settings where learning takes place. Certainly, in developing such an approach, the notions of a 'planetary *phronesis'*, and of a 'Land Ethic' based in elements of virtue ethics provide a convincing rationale for a conceptual framework through which a shared vision of responsibility towards the planet could be developed (Allison *et al.*, 2012; Anastasiadou *et al.*, 2021; Avery and Kassam, 2011; Beebeejaun-Roojee and Congo-Poottaren, 2015; Cafaro, 2001; Ferkany and Whyte, 2012; Hodson, 2014; Kotzee, 2018; Macallister, 2012; MacAllister *et al.*, 2013; Marshall and Thorburn, 2014; Place, 2016; Thorburn, 2018; Thorburn and Allison, 2017; Xiang, 2014; Zajchowski *et al.*, 2021). A planetary phronesis in this sense recognises the value of 'theoretical know-why' (*Espisteme*) and 'technical know-how' (*Techne*), but it also places practical knowledge and ethics (*Phronesis*) as its moral centrepiece. It can therefore,

> invoke a sense of connection to an imagined planetary
> community that encompasses nations and localities
> (Anastasiadou *et al.*, 2021, p. 12).

Thus, a planetary phronesis encourages us to expand our thoughtscape beyond the interests of the local or national horizon, instead recognising those collective and individual contributions towards responsible global action. With this lens or value in place, agricultural-phronesis then encourages us to increase critical awareness of, and to promote justice, wisdom, compassion, and integrity in, our actions towards those important areas in our lives such as agriculture, food, farming, farmers, animals, plants, rural life, climate change, impact, sustainability.

Farming and agriculture and their wider setting within the 'rural' must therefore be parsed and situated, and I argue, *valued*, within CfE, as a central part of conversations around solutions to our wicked problems, rather than only positioning it as a wicked problem itself. As this research has demonstrated, CfE has in its armoury a rich array of concepts such as IDL, LfS, OL – however challenging their definitions and implementation may sometimes be – and the basic framework available to deliver an education as social good. The aspects of CfE discussed in Chapter Two – such as assessment, knowledge economics, PISA shock, interpreting IDL and SD – have, however, named those areas that are vulnerable to losing sight of the capabilities in each of us to be Craftspeople[17] (Sennett, 2009); to *want* and to *want-to-value* Heart or Hand work over Head (Goodhart, 2020); to feel *hefted* to a mountain just as sheep can be (Rebanks, 2015); to feel more successful as a farrier *despite* being successful in physics - to reinvoke one of my initial comparisons. There will always be a demand for people to do Head work. However just because we *can* does not always mean we *should;* perhaps CfE, and wider society, needs to unlearn aspects of the worth applied to examination credentials and 're-learn' the worth of a 'good living'.

> Charlie-   It's a nice life, you know… at some point in time, I
> don't know when it was, there has been this drive
> about your success depending on how much money
> you earn, that's got nothing to do with being
> successful…

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[17] 'Craftsman' as used by Sennett, does not adequately reflect the full diversity of humankind.

> Being successful, we were talking about that the other day. What, and how would you define successful… the best word we came up with was contentment!

When I first met Charlie, he spoke about how we no longer value the work that people do with their hands; a simple conversation that resonated with the trajectory of my own life. When I was a small child, my father was a shepherd and in similar fashion to James Rebanks has always as a consequence been bound to the land, even in his second career as a teacher. My mother is extraordinary at making things, from knitting to bookbinding, and has a very keen eye for written grammatical errors. I always had a book on the go, I cannot remember a time I was not reading – picture books about farms, stories about droving cattle and witches, several thousand journal articles, and more recently James Rebanks. However, that short conversation with Charlie forced me to think about my own hands and the satisfaction and fulfilment that I get from creating, growing, and making. Thus, a success of this research for me has been the clarification of my own positionality within the concepts of craftsperson and Hand work – and the value, depth, and richness that these perspectives have brought for me as a 'Head work' educational-agricultural researcher.

4.5   Agriculture and *Curriculum for Excellence* Revisited

The aim of this study is to examine the opportunities for agricultural experiences as part of CfE. This chapter demonstrated that learning based on Es+Os that relate to food are the best 'minimum effort strategy' for opportunities to link agricultural experiences and thus cultivate and increase agricultural literacy amongst young people. I also argued strongly that this approach does not go far enough, however, in adequately engaging with agriculture or rurality. Change, even when there is a strong motivation for doing so, takes time, and thus I detail some of the ways in which available resources and structures may be strengthened to better meet the aims of the agricultural experiences concept within a Minimum Effort Strategy. I further proposed, however, that this will not be enough and that a fundamental shift will be required in our relationships with rural and farming communities if we are indeed serious about transforming our own behaviours and attitudes to our consumption and our environmental impact. To this extent, I detail some proposed key concepts which could be adapted and implemented to develop agricultural experiences that would align more deeply with just such a fundamental shift. I have termed this a 'Radical Strategy', as a means of differentiating it from any business-as-usual scenarios.

A cross-cutting element to both proposed strategies is the concept of Learner Pathways, which I discussed in Chapter Two. The aim of Learner Pathways is to support each young person with a curriculum that reflects their personal choices and priorities:

> Young people must be encouraged to develop learning that interests and engages them, as well as it being purposeful for them and schools should not feel threatened to allow them to take learning in a different direction (Education Scotland, 2020c, pp. 3–4).

Thus, young people should feel encouraged and supported in following unconventional or alternative directions, that may not necessarily follow previously orthodox norms. As has been indicated throughout the thesis, it is clear that educational routes or pathways that involve agricultural or rural sector credentials are likely to be vocational qualifications such as apprenticeships and National Progression Awards.

The SQA is the <u>executive non-departmental public body</u> of the <u>Scottish Government</u> responsible for the accreditation and awarding of such credentials, including 'devising and developing' the national menu of qualifications (SQA, n.d.-a). Its functions are set out in the *Scottish Qualifications Act 2002*, and any new qualifications are developed by SQA through their Qualification Cycle which,

> ensures SQA's portfolio of qualifications is inclusive, addresses progression needs and reflects Scotland's economic, social, political and cultural needs (SQA, n.d.-b).

As a government agency, as well as both the accreditor and awarding body, the SQA holds a monopoly in Scotland over national qualifications, which has led to calls for reform, particularly following the 2020 exam results scandal that unfolded amidst the COVID-19 pandemic (Roffe, 2020). It is suggested that reforms are made to both the SQA and Education Scotland: splitting the accreditation and awarding arms of the SQA, and separating the policy and inspection roles of Education Scotland (Hepburn, 2021; Holden, 2021; Seith, 2021). MSPs backed the motion for reform in February 2021 (BBC, 2021); it will thus be interesting to follow how, if any, resultant changes impact the education policy and qualifications arenas in Scotland in the near future.

Building on my earlier discussions, which identified vocational qualifications as key for those young people wishing to pursue agriculture and other land-based qualifications as part of their Learner Pathways, it could be surmised that in addition to CfE holding an inadvertently anti-rural position, by default so too does the SQA. At present, any alternative or unconventional qualification choices made as part of a Learner Pathway are essentially limited and restricted to the provision that is offered by the SQA. There are thus limits to how even a strengthened interpretation of the 'Minimum Effort Strategy' can employ Learner Pathways that seek to pursue agricultural and land-based routes within the narrow parameters of the SQA offering (SQA's *Land-based and Environment* qualifications can be [accessed here](#)).

4.5.1 'Minimum Effort Strategy'

This strategy outlines those opportunities for agricultural experiences, as identified through this research, that can be facilitated through the *current* structures and resources of CfE, along with relevant resources prepared by third parties. These include (but are by no means limited to):

- Learning for Sustainability
- Food for Thought Curriculum Resources
- Food and Health Benchmarks
- Third Party Resources
- Es+Os identified by this research (Appendix 10)

Learning for Sustainability has been introduced previously and as an 'approach to life and learning' is a combination of ESD, GCE, and OL. It aims to create learning experiences that are 'coherent, rewarding and transformative' (Education Scotland, 2021), involving continual processes of exploration, curiosity and community development (Christie and Higgins, 2020). A key component of its rationale is a values and personal action narrative, and thus everyone is involved in the learning experience, including teachers and even the local community where relevant (Christie and Higgins, 2020). This means that learning experiences, whilst structured, do not necessarily have specific outcomes or targets. By definition, sustainability is a complex, sometimes controversial, uncertain, and interdisciplinary mix of issues that are commonly referred to as wicked problems – as we have established throughout this thesis. Thus, the teacher or resource may be limited, meaning that action-based principles that expect and encourage learner action are essential to pedagogies; recognising that the whole processes has potential for emotional hazard as well as personal development (Christie and Higgins, 2020).

I earlier outlined that sustainability and sustainable development are contested terms that can be understood both in terms of weak and strong values. Kadji-Beltran *et al.* (2013) argue that where learning experiences avoid or marginalise emotive topics or controversy the learning becomes a weakened form of sustainability learning which then lacks quality and depth. Hence given the dearth of agricultural references within CfE, and the often involuntarily negative

framing where it is included, LfS is at risk of perpetuating weakened sustainability learning due to its inadvertent marginalisation of those perspectives on agriculture and environment/society/economy that (maybe controversially) regard agriculture as not wholly wicked. Giving children the opportunity to experience situations that are outside of 'comfort zones' (Fairclough, 2016), or where 'troubling' situations can encourage children to develop and apply critical thinking along the lines of 'this is not good, how can we make this better?' (Hedefalk *et al.*, 2015, p. 983), can cultivate increased grit and resilience (Fairclough, 2016) as part of personal development and action-based learning. There is thus potential for the LfS approach to agricultural experiences to cultivate agricultural literacy. However, I argue that this has limitations given the current positioning of agriculture within CfE Es+Os. The LfS approach has the capacity to be strengthened through the use of third party OL experiences such as RHET farm visits and classroom speakers.

Food for Thought Curriculum Resources are a series of resources about food and drink, particularly relating to food and health (Education Scotland, 2020a). Whilst on the surface the description for these resources seemed to be an ideal opportunity to employ agricultural experiences, they are, in my view, anti-rural in their total exclusion of farmers, as I outlined earlier in this chapter, and until such time as they can be reviewed they remain problematic. Further to the total exclusion of farmers themselves, the resources also followed the framing of agriculture against the backdrop of the adverse environmental impacts, rather than cementing their central role in the sustainable and reformed production of food. Despite the lack of reference to key terms, and the anti-rural sentiment, the resources remain, however, a valid source for making cross-curricular connections on the topic of food, particularly with regard to IDL.

The **Food and Health Benchmarks**, **Third Party Resources**, and the **Es+Os** identified through the research are all discussed in relative detail previously, and are simply included here to indicate their value as part of a strategy to increase agricultural literacy and show curricular opportunities to further agricultural experiences as part of the 'Minimum Effort Strategy' approach. Any forthcoming *Framework Document* on agricultural experiences as part of funding body commitments will likely provide a more practically arranged implementation 'Strategy' aimed at teachers and practitioners.

4.5.2 'Radical Strategy'

The Radical Strategy differs from the Minimal Effort Strategy in that it is conceptual in nature and demonstrates a future vision for agricultural experiences that requires a fundamental shift in our understanding of what it is that we are asking education to achieve. As such it is at this juncture less detailed in the sense of a practical strategy, instead asking – *given the findings of the research what can I do? What can you do? What can we do to change this?*

I earlier outlined the potential for a notion of 'ecophronesis', 'planetary phronesis', or indeed **agricultural phronesis** as a way in which we can reconcile our disconnect from the processes of agriculture. Agricultural experiences, in their most radical sense, then, provide a framework for young people and thus future generations to use experiential learning and increase their internal knowledge and agricultural literacy to reimagine our relationship to food. Furthermore, they offer the opportunity to redress the balance between Head and Hand (Sennett, 2009) and between Head, Heart and Hand (Goodhart, 2020) work, which both Sennett and Goodhart recognise to be central to a sense of dignity and value in work. An agricultural phronesis thus asks us to understand, truly, those related and overlapping issues, concerns, politics, policies, values, attitudes, perceptions, attributes, challenges and benefits, costs and benefits, etc, that uphold or devalue agriculture and its vital role in our continued survival.

Zajchowski *et al.* (2021, p. 13) argue that if humankind is to lose its 'hubris', this will come '(if it comes at all)' from encounters and experiences in the outdoors which enable us to see ourselves as small in the scope of the grandness of nature. These notions of immersion within nature are the same proposals made by Aldo Leopold in the 1940s, who argued that young people must be afforded the freedom to make mistakes, and thus to learn from them as he recorded in *A Sand County Almanac* (Leopold, 1949). Children can thereby come to understand their place within a much larger ecosystem, the reach of which we cannot command or dominate. The inherent sense of wonder that children for good evolutionary reasons possess (Carson, 1965), along with Aldo Leopold's idea that we are simply 'members and citizens' of a much larger community of

life (Zajchowski *et al.*, 2021), must thus be central to any radical proposals for environmental or agricultural experiences that re-imagine our human relation to the world.

The interplay between food, environment, land, people, history, culture, art, music and so on, are all morally, ethically, philosophically, politically intertwined with concepts of rurality, be these negatively or positively defined. This leads me inevitably to the question of what it is that society values? *What can we do to change this?* What values do we expect from education? *What can we do to change this?* Do the Four Capacities and related capabilities and attributes develop children and young people into responsible, informed and engaged members of civil society? Do those values specified by the architects of CfE go far enough? If not, why not? *What can we do to change this?* Or, is CfE reform needed? Would *that* go far enough? Is a more radical overhaul and reimagining of what education values required? What would this look like? Are we able to unlearn? Why do we live lifestyles that do not honour or value the limitations of our planet's boundaries? Why have we become disconnected from agriculture and rural life? *What can we do to change this?*

Stepping back at the end of this research from lengthy and meaningful interactions with all of my participants compels me to consider another critical reality of my project, which only began to form as the actual discussions and my analysis of them ended. Perhaps all along in the fieldwork of this endeavour I have been in the presence of a subaltern group: that is, a group marked by marginalisation, exclusion and even occasionally abjection from mainstream Scottish society and education. This subaltern status is manifest in the deep impression of what Miranda Fricker calls 'epistemic injustice': both testimonial and hermeneutical in nature with regard to the contributions of the rural participants: a recognition that their experience and testimony, *as rural subjects*, is not accorded equal status with those from elite or mainstream or urban culture (Anderson, 2012; Fricker, 2007, 2010; Roberts, 2014, 2017). Appreciation of these insights calls forth a moral response: a requirement that rural voices be *heard*, listened to, attended to, and ethically affirmed as we integrate their experiences, their achievements and their struggles into a

genuinely democratic social-educational conversation about the future of our country and indeed of our planetary home as a sustainable place.

The greatest threat to environmental integrity is indifference to the environment by a highly urbanized citizenry that is increasingly detached from its biological moorings, a citizenry absent a sense of dependence on nature as its fundamental ground of being (Zajchowski et al., 2021, p. 12)

What can I do?
Eat responsibly; find my inner 'craftsman'; continue the research; be better at 'good living'; get political; stay humble; raise my voice; grow food; seek out Hand work; be a better activist; walk the sustainable talk

What can you do?
Eat responsibly; live a 'good life'; find Hand work you enjoy; be political; be an activist; value experience; walk the sustainable talk

What can we do?
Eat responsibly; words matter; framing farming; balanced environmental education; build partnerships; be bold; value rurality; willingness to pay for food; stay political; hold people to account; walk the sustainable talk

What can Interdisciplinary Learning do? What can Outdoor Learning do?
Responsible food education; agricultural experiences; words matter; framing farming; balanced environmental education; build partnerships; be bold

What can the Four Capacities do?
Phronesis; planetary phronesis; eco-phronesis; agricultural-phronesis; Land Ethic

Chapter 5: Conclusions and Recommendations

Oh, give me land, lots of land, under starry skies above.
Don't fence me in.

Let me ride through the wide open country that I love.
Don't fence me in.

Cole Porter
(from: Don't Fence Me In)

This closing chapter includes two sets of conclusions: section 0 highlights the practical contributions that this study has made, and is intended to make for the funding body and lay-audiences with an interest in learning from the practical elements identified through the research. This is presented as a list of recommendations. Section 0 highlights the academic contribution to knowledge of the larger project, alongside future research recommendations and reflection upon the study limitations.

In summary, the aim of this research was to **examine the opportunities of agricultural experiences as part of Scottish secondary school pupils' learning under *Curriculum for Excellence***. The study was underpinned by three key research objectives and two research outputs. A qualitatively-driven mixed methods approach was utilised, offering a rich exploration of the topic. The methods used included a quantitative and qualitative postal survey, as well as short surveys with in-person participants. Qualitative data was constructed with participants through interviews and focus group discussion. The data was then analysed in an integrated fashion as outlined in Chapter Three. Methods contributed variously to the different outcomes, which can be found in Table 3-1. A summary of the research findings by Objective is listed below.

Objective 1: Examine CfE to see where agricultural experiences could be best employed and link the placement to outdoor learning opportunities.

- *Curriculum for Excellence* inadvertently maintains an anti-rural position.

- Agriculture is significantly lacking as a direct topic within *Curriculum for Excellence* policy, guidance and advice; referred to only four times in total throughout Experiences and Outcomes and Benchmarks.

- Scope nevertheless exists for agricultural experiences to relate to all curriculum areas with creativity and inspiration. However, there remain challenges to their implementation under current CfE cultures and structures.

- Learning for Sustainability in combination with Interdisciplinary Learning is in general hospitable to the employment of agricultural experiences. However, this relies on clear understanding of the definitions and purposes of both Learning for Sustainability and Interdisciplinary Learning.

- OL is a fundamental part of agricultural experiences; but should be part of a wider and deeper learning about rurality more comprehensively.

Objective 2: Seek stakeholders' (agricultural sector and school-based) views on the benefits and challenges of agricultural experiences.

- Multiple benefits to pupils of agricultural experiences. These include opportunities for deep experiential learning experiences; greater awareness of their own, and Scotland's, place within the world; re-connecting with the processes of agriculture and its role in the economy; knowledge, skills, and attributes for lifelong learning.

- Multiple benefits to rural sector of increased agricultural literacy. This includes heightened recognition for the myriad contributions to and achievements of farmers to e.g., food security; raised awareness of the key role of agriculture and food in tackling complex global challenges, including climate change; opportunity for transformations in food systems, including increased awareness of the true cost and value of sustainable and ethical food and goods.

- Challenges include cultures and structures of secondary schools, and the constant need of education to 'perform' rather than 'experience'. The perception of agriculture as 'second best' is considered challenging, as well as only looking to the curriculum as a source of change. Initial Teacher Education is important opportunity to increase teacher confidence and embed agriculture-as-food as a valuable learning experience.

Objective 3: Look for any differences, or specific challenges, between rural and urban stakeholders.

- Scottish farmers feel misrepresented in mass media, which they feel often unfairly places blame on the industry without also recognising agriculture-as-food, and wider carbon accounting.

- 'Good farmer' values have not always driven public perception, which can be challenging in bringing about transformational changes in practices and attitudes from farmers **and** consumers. Elements of the circular economy concept could be improved with use of animal-source products e.g., wool.

- Gulf between what ethical and sustainable food *is* in terms of diet, nutrition, ecological impact, and global systems. Questionable role of some that would seek to 'reset' food systems transformation through philanthrocapitalism.

Output 1: Compile a list of recommendations for interested parties on agricultural experiences as part of Curriculum for Excellence for Scottish secondary pupils.

1. Words Matter
2. Framing Farming
3. Balanced Environmental Education
4. Be Bold
5. Build Partnerships

Output 2: Produce guidance for secondary school teachers, highlighting available resources and strategies to increase agricultural experiences within their teaching practice.

- Forthcoming as part of research project dissemination strategy, with support from project funding body.

5.1 Conclusion: Practical Action

5.1.1 Contribution of Study

The main contribution of this study as a practical call to action is the recommendations listed below. These were informed by the research that I carried out and meet <u>Objective IV</u>. Each recommendation features a different call to action:

1. Include
2. Review
3. Balance
4. Build
5. Envision

CfE curriculum documentation and guidance severely lack any meaningful inclusion of agriculture, and whilst work has been ongoing with regard to increased awareness of food, this has not expanded to include agriculture or indeed farmers more systematically. Increased focus on food does *not* necessarily imply agriculture as a way of life, and I have argued that unless there are direct and extended positive references, alongside clear guidance for teachers on the opportunities for deep learning through agriculture and agricultural experiences, it will remain side-lined as a time-consuming activity for teachers who are already operating within onerous time- and workload-constraints. That said, the Four Capacities and related capabilities and attributes do set out in CfE an adequate framework of values with which to begin a re-imagining of what it is that agriculture and agricultural experiences could achieve through a reformed curriculum. The more radically fundamental 'reconstruction' and 'co-construction' of education and, what agricultural experiences could achieve therein, requires extending a framework of values beyond those set out currently in the four capacities. In order for the recommendations to bring about real change in agricultural education, further research as well as applied policy action is pressingly required.

Scotland as a nation takes much pride in its cultural identity and heritage and national products, pursuits, and landscapes. Exceptional produce is reared and grown across Scotland all year round: potatoes, lamb, beef, oats, raspberries, strawberries, barley, carrots; the list goes on, and there is much scope to increase awareness in education and beyond of the public good role of Scotland's rural sector both in contributing to the solutions to the challenges of our time, and their essential role in ensuring a safe and nutritious food supply. On this basis, I urge interested parties to move agricultural education forward in an integrated and serious manner to ensure that Scotland's young people can benefit from all that it has to offer.

5.1.2 Recommendations

Recommendation 1: Words Matter

<u>Include</u> explicit reference to the following words within CfE Es+Os (number in brackets is the total occurrence of the related word within Es+Os), thereby increasing opportunities for learning to happen around wider processes of agriculture and rural life, both as relating to life in Scotland and Scotland's place in the world.

- Agricultural (0)
- Agriculture (3)
- Farm (0)
- Farmer (0)
- Farming (0)
- Food (60)
- Food production (1)
- Rural (0)

This research notes that further aspiration towards increasing food education is included within the *Food and Health* Benchmarks via 'The Journey of Food', *Food for Thought* learning resources, and the *Food, STEM and Sustainability* resource (available through registration only). Whilst there are positive parts to the *Food for Thought* resources, the inclusion of the people responsible for 'the way we grow and catch food', i.e. Scotland's farmers, is entirely lacking. The new Food, STEM and Sustainability resource is a product of Scotland's Good Food Nation policy.

The Scottish Government (n.d.), through its *Food and Drink Education* initiatives state that it,

> Want[s] Scotland's young people to know where their food comes from and how it affects their health, the environment and the economy.

It achieves aspects of this through funding of a number of projects and organisations including RHET and Crofting Connections. Funded organisations and project content aside, however, it is difficult to reconcile these aims with a curriculum so lacking in direct engagements with farming and agriculture.

Recommendation 2: Framing Farming

Review the framing of 'agriculture' within CfE *Experiences and Outcomes*. Listed below is the entire extent of CfE's contribution to agricultural education by way of direct references to *agriculture*, one of which is located within Level One (point 3 below).

1. Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in agriculture and their alternatives and can evaluate their potential impact on the world's food production. (SCN 3-03a)

2. Having evaluated the role of agriculture in the production of food and raw material, I can draw reasoned conclusions about the environmental impacts and sustainability. (SOC 4-09a)

3. [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)]

The framing of the first two points within their wider position in the curriculum identifies that they are both set within contexts which lead to agriculture being presented fundamentally in negative terms, as opposed to being the vehicle for other learning to take place.

This research indicates more broadly that agriculture and rural life are often misrepresented or only partially represented (e.g. via either idyllic or destructive framings) in arenas of public information consumption such as the media. Food is a shared necessity, and so the ways in which food gets from 'field to fork' need to become part of shared thinking about how we tackle e.g., climate change, habitat preservation and land-use.

The above should be read in combination with ***Recommendation 1: Words Matter***. Whilst these two recommendations extend largely to CfE *Experiences and Outcomes*, this research indicates that the negative framing and lack of inclusion of agricultural and rural terminology is more of a systemic issue, extending to (in some instances) school cultures and structures. Future research could be well directed in reviewing all CfE related resources, advice, guidance, documents, and policy as the next phase of national curricular reform moves forward.

Recommendation 3: Balanced Environmental Education

Balanced environmental education includes positive engagement with agriculture and its fundamental role in the production of *all foods*. This means also noting the subtle differences between *environmental* as everything that surrounds us, and *ecological* as how these all work – which is a key aspect to understanding the centrality of agriculture as part of the solution to mitigating human impact on the environment (Danylova & Salata, 2018; Otto & Pensini, 2017; Shava et al., 2010). At the same time, it is vital to remember that whilst there are highly complex challenges to agriculture as currently practised that need to be faced, these are not the necessarily defining or primary elements of its processes. Our actions and agency can contribute to transformative changes within agriculture, as much contemporary rural opinion and leading-edge scholarship is now advocating.

The role of the four capacities is at the present juncture key to developing environmentally (and ecologically), socially, economically responsible behaviours and values in young people. Making particular reference to some of the associated capabilities and attributes:

- confident individuals and responsible citizens
    - secure beliefs and values → relate to others and manage themselves; develop and communicate their own beliefs and view of the world
    - commitment to participate responsibly in political, economic, social and cultural life → make informed choices and decisions; evaluate environmental, scientific and technological issues; develop informed, ethical views of complex issues.
- successful learners and effective contributors
    - openness to new thinking and ideas → make reasoned conclusions; link and apply different kinds of learning to new situations
    - resilience → apply critical thinking in new contexts; create and develop; solve problems

Combining balance and the four capacities as outlined above therefore helps to cultivate and develop learning experiences, including agricultural experiences, that meet the ambitious curricular aims to:

1. Recognise the knowledge, skills and attributes that children and young people need to acquire to thrive in our interconnected, digital and rapidly changing world.

2. Recognise the need for all children and young people to know themselves as individuals and to develop their relationships with others, in families and in communities.

3. Enable children and young people to be democratic citizens and active shapers of that world.

Agricultural experiences that are thoughtfully planned and implemented in the forms championed throughout this study, often by stakeholders themselves, can intersect with the response to multiple contemporary challenges – including climate change, animal welfare, sustainability, green recovery, rural disconnect, land reform. They can do all this whilst also engaging young people with core curricular aims for autonomy, empowerment and collaboration.

Recommendation 4: Build Partnerships

The rural sector is willing, and open, to building working partnerships in order to increase agricultural experiences for secondary school pupils:

– Everyday learning can be strengthened. Organisations such as RHET, RNCI, QMS, CLS, LEAF, LANTRA Scotland are good first ports of call depending on location

– Apprenticeships are an increasingly popular choice for young people when setting out to find a career or work, and can also be included as part of Senior Phase learning

Recommendation 5: Be Bold

The 'Minimum Effort Strategy' discussed several times in this research outlines the ways in which current structures and concepts of CfE can be strengthened in order better to deliver effective and rewarding agricultural experiences. The forthcoming *Framework Document* on agricultural experiences will seek to provide a practically arranged Strategy based on this concept.

The 'Radical Strategy' also signposted in this work <u>envisions </u>a future scenario within which a concept of planetary or agricultural-*phronesis* guides us to unlearning those attitudes and behaviours that are unsustainable, and challenges us to ask: *What can I do? What can you do? What can we do to change this?*

5.2 Conclusion: Academic Knowledge Production and Change

5.2.1 Contribution of Study

It has become increasingly apparent throughout the progression of this research that there exists in in CfE a genuine rupture and estrangement from the processes of agriculture and farming reflective of wider tensions in Scottish education also analysed here. This gulf is extended to society more generally, exacerbated by misrepresentation and polarised by partial or partisan or polarised representations of agriculture in news and media. There is also a sense that due recognition is not made to farmers, crofters and land managers for the contributions and achievements they do make in e.g., safeguarding food security and countryside landscapes for recreation.

The study has shown that even with these impediments there exists huge potential for agricultural education on a wider scale to develop increased agricultural literacy amongst Scotland's young people; with this same agricultural literacy acting as a learning vehicle for considering and tackling the major challenges of 21st century life. One of the main mechanisms for this was identified above as the LfS entitlement, a key element of which is OL. Outdoor learning/education as a wider field draws on such elements as Outdoor Adventure Education, which has a rich and well developed body of scholarship and literature pertaining to such concepts as critical thinking, environmental education, and adventure (Asfeldt & Beames, 2017; Beames et al., 2017). Little scholarship exists linking agricultural experiences with quality outdoor learning. In light of this significant gap in the literature, and taking into account the findings of this thesis relating to the potential of agricultural literacy, I suggest that this would be an ideal and primary site of interest and practical innovation for the two distinct bodies of literature and discourse to meet.

The features of interest identified through the research that pertain to agricultural education and the outdoors include those such as *risk* (Fairclough, 2016), the importance of *moral learning* and a connection to *place* in light of social/environmental crises (Mannion & Lynch, 2016; Stonehouse, 2016, 2020), along with developing *emotional* connections (Malberg Dyg & Wistoft, 2018;

Wistoft, 2013) both human and non-human, among others. There is therefore scope for those professionals and scholars within the frames of outdoor learning and adventure learning to engage with the farming/rural sector *at the outset* in the co-construction of learning experiences for young people, and in collaborative research investigations. As a female actively interested and involved in the outdoors, and engaging with the challenge offered by Beth Christie (2018) to examine, critically, the generally male dominated narratives and perspectives of the field I believe new throughtscapes can be found in the outlined spaces. There are thus a number of parallels within, as well as intersections between, outdoor education and agricultural education. I argue that given the potential of increased agricultural literacy as this thesis has illustrated, there is a need to re-examine, re-imagine and re-define the limits and boundaries of adventure education in dynamic, innovative and forward-thinking research.

In stepping back at the end of the research project, it became clear, as I outlined in that a critical reality of the project was bearing witness to *testimonial injustice*. I felt that there was sufficient evidence to interpret the findings of the analysis, after Fricker (2007, 2010), through an 'epistemic injustice' moral critique. In identifying this reality, a further contribution to knowledge of this research is the call – also consistent with Fricker's moral logic – to redress and *re-legitimise* within academic and scholarly investigation the weight and value of rural voices, narratives, wisdom and testimonies. The objective here is shared with many of the minorities and subaltern groups now demanding, in the wake of often convulsive social change, their proper representation at the tables of educational research, practice and day-to-day encounter. That is, to ensure that their achievements, their struggles and historic afflictions, their experiences, their discursive constructions of reality with all of its fissures and injustices – their very ontology –, be afforded ethical attention and response; attended to with the same urgency and respect as those from elite and urban cultures where power is routinely accrued and exercised (Pratt, 1991). As this study comes to its close, however, it is evident that this work has only just begun.

5.2.2 Project Limitations

The small population size of this project means that the findings of this research are limited, but nevertheless significant. It has been previously outlined that the intended sampling technique of this study was impacted by a number of unforeseen problems and, as such, adjustments to the methodological approach were required to be made. These included a major shift in the overall focus of the research reflecting those participants who did volunteer to take part, along with the addition of narrative analysis data. This being said, the resultant population generated rich and varied feedback which, combined with the chosen narrative data analysis, produced stimulating and enlightening insights.

Given the controverted nature of some of the arguments that emerged from the data, it would perhaps be prudent to bring into this conversation and its future-leaning arc the testimonies of those voices at the front of 'agricultural critique'. This suggests that there is scope for subsequent research to bring more fully into the dialogue and the research investigation those interests and advocacy groups more directly antipathetic to the current norms of farming and agriculture. It is also of course pertinent to note, again, that this research was funded by an agriculturally-minded charitable trust, whose explicit purpose is to increase opportunities for agricultural education. Although involved in the funding of this research, the only input from the funding body were the research questions and title – how these were interpreted and conducted was determined by me as the investigator. So, whilst there are controverted elements to the discussions, this was always a motivated piece of research – a contribution to a very live and important local and global debate.

As I reflect in subsequent sections, the world in which we now live – impacted as it has been by Brexit, COVID-19 and the continuing ramifications of the associated pandemic, alongside the crystallisation of climate change awareness as the climate emergency – is certainly not the same world in which I set out to conduct this research in 2017. Thus, if I were to conduct this study again, I would wish to include greater focus on the interplay between *food* and *agriculture*. Whilst this is an area that emerges from the data analysis and the curriculum documentation, I would be interested to hear what further insight

the participants may have brought to this discussion. In terms of bolder and forward thinking research approaches, I would also look at more experimental 'post-critical' methodologies, including those now emerging with a creative, artistic and literary element – exploring the very real interdisciplinary ways in which food and agriculture intersect with all facets of life (Perry, 2019).

Conducting the interviews and focus group with *themes* as opposed to a strict list of questions was, I believe, a successful approach to generating the data together with the participants. This is reflected not only in the rich dataset, but also in those unanticipated and unexpected themes that arose through analysis. The postal survey also met its intended aims in contributing a further layer of perspective, that given the recruitment challenges meant teacher perspectives were included to a greater extent than the singular qualitative interview. The mix of scholarly, academic and popular literature used to inform the research was, I believe, a strength of the applied objectives of the research, retaining its relevance as an interdisciplinary study intended for diverse audiences.

I acknowledged at the start of this thesis that I did not come to this research as an impartial observer, but as someone who is deeply committed to the cultural heritage of agriculture. Thus, throughout the thesis I have sought to be transparent where my position as an interested party had the potential to intersect with the discussion at hand. At times the additional onus of my investment in the topic has been a heavy weight to bear, and I have felt a constant duty to ensure that my participants' stories were handled with the care and attention they deserved. I trust they feel I have conveyed their emotions and lived experiences sensitively.

5.3 Future Research

I have made five recommendations as a result of this research, which are aimed at those parties interested in agricultural experiences under CfE (Objective IV). They reflect practical and policy action that could be taken in order that agriculture and agricultural experiences could be better incorporated into CfE, thus cultivating and raising agricultural literacy. As outlined elsewhere a funding body requirement for a *Framework Guidance Document* for teachers, prepared as a result of the research findings is anticipated to be forthcoming, and will be made widely available via the project dissemination strategy (Objective V).

Given the rich findings of the qualitative data from such a small sample size, my personal hope for future research resulting from this project is to conduct similar projects with greater, more diverse participation, perhaps on a regional basis in order to retain a richness of data (i.e., a local authority level comparison of rural sector needs and relative level of secondary school agricultural literacy. It is also to further the work on testimonial injustice with regard to rural voices. In addition, I identify these areas that I see as key for further investigation:

1. The coming together of scholarship and discourse that relates to outdoor learning, with particular focus on Outdoor Adventure Education as an area that could be re-defined and re-thought in relation to the cultivation of agricultural literacy. The scope to pursue new avenues of adventure learning as relates to food, farming, the outdoors and climate change that also include experiential learning concepts such as risk, critical self-awareness, confidence, lateral thinking, health and wellbeing, and getting 'dirty hands'.

2. Further mixed-methods research on building and developing the concept of agricultural experiences. Particularly with school-based participants – and with particular reference to:
   – Areas where the Local Authority refused ethical permission (including Highland Council, Borders Council),

- Rural areas with poor participation in this project (including Aberdeenshire and Dumfries and Galloway),
- Island Communities,
- Urban and inner-city schools.

3. Further mixed-methods research building on topics such as attitudes toward agriculture in Scotland, farmer misrepresentation, the polarities in partial representation from idyll to ruin; the roles of media, rural life, perceptions of 'Hand work' as inspired by e.g., Richard Sennett and David Goodhart. Participants would represent a cross-section of rural sector workers from farmers to engineers, perhaps widening to include those living in rural areas but with occupations in other sectors.

4. Future interdisciplinary research collaboration. I am passionate about agriculture, education, and rural life because of their real world applicability, and would welcome and value collaborations across all disciplines. With particular reference to Elizabeth Nelson and her recent thesis *Understanding Childhood and Play in the Post-Digital Age* (2021), the potential for agriculture and farming to form part of play and childhood experiential learning, along with enquiry into the ways in which farmers, and farming are represented in e.g., children's literature has been the focus of many academic conversations. I would also highlight the first area for future study outlined in Dr Rona E. MacFarlane's (2020) recent doctoral thesis on secondary school teachers' perceptions of delivering excellence and equity in Scottish education. The intersections hold forth real possibilities for further knowledge production at the interface of agriculture and Scottish education.

> The alignment of the new National Qualifications with the curriculum in the Broad General Education phase. The SQA is responsible for the National Qualifications, however, there has been no communication regarding the underlying philosophy of these exit qualifications, nor has there been oversight of their alignment with CfE by any other governing body. Such research into the philosophy of CfE could entail trying to retrieve the original principles and premises of CfE. (Macfarlane, 2020, pp. 136–137)

5.4 Contemporary Context: A Reflection

The world in which we find ourselves at the writing of this conclusion is a very different place from the world as it was at the start of the project. Brexit brought monumental challenges for agriculture and food production in Scotland and the UK more widely, and at the final point of leaving the EU we found ourselves in the midst of the previously inconceivable COVID-19 global pandemic. In my opinion these events, when taken in combination with other world events such as Donald Trump's Presidency, debates for Scottish Independence, increasing unrest at structural and systemic inequalities, the steady rise of populism across Europe, and the urgency of the climate crisis have led ordinary people to examine in greater detail the ways in which our individual actions are enabling or perpetuating undesirable situations.

The utter chaos of the early impacts of the COVID-19 pandemic on food and supermarket supplies both at home and around the world have, for me, accentuated the true value of the contribution that this thesis makes. When the funding body set out a project aiming to better understand the ways in which secondary school pupils can be educated through CfE in order to be more informed and aware about agriculture and farming, I am sure that they could not have imagined the saliency of research findings that are so timely. As I set out at the start of the thesis, the data generated with participants took place before the First Meaningful vote on the Brexit withdrawal legislation, and the writing took place before and during COVID-19 events – as such these were not central considerations of the data or analysis. I thus wish to convey here just how much these events have added to the gravity of the research findings and recommendations.

On the topic of children and young people missing school due to subsequent lockdowns, a narrative of 'catching-up' has dominated coverage, leading educational psychologists to warn that it should be well-being, rather than 'lost learning' that ought to become the central educational theme moving forward (BBC, 2021; McMullen, 2021; Telegraph, 2021). Whether or not this is something that schools and the education system at large take into account in future school years is difficult to ascertain. The very narrative of 'lost learning' within the

context of a global pandemic, however, highlights the need, perhaps, to reconsider and 'refresh' further the narratives of CfE along with LfS, IDL, OL and ask what it really is that the world demands from our education systems: citizens with credentials? Or citizens of the world whose vocation it is to lead sustainable, ethical, moral and compassionate lives? Can we radically transform education to 'unlearn' some of the culture and structure that has progressed us to this point, and at the same time re-learn our place *within* nature?

Agricultural experiences thus have the capability to deliver engaging, deep, exciting, meaningful and relevant opportunities for children and young people to discover the links that food, farming, and agriculture have within their lives, with their history and culture, with art, music, literature; to understand that it is fundamentally, simultaneously, the future and the challenge – even where this happens through a 'minimal effort strategy'. The contribution of this research within the contemporary context is significant, even vital, in its capacity to intersect, truly, across a wide range of current societal challenges invoking the four CfE values of Compassion, Integrity, Justice and Wisdom.

Most urban shoppers would tell you that food is produced on farms. But most of them do not know what farms, or what kinds of farms, or where the farms are, or what knowledge of skills are involved in farming. They apparently have little doubt that farms will continue to produce, but they do not know how or over what obstacles. For them, then, food is pretty much an abstract idea – something they do not know or imagine – until it appears on the grocery shelf or on the table.

(Berry, 1990)

5.5 Concluding Thoughts

Conducting this research and compiling the findings and analysis has been my greatest honour, and I have not taken lightly the immense responsibility of presenting the views and opinions of my participants in a way that they can identify with. Farming has always been a part of my life, and so the origins of the food I eat have never been a mystery to me. This strong grounding into the land in my early years, in combination with the many memorable agricultural experiences I had at school, mean I have never lost sight of the bigger picture of which I am only a very tiny part.

I now come to see as extraordinary those agricultural experiences that have left such a lasting impression in my life. Both agriculture and education have been transformed over the past three decades, and this little girl amidst her oat sheaves could not have imagined that her life's journey through those same years would lead her to this point.

It is my sincere hope that we all challenge ourselves to transform our relationships, attitudes, and actions towards food and agriculture, so that in thirty more years we can look back on a journey of positive revolutions across our *thoughtscapes*, *landscapes*, and *foodscapes*.

Appendices

Appendix 1: Ethical Approval

University of Glasgow

College of Social
Sciences

27 March 2018

Dear Sophie Brett

College of Social Sciences Research Ethics Committee

Project Title: *Examining the effectiveness of agricultural experiences as part of Scottish Secondary school pupils' interdisciplinary learning under the Curriculum for Excellence (CfE).*

Application No: 400170112

The College Research Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed study. It is happy therefore to approve the project, subject to the following conditions:

- Project end date: __30.08.2019_____
- The data should be held securely for a period of ten years after the completion of the research project, or for longer if specified by the research funder or sponsor, in accordance with the University's Code of Good Practice in Research: (http://www.gla.ac.uk/media/media_227599_en.pdf) (Unless there is an agreed exemption to this, noted here).
- The research should be carried out only on the sites, and/or with the groups and using the methods defined in the application.
- Any proposed changes in the protocol should be submitted for reassessment as an amendment to the original application. The *Request for Amendments to an Approved Application* form should be used:

  http://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/

Yours sincerely,

Dr Muir Houston
College Ethics Officer

Muir Houston, Senior Lecturer
College of Social Sciences Ethics Officer
Social Justice, Place and Lifelong Education Research
University of Glasgow
School of Education, St Andrew's Building, 11 Eldon Street
Glasgow G3 6NH

Appendix 2: Local Authority Ethical Permissions

Appendix Table 1: List of Local Authority Ethical Consent Granted

Scottish Local Authorities	Yes/No/No Response
Aberdeen City Council	No
Aberdeenshire Council	Yes
Angus Council	No
Argyll and Bute Council	Yes
Edinburgh City Council*	Yes
Clackmannanshire Council	No
Dumfries and Galloway Council	Yes
Dundee City Council	No
East Ayrshire Council	Yes
East Dunbartonshire Council	No Response
East Lothian Council*	Yes
East Renfrewshire Council*	Yes
Falkirk Council	No
Fife Council*	Yes
Glasgow City Council*	Yes
Highland Council	No
Inverclyde Council	No
Midlothian Council	No Response
Moray Council	Yes
Comhairle nan Eilean Siar (Western Isles Council)	Yes
North Ayrshire Council	No Response
North Lanarkshire Council	Yes
Orkney Islands Council	Yes
Perth & Kinross Council*	Yes
Renfrewshire Council	Yes
Scottish Borders Council	No
Shetland Islands Council	Yes
South Ayrshire Council	Yes
South Lanarkshire Council	No
Stirling Council	No
West Dunbartonshire Council	Yes
West Lothian Council	No
Total Yes	18
Total No	11
Total No Response	3
TOTAL	32

*whilst consent was given these councils did so with restrictions or a requirement of further information such as applying via their own ethical consent committees.

Key	
🟦	No Response (Blue)
🟩	Permission Granted (Green)
🟥	Permission Denied (Red)
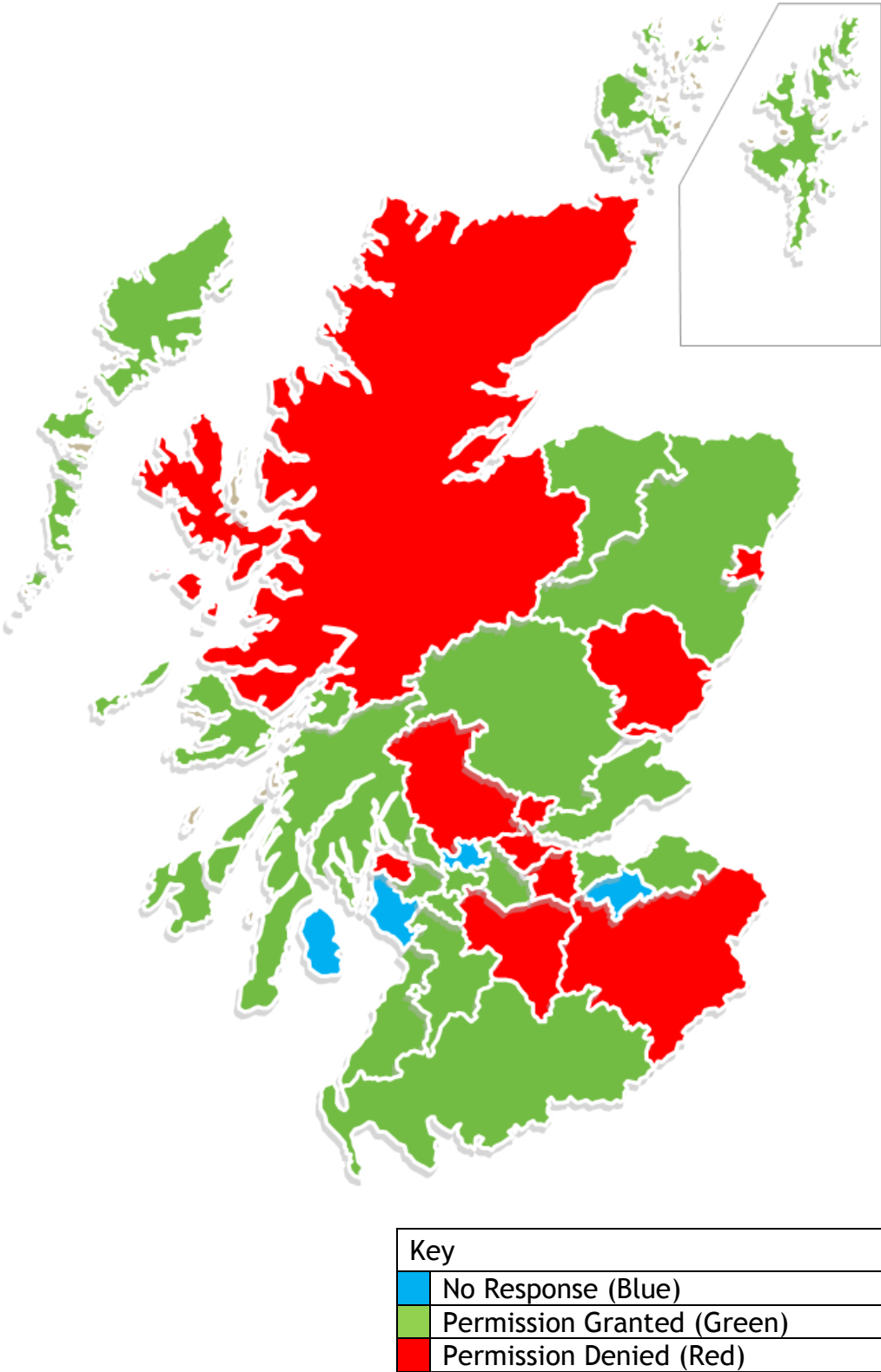
Appendix Figure 1: Map of Local Authority Consent Granted

Appendix 3: Lone Working Procedure

[Screenshot from Ethical Application to the University Ethics Committee.]

15 Risk

15a: Does the activity involve lone field work, lone working or travel to unfamiliar places? (E.g. Carrying out interviews alone and off-campus)

NB: *This does not apply to working within an institution such as a school.*

(You should refer to the Risk Guidance at: https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/#d.en.473063)

Yes☒

No☐

Give details of arrangements to minimise risks pertaining to this.

Where the location of the interview/focus group is considered unusual (e.g. farm/café/hotel venue etc), a risk assessment will be made and issued to the lead supervisor, and the full procedure below will be followed.

Where the location of the interview/focus group is a local authority school the transit related part of the procedure will be implemented.

Risk Minimisation Procedure

- Lead supervisor to be issued with list of times, dates, and locations of planned interviews, and any relevant risk assessments made as part of the interview/focus group locational arrangements.

- Lead supervisor, and partner of researcher (and a further contact in case of emergencies) to be given mutual contact details, researcher will inform both lead supervisor and partner with location before and after a survey/interview is conducted in order to ensure location and wellbeing of researcher is known. This will be done via a dedicated mobile device.

- Any transit between place of residence and interview location (and back again) will be notified to both as above.

- Where no contact is made within the given parameters (e.g. within specified length of time from latest interview or journey notification) an escalation will be triggered, including the emergency contact.

Researcher will be using a personal vehicle and will ensure adequate insurance is in place as per the University's *Use of Vehicles on University Business* policy. Further evidence of this can be supplied.

Appendix 4: Postal Survey Questionnaire

**Agricultural experiences in the Scottish Curriculum for Excellence
Survey of teachers in Scottish secondary schools.**

Please complete and return in envelope provided – thank you!

Section 1: General Information

Name of School: _____

Postcode of School: _____ Local Authority/Area: _____

Name of teacher completing survey: _____

Job title or role: _____

I have a formal remit or lead for Outdoor Learning?   ☐ Yes   ☐ No

☐ Probationary Teacher; ☐ Under 10 years of experience; ☐ 10+ years of experience

Section 2: your thoughts on agriculture and the outdoors

Please specify the amount to which you agree with each of the following statements, by circling a number.	Do not agree at all		Strongly agree		
I enjoy spending my free time in the outdoors	1	2	3	4	5
I have strong memories of outdoor experiences from my own time at school	1	2	3	4	5
I have specific memories of farming and agriculture from my time at school	1	2	3	4	5
I enjoy teaching in the outdoors	1	2	3	4	5
I feel my pupils would benefit from an agricultural experience	1	2	3	4	5
I think it is important in my role as teacher to give children outdoor learning opportunities	1	2	3	4	5
There is little available time to take children on field trips	1	2	3	4	5
It is riskier to take children on educational farm visits than to other outdoor locations	1	2	3	4	5

Section 3: Agricultural Experiences

When planning a learning experience around agriculture/farming I would consider the following for a field trip; [please select all that apply, and give any further comment in the box below]

☐ Food Production Factory   ☐ I would organise a farm visit

☐ Countryside Walk   ☐ I would bring in a classroom speaker

☐ Arranged farm visit eg through RHET   ☐ No field trip would be planned.

☐ Other: [   ]

What is the most significant barrier to giving secondary school children an agricultural experience? [please select one option, or provide a comment below]

☐ Difficult to organise   ☐ Don't know any farms/farmers/businesses

☐ Transport limitations eg cost   ☐ Health and Safety concerns

☐ Costs other that transport   ☐ Timetable related limitations

☐ Other: [   ]

Section 4: Interdisciplinary Learning

Please specify the amount to which you agree with each of the following statements, by circling a number	Do not agree at all -----	Strongly agree
Agriculture would be a successful interdisciplinary learning project.	1 2 3 4 5	
I feel sufficiently confident to cover agriculture as a lesson topic	1 2 3 4 5	
Pupils would enjoy an agriculture based interdisciplinary learning experience	1 2 3 4 5	
There are ample opportunities to link different curriculum areas together around agriculture	1 2 3 4 5	
A guidance framework document for an agricultural interdisciplinary learning experience would be of benefit to me	1 2 3 4 5	
My school offers rural skills as part of the curriculum	1 2 3 4 5	
I would now consider incorporating more about agriculture into my teaching	1 2 3 4 5	
I would be interested in hearing more about the outcomes of the research study	1 2 3 4 5	

If you would like to be informed of the study outcomes, please leave a contact email address below:

_____

Thank you for your time!

Appendix 5: Interview and Focus Group Prompt Themes

Initial Prompt Questions: Farmer, Teacher, Stakeholder, Focus Group

Farmer

Agricultural experiences in secondary school and the Scottish Curriculum for Excellence.

NB: These are prompt questions and are for guidance of the interview.
The topics discussed may differ slightly to those listed below.

Ethics Committee: [Please note; topics presented for discussion will be under continual review and development based on findings and feedback from other parts of this study. Depending on flow of conversation the order in which the questions are asked may change.]

Interviews with farmers: Prompt questions.
Introductions: Remind participant of purpose, methods and the right to withdraw. The focus of the discussion are participants' views on any benefits and/or challenges of agricultural experiences but may also cover other related areas such as rural careers, rural life, aspects relating to the farming industry, and outdoor education more generally.
- How did you get into farming?
- In your opinion what are the biggest benefits of secondary school pupils experiencing agriculture?
- Following on from the benefits, what do you think are the biggest challenges?
- Have children (youth/education system?) lost touch with the processes of food production? E.g., seasonality, Scottish produce, cost of production, market volatility?
- In your experience, are teachers adequately equipped with the required skills/experience/knowledge to really give the topic its due?
- Should there be more emphasis on agricultural/outdoor education during teacher training?
- Do you think that society overlooks and undervalues rural/agricultural careers? Why do you think this is?
- How can we encourage more children to have agricultural experiences?
- How could the agricultural sector market itself better as an exciting career option?
- What could the education sector to better in encouraging a positive experience of agriculture?

Closing questions: One of the main purposes of the study is to produce guidance for secondary teachers to help them understand what happens on farms and how farming works.
- What types of things would you suggest putting in the guidance? What would you advise farmers who host secondary school children? What do teachers need to know?

Closing: Thank participant, and reiterate what happens to the information collected, and the process if they change their mind about having their information included or have any questions. Give out business card if not done so already.

Teacher

Agricultural experiences in secondary school and the Scottish Curriculum for Excellence.

NB: These are prompt questions and are for guidance of the interview.
The topics discussed may differ slightly to those listed below.

Ethics Committee: [Please note; topics presented for discussion will be under continual review and development based on findings and feedback from other parts of this study. Depending on flow of conversation the order in which the questions are asked may change.]

Interviews with teachers: Prompt questions.
Introductions: Remind participant of purpose, methods and the right to withdraw. The focus of the discussion are participants' views on any benefits and/or challenges of agricultural experiences but may also cover other related areas such as Curriculum for Excellence, rural careers, urban access to the countryside, teacher experience of agriculture, initial teacher education, and outdoor education more generally.

- How would you describe your experiences of agriculture to date? Including personal, professional etc
- Do you offer farm visits as part of teaching?
- Do you consider agriculture to be an important topic? Why?
- How important do you think it is for pupils to understand and experience farming?
  - What are some of the benefits to students in experiencing farming?
- What are the main barriers or challenges you face in terms of giving pupils agricultural experiences?
- Does timetabling and examination pressure impact pupils having outdoor/agricultural experiences?
  - Could an interdisciplinary learning project create space for field trips? Outdoor learning?
- Would a guidance document/framework around secondary school agricultural experiences be of benefit?
  - What format might this take? And what types of information are useful?

Closing questions: One of the main purposes of the study is to produce guidance for secondary teachers to help them understand what happens on farms and how farming works.

- What types of things would you suggest putting in the guidance? What would you advise teachers taking pupils to a farm for the first time? What do farmers need to know?
- What format would be most useful? Online/guidance document/CPD session/other?

Closing: Thank participant, and reiterate what happens to the information collected, and the process if they change their mind about having their information included or have any questions. Give out business card if not done so already.

Stakeholder

Agricultural experiences in secondary school and the Scottish Curriculum for Excellence.

> NB: These are prompt questions and are for guidance of the interview.
> The topics discussed may differ slightly to those listed below.

Ethics Committee: [Topics presented for discussion will be under continual review and development based on findings and feedback from other parts of this study. Depending on flow of conversation the order in which the questions are asked may change.]

Interviews with other stakeholders: Prompt questions.

Introductions: Remind participant of purpose and the right to withdraw. The focus of the discussion are participants' views on any benefits and/or challenges of agricultural experiences, but may also cover other related areas such as Curriculum for Excellence, rural careers, rural life, urban access to the countryside, teacher experience of agriculture, urban/rural challenges/differences, and outdoor education more generally.

- Tell me about your involvement with agriculture/education.
- How important is it, in your opinion, that children learn about agriculture at secondary school?
  - Would a practical experience be beneficial in this instance? Why/how?
  - Are there any associated barriers or challenges you would associate with this?
- Do you feel that society has become disconnected with food production processes?
  - What could farmers do to re-engage?
  - What could society do to re-educate?
- What do you think are the main differences between an urban approach and a rural approach to agricultural education?

Closing questions: One of the main purposes of the study is to produce guidance for secondary teachers to help them understand what happens on farms and how farming works.

- What types of things would you suggest putting in the guidance? What would you advise teachers/farmers taking pupils to a farm for the first time? What do farmers/teachers need to know?
- Is there anything you could suggest for inclusion in such a document?

Closing: Thank participant, and reiterate what happens to the information collected, and the process if they change their mind about having their information included or have any questions. Give out business card if not done so already.

Stakeholder

Focus Group

Agricultural experiences in secondary school and the Scottish Curriculum for Excellence.

> Recruitment Pack: These are prompt questions and are for guidance of the focus group. The topics discussed may differ slightly to those listed below.

Ethics Committee: [Note that these questions may be altered to the needs of each individual group, for example in terms of urban/rural location. Topics presented for discussion will be under continual review and development based on findings and feedback from other parts of this study. Depending on flow of conversation the order in which the questions are asked may change.]

Focus Group with secondary school pupils: Prompt questions.
Introductions: Remind pupils of my name, purpose of the study, their right to withdraw at any time, and the procedure for doing so (for safety reasons, and potential school policy, it may not be possible to allow them to leave the room of their own accord). Outline the ground rules for the session, for example respecting the opinions of others, what to do if a comfort break is required etc.
Ice Breaker Activity: Short activity to get the pupils talking. Although it is anticipated that they will already know one another, the main purpose is to encourage a relaxed and chatty environment. An example of this might be a 'name game' where each pupil says their name and a fact about themselves. This has the added benefit of having the pupils state their name on the audio recording which will help the transcription process. This is not expected to be demanding and will be tailored to meet the needs of the group (e.g. age/ability).
Introduce Main Discussion: 'the benefits and/or challenges of agricultural experiences'

- Tell me about your experiences of agriculture. E.g., farm visits, family, friends, city farms, forests, highland show etc
- In your opinion is it important to learn about agriculture at school?
    - Is it useful, do you think, for your future? Why?
- Should more be taught about agriculture at school? What types of things would you like to see more of?
- Do you have any aspirations for a career in the agricultural/rural (and related) sector?
- Do you consider agriculture to be an important issue, and why yes/no?
    - How important is agriculture to Scottish culture/everyday life/economy?
- Has society lost touch with the processes through which our food is produced?
    - What might be the reasons for this?

Closing: Thank the pupils for taking part and reiterate what will happen to the data collected, and what to do if they change their mind about having their information included, or if they have any questions.

Final Prompt Questions: Farmer, Teacher, Stakeholder, Focus Group

Farmer

Farmer Interview Prompt Questions

Introductions: Remind participant of purpose and the right to withdraw. The focus of the discussion are participants' views on any benefits and/or challenges of agricultural experiences, but may also cover other related areas such as Curriculum for Excellence, rural careers, rural life, urban access to the countryside, teacher experience of agriculture, urban/rural challenges/differences, and outdoor education more generally. |

- In your own words define agriculture...
- Tell me about your involvement with agriculture/education.
  - How did you get into farming?
- How important is it, in your opinion, that children learn about agriculture at secondary school?
- In your opinion what are the biggest benefits of secondary school pupils experiencing agriculture?
  - Following on from the benefits, what do you think are the biggest challenges?
- Would a practical experience be beneficial in this instance? Why/how?
- Are there any associated barriers or challenges you would associate with this?
- Do you feel that society has become disconnected with food production processes?
- Have children (youth/education system?) lost touch with the processes of food production? E.g., seasonality, Scottish produce, cost of production, market volatility?
- In your experience, are teachers adequately equipped with the required skills/experience/knowledge to really give the topic its due?
- Should there be more emphasis on agricultural/outdoor education during teacher training?
- What could farmers do to re-engage?
- What could society do to re-educate?
- What do you think are the main differences between an urban approach and a rural approach to agricultural education?
- Do you think that society overlooks and undervalues rural/agricultural careers? Why do you think this is?
- How can we encourage more children to have agricultural experiences?
- How could the agricultural sector market itself better as an exciting career option?
- What could the education sector to better in encouraging a positive experience of agriculture?

Closing questions: One of the main purposes of the study is to produce guidance for secondary teachers to help them understand what happens on farms and how farming works.

What types of things would you suggest putting in the guidance? What would you advise teachers/farmers taking pupils to a farm for the first time? What do farmers/teachers need to know?

- Is there anything you could suggest for inclusion in such a document?
- What types of things would you suggest putting in the guidance? What would you advise farmers who host secondary school children? What do teachers need to know?

Closing: Thank participant, and reiterate what happens to the information collected, and the process if they change their mind about having their information included or have any questions. Give out business card if not done so already.

Teacher

Interviews with teachers: Prompt questions.

Introductions: Remind participant of purpose, methods and the right to withdraw. The focus of the discussion are participants' views on any benefits and/or challenges of agricultural experiences but may also cover other related areas such as Curriculum for Excellence, rural careers, urban access to the countryside, teacher experience of agriculture, initial teacher education, and outdoor education more generally.

- In your own words, define agriculture
- How would you describe your experiences of agriculture to date? Including personal, professional etc
- Do you offer farm visits as part of teaching?
- Do you consider agriculture to be an important topic? Why?
- How important do you think it is for pupils to understand and experience farming at secondary school?
  - What are some of the benefits to students in experiencing farming?
- Would a practical experience be beneficial in this instance? Why/how?
- Are there any barriers or challenges you would associate with this?
- Does timetabling and examination pressure impact pupils having outdoor/agricultural experiences?
  - Could an interdisciplinary learning project create space for field trips? Outdoor learning?
- Do you feel that society has become disconnected with food production processes?
- Have children (youth/education system?) lost touch with the processes of food production? E.g., seasonality, Scottish produce, cost of production, market volatility?
- Should there be more emphasis on agricultural/outdoor education during teacher training?
- What could farmers do to re-engage?
- What could society do to re-educate?
- What do you think are the main differences between an urban approach and a rural approach to agricultural education?
- Do you think that society overlooks and undervalues rural/agricultural careers? Why do you think this is?
- How can we encourage more children to have agricultural experiences?
- How could the agricultural sector market itself better as an exciting career option?
- What could the education sector to better in encouraging a positive experience of agriculture?
- Would a guidance document/framework around secondary school agricultural experiences be of benefit?
  - What format might this take? And what types of information are useful?

Closing questions: One of the main purposes of the study is to produce guidance for secondary teachers to help them understand what happens on farms and how farming works.

- What types of things would you suggest putting in the guidance? What would you advise teachers taking pupils to a farm for the first time? What do farmers need to know?
- What format would be most useful? Online/guidance document/CPD session/other?
- Is there anything you could suggest for inclusion in such a document?

Closing: Thank participant, and reiterate what happens to the information collected, and the process if they change their mind about having their information included or have any questions. Give out business card if not done so already.

Stakeholder

Interviews with Stakeholders: Prompt questions

Introductions: Remind participant of purpose and the right to withdraw. The focus of the discussion are participants' views on any benefits and/or challenges of agricultural experiences, but may also cover other related areas such as Curriculum for Excellence, rural careers, rural life, urban access to the countryside, teacher experience of agriculture, urban/rural challenges/differences, and outdoor education more generally.

- In your own words, define agriculture.
- Tell me about your involvement with agriculture/education.
- How important is it, in your opinion, that children learn about agriculture at secondary school?
- In your opinion what do you think are the biggest benefits of secondary school pupils experiencing agriculture?
    - Following on from the benefits, what do you think are the biggest challenges?
- Are there any associated barriers or challenges you would associate with this?
- Do you feel that society has become disconnected with food production processes?
- Have children (youth/education system?) lost touch with the processes of food production? E.g., seasonality, Scottish produce, cost of production, market volatility?
- In your experience, are teachers adequately equipped with the required skills/experience/knowledge to really give the topic its due?
- Should there be more emphasis on agricultural/outdoor education during teacher training?
- What could farmers do to re-engage?
- What could society do to re-educate?
- What do you think are the main differences between an urban approach and a rural approach to agricultural education?
- Do you think that society overlooks and undervalues rural/agricultural careers? Why do you think this is?
- How can we encourage more children to have agricultural experiences?
- How could the agricultural sector market itself better as an exciting career option?
- What could the education sector to better in encouraging a positive experience of agriculture?

Closing questions: One of the main purposes of the study is to produce guidance for secondary teachers to help them understand what happens on farms and how farming works.
- What types of things would you suggest putting in the guidance? What would you advise teachers/farmers taking pupils to a farm for the first time? What do farmers/teachers need to know?
- Is there anything you could suggest for inclusion in such a document?
- What types of things would you suggest putting in the guidance? What would you advise farmers who host secondary school children? What do teachers need to know?

Closing: Thank participant, and reiterate what happens to the information collected, and the process if they change their mind about having their information included or have any questions. Give out business card if not done so already.

Focus Group

Focus Group with secondary school pupils: Prompt questions.

Introductions: Remind pupils of my name, purpose of the study, their right to withdraw at any time, and the procedure for doing so (for safety reasons, and potential school policy, it may not be possible to allow them to leave the room of their own accord). Outline the ground rules for the session, for example respecting the opinions of others, what to do if a comfort break is required etc.

Ice Breaker Activity: Short activity to get the pupils talking. Although it is anticipated that they will already know one another, the main purpose is to encourage a relaxed and chatty environment. An example of this might be a 'name game' where each pupil says their name and a fact about themselves. This has the added benefit of having the pupils state their name on the audio recording which will help the transcription process. This is not expected to be demanding and will be tailored to meet the needs of the group (e.g. age/ability).

Introduce Main Discussion: 'the benefits and/or challenges of agricultural experiences'

- [each in turn] Using your own words please define what you understand by 'agriculture'.
- Tell me about your experiences of agriculture. Eg farm visits, family, friends, city farms, forests, highland show etc
- In your opinion is it important to learn about agriculture at school?
  - Is it useful, do you think, for your future? Why?
- Should more be taught about agriculture at school? What types of things would you like to see more of?
- Do you have any aspirations for a career in the agricultural/rural (and related) sector?
- Do you consider agriculture to be an important issue, and why yes/no?
  - How important is agriculture to Scottish culture/everyday life/economy?
- Has society lost touch with the processes through which our food is produced?
  - What might be the reasons for this?

Closing: Thank the pupils for taking part and reiterate what will happen to the data collected, and what to do if they change their mind about having their information included, or if they have any questions.

Appendix 6: Short Surveys

Screenshots of Short Surveys issued prior to, and post-interview and focus group.

Farmer Short Surveys

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Please fill out the following survey and hand your sheet back to the researcher.

Farm Postcode:
Local Authority:

1. Are you a RHET farm host, or do you offer farm visits through another organisation (RNCI, Food for Life etc)?

☐ Yes, RHET farm host
☐ Yes, other organisation or personal connections [please detail]
....
☐ No, do not offer farm visits

2. Agriculture should be an essential part of school pupils' education in Scotland? [select one score]

Non-essential | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | vitally essential

3. Secondary school pupils should have a compulsory agricultural experience* as part of their education? [select one score]

do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree

4. Rural skills should be offered in every school (urban and rural). [select one score]

do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree

5. More needs to be done to re-educate society about agriculture and food production. [select one score]

do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree

*agricultural experience defined as 'practical experience and/or observations of agriculture that aim to leave a lasting impression'.

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Post-Interview Survey

Please complete this survey and hand back to the researcher.

Please specify the amount to which you agree with each of the following statements. [circle one number]	Do not agree at all ----------------------- Strongly ----- agree				
1. Taking part in this study has made me think about how I could engage with secondary schools in the future.	1	2	3	4	5
2. I feel confident about the future of agriculture in Scotland.	1	2	3	4	5
3. Secondary schools engage well with agriculture.	1	2	3	4	5
4. I would consider taking on a young person on my farm for a school placement.	1	2	3	4	5
5. Multiple barriers stop young people getting into agriculture/farming.	1	2	3	4	5
6. I would consider delivering a classroom talk on my experiences and role as a farmer.	1	2	3	4	5
7. I enjoyed taking part in the study	1	2	3	4	5
8. I would be interested in a follow-up update once the study is complete.	1	2	3	4	5
Other Comments:					

Thank you for your time!

Teacher Short Surveys

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Pre-Interview Survey for Teachers
Please fill out the following survey and hand your sheet back to the researcher.

School Postcode:

Name of School:

Local Authority:

How long have you been teaching? ☐ Probationary Year   ☐ under 10 Years   ☐ 10+ Years

1. Have you used the Royal Highland Education Trust (RHET), or any other organisations to organise a farm visit for secondary school pupils?

☐ Yes, RHET   ☐ Yes, other organisation [please detail]
.... ☐ No

If no, do any of the following apply? [please circle the answers that apply]

RHET classroom visit used / health and safety concern / budget restriction / timetable or exam pressure

2. Have you heard of the Royal Highland Education Trust (RHET) and the resources they offer?
        ☐ Yes☐ No

4. Outdoor learning was a key part of my teacher training. [select one score]

| do not agree | 1 | 2 | 3 | 4 | 5 | strongly agree |

5. Farming/agriculture was explicitly covered as part of my teacher training. [select one]

| do not agree | 1 | 2 | 3 | 4 | 5 | strongly agree |

6. Knowing where my food comes from is important to me. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | very important |

7. Knowing how my food is produced is important to me. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | very important |

8. Farmers play an important role in our society. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | very important role |

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Post-Interview Survey

Please complete this survey and hand it back to the researcher

Please specify the amount to which you agree with each of the following statements. [circle one number]	Do not agree at all ---- ---------------------- Strongly agree				
1. Taking part in this study has made me think about how I could engage more with agriculture as part of my teaching	1	2	3	4	5
2. I would find it easy to fit an agricultural experience into the curriculum I teach.	1	2	3	4	5
3. I feel more confident about including an agricultural experience having heard about RHET and other resources.	1	2	3	4	5
4. There is adequate scope for linking agriculture into the Curriculum for Excellence in the secondary school curriculum.	1	2	3	4	5
5. I would consider bringing in a farmer to talk about their role and experiences as a way of engaging pupils with agriculture.	1	2	3	4	5
6. A guidance document on agricultural experiences and the Curriculum for Excellent would be useful to my practice.	1	2	3	4	5
7. I enjoyed taking part in the study	1	2	3	4	5
8. I would be interested in a follow-up update once the study is complete.	1	2	3	4	5

Other Comments:

Thank you for your time!

Stakeholder Short Surveys

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Please fill out the following survey and hand your sheet back to the researcher.

Home Postcode:
Local Authority:

1. What is your current level of involvement in agricultural education? [please select]
☐ It's my job
☐ I believe it's an important cause
☐ I want to be more involved
☐ Other:
....

2. Agriculture should be an essential part of school pupils' education in Scotland? [select one score]

| Non-essential | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | vitally essential |

3. Secondary school pupils should have a compulsory agricultural experience* as part of their education? [select one score]

| do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree |

4. Rural skills should be offered in every school. [select one score]

| do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree |

5. Farmers play an important role in our society. [select one score]

| do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree |

6. More needs to be done to re-educate society about agriculture and food production. [select one score]

| do not agree | 1 [Control] | 2 [Control] | 3 [Control] | 4 [Control] | 5 [Control] | strongly agree |

*agricultural experience defined as 'practical experience and/or observations of agriculture that aim to leave a lasting impression'.

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Post-Interview Survey

Please complete this survey and hand back to the researcher.

Please specify the amount to which you agree with each of the following statements. [circle one number]	Do not agree at all -------------------- Strongly agree				
1. Taking part in this study has made me think about how I will engage more with agricultural education in the future	1	2	3	4	5
2. Schools do enough to encourage engagement with and experience of agriculture/farming at secondary school level.	1	2	3	4	5
3. The farming community does enough to engage secondary school children in agricultural experiences	1	2	3	4	5
4. more support is needed to ensure every child has an agricultural experience at secondary school.	1	2	3	4	5
5. Multiple barriers stop young people getting into agriculture/farming.	1	2	3	4	5
6. I would like to be consulted on a guidance document to help teachers provide secondary school children with agricultural experiences	1	2	3	4	5
7. I enjoyed taking part in the study	1	2	3	4	5
8. I would be interested in a follow-up update once the study is complete.	1	2	3	4	5
Other comments:					

Thank you for your time!

Focus Group Short Surveys

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Pre-Focus Group Survey for Pupils

Please fill out the following survey and hand your sheet back to the researcher.

Age:

Home Postcode:

Name of School:

1. Have you ever visited a farm?

☐ Yes

☐ No

If yes, was this at; [please circle the answers that apply]

primary school / secondary school / outside of school

2. I am thinking about a career in the agricultural/rural sector. [select one score]

| not thinking about it | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | top of my list |

3. Agriculture is an important part of life in Scotland. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | very important |

4. Farmers play an important role in our society. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | very important role |

5. Knowing where my food comes from is important to me. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | very important |

6. Knowing how my food is produced is important to me. [select one score]

| not important | 1 | 2 | 3 | 4 | 5 | very important |

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Post-Focus Group Survey

Please complete this short survey and hand back to the researcher.

Please specify the amount to which you agree with each of the following statements. [circle one number]	Do not agree at all ----				Strongly agree
1. My opinions on the importance of agriculture have changed after taking part in this focus group.	1	2	3	4	5
2. I would now consider a career path relating to the agricultural/rural sector.	1	2	3	4	5
3. My school should offer more opportunities to experience agriculture	1	2	3	4	5
4. I enjoyed taking part in the study	1	2	3	4	5
5. I would be interested in hearing about the study again when it is finished.	1	2	3	4	5

Thank you!

Appendix 7: Urban Rural Classification

Scottish Government Urban Rural Classification (Scottish Government, 2018e)

6 Fold Urban Rural Classification (page 5)	
1 Large Urban Areas	Settlements of 125,000 or more people.
2 Other Urban Areas	Settlements of 10,000 to 124,999 people.
3 Accessible Small Towns	Settlements of 3,000 to 9,999 people and within a 30 minute drive of a settlement of 10,000 or more.
4 Remote Small Towns	Settlements of 3,000 to 9,999 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.

Appendix 8: Careers Related Recommendations

The following screenhots are taken from Scottish Government's 2018 publication *A Future Strategy for Scottish Agriculture: Final Report by the Scottish Government's Agricultural Champions* (Scottish Government, 2018c, pp. 12–13).

Careers

- At school level there should be:

  o A coordinated approach to support Skills for Work so that there is genuinely a "Career for All", illustrating the very large number of qualifications which can emanate from a Rural Skills Course.

  o A coordinated approach to identify best practice at schools teaching Rural Skills at Level 4 so that it can be rolled out nationally.

  o A method of supporting regions such as Aberdeenshire, Dumfries & Galloway who are piloting Rural Skills at schools.

  o Continued work to develop a National Progression Award at Level 5 at schools so that it can be rolled out nationally.

  o A focus on building on Rural Skills Level 4, and Rural and Environmental Studies Level 5, and in due course a Needs Analysis for a Foundation Apprenticeship for rural skills.

  o A focus on increased vocational training, and in due course a Needs Analysis for Graduate Apprenticeships for agriculture, forestry, and other land-based industries.

- To improve the way in which career opportunities in farming and related sectors are illustrated and communicated in schools, there should be:

  o Development of the various existing initiatives, for example in Moray and Dumfries & Galloway, to leverage off them.

  o More industry involvement with the 21 existing Regional Leads and coordination of activities.

  o More training of teachers and the various types of industry Ambassador, in what the career possibilities are, and a Toolkit to illustrate course content, qualifications and career opportunities.

  o Coordination of the work done by various bodies and organisations on resources including videos showing career opportunities (My World of Work, Scottish Association of Young Farmers Clubs, Lantra, Chartered Institute of Forestry, Food & Drink Federation of Scotland), to ensure consistency and availability.

  o More detailed labour market intelligence for all of the sectors involved.

- At pre-apprenticeship and apprenticeship level there should be:

  o work to develop the principle of a pre-apprenticeship, building on existing initiatives such as the Ringlink internship programme, including how best it can be funded sustainably (including the potential for wider industry funding), the possibility of a new qualification, and how it can be rolled out nationally.

  o National roll out of existing Modern Apprenticeships and National Occupational Standards, and continued work to develop the new Technical Apprenticeship.

  o Expansion of the Rural Skills Modern Apprenticeship with new pathways as well as estate maintenance and environmental management.

  o Centres of expertise where skills' training is done and research and imaginative training methods are used.

  o A re-examination of the costs of training to ensure initiatives are fully costed.

  o The inclusion of self-employment skills.

  o Recruitment of new trainers, instructors, assessors and verifiers.

  o Consideration of Shared Apprenticeships, which have the potential to help where rural microbusinesses have insufficient time for mentoring and supervision of an apprentice, building on pilots under Opportunity North East (ONE) and the Fife Rural Skills Initiative and including the need for sustainable funding.

- We recommend particular policies are implemented by government to address the difficulties of form filling by those with dyslexia.

- To address the age demographic of Scottish farming, existing new entrant initiatives such as Farming Opportunities for New Entrants, the Farm Advisory Service's New Entrant Programme and the SRDP new entrant grants and establishment grants must be continued with and built upon.

Appendix 9: CfE Capacities and Attributes

To enable all young people to become...

Successful Learners

with
- enthusiasm and motivation for learning
- determination to reach high standards of achievement
- openness to new thinking and ideas

and able to
- use literacy, communication and numeracy skills
- use technology for learning
- think creatively and independently
- learn independently and as part of a group
- make reasoned evaluations
- link and apply different kinds of learning in new situations

Confident Individuals

with
- self-respect
- a sense of physical, mental and emotional wellbeing
- secure values and belief
- ambition

and able to
- relate to others and manage themselves
- pursue a healthy and active lifestyle
- be self-aware
- develop and communicate their own beliefs and view of the world
- live as independently as they can
- assess risk and take informed decisions
- achieve success in different areas of activity

Responsible Citizens

with
- respect for others
- commitment to participate responsibly in political, economic, social and cultural life

and able to
- develop knowledge and understanding of the world and Scotland's place in it
- understand different beliefs and cultures
- make informed choices and decisions
- evaluate environmental, scientific and technological issues
- develop informed, ethical views of complex issues

Effective Contributors

with
- an enterprising attitude
- resilience
- self-reliance

and able to
- communicate in different ways and in different settings
- work in partnership and in teams
- take the initiative and lead
- apply critical thinking in new contexts
- create and develop
- solve problems

From: Building the Curriculum 3 (Scottish Government, 2008, p. 22)

Appendix 10: Identified CfE Outcomes

Health and Wellbeing

Curriculum Organiser	− Planning for Choices and Change − Physical Activity and Health − Food and Health − (also: The Food Experience, Developing Healthy Choices, Nutrition, The Journey of Food and other aspects of Food and Health Benchmarks)
Curriculum Outcomes	I can explain the links between the energy I use while being physically active, the food I eat, and my health and wellbeing. HWB 2-28a / HWB 3-28a I enjoy eating a diversity of foods in a range of social situations. HWB 0-29a / HWB 1-29a / HWB 2-29a / HWB 3-29a / HWB 4-29a I am investigating different careers/occupations, ways of working, and learning and training paths. I am gaining experience that helps me recognise the relevance of my learning, skills and interests to my future life. HWB 2-20a / HWB 3-20a / HWB 4-20a Having explored a range of issues which may affect food choice, I can discuss how this could impact on the individual's health. HWB 3-34a / HWB 4-34a *I am developing the skills and attributes which I will need for learning, life and work. I am gaining understanding of the relevance of my current learning to future opportunities. This is helping me to make informed choices about my life and learning. HWB 3-19a* By taking part in practical food activities and taking account of current healthy eating advice, I can prepare healthy foods to meet identified needs. HWB 3-30a Through practical activities using different foods and drinks, I can identify key nutrients, their sources and functions, and demonstrate the links between energy, nutrients and health. HWB 3-31a I can apply food safety principles when buying, storing, preparing, cooking and consuming food. HWB 3-33a Using my knowledge of nutrition and current healthy eating advice, I can evaluate the information on food packaging, enabling me to make informed choices when preparing and cooking healthy dishes. HWB 3-36a

Based on my interests, skills, strengths and preferences, I am supported to make suitable, realistic and informed choices, set manageable goals and plan for my further transitions. HWB 4-19a

I have investigated factors which can influence participation in physical activity and food choices, and the impact of activity on population health in the Scottish and wider contexts. I can use this information to discuss policies and inform my own health choices. HWB 4-28a

Having researched food and health policy, and dietary legislation, I can explain how this impacts on individuals, the community and the world of work. HWB 4-30a

I can apply my knowledge and understanding of nutrition, current healthy eating advice and the needs of different groups in the community when planning, choosing, cooking and evaluating dishes. HWB 4-31a

Having investigated the effects of food processing on the nutritional value of foods, I can critically assess the place of processed foods in a healthy balanced diet. HWB 4-35a

I have examined and evaluated food packaging and can understand the legal requirements for manufacturers. HWB 4-36a

By investigating different influences on the consumer, I can discuss how consumers can be influenced by external sources. HWB 4-37a

I can explain basic legal rights and responsibilities of the consumer, recognising the agencies that can help. HWB 4-37b

Social Studies

Curriculum Organiser	– People, past events and societies – People, place and environment – People in society, economy and business
Curriculum Outcomes	I can make links between my current and previous studies, and show my understanding of how people and events have contributed to the development of the Scottish nation. SOC 3-02a Having investigated processes which form and shape landscapes, I can explain their impact on selected landscapes in Scotland, Europe and beyond. SOC 3-07a I can identify the possible consequences of an environmental issue and make informed suggestions about ways to manage the impact. SOC 3-08a By comparing settlement and economic activity in two contrasting landscapes, I can reach conclusions about how landscapes influence human activity. I can explain my findings clearly to others. SOC 3-13a I can use a range of maps and geographical information systems to gather, interpret and present conclusions and can locate a range of features within Scotland, UK, Europe and the wider world. SOC 3-14a I can discuss the extent to which my choices and decisions are influenced by the ways in which I am informed. SOC 3-17b I can present conclusions about the impact of the globalisation of trade on patterns of work and conditions of employment in Scotland, the UK or beyond. SOC 3-20b I can evaluate conflicting sources of evidence to sustain a line of argument. SOC 4-01a By studying groups in past societies who experienced inequality, I can explain the reasons for the inequality and evaluate how groups or individuals addressed it. SOC 4-04a I can present supported conclusions about the social, political and economic impacts of a technological change in the past. SOC 4-05a I can evaluate the changes which have taken place in an industry in Scotland's past and can debate their impact. SOC 4-05b

	I have investigated a meeting of cultures in the past and can analyse the impact on the societies involved. SOC 4-05c I can discuss the sustainability of key natural resources and analyse the possible implications for human activity. SOC 4-08a Having evaluated the role of agriculture in the production of food and raw material, I can draw reasoned conclusions about the environmental impacts and sustainability. SOC 4-09a I can carry out a geographical enquiry to assess the impact and possible outcomes of climate change on a selected region and can propose strategies to slow or reverse the impact. SOC 4-12b I can use specialised maps and geographical information systems to identify patterns of human activity and physical processes. SOC 4-14a I can critically examine how some economic factors can influence individuals, businesses or communities. SOC 4-20a

Sciences

Curriculum Organiser	– Planet Earth – Biological Systems – Materials – Topical Science
Curriculum Outcomes	Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in agriculture and their alternatives and can evaluate their potential impact on the world's food production. SCN 3-03a I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. SCN 3-05b Through evaluation of a range of data, I can describe the formation, characteristics and uses of soils, minerals and basic types of rocks. SCN 3-17a Having taken part in practical activities to compare the properties of acids and bases, I have demonstrated ways of measuring and adjusting pH and can describe the significance of pH in everyday life. SCN 3-18a I have collaborated with others to find and present information on how scientists from Scotland and beyond have contributed to innovative research and development. SCN 3-20a Through research and discussion, I have contributed to evaluations of media items with regard to scientific content and ethical implications. SCN 3-20b I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. SCN 4-01a I have propagated and grown plants using a variety of different methods. I can compare these methods and develop my understanding of their commercial use. SCN 4-02a Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance. SCN 4-05b I can debate the moral and ethical issues associated with some controversial biological procedures. SCN 4-13c

	I can monitor the environment by collecting and analysing samples. I can interpret the results to inform others about levels of pollution and express a considered opinion on how science can help to protect our environment. SCN 4-18a I have researched new developments in science and can explain how their current or future applications might impact on modern life. SCN 4-20a Having selected scientific themes of topical interest, I can critically analyse the issues, and use relevant information to develop an informed argument. SCN 4-20b

Expressive Arts and Languages

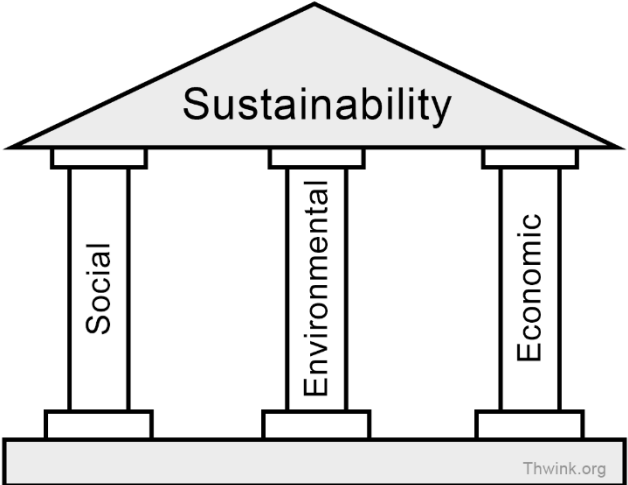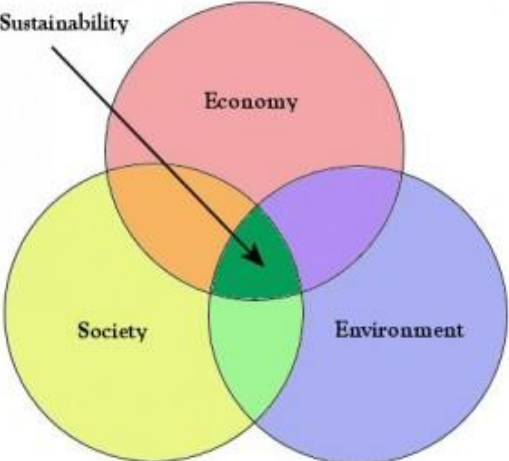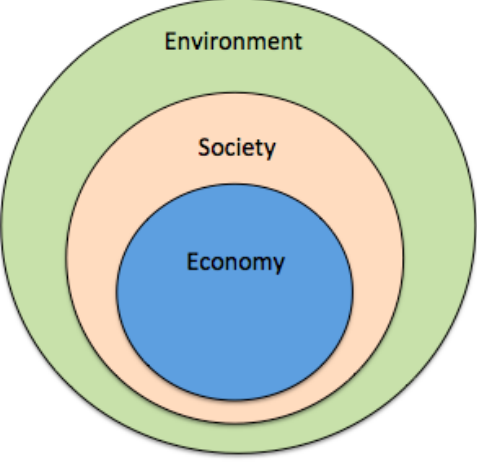| Curriculum Organiser	- Art and Design - Listening and Talking - Reading - Writing
Curriculum Outcomes	I can use and combine the visual elements and concepts to convey ideas, thoughts and feelings in expressive and design work. EXA 3-03a I can use the visual elements and concepts with sensitivity to express qualities and relationships and convey information, thoughts and feelings. I can use my skills and creativity to generate original ideas in my expressive and design work. EXA 4-03a Having chosen personal themes and developed my own ideas from a range of stimuli, I can express and communicate my ideas, thoughts and feelings through 2D and 3D work. EXA 4-05a *Using what I know about the features of different types of texts, I can find, select, sort, summarise, link and use information from different sources. LIT 3-14a / LIT 4-14a* *I can make notes and organise them to develop my thinking, help retain and recall information, explore issues and create new texts, using my own words as appropriate. LIT 3-15a / LIT 4-15a* *To help me develop an informed view, I am learning about the techniques used to influence opinion and how to assess the value of my sources, and I can recognise persuasion. LIT 3-08a* *I can persuade, argue, evaluate, explore issues or express an opinion using a clear line of thought, relevant supporting detail and/or evidence. LIT 3-29a* I can recreate a convincing impression of a personal experience for my reader, sharing my feelings and reactions to the changing circumstances with some attempt at reflection. ENG 3-30a *To help me develop an informed view, I can identify some of the techniques used to influence or persuade and can assess the value of my sources. LIT 4-08a* *I can persuade, argue, evaluate, explore issues or express and justify opinions within a convincing line of thought, using relevant supporting detail and/or evidence. LIT 4-29a* I can create a convincing impression of my personal experience and reflect on my response to the changing circumstances to engage my reader. ENG 4-30a

Mathematics and Technology

Curriculum Organiser	- Data and Analysis - Digital Literacy - Food and Textile - Awareness of technological developments (Past, Present and Future), including how they work. - Impact, contribution, and relationship of technologies on business, the economy, politics, and the environment. - Application of Engineering
Curriculum Outcome	*I can work collaboratively, making appropriate use of technology, to source information presented in a range of ways, interpret what it conveys and discuss whether I believe the information to be robust, vague or misleading. MNU 3-20a* When analysing information or collecting data of my own, I can use my understanding of how bias may arise and how sample size can affect precision, to ensure that the data allows for fair conclusions to be drawn. MTH 3-20b I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology. MTH 2-21a / MTH 3-21a *I can evaluate and interpret raw and graphical data using a variety of methods, comment on relationships I observe within the data and communicate my findings to others. MNU 4-20a* In order to compare numerical information in reallife contexts, I can find the mean, median, mode and range of sets of numbers, decide which type of average is most appropriate to use and discuss how using an alternative type of average could be misleading. MTH 4-20b I can select appropriately from a wide range of tables, charts, diagrams and graphs when displaying discrete, continuous or grouped data, clearly communicating the significant features of the data. MTH 4-21a Having used digital technologies to search, access and retrieve information I can justify my selection in terms of validity, reliability and have an awareness of plagiarism. TCH 3-02a I am gaining confidence and dexterity in the use of ingredients and equipment and can apply specialist skills in preparing food. TCH 3-04a By using problem-solving strategies and showing creativity in a design challenge, I can plan, develop, make and evaluate food or

textile items which meet needs at home or in the world of work. TCH 3-04c

I understand how scientific and technological developments have contributed to changes in everyday products. TCH 3-05a

I can identify the costs and benefits of using technologies to reduce the impact of our activities on the environment and business. TCH 3-07a

I can apply my knowledge and understanding of engineering disciplines and can develop/build solutions to given tasks. TCH 3-12a

I can use digital technologies to process and manage information responsibly and can reference sources accordingly. TCH 4-02a

I can explore the properties and functionality of ingredients, textiles and equipment to establish their suitability for a task at home or in the world of work. TCH 4-04a

Showing creativity and innovation I can design, plan and produce increasingly complex food or textile items which satisfy the needs of the user, at home or in the world of work. TCH 4-04c

I can analyse products taking into consideration sustainability, scientific and technological developments. TCH 4-05a

I can examine a range of materials, processes or designs in my local community to consider their environmental, social and economic impact. TCH 4-06a

I can present conclusions about the impact of technologies on the economy, politics and the environment. TCH 4-07a

I can solve problems through the application of engineering principles and can discuss the impact engineering has on the world around me. TCH 4-12a

Appendix 11: Sustainable Development Models

Appendix Table 2: Three Models of Sustainable Development

1. 'Three Pillars' of Sustainable Development	Sustainability — Social, Environmental, Economic pillars (Thwink.org)
2. 'Overlapping Circles' of Sustainable Development	Sustainability — Economy, Society, Environment overlapping circles
3. 'Nested Circle' of Sustainability	Environment, Society, Economy nested circles

1. - https://www.thwink.org/sustain/glossary/ThreePillarsOfSustainability.htm
2. - https://changingthestory.net/2012/01/19/conceptual-foundation-teaching-sustainability-courses/
3. - https://valuechaingeneration.com/2012/07/25/disruptive-innovation-and-sustainable-development/

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