

# **Interdisciplinary Learning: A Chimera of Scottish Education?**

**Thesis submitted for the degree of Doctor of  
Education**

**School of Education  
University of Stirling**



**Julie Harvie  
August 2018**

## **Interdisciplinary Learning – A Chimera of Scottish Education?**

### **ACKNOWLEDGEMENTS**

There are a number of people that I would like to thank for their help and support in completing this thesis. I am indebted to my two esteemed supervisors, Professor Mark Priestley and Professor Walter Humes, who have provided much guidance and support over the past few years. They have been both motivating and inspiring on this journey.

Professor Julie Allan encouraged me to begin the EdD course. Without her time, advice and assurance, at the start, I doubt if I would have embarked upon the adventure.

Thanks, are also due to the Head Teachers who allowed me in to their schools to carry out this research. Without their willingness to support this project, it could not have happened. Also, to the teachers involved, who so generously shared their stories, thoughts and views with me and welcomed me in to their classrooms. This thesis could not have been written without them.

I am extremely grateful to my family who have always supported me, especially my late father Patrick Lynch who tirelessly proof read my essays when I did my initial degree, and my mother Elizabeth Lynch who read to me and gave me self-belief and encouragement from an early age.

Finally, thank you to my husband Stewart, who has provided me with space, patience and time, (not to mention copious amounts of tea and snacks) to help me finish this work.

## Table of Contents

ACKNOWLEDGEMENTS .....	1
ABSTRACT.....	9
LIST OF ABBREVIATIONS .....	10
Research Context and Purpose.....	11
1.1 Introduction.....	11
1.2 Educational Doctorate Journey .....	12
1.3 Practitioner Researcher .....	13
1.4 Why Interdisciplinary Learning? .....	13
1.5 Voyage of Discovery .....	14
1.6 Structure of the Thesis .....	15
Chapter 2.....	18
Policy Context.....	18
2.1 Introduction.....	18
2.2. Supra Level .....	18
2.2.1 Plugging the Skills Gap .....	19
2.2.2 Facing Uncertain Futures .....	20
2.2.3 Competencies for Lifelong Learning .....	21
2.2.4 Pupil Voice.....	22
2.2.5 Teachers as Curriculum Makers.....	23
2.2.6 Pedagogical Advice .....	23
2.3 Macro Level .....	24
2.3.1 Historical Context of IDL .....	24
2.3.2 Interdisciplinary Learning within CfE .....	25
2.3.3 Skills.....	26
2.3.4 Facing Uncertain Futures .....	27
2.3.5 Making Links and Connections.....	28
2.3.6 Pupil Centred Activities .....	28
2.3.7 Teachers as curriculum makers.....	29
2.3.8 Guidance for Practitioners .....	30
2.4 Conclusion .....	30
Chapter 3.....	32
The Nature of IDL .....	32
3.1 Introduction .....	32
3.2 Disciplinary Learning .....	33
3.2.1 Disciplines .....	34

The 3.2.2 Subjects, Disciplines and the Curriculum .....	35
3.2.3 Social Realism and arguments against IDL.....	36
3.2.4 Benefits of an interdisciplinary approach .....	37
3.3 Defining IDL.....	40
3.3.1 Interdisciplinarity and Integration .....	41
3.3.2 Academic definitions.....	41
3.3.3 Application of knowledge .....	42
3.3.4 Main Features of IDL.....	43
3.4 Conclusion .....	44
Chapter 4.....	46
Pedagogical Approaches to IDL .....	46
4.1 Introduction.....	46
4.2 Models Which Blur Disciplinary Boundaries.....	46
4.3 Continuum of Practice .....	47
4.3.1 Disciplinary Learning.....	47
4.3.2 Cross curricular Learning.....	47
4.3.3 Multidisciplinary Learning.....	49
4.3.4 Interdisciplinary Learning.....	50
4.4 Pedagogical Approaches .....	51
4.4.1 Historical Influences.....	51
4.4.1 Subject Centred Approach .....	52
4.4.2 Child Centred Approach.....	53
4.4.3 Practical Application .....	54
4.5 Facilitating Factors for IDL .....	55
4.5.1 Collegiality.....	55
4.5.2 Time .....	58
4.5.3 Institutional Support.....	58
4.5.4 Teachers as Facilitators .....	59
4.5.5 Assessment .....	59
4.6 Teacher Agency .....	61
4.6.1 Teacher Beliefs.....	61
4.6.2 School Culture .....	62
4.6.3 Social and Political influences.....	63
4.6.4 Policy Guidance .....	63
4.7 Examples of IDL.....	64

4.8 Conclusion .....	65
Chapter 5.....	66
Methodology .....	66
5.1 Introduction.....	66
5.2 Research Questions .....	66
5.3 Epistemology .....	67
5.4 Pilot Study.....	69
5.5 Methodology .....	71
5.5.1 Macro Level Policy Analysis .....	72
5.5.2 Document Analysis.....	72
5.5.3 Case Study Design .....	73
5.5.4 Data Collection.....	75
5.5.5 Data Collection Methods .....	76
5.5.6 Interviews.....	76
5.5.7 Classroom Observations .....	80
5.5.8 Research Journal .....	80
5.5.9 Data Analysis.....	80
5.5.10 Content Analysis .....	81
5.5.11 Research Synthesis.....	82
5.5.11 The Research Site .....	86
5.6 Practitioner Researcher .....	87
5.7 Ethics.....	88
5.8 Research Quality .....	89
5.9 Conclusion .....	89
Chapter 6.....	91
Macro Level Policy Analysis.....	91
6.1 Introduction.....	91
6.2 Policy Themes.....	91
6.2.1 Making Links.....	92
6.2.2 Relevant Contexts .....	94
6.2.3 Developing knowledge and skills .....	96
6.2.4 Innovation and creativity .....	98
6.2.5 Partnership Working.....	99
6.3 Guidance for Practitioners .....	100
6.2.6 Mixed Messages.....	102

6.4 Conclusion .....	103
Chapter 7.....	104
Case Study 1 .....	104
Burnhill Primary School .....	104
7.1 Introduction.....	104
7.2 The Schools.....	104
7.3 Burnhill Primary .....	104
7.4 Structure of IDL Planning.....	105
7.5 The Teachers .....	108
7.5.1 Peter.....	108
7.5.2 Emily.....	109
7.6 The Role of the Teacher and Purpose of Education .....	109
7.7 Challenges.....	111
7.7.1 Behaviour .....	111
7.7.2 Workload.....	112
7.8 Curriculum for Excellence .....	113
7.9 How do teachers understand IDL?.....	114
7.9.1 Writing .....	116
7.9.2 Engagement .....	116
7.9.3 Making Links.....	116
7.9.4 Skills.....	117
7.10 How is IDL work planned for? .....	118
7.11 How is IDL implemented?.....	119
7.11.1 Successful Examples of IDL .....	120
7.12 Classroom Observations .....	121
7.12.1 Typology of IDL Practice.....	121
7.12.2 P4 – The Titanic.....	122
7.12.3 P6/7 – World War II .....	126
7.13 The IDL Open Evening.....	129
7.14 Conclusion .....	131
Chapter 8.....	135
Case Study 2 .....	135
St Mary’s Primary School.....	135
8.1 Introduction.....	135
8.2 St Mary’s Primary School.....	135
8.3 Structure of IDL Planning.....	136

8.4 The Teachers .....	139
8.4.1 Colleen .....	139
8.4.2 Maureen.....	140
8.5 The Role of the Teacher and Purpose of Education .....	140
8.6 Curriculum for Excellence .....	142
8.6.1 Overcrowded Curriculum.....	143
8.6.2 Vague Messages.....	144
8.7 Additional Challenges.....	144
8.7.1 Behaviour of Students.....	145
8.7.2 Lack of Resources.....	145
8.8 What does IDL involve? .....	146
8.9 How do primary teachers understand IDL? .....	147
8.10 How is IDL Work Planned For? .....	149
8.11 How is IDL implemented?.....	151
8.12 Classroom Observations .....	152
8.12.1 P3/4 – Glasgow .....	153
8.12.2 P2/3 - The Emergency Services .....	154
8.13 Conclusion .....	159
Chapter 9.....	163
Cross-Case Analysis .....	163
9.1 Introduction.....	163
9.2 Common Themes .....	163
9.3 Teachers’ Understanding of IDL .....	166
9.4 Teacher Agency Framework.....	169
9.4.1 Teachers’ Views and Beliefs.....	169
9.4.2 Unclear Policy Guidance .....	170
9.4.3 Performativity .....	173
9.4.4 School Culture and Traditions.....	175
9.4.5 School Resources .....	176
9.4.6 Staff Training Opportunities .....	177
9.4.7 Short Term Objectives .....	179
9.4.8 Planning Constraints .....	182
9.4.9 Lack of Collegiality.....	184
9.4.10 Barriers and Drivers of IDL .....	185
9.5 Conclusions.....	187

Chapter 10.....	189
Conclusion .....	189
10.1 Introduction.....	189
10.2 Analytical Generalisations .....	190
10.3 Closing the Gap.....	191
10.4 Implications for the future of IDL – Addressing the Chimera Effect.....	191
10.4.1 Policy Makers .....	191
10.4.2 Local Authorities and Universities .....	192
10.4.3 Schools Leaders.....	192
10.4.4 Implementing IDL in the Primary School .....	193
10.5 Examples of IDL Practices .....	195
10.6 Reflections on the Research Process.....	197
10.7 Concluding remarks .....	200
APPENDIX.....	202
Appendix 1: Hierarchical Focussing Schedule.....	202
Appendix 2: Observation Schedule .....	203
Appendix 3: Participant Information Sheet .....	204
Appendix 4: St Mary’s Planning Overview .....	206
Appendix 5: St Mary’s Suggested Activities Plan .....	207
Appendix 6: St Mary’s Cross Cutting Themes .....	208
Appendix 7: St Mary’s Assessment Sheet.....	209
REFERENCES .....	210
Table 1: Disciplines .....	35
Table 2: Research Synthesis Comparison.....	84
Table 3: Cross-Case Analysis Model.....	85
Table 4: Burnhill Primary Planner .....	106
Table 5: Burnhill Primary Emergent Themes .....	114
Table 6: St Mary’s Primary Planner .....	137
Table 7: St Mary’s Primary Emergent Themes .....	147
Table 8: Themes.....	164
Table 9: Approach Comparison .....	168
Table 10: Planning Comparison.....	184
Table 11:Facilitating Factors Comparison.....	185
Table 12: Vignette of a Suggested Planning Format .....	196
Figure 1: Core Elements of IDL (adapted from Boix-Mansilla, 2004)).....	43
Figure 2: Relationship Between Core Elements of IDL .....	44



Figure 3: Disciplinary Learning .....	47
Figure 4: Cross Curricular Learning .....	48
Figure 5: Multidisciplinary Learning .....	49
Figure 6: Interdisciplinary Learning .....	50
Figure 7: Overview of Research Structure.....	66
Figure 8: Frequency of Skills in BtC Documents .....	97
Figure 9: Frequency of IDL in BtC Documents .....	97
Figure 10: Burnhill Primary Themes .....	115
Figure 11: Typology of Practice Model.....	122
Figure 12: St Mary's Primary Themes .....	147
Figure 13: Themes from both schools .....	164
Figure 14: Combined Responses from Both Schools .....	165
Figure 15: Common Themes of all Teachers.....	165
Figure 16: Main Elements in St Mary's      Figure 17: Main Elements in Burnhill .....	166
Picture 1: Boat Shaped Desks .....	123
Picture 2: The Titanic Writing Display .....	123
Picture 3: The Titanic Writing Display      Picture 4: The Titanic Writing Display .....	124
Picture 5: The Titanic Artwork .....	124
Picture 6: WW2 Artwork .....	126
Picture 7: WW2 Writing Display.....	126

## **ABSTRACT**

Interdisciplinary learning (IDL) is cited as one of the four contexts for learning alongside Curriculum areas and subjects, Ethos and life of the school and Opportunities for personal achievement. As a result, interdisciplinary education has become a prevalent topic, over the past decade, in both primary and secondary schools. IDL has been linked with promoting higher order, critical thinking, where participants are given opportunities to develop their knowledge and skills (Education Scotland, 2012). It is unclear, however, how IDL is understood and implemented by practitioners in Scottish schools, as little research has been done in this area. This thesis attempts to address this situation, by taking a closer look at the nature of interdisciplinarity and investigating how IDL is understood by primary classroom practitioners and translated into practice. The aim is to investigate whether authentic interdisciplinary work exists, or if like the chimera, a hybrid monster from Greek mythology, it is something which remains illusory.

A Macro level policy analysis examines the policy context surrounding IDL and two case studies, from different Scottish primary schools, where teachers' understandings and classroom practices are examined and provide an empirical basis for the research. To analyse the data generated, a cross-case analysis mixed with a narrative approach is used. Factors such as policy context, environment, school cultures and traditions are taken into consideration, in order, to understand their impact on teacher agency and make sense of the findings. It is hoped that this thesis will provide some clarity around interdisciplinary practices and open discussion on the subject among practitioners. Recommendations for future practice regarding IDL are made at the end.

## LIST OF ABBREVIATIONS

BA	Bachelor of Arts
BEd	Bachelor of Education
BERA	British Educational Research Association
BtC	Building the Curriculum
CfE	Curriculum for Excellence
DHT	Depute Head Teacher
DeSeCo	Definition and Selection of Competencies
Es and Os	Experiences and Outcomes
EdD	Educational Doctorate
FTE	Full Time Equivalent
HMIe	Her Majesty's Inspectorate of Education
HT	Head Teacher
IDL	Interdisciplinary Learning
ITSE	International Society for Technology in Education
KWOF	K     What I <u>know</u> already W     What I <u>want</u> to know O     I would like <u>opportunities</u> to .... F     How will I <u>find</u> out
LI	Learning Intention
MEd	Master of Education
OECD	Organization for Economic Cooperation and Development
SC	Success Criteria
SIMD	Scottish Index of Multiple Deprivation
SMT	Senior Management Team
UK	United Kingdom
USA	United States of America
UNESCO	United Nations Educational, Scientific and Cultural Organization

## Chapter 1

### Research Context and Purpose

*“Preparing young people to engage in the major issues of our times requires that we nurture their ability to produce quality interdisciplinary work.” (Boix-Mansilla, 2006)*

#### 1.1 Introduction

Curriculum for Excellence (CfE) (Scottish Executive 2004), has made interdisciplinary learning (IDL) a prominent feature of the Scottish curriculum and IDL one of the four contexts of learning:

- Curriculum areas and subjects
- Interdisciplinary Learning
- Ethos and life of the school
- Opportunities for personal achievement

As a result, interdisciplinary education has been promoted as a vehicle to allow students to develop the transferrable, problem solving and generic skills, which will equip them for a future beyond the school gates (HM Inspectorate of Education, 2009). IDL has been linked with promoting higher order, critical and holistic thinking (i.e. the ability to understand how ideas and information from relevant disciplines, relate to each other and to the problem). Many argue that this is a powerful and engaging strategy that leads to sustained and transferable learning (Hiebert et al., 1996; Jones et al., 1996).

Baumfield and colleagues found that, in all sectors of the Scottish school system, “The promotion of interdisciplinary learning within the Draft Experiences and Outcomes were generally welcomed in principle” (Baumfield et al., 2010, p11). This study suggests that, while secondary teachers find IDL harder to comprehend and implement, due in part to the nature of the disciplinary domains and subject-based settings they inhabit, primary practitioners seem more secure about using this approach. However, little research has been carried out to examine how primary practitioners perceive and implement interdisciplinary processes and it remains unclear how IDL is understood by primary teachers and enacted in Scottish schools. This study aims to address this situation.

The title of this thesis uses the metaphor of a chimera to draw a comparison with IDL. This is appropriate in two ways. Firstly, a chimera is a creature from Greek mythology which is a hybrid, made from parts of different animals, fused together into one body. IDL could also be thought of in this way: as a hybrid of different disciplines, coming together and synthesised during an interdisciplinary task or activity. However, the word chimera can also be used to describe something which is hoped for or desired, but impossible to achieve or illusory. It is in this sense that the question is posed, 'IDL – A chimera of Scottish Education?'. This thesis aims to explore the nature of IDL and consider whether authentic IDL practices exist within the Scottish primary classroom, by investigating two case study schools. In doing so, the reader will be able to draw their own conclusions about whether IDL is something which is real, tangible and achievable or, like the chimera, something which, although talked about, remains illusory.

## **1.2 Educational Doctorate Journey**

Having been a primary teacher for almost fifteen years when the Chartered Teacher course became available (Scottish Executive, 2000), I was eager to participate and took up my studies at the University of Stirling. On reflection, by completing the Master of Education (MEd) qualification and gaining Chartered Teacher status I went through a leadership development process which was identified in the Scottish Qualification for Headship (Reeves et al., 2002) as being pivotal for effecting transformative change. This process involved: reflection – trying new strategies and evaluating their impact and effectiveness; cognitive development – exploring new bodies of knowledge around pedagogy; experiential learning – planning, trialling and implementing leadership strategies and; social learning processes – engaging with the school community to bring about improvements in practice. As Forde and colleagues (2018) highlight, these four elements are interdependent and, together, can lead to a sustainable change. In my case, this led, not only to an ambition for more senior leadership roles within education, but also a thirst for more academic pursuits.

### **1.3 Practitioner Researcher**

After much deliberation I began my doctoral studies a few years after completing my MEd qualification. One reason for engaging in the Educational Doctorate (EdD) process was simply, that I wanted to learn more about education and improve my own practice. I had found the MEd empowering, and life changing in some ways, and wondered what kind of transformation the EdD could possibly bring about. I had swithered about this for some time, however, because I knew that it would be a huge undertaking, in terms of additional workload, when the job I was already doing was so time consuming and demanding.

Another reason for beginning the EdD was that I was convinced that practitioner research was a very worthwhile endeavour, having experienced this during the Masters course. I hold the belief that it promotes the value of practitioner knowledge, knowledge that is often described as ‘knowing in action’ (Berliner, 1986). Indeed, being a school practitioner and researcher has ensured that my research has been focussed on classroom practices. The processes of engaging in current debates in education, illuminating practices and explaining problems encountered in the research investigation have invigorated me. As such, my hope is to contribute to closing the gap in the field of knowledge around IDL.

### **1.4 Why Interdisciplinary Learning?**

I attended a conference in 2010, where Howard Gardner spoke briefly about IDL. He made, an almost throw away comment which struck me at the time, about primary teachers thinking that topic work was IDL when it was not. As a primary practitioner I had never questioned my understanding of IDL until then. After this conference however, I had a nagging doubt. Later when I began my doctoral studies and was looking for a topic to investigate, the niggling question of IDL came back to mind. I realised that there was very little research in this area, certainly within the Scottish context, and decided that this would be a worthwhile, relevant and useful issue for examination.

IDL had become a prevalent topic, having been named as one of the four contexts for learning in CfE; however, teachers in my school were still carrying out thematic topic work under the umbrella of Environmental Studies, as they had always done but now being called IDL. Cross curricular links were made between different subject areas and the theme being studied but, I wanted to find out whether IDL was something different, as Gardner had suggested, and how primary practitioners understood the concept of interdisciplinarity.

### **1.5 Voyage of Discovery**

Comparing the EdD process to a ‘voyage of discovery’ seems apt one to me. The preparation for my journey began with the taught phase of the EdD where my cohort and I were equipped with some tools we would need for entering the alien, unfamiliar and sometimes hostile seeming environments we would encounter in the world of academic research, for example, methodology and epistemology. At this stage there was relative optimism, excitement and enthusiasm for the adventure which lay ahead. However, after this phase my cohort and I were left to go our separate ways, and for a while I found myself sailing on a vast and turbulent ocean, in the darkness and with no clear direction. Writing the literature review, for example, was like battling through a thick, dense foggy storm, peppered with moments of wonder and awe, when the fog cleared, the wind calmed, and the luscious lands, abundant with exotic fruits of knowledge, could be glimpsed on the far-off shores. At other times, hostile pirates and wild sea creatures (these mainly came in the form of work related pressures), threatened to sabotage the expedition, and once reaching land many vines and branches had to be cast aside, to clear a pathway through and reach the other side – alive! Writing some sections of the thesis was akin to crossing a dry and waterless desert, which had me gasping for breath and nearly dying of thirst. Mirages and hallucinations along the way meant there were a number of wrong turns taken before straying back into more familiar territory. Navigational assistance came in the form of my two experienced supervisors who were there to revive me at times, offer advice and provide direction at key points on the journey, sometimes steering me in a different path to the one I had chosen.

On reflection, mistakes were made and circuitous routes taken which delayed my arrival at the end goal of achieving the EdD qualification: if I was doing it all again I would do certain things differently. However, despite the difficulties of working full time and completing a doctoral thesis, and the blood, sweat and tears this has entailed, I can say that the experience has been a huge learning curve and intrinsically very rewarding.

## **1.6 Structure of the Thesis**

This study aims to fill a gap in the research by examining the nature of interdisciplinarity and investigating primary teachers' conceptions of it and how it is enacted in classrooms. The three main research questions which will provide the focus of this investigation are -

- 1. How do primary teachers understand the term 'interdisciplinary learning'?**
- 2. How do teachers plan for IDL work?**
- 3. How is IDL work implemented in the classroom?**

In Chapter 2, the policy context surrounding IDL will be considered. Themes which are evident in new curricula across the globe will be discussed, and how these have influenced educational policy in Scotland, bringing IDL to the fore. The pedagogical advice and guidance offered to practitioners at international and national level will also be examined. To structure the analysis of policy developments surrounding IDL, it has been useful to consider the analytical model of Supra, Macro, Meso, Micro and Nano (Thijs and van den Akker, 2009), which frames curriculum making as activity across multiple layers of the education system. Regarding IDL in the Scottish educational context, these headings can be used to refer to –

- Supra - global and international influences on the development of IDL in Scotland
- Macro - national policies promoting the use of IDL and advice being given to practitioners
- Meso - implementation of policy at school level
- Micro - implementation of policy at teacher/classroom level



- Nano - implementation of policy experienced by pupils in minute by minute classroom interactions

Chapter 2 will provide a broad overview of the context, to set the scene for the reader. A more detailed empirical analysis of Macro level themes relating to IDL will be undertaken in Chapter 6.

The literature review will be done in two parts. Chapter 3 will form the first part of the review, investigating the nature of interdisciplinarity. This chapter will look at knowledge, disciplines, school subjects and the differences between these key concepts. Various academic definitions of IDL will then be considered, in order, to provide clarity of meaning. There will be a focus on the essential elements of IDL, to create an exemplar model which will be used later to ascertain if IDL is taking place within the case study schools. In Chapter 4, the literature review will continue by examining subject-centred and child-centred pedagogical approaches to interdisciplinary practices. Factors necessary to facilitate effective IDL will also be considered. At the end of this chapter the three main research questions will be reviewed with some subsidiary questions being added, based on the conclusions drawn about authentic IDL practices.

Chapter 5 will provide an overview of the structure of this study and outline the epistemological framework to be used in conducting this research. It will also detail and justify the methods employed. Chapter 6 will provide a Macro analysis of CfE, the policy which has been responsible for the development of IDL within Scotland. This chapter will extend the contextual description given in Chapter 2, providing an empirical study of the key policy documents and identifying themes pertaining to IDL in the documents. This will provide an empirical and conceptual basis for judging how the policy intentions of CfE, in relation to IDL, are likely to be understood and realised by schools and classroom practitioners.

Chapters 7 and 8 contain two separate case studies, exploring data generated by qualitative research in different primary schools within the same local authority, in order, to uncover and gain an understanding

of their IDL practices. A contextual overview of the schools will be provided before an examination of their approaches to planning and implementation. Following this, a brief biography of each teacher involved in this study will be provided, and their views and beliefs explored. Teacher agency will be used a framework for examining the effectiveness of teachers in implementing IDL. The approach taken by Priestley and colleagues (2015) will be adopted which is an ecological one. This view sees agency as something that emerges as a result of the interaction between a teacher's personal capacity to act and their social and material environment. In this thesis then, agency will not be considered as something which a person has or possesses, but rather, something which they are able to achieve. In relation to the implementation of IDL, there are various factors which may affect teacher agency. As views and beliefs affect the ability to enact and mediate curriculum policy, this will help to reveal the teachers' dispositions and willingness to implement new policy initiatives of which IDL is one. The teachers' conceptions and practices, regarding IDL, will then be reviewed using the methods outlined in Chapter 5. The information gained from each case study will be cross referenced to the individual research questions, in order, to find answers.

Chapter 9 presents a cross-case analysis using some aspects of a narrative approach (see Chapter 5), with data gathered from both case studies. The data are coded and organised using tables, graphs and charts to ascertain patterns and emergent themes. From these patterns and themes, meaning is drawn, possible reasons explored, and conclusions reached in relation to the research questions. This chapter explores the findings of the data using a framework around teacher agency (Priestley et al. 2015) in order to obtain meaning from the results. It concludes by reflecting on the limitations and practical value of the study and goes on to make some recommendations for future practice in IDL.

## Chapter 2

### Policy Context

*“Education policy should support the creation of a reinvigorated approach to 21<sup>st</sup> century teaching professionalism.”* (Donaldson, 2010)

#### 2.1 Introduction

Fluctuations between curriculum freedom and regulation have been a feature of Scotland’s history of curriculum development. In recent years, the introduction of CfE, has seen a less prescriptive approach being taken and much rhetoric around providing schools with more autonomy to make decisions, based on the needs of their individual context (Priestley and Biesta, 2013). Schools have been provided with flexibility in cultivating and growing their own curriculum, with teachers being put into the role of curriculum makers (Donaldson, 2010). The strand of general curriculum policy reform with which this thesis is concerned is IDL, particularly, how it is understood by primary practitioners and implemented at school level. This chapter will now explore the policy landscape surrounding its development, to provide a useful context for examining how IDL has been translated into practice in the primary sector.

#### 2.2. Supra Level

National curriculum policy in Scotland, as is the case globally, is heavily influenced by global trends and discourses. For example, many of the themes within the United Nations Educational Scientific Cultural Organization (UNESCO) document *The Treasure Within* (Delors, 1996), also run through CfE. *The Treasure Within* states that there are ‘four pillars of education’: ‘learning to know’, ‘learning to do’, ‘learning to live’ (together) and ‘learning to be’. These strongly resemble the four capacities of CfE namely, ‘successful learners’, ‘effective contributors’, ‘responsible citizens’ and ‘confident individuals’. Frequent references are made in *The Treasure Within* to ‘learning throughout life’, ‘global citizenship’, ‘health and wellbeing’, and these are subjects which are also prevalent in CfE, so the similarities are obvious.

Commentators such as Priestley (2002) and Sahlberg (2007) suggest that organisations, such as the Organisation for Economic Cooperation and Development (OECD), have helped homogenize policy in many instances and a form of ‘policy borrowing’ or ‘policy learning’ has emerged between many different countries. This occurs where features of overseas policies are taken and adapted to fit a new context. Similarities are evident, for example, between CfE in Scotland and the *New Basics* project in Queensland (2001), *The National Curriculum of New Zealand* (2007) and *The Ontario Curriculum* (2009). From these new curricula across the globe, it is possible to identify some recurrent themes, which can be directly linked to the emergence of IDL within the educational policy of Scotland. The most prominent of these themes will now be considered.

### *2.2.1 Plugging the Skills Gap*

Over the past few decades neoliberalism has become the dominant ideology, not only within the economies of countries worldwide, but also in other spheres of public life, including education (Erss, 2015). Apple (2001) argues that the aim of neoliberal education policy is to create a stronger link between the economy and education so that gaps in the skills market can be filled by young people entering the world of work. To believe that this is a simple process, however, is to underestimate the complexity of the situation (Humes, 2013). For example, skills which are acquired may not always match the types of jobs available at any given time or may be surplus to requirements during times of economic recession when jobs are hard to be found. Nevertheless, the idea that education should address skills deficits, identified by business analysts and economists, is a prevalent one.

As a result of this focus on skills, education has seen major changes since the 1980s, with a shift from teacher focussed approaches to learner focussed ones instead, that is from input to output. Erss (2015) observes that due to the rapidly changing global environment of economy and employment, and the swift advance of technology, which enables factual knowledge (as well as mis-information) to be accessed at the touch of a button, education now places less importance than formerly on the acquisition of knowledge, focussing instead on skills, and this is on a global scale.

Workers need to have strong literacy, numeracy and problem solving skills, skills in the use of technologies, social and emotional skills and the capacity and motivation to learn. When workers have the mix of skills that is well aligned with the needs of the most technologically advanced industries and when qualifications reliably reflect what workers can do, countries can develop a comparative advantage by specialising in these industries. (OECD, 2017, p5)

The role of knowledge and skills in education will be discussed further in the next chapter, but the development of IDL within educational policy can be seen to be directly linked to this growing trend, because IDL has been closely associated with the development of transferable skills.

### *2.2.2 Facing Uncertain Futures*

Another international trend which runs through many global curricula is the notion that today's young people are having to face more uncertain futures than in previous generations (Sinnema and Aitken, 2013). This is, in part, due to technological advancements which have been made in recent years and the creation of jobs which could not have been imagined, even 50 years ago. The argument then follows that students need to experience a curriculum that will equip them to face the unknown situations and challenges which await them in the future, and develop the problem solving, critical thinking skills which will allow them to do so. In 2016, for example, the International Society for Technology in Education (ISTE) launched a new version of *Standards for Students* to help teachers to prepare students "for work and life in this uncertain future" (ISTE, 2016, p2). And in Australia, the curriculum is placed in a context where futures of learners are difficult to predict (Australian Curriculum Assessment and Reporting Authority, 2010). IDL has been linked to the development of generic, transferable and problem-solving skills (Hiebert et al., 1996: Jones et al., 1996), so this trend has helped to bring it to the fore.

### 2.2.3 Competencies for Lifelong Learning

The notion of ‘lifelong learning’ emerged in the 18<sup>th</sup> Century when it was associated with ideas relating to social equality, social progress and social processes such as industrialisation. It came from a belief that human progress was reliant on the application of reason and science, which required people to engage not only in formal schooling, but also education that was ongoing (Rizvi and Lingard, 2010). Since then, the meaning of the term has evolved and in the 21<sup>st</sup> Century it has been linked to neoliberal concepts of the knowledge economy and holistic development as illustrated by the statement that learning must not only “...adapt to changes in the nature of work, but it must also constitute a continuous process of forming whole human beings – their knowledge and aptitudes, as well as the critical faculty and the ability to act” (UNESCO, 2006, p13). Publications such as ‘*Lifelong Learning for All*’ (OECD, 2004), have resulted in the phrase becoming more significant as a discourse applied to curriculum policy alongside other themes such as ‘citizenship’ and developing ‘skills for life’ and these have been associated with the need for students to acquire competencies required for contributing productively to the economy and society. The Norwegian National Curriculum, for example, states a need for citizens’ competence to understand processes in society and to have an impact on them (Ministry of Education and Research, 2006).

According to the OECD,

A competency is more than just knowledge and skills. It involves the ability to meet complex demands, by drawing on and mobilising psychosocial resources (including skills and attitudes) in a particular context. (OECD, 2005b, p4)

The focus on competencies is evident in the OECD report on, the *Definition and Selection of Competencies (DeSeCo) Project*, which states that individuals,

.... face collective challenges as societies – such as balancing economic growth with environmental sustainability, and prosperity with social equity. In these contexts, the competencies that individuals need to meet their goals have become more complex, requiring more than the mastery of certain narrowly defined skills. (OECD, 2005b, p4)

The more recent *Teaching for Global Competence in a Rapidly Changing World* (OECD, 2018), illustrates that competencies are still high on the global policy agenda.

Policies, such as these, have emphasised the need for young people to acquire key skills which cannot be taught discretely, but instead blur disciplinary boundaries, integrate knowledge, and require application within real life contexts (Rychen and Salganik, 2003). Sinnema and Aitken (2013), suggest that, across different countries, the terms competencies, capabilities, capacities, interdisciplinarity and cross curricular all have similar meanings. So, while capacities and interdisciplinarity feature strongly in Scotland's CfE, the Australian curriculum refers to capabilities, New Zealand's national curriculum details five key competencies and Northern Ireland's curriculum outlines cross curricular skills. What all these terms have in common is the prioritisation of students experiencing learning in stimulating, relevant and challenging contexts where disciplinary boundaries are not clearly delineated.

#### *2.2.4 Pupil Voice*

Another significant aspect of the new curricula is the emphasis on the need for pupils to have a voice, with regards to their own learning experiences. This may be seen as a direct result of the United Nations' *Convention on the Rights of the Child* (United National General Assembly, 1989), which details children's rights at school, including - their right to be heard, their right to have their views considered in decisions which affect them and their right to be consulted about school matters, including that of the curriculum and assessment procedures. In Wales, a document which is reflective of this is '*Listening to learners*'. In the Australian Curriculum, schools are advised to use pedagogical approaches that account for students' needs, interests and the school and community context (Australian Curriculum Assessment Reporting Authority, 2012). The prominence of interdisciplinarity is closely related to this policy trend because an aspect of IDL is that tasks are responsive to the curiosities and interests of the child and purposeful to them.

### 2.2.5 Teachers as Curriculum Makers

Priestley and Biesta (2013) note that another Supra trend of the new curricula is that teachers have been increasingly positioned as central agents of change, in terms of curriculum making. This has resulted in less prescriptive advice and increased levels of autonomy at school level.

Teachers are now expected to have much broader roles, taking into account the individual development of children and young people, the management of learning processes in the classroom, the development of the entire school as a “learning community” and connections with the local community and the wider world. (OECD, 2005a)

In New Zealand, for example, in 2007 the national curriculum significantly increased the power schools had to design and shape their own curriculum. IDL is an example of practice which relies heavily on individual teachers to create and design tasks. This is partly because it is associated with the interests of the child (as outlined in section 2.2.4) which means planning responsively to what individuals and groups of children want to learn. Planning an IDL activity differs significantly from following a pre-planned programme of work in maths or language for example. It is a thought intensive process which requires time and collaboration (Klein, 2009).

The international curricular trends, outlined above, provide the global backdrop for IDL coming to prominence in the Scottish curriculum. But what advice *has* there been for teachers?

### 2.2.6 Pedagogical Advice

At the Supra level the OECD's *Practitioner's Guide* (Groff, 2012) was published, in order, to give teachers, guidance on pedagogy following shifts in educational policy. This document is rooted in social constructivist theories of education, and advises, that for effective learning to take place, the context is of vital importance and so is the ability of students to socially interact with others during the learning process.



The document identifies seven principles which are –

- Learners at the centre
- The social nature of learning
- Emotions are integral to learning
- Recognising individual differences
- Stretching all students
- Assessment for learning
- Building horizontal connections

The document states that “..all the principles should be present in a learning environment for it to be judged truly effective” (Groff, 2012, p11). The principle of ‘building horizontal connections’ seems directly related to IDL which is concerned with enabling students to integrate knowledge from across the disciplines. The advice provided, however does little to give teachers practical guidance or examples of how to implement effective tasks in the classroom, and with regards to interdisciplinarity, very little has been offered to provide clarity on its nature or purpose.

## **2.3 Macro Level**

The aim of this section is to provide a contextual description of the Macro policy context but a more detailed analysis will follow in Chapter 6.

In 2006, *A Curriculum for Excellence: Progress and Proposals* document was published. One of its’ stated goals was to “..give teachers more freedom to teach in innovative and creative ways” (Scottish Executive, 2006a, p16). Here, interdisciplinary and active approaches to learning were overtly favoured. The political and historical contexts of IDL within Scotland will now be considered.

### *2.3.1 Historical Context of IDL*

Historically, the integration of subjects has been a controversial topic in Scotland. This can be construed as a battle of paradigms (Priestley, 2009). On the one hand, primary education has had a tradition of

teaching thematically, with its roots in, the influential, 1965 *Primary Education in Scotland Memorandum* (SED 1965). On the other hand, secondary education is firmly rooted in the teaching of traditional subjects. *The Munn Report* (SED 1977), (a seminal document which looked at a restructuring of the Scottish curriculum), did little to change the curriculum structured round discrete disciplines within the secondary sector. It did, however, identify inherent problems in the isolation of traditional subjects, namely fragmentation and poor coverage of cross curricular issues. According to Kirk (1982), this report did not abandon the notion of interdisciplinarity, but gave strong tacit support to thematic teaching, and was critical of narrow subject-based approaches. It therefore left the door open to future debate about interdisciplinary provision. This debate re-emerged in the late 1980s and early 1990s, when the 5-14 Curriculum was developed. By the year 2000, however, the government had begun to look towards creating a new curriculum.

### *2.3.2 Interdisciplinary Learning within CfE*

IDL can be seen as one of the curriculum changes which has been introduced in response to issues highlighted around the Scottish curriculum by the OECD. This is evident in the statement that CfE is “..... helping us to meet the concerns raised in the recent Organization for Economic Co-operation and Development (OECD) report on Quality and Equity in Schooling in Scotland” (Scottish Executive, 2008, p4).

When the very first CfE document emerged in 2004, it set out new values, purposes and principles for Scottish Education. Seven principles of curriculum design were given as ‘Challenge & Enjoyment’, ‘Breadth’, ‘Progression’, ‘Depth’, ‘Personalisation & Choice’, ‘Coherence’ and ‘Relevance’. The sections on ‘Breadth’ and ‘Coherence’ allude most strongly to the use of interdisciplinary practices.

Breadth – All young people should have opportunities for a broad, suitably-weighted range of experiences. The curriculum should be organised so that they will learn and develop through a variety of contexts within both the classroom and other aspects of school life. (Scottish Executive, 2004, p17)

Coherence - Taken as a whole, children's learning activities should combine to form a coherent experience. There should be clear links between the different aspects of young people's learning, including opportunities for extended activities which draw different strands of learning together. (Scottish Executive, 2004, p17)

This document also says that one of the main implications for teachers is that teaching across and beyond traditional subject boundaries will become more frequent. This message has been reinforced in many of the follow up documents which have been published.

As Ball (1990) observes, policies can be interpreted in multiple ways and what is enacted may not correlate to the policy makers intentions. One of the aims of this research is to explore how policy messages about IDL have been translated into classroom practice. How do teachers understand the term IDL and how do they plan for and implement this kind of work? Do teachers see interdisciplinarity as a way of giving children the experience of learning a variety of subjects using a contextual theme? Do they see it as a way of making the individual subjects more interesting and engaging for the children? Or do they think IDL is valuable for its own sake?

### *2.3.3 Skills*

As outlined above, skills have been a recurrent theme in global curricula, and this is related to what was discussed in section 2.2.1, about neoliberalism resulting in a focus on skills development rather than knowledge acquisition within educational spheres (Erss, 2015 and Apple, 2001). Problem solving and other transferable skills have been promoted with the rationale that these will allow young people to access jobs which may not yet exist, and IDL has been expounded as a way of developing such problem-solving abilities. These trans-national discourses are clearly evident in Scottish IDL policy guidance:

It provides opportunities for deepening learning, for example through exploring an issue, solving problems or completing a final project. (Education Scotland, 2012, p1)

[IDL] leads to a better, more rounded understanding of important ideas and to an increased competence in using knowledge and skills in transferable ways. (Education Scotland, 2012, p3)

It is worth noting, however, that these assertions are made with no apparent empirical foundation.

If we consider one of the key CfE publications, *Building the Curriculum (BtC) 1*, IDL is mentioned frequently and there is a heavy emphasis on IDL leading to the development of skills. The word ‘skills’ actually appears over 70 times in the text. When skills are referred to here, although application is alluded to in places, it is the *development* or extension of skills (and literacy skills in particular) which is overwhelmingly stressed. For example it is stated that, “.....interdisciplinary projects are likely to involve both research and a strong element of presentation and will provide valuable opportunities to extend language skills” (Scottish Executive, 2006b, p17).

A subsequent publication, *BtC4* is entitled ‘skills for learning, skills for life, skills for work’. As may be expected from the title of this document, ‘skills’ is mentioned constantly throughout, more than 300 times. This document also makes direct links between skills development and IDL. For example, *BtC 4* states, “The skills should be developed across all curriculum areas, in interdisciplinary studies and in all the contexts and settings where young people are learning” (Scottish Government, 2009, p2).

Similarly, in other documents, the development of skills (as opposed to application) is mentioned frequently in relation to IDL.

### *2.3.4 Facing Uncertain Futures*

The theme of students facing uncertain futures has been a recurrent feature at Supra level as discussed in section 2.2.2. The development of new technologies and changing labour markets has given rise to the notion of having to future proof students against uncertainties, and this is also strongly reflected in Scottish education as illustrated by one of the early CfE documents which said that one of the benefits of the new curriculum was that, “It enables us to anticipate changes and challenges which young people

will face in the future....” (Scottish Executive, 2004, p3). This was echoed in a report from HMIE in 2009 which states, “..it is clear that the future will require a population with the confidence and skills to meet the challenges posed by fast and far-reaching change” (HM Inspectorate of Education, 2009, p1). Within CfE, as illustrated above, IDL is associated with equipping students with these necessary skills.

### *2.3.5 Making Links and Connections*

Another theme which features strongly in relation to IDL is making links or connections across the curriculum. Most of the BtC documents refer to this, for example, “The curriculum should include space for learning beyond subject boundaries, so that children and young people can make connections between different areas of learning” (Scottish Government, 2008, p21). “Primary schools have major advantages in promoting coherence by helping children to see links between different aspects of learning within and across subjects and curriculum areas and in interdisciplinary studies” (Scottish Government, 2008, p32). Again, in the IDL briefing paper it states, “Interdisciplinary learning is a planned approach to learning which uses links across different subjects or disciplines to enhance learning” (Education Scotland, 2012, p2).

As will be discussed in the next two chapters, merely making links or connections across subject boundaries does not constitute IDL. This falls in line, rather, with a cross curricular definition. The question then is raised as to whether policy makers meant cross curricular rather than interdisciplinary, when devising the policies and whether they understood the difference between the two concepts. As noted above, Sinnema and Aitken (2013) point out that there are similarities between these terms however, there are also significant differences.

### *2.3.6 Pupil Centred Activities*

As noted in section 2.2.4, there has been a global curricular trend to emphasise student centred approaches to learning and increase pupil voice. Scotland’s CfE has addressed the issue of pupil voice, for example, when it highlights ‘personalisation and choice’ as a principle of curriculum design. One

of the earliest CfE documents states that the new curriculum should involve, "...planning programmes and activities to respond to the needs of individual children." (Scottish Executive, 2004, p16). The prominence of interdisciplinarity within CfE is closely related to this policy trend because an aspect of IDL is that tasks are responsive to the curiosities and interests of the child, "It can provide opportunities for mixed stage learning which is interest based" (Education Scotland, 2012, p1). The IDL Briefing Paper (Education Scotland, 2012), states that IDL work can be based on the interests of pupils and take place within contexts which are real and relevant to learners.

Another feature of the CfE documents is that of engaging pupils through interest-based learning. Engagement is mentioned frequently throughout the BtC documents and associated with making education more equitable. For example in *Building the Curriculum 5* it is stated that, "...through improved learner engagement, we will be able to raise levels of achievement for all children and young people, while ensuring they are safe, healthy, nurtured, active, respected and included and thereby narrow the achievement gap, resulting in equity" (Scottish Government, 2011, p48).

### *2.3.7 Teachers as curriculum makers*

In the introduction to this chapter, it was stated that CfE contains much rhetoric around providing schools with more autonomy to make decisions, based on the needs of their individual context (Priestley and Biesta, 2013). Schools now have more flexibility in cultivating and growing their own curriculum, than in previous years, with teachers increasingly being seen as curriculum makers (Priestley & Philippou, 2018). Sinnema and Aitken (2013) describe the situation in Scotland as being 'extreme' in this regard, compared to other countries, because CfE is non-statutory with much of the curriculum content given as guidance, emphasising the need for school development. While this kind of flexibility may seem attractive, it places high demands on schools and presupposes that all schools have staff with the experience, expertise and resources to carry this out successfully. It can also lead to discrepancies in terms of the quality of education that pupils experience.

As Reeves (2008) observes, Scotland has retained a high level of managerialism which remains a strong feature of the educational system at all levels. The hierarchical structures which exist ensure that local authorities have the power to exert pressures on head teachers to conform, and in turn, head teachers and senior managers can exert similar pressures on their staff. Whether a top-down or bottom-up approach is taken to IDL policy implementation, therefore, is highly dependent on the locality, context and culture of the school. This means that IDL may be developed in different ways in different schools which in turn means that students may experience an inequality of provision, depending on where they are situated.

### *2.3.8 Guidance for Practitioners*

As Reeves (2016) observes, on the Education Scotland (2016) website, teachers have been offered guidance on a wide variety of pedagogical themes which include – Interdisciplinary Learning, Active Learning, Games Based Learning and ICT, Creativity, Pupil Directed Learning, Open Ended Approaches, Coaching (as opposed to direct teaching), Outdoor Learning, Cooperative and Collaborative learning, Reggio Emilia, Partnerships for Learning and Sharing Practice for Effective Learning. This list is not exhaustive but serves to illustrate that the guidance being offered to teachers is wide, varied and arguably confusing. There is no clear relationship between any of the above approaches, they have no common reference point and they do not have any direct reference to a particular curricular framework (Reeves, 2016). It is not clear how teachers are making sense of IDL advice they have received and applying it in the classroom. Policy guidance for teachers around IDL will be further examined in Chapter 6.

## **2.4 Conclusion**

This chapter has highlighted key trans-national discourses and shown how Scottish policy at a Macro level has addressed them. Chapter 6 will explore policy more rigorously to examine the extent to which policy is coherent and clear. When considering the Meso and Micro levels of policy, with regards to IDL, little is known about the Scottish context. How is the practice of IDL being realised in schools and classrooms by the recent changes in national policy? The aim of this research is to shed a light on what

is happening in the Scottish primary context. This study will focus on uncovering how national and local policies have been interpreted by schools and teachers regarding their IDL work and how IDL policy is being implemented.

As Humes points out, “Many worthwhile ideas flounder on the operational obstacles which are placed in their way by existing practices, vested interests and fear of change” (Humes, 2013, p90). Added to this could be vague and conflicting policy advice and lack of clear guidance for pedagogical practice. The following two chapters will now review the literature in this area.



## Chapter 3

### The Nature of IDL

*“The demand is clear. To thrive in contemporary knowledge societies, young people need not only to develop insights and modes of thinking that are informed by a variety of disciplines but also to integrate these forms of knowledge effectively.” (Boix-Mansilla, 2006)*

#### 3.1 Introduction

As discussed in the previous chapter, within Scotland, debates around interdisciplinarity have transpired over many years and seminal documents such as the 1965 *Primary Education in Scotland Memorandum* (SED 1965) (which advocated the blurring of disciplinary boundaries through thematic teaching in primary schools) and *The Munn Report* (SED 1977) (which advocated the teaching of discrete subjects in secondary schools) illustrate contrasting views around how the curriculum should be structured. As a result, primary and secondary schools in Scotland are organised very differently. By advocating interdisciplinary practices and naming IDL as one of the four contexts for learning in a curriculum spanning pupils from early years to secondary stages, CfE has once again opened up questions around the nature of curriculum i.e. - What is the purpose of the curriculum? What outcomes and goals do we want to achieve? How should the curriculum be structured? What should the content of the curriculum be? What pedagogical strategies should be used to implement the curriculum? How should we assess the learning? What is more, as discussed in Chapter 2 (section 2.3.7), teachers have increasingly been put into the role of curriculum makers (Priestley & Philippou, 2018) and how they are tackling these questions and making sense of curriculum initiatives such as IDL remains unclear. This is an area this study seeks to address.

This chapter will provide the first part of a literature review, examining the educational literature on interdisciplinarity to gain conceptual clarity around this subject. The aim of this chapter and the next will be to explore the debates around interdisciplinarity which have arisen since the introduction of CfE and to develop an understanding of the term IDL before considering what factors are necessary for it to be implemented successfully in the classroom. This chapter will provide a conceptual framework of

IDL, with which to compare what is happening today in primary schools, and to derive a set of research questions, which can be used to provide some clarity on current practice within Scottish primary classrooms.

### **3.2 Disciplinary Learning**

As outlined in the previous chapters, IDL has been named as one of the four contexts of learning in CfE alongside, curriculum areas and subjects, ethos and life of the school and opportunities for personal achievement and has become closely associated with creativity, higher order thinking skills, progress and innovation (Bruun and Toppinen, 2004). However, in recent years some have vigorously argued against the reforms of CfE and, in particular, the moves towards interdisciplinarity. One of the arguments in favour of teaching discrete disciplines and subjects, is that the worth of doing this has been evidenced over many years. Lindsay Paterson, a strong critic of CfE reforms, has made the point forcefully:

The reform neglects the crucial importance of subjects, of the disciplinary structures into which human beings have refined their knowledge over centuries. Where they are mentioned it is tokenistically. Where they are denigrated it is as if they were self-evidently discredited because they are old (as in the dismissive phrase ‘traditional subject boundaries’). There is no sense at all that the disciplines are important precisely because they are old, that each generation has a responsibility to renew them, not throw them away, and that, without attention to these necessary specialisms, inter-disciplinarity and this entire over-blown reform will amount to mere froth. (Paterson, 2009)

Here, Paterson conflates school subjects with disciplines and it is worth noting that these are not the same thing (see section 3.2.2). However, those who believe in the virtues of disciplinarity often hold that disciplines should be taught in isolation (Hunt, 1994), and that an interdisciplinary approach weakens a student’s ability to absorb subject knowledge. It is useful here to consider what constitutes a discipline.

### *3.2.1 Disciplines*

Klein (2009) points out that although the modern system of disciplinarity is little more than a century old, the etymology of the term ‘discipline’ is ancient with the Latin root of ‘disciplina’ pertaining to the instruction of disciples in an educational setting. It was not until the late nineteenth and early twentieth centuries that disciplines were divided and separated into individual academic divisions. A discipline can be said to be a way of structuring and organising knowledge into a set of objects or subjects using theories, concepts, methods and procedures.

Bernstein (1990) differentiated between horizontal discourses which allow knowledge to be recontextualised in an informal, context dependent, everyday way from vertical discourses which structure knowledge into highly organised, hierarchical disciplinary domains. Disciplines change and are shaped over time by external influences and intellectual development and come to produce a particular view of the world which exerts a certain amount of authority and influence. Defining a discipline is complicated by the fact that some disciplines are more formal and more structured than others. For example, distinctions have been made between sciences which are highly subject specific and mathematical (such as physics and chemistry) and those which are less formal such as the social sciences. Whitley, (1978) for example, refers to the former as restricted sciences and the latter as configurational sciences. Toulmin (1972) goes a step further and differentiates between what he calls ‘compact disciplines’ like physics and biology, ‘would be disciplines’ like the behavioural sciences and ‘non-disciplinary activities’ such as ethics and philosophy.

Lenoir (1997), suggests that disciplines can be categorised into those which are concerned with the construction of reality, those concerned with the expression of that reality and those which ensure we have a relationship that reality. The following table may be helpful in categorising what can be termed the Sciences, the Humanities and the Arts using typical school subjects.

Table 1: Disciplines – developed from Lenoir (1997)

Construction of reality	Expression of reality	Ensuring a relationship with reality
<b>Sciences</b>	<b>Humanities</b>	<b>The Arts</b>
Biology	Language	Music
Physics	Modern Studies	Drama
Chemistry	Geography	Dance
Maths	History	Art

Klein (1990) makes the point that some disciplines are more receptive to changes and subject to growth than others. As new fields of study are developed the lines between the traditional disciplines are often blurred and subjects can become hybrids drawn from different disciplinary areas e.g. biochemistry and geophysics. Some have a greater propensity to borrow from other disciplines, for example, since its inception psychology has been known to borrow from maths, physics and physiology. In so far, then, as a discipline has evolved and developed over time, it could be argued that there is no such thing as a ‘pure’ discipline and school subjects are often drawn from more than one disciplinary area.

### 3.2.2 Subjects, Disciplines and the Curriculum

Martin (1970) claims that proponents of the argument that disciplines should be taught in isolation seem to favour what can be termed as, the ‘theoretical’ disciplines such physics and economics rather than the ‘practical’ disciplines such as dance and teaching. This argument then excludes many subjects which have come to be part of the school curriculum today. Martin explores the relationship between the disciplines and school subjects and analyses the view that ‘disciplines only should be taught’. She criticises this argument claiming that it is inherently flawed for a number of reasons. One is that there is a distinction to be made between how traditional disciplines influence school subjects, as opposed to subject matter. If the disciplines are used to govern the selection of subjects themselves, each school subject would correspond to one of the disciplines. Not every discipline would have to be included in the school’s curriculum, but every subject would be drawn directly from one of the main disciplines.

If, however, disciplines are used to govern subject matter, a school could choose to organise subjects in such a way that the content would come from more than one discipline. In fact, many school subjects taught today could be said to be pluralistic in nature. If we look at the subject of modern studies or technology, for example, the core programmes of work of each of these can be seen to be taken from a variety of traditional disciplines. Priestley (2009), concurs with Beane's view that subjects such as social studies, for example, illustrate how boundaries between disciplines have been redrawn. This has to weaken the arguments of those such as Paterson (2009) who imply that school subjects, drawn from the disciplines, have remained static and unchanged over time.

### *3.2.3 Social Realism and arguments against IDL*

The work of Bernstein (1990) has influenced the social realists of today, who tend to support discrete subject teaching. While social realist literature is concerned with illustrating how knowledge is socially formed into disciplines and how disciplines have gained their academic legitimacy from social factors, it could be argued that they do not make a clear case for justifying the teaching of discrete subjects and yet they advocate this as being the best way of structuring the education system.

Social realists view the acquisition of powerful, disciplinary knowledge as a way of giving young people a chance to become upwardly mobile in social terms. They see the blurring of subject boundaries as being a danger in the sense that it may lead to students experiencing a lack of exposure to important, intrinsic knowledge contained within the traditional disciplines. They hold that this is potentially harmful to young people whose life chances could be adversely affected as a result. Young (2008) for example, concludes that the boundaries between school and non-school knowledge are being weakened due to the increased accountability of schools and the drive to provide a more economically relevant curriculum. He draws on the work of Bernstein (1990) to suggest that the weakening of these boundaries means to deny those from socially disadvantaged backgrounds the chance to acquire vital information, needed to gain access to a better life.

Goodson (1992) recognises the creation of school subjects to be a political process which "... provide a window on the wider educational and political culture of a country" (Goodson, 1992, p3). Young and Muller (2010) also recognise this and warn against a curriculum which is rigidly content focussed and may perpetuate the interests of the dominant bodies who determine subject content. However, they also warn against a curriculum which promotes facilitative rather than directive teaching, formative rather than summative approaches to assessment and the integration of school subjects and say these are "among the expressions of this boundary weakening" (Young and Muller, 2010, p18). They recognise that children come to school already having knowledge and experiences but see the role of schools as that of providing young people with specialised knowledge that they would not ordinarily have access to at home. The argument then follows that, to provide this specialised knowledge, specialised teachers are required to teach their specialised subjects and this is illustrated by Young and Muller when they say "These tendencies are not insurmountable obstacles for well resourced schools that are able to recruit teachers with strong subject qualifications who can fill in the gap" (Young and Muller, 2010, p23). The assumption here is that the acquisition of this 'powerful knowledge' is dependent on a teacher's specialised subject knowledge and focusing on integration or interdisciplinarity could disadvantage pupils.

#### *3.2.4 Benefits of an interdisciplinary approach*

In answer to those who argue that IDL weakens a student's ability to absorb knowledge, supporters of IDL, such as Beane (1997), propose that far from weakening a student's ability to absorb subject knowledge, knowledge is called forth during the contexts of the IDL task. This may be compared to a real-life situation such as fixing a car engine. For example, when a mechanic is faced with a broken-down engine, he or she does not stop to think about whether what they are doing requires mathematical, chemical or disciplinary knowledge from the field of physics, they simply draw upon their existing knowledge and skills to solve the problem facing them. If, therefore, an IDL task is relevant and engaging enough for a child, it should mean that disciplinary boundaries are blurred, and the application of knowledge and skills means connections are made naturally and instinctively.

Many within the educational spectrum claim that an interdisciplinary approach is beneficial to students. Duran, Duran and Worch (2009) draw upon the work of cognitive psychologists to claim that, during IDL work, learning is enhanced through the establishment of connections in the brain. They say that establishing complex learning experiences makes for more effective learning as neurons have to perform multiple operations at once (Cohen, 1995).

Jones (2009) suggests that interdisciplinary techniques go beyond multidisciplinary or cross curricular approaches (these terms will be explored later), by allowing students to see different perspectives, work in groups and make synthesizing of disciplines the ultimate goal. Duerr (2008) argues that students, through interdisciplinary integration, can apply their knowledge and understanding to real world scenarios. Staples (2005) claims that integration of interdisciplinary studies offers students advanced thinking skills and enhanced ability to solve real life problems. Many argue that this is a powerful and engaging strategy that leads to sustained and transferable learning (Hiebert et al., 1996; Jones et al., 1996).

Research carried out by Skelly and Zajicek (1998), with children of elementary school age, found that students who participated in an interdisciplinary garden programme, where environmental disciplines were combined with other disciplinary areas, developed more positive environmental attitudes than those who did not. Case studies of curriculum integration in American middle schools (Brazee and Capelluti, 1995; Pate et al., 1997) have shown that student-centred designs for curriculum integration respond well to the educational and developmental needs of early adolescents. Hmelo-Silver and colleague (2009) showed that students in higher education, who participated in a problem based interdisciplinary approach were able to construct a deeper understanding of the concept of transfer than students who did not. In their study, students involved in this type of work were also able to apply their understandings of the concept to generate recommendations for improvements of instructional methods. Derry and colleagues (2006), demonstrated similar results. Other studies, set in both primary and secondary schools, are cited by Hinde (2005) as demonstrating benefits from 'integrated or

interdisciplinary' methods. These resulted in increased engagement, more positive attitudes, and improved effort of students due to the use of relevant contexts.

Authors such as Youngblood (2007) and Duerr (2008), support the view that interdisciplinarity is a tool, and hold that the key to interdisciplinary success is methodology. It is not enough to merely transmit disciplinary knowledge using text books or other means to students: instead students must be stimulated, challenged and encouraged to apply this knowledge in creative ways and this can be done through an interdisciplinary process. This suggests that pedagogy is important in ensuring the success of IDL. Youngblood and Duerr both claim that interdisciplinary techniques will go further than helping students synthesize and integrate knowledge, but will also enrich a student's lifelong learning habits, academic skills and personal growth.

Adler and Flihan (1997) claim that many teachers involved in IDL work also ascribe benefits such as an increased enthusiasm for teaching and a renewed interest in their profession. Teachers also find students being more engaged in their learning and have increased opportunities for collegiate working. Adler and Flihan acknowledge, however, that the benefits of IDL are often not firmly grounded in theory and research, as many of the practical accounts are mainly anecdotal and so cannot clearly inform future practice. They say that interested researchers in this area are in an opportune position to expand upon our knowledge of IDL in a number of areas.

Given the perceived benefits of IDL for children and teachers, the concern is, that if teachers have merely a vague notion about what the term 'interdisciplinary' means but do not fully understand it, they will not be in a position to develop and implement it successfully. If teachers are unsure or fuzzy about what interdisciplinarity is, then how can the desired educational outcomes be recognised, planned for, achieved or assessed? This is an area which is in need of research within the Scottish primary school sector. What do teachers understand when they think of IDL and how is this translated into their classroom practice? The term IDL will now be examined in more detail.



### **3.3 Defining IDL**

Defining IDL is difficult for a number of reasons. There is a general lack of familiarity among educationalists with interdisciplinary scholarship and a relatively small amount of work published on the subject (Klein, 1990). No synthesised body of discourse exists to clarify thinking on the subject and discussion instead is spread across professional, academic, governmental and industrial literatures. Wineburg and Grossman (2000) argue that there is also a deficit of research around interdisciplinary approaches, which has led to difficulties in evaluating IDL work.

The term ‘interdisciplinary’ itself, is an amorphous one, which can cause confusion. Part of the reason for this is that it is used to describe very disparate and unrelated activities. For example, the term can be applied to: a) – primary school children engaging in topic work; b) – different departments within a secondary school or university, collaborating on a project for students; c) - representatives from Social Work, Housing, Health and Education working together to gain a holistic view of a client’s needs. These are only some of the many contexts, which the umbrella term of interdisciplinarity covers.

There are many meanings associated with interdisciplinary work, and the lack of clarity from policy documents on the subject (explored in Chapters 2 and 6) means that it is difficult to envisage that all teachers and those involved in education view interdisciplinarity through the same lens. Exactly what teachers understand by the term ‘interdisciplinary learning’ is not clear. How teachers plan and implement this approach within the classroom setting is also unclear and there is a significant deficit in research in this area within Scottish Education.

Given that IDL is a strong feature of CfE, and is being advocated as good practice within schools, it seems very relevant and important to understand what the benefits of IDL are, what are its key components, and to gain an understanding of how teachers are implementing IDL work in their classrooms. Before going further therefore it is necessary to examine interdisciplinarity in more detail and provide clarification of the term for a clearer understanding.

### *3.3.1 Interdisciplinarity and Integration*

In the United States of America (USA) the terms ‘integrated’ or ‘integrative learning’ are often used to represent what other academics refer to as ‘interdisciplinary learning’. For example, Beane (1997) writes about the ‘Integrated Curriculum’ and Klein (2005) refers to ‘Integrative Learning and Interdisciplinary Studies’. Lake (1994) claims that the terms ‘integrated curriculum’ and ‘interdisciplinary curriculum’ are practically synonymous. Central to both is the idea of students exploring knowledge in various subjects which relate to certain aspects of their environment and cutting across disciplinary boundaries. During the rest of this thesis, therefore, the terms interdisciplinary learning and integration will be used synonymously.

### *3.3.2 Academic definitions*

When academics define the term IDL, many go further than merely suggesting a linking or crossing over of disciplines or disciplinary boundaries, they say that interdisciplinarity involves a fusion of knowledge to a level which would not be possible through working within disciplinary boundaries alone. Repko (2008) draws on a number of definitions of interdisciplinary studies and defines it in the following way:

Interdisciplinary studies is a process of answering a question, solving a problem or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline and draws on disciplinary perspectives and integrates their insights to produce a more comprehensive understanding or cognitive advancement. (Repko, 2008, p12)

This definition of interdisciplinary education contains a recurring theme which appears time and time again within the academic literature, namely that of students being involved in solving problems or finding solutions to questions which are pertinent to them. An important aspect of this, which is detailed in the definition above as ‘cognitive advancement’, is that participants in IDL further their knowledge and understanding beyond that which would be possible by studying compartmentalised disciplines individually. In doing so they are able then to transfer their skills and knowledge to familiar and

unfamiliar contexts. As Humes (2013) observes, this idea of pupils being engaged in various types of problem solving, moves away from the traditional notion of students simply acquiring academic knowledge, towards the student being able to apply their knowledge and skills to practical contexts.

According to some researchers, interdisciplinary learners make connections between the disciplinary perspectives and *integrate* this information to create artefacts, explain or solve problems (Boix-Mansilla and Gardner, 2003). This idea of integrating existing disciplinary knowledge is a key feature in differentiating interdisciplinary work from cross curricular or multidisciplinary activities. If we want to know, therefore, if IDL is being carried out effectively in schools we have to look at whether young people are being given opportunities to apply their skills and knowledge and integrate or synthesise information. This gives rise to the question of what kind of tasks are teachers planning when they implement IDL work in the classroom.

### *3.3.3 Application of knowledge*

Boix-Mansilla (2004) claims that there are four core premise which underlie interdisciplinarity. The first premise is that knowledge is something which has to be applied, rather than merely being acquired. Individuals must be able to use and apply their understanding of a concept in various situations and contexts. The second premise is that interdisciplinary understanding is strongly informed by disciplinary insights. Individuals must have grounding in two or more disciplines in order to draw on them to address the interdisciplinary task. The third premise is that the disciplinary insights are integrated during the interdisciplinary process, not merely juxtaposed. As a result, understanding is enhanced further than would have been possible otherwise. The fourth premise holds that interdisciplinary work must be purposeful and that cognitive advancement is the main aim. Scholars such as Pring (1976), hold the belief that the primary focus of education is about the development of mental activity, and is concerned with the advancement of knowledge which ties in with Boix-Mansilla's view of IDL.

Within Boix-Mansilla's core premises there is a focus on performance. Individuals engage in a given task in order to stimulate the interdisciplinary process, but the task also serves to show how well the

individual has understood the concepts they are working with and how this knowledge and understanding has been applied and developed. The task then is an external part of the process, which can be used for assessment but interdisciplinarity itself is an internal activity in the sense that it takes place within the mind of an individual.

If we view interdisciplinary learning in this way, we should no longer have to be concerned about manufacturing a curriculum where different subjects are linked together tenuously or otherwise, either through themes in the primary sector or inter-departmental working in the secondary sector. The role of the teacher, instead, is to direct and facilitate the internal synthesis of disciplinary knowledge of students using a catalyst which is the challenge, question, problem or task posed.

### *3.3.4 Main Features of IDL*

Based on the literature above, two diagrams have been created which illustrate the essential elements of an IDL task and the relationship which exist between these core components. See Figures 1 and 2 below.

*Figure 1: Core Elements of IDL (adapted from Boix-Mansilla, 2004)*

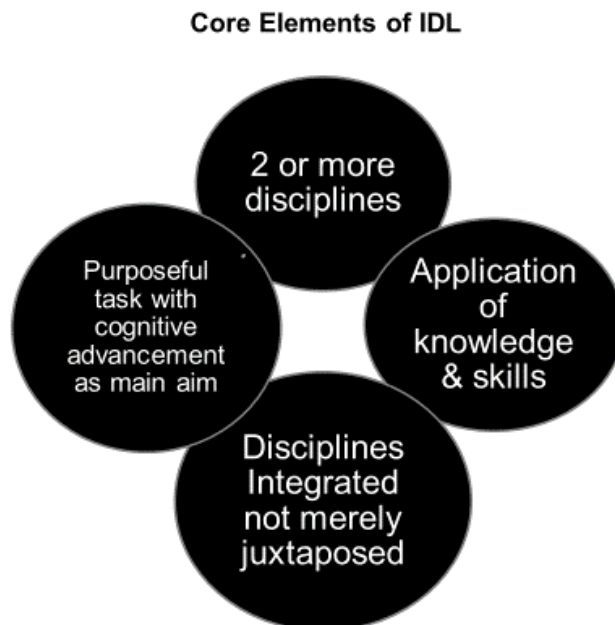
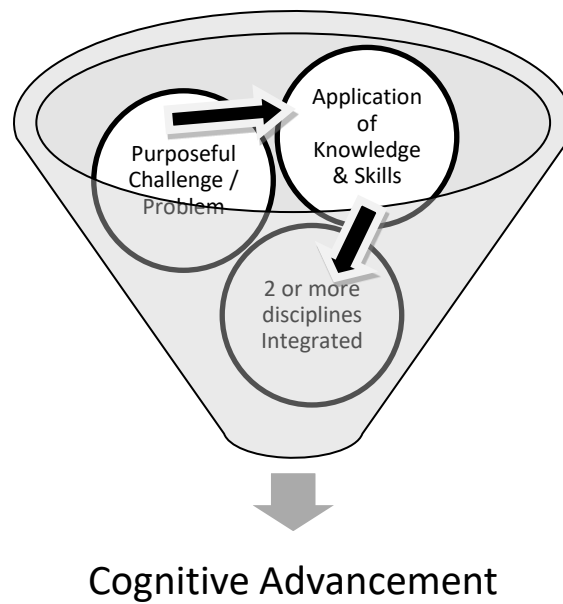


Figure 2: Relationship Between Core Elements of IDL



While Figure 1 details the four core premises of IDL, Figure 2 illustrates the relationship between these elements, showing that an interdisciplinary task must begin with a problem, question or challenge which is meaningful to the learner. This has to be sufficiently challenging and purposeful to impel the student to apply and integrate their knowledge and skills from two or more disciplinary areas in order to solve or answer it. In the process, cognitive advancements will be made in the disciplinary areas involved.

### 3.4 Conclusion

If IDL involves two or more disciplinary areas and necessitates the application of existing knowledge and skills, it is important to consider if this is happening within classrooms. Do primary school teachers provide opportunities for children to apply their knowledge and skills during IDL work and if so how do they do this? Do they plan IDL tasks to incorporate more than one discipline and are these integrated rather than juxtaposed within the task? Do primary school teachers make IDL tasks relevant and purposeful to pupils and if so how is this done? If this is not happening, then the benefits of IDL will not be attained by students.

This chapter has formed the first part of a literature review in areas of knowledge, disciplines, the purpose of schools, benefits and challenges of adopting an interdisciplinary approach, and the main elements of IDL. The following chapter provides the second part of this literature review by considering in more depth, the pedagogical frameworks which surround an interdisciplinary approach.

## **Chapter 4**

### **Pedagogical Approaches to IDL**

#### **4.1 Introduction**

While the previous chapter reviewed the literature around the nature of interdisciplinarity and explored some main dimensions of the concept, this chapter will consider the literature concerning pedagogical approaches to IDL. It will begin by exploring some of the variants of practice offered by theorists then consider a typology of practice within primary schools under the categories of disciplinary, cross curricular, multidisciplinary and interdisciplinary learning. Next, subject centred and child centred frameworks for IDL will be outlined for the purpose of determining an appropriate starting point for IDL tasks and the tensions, contradictions and weaknesses of these will be examined. Factors which are drivers in facilitating interdisciplinarity will then be discussed before finally considering elements which may affect the agency of teachers in pursuing an IDL approach.

#### **4.2 Models Which Blur Disciplinary Boundaries**

Wineburg and Grossman (2000) assert that, although there are many definitions and frameworks relating to IDL, there has been very little consensus reached about the phenomenon. They attribute this to the fact that there is an absence of a rigorous research base for IDL, which has led to difficulties in evaluating it. Some of the organised frameworks and descriptors around this area include: thematic/multi-disciplinary and interdisciplinary (Drake, 1991 and Jacobs, 1989); fused, correlated and core (Vars, 1991); cross curricular (Barnes, 2007); immersed and networked (Fogarty, 1991); and curriculum integration (Beane, 1997).

An overview of practice which is relevant to the Scottish primary school setting will now be considered under the following headings -

- disciplinary learning - disciplines are studied discretely,
- cross curricular learning - disciplines are linked to a theme,

- multidisciplinary learning – multiple disciplines are involved in activities but are juxtaposed rather than integrated
- interdisciplinary learning – two disciplines or more are integrated during tasks.

### 4.3 Continuum of Practice

#### 4.3.1 Disciplinary Learning

Disciplinary learning occurs when there is the teaching of separate disciplines. Within the primary school, subjects are largely drawn from discrete disciplinary areas for example, language, maths, science, art etc. These discrete subjects are taught in isolation. In secondary schools, while subjects such as modern studies may be seen as quasi-disciplinary (i.e. drawn from more than one discipline), the teaching of subjects is generally done by different specialist teachers. In primary education, however, the same teacher teaches most subjects to the one class. This type of approach provides students with a knowledge base in the disciplines, but it can mean that students find it difficult to make links between the subject areas (Fogarty, 1991). This difficulty was highlighted by the influential *Munn Report* (1977) which identified inherent problems of fragmentation and poor coverage of cross curricular issues when teaching subjects in isolation. Figure 3 below illustrates that when disciplines are taught discretely they remain as separate entities.

Figure 3: Disciplinary Learning



#### 4.3.2 Cross curricular Learning

When cross curricular learning is engaged in, the constituent subjects may relate to a particular topic, but are still experienced separately. Discrete subjects are taught but related to the context of a theme. This corresponds with Fogarty's (1991) webbed approach. Indeed, primary schools for years have used



themes through which to teach the various subjects. *The Primary Memorandum* (1965), for example, directed that primary schools had a more contextualised curriculum, linking the various curricular areas through topics. This led to many teachers using a ‘topic web’ approach to planning around themes such as ‘The Romans’, ‘People Who Help Us’ and ‘Climate Change’.

Topic webs are similar to mind maps, which have an idea or theme in the centre then separate areas of the curriculum plotted around, with lessons relating to the central theme under each subject heading. For example, if a class are studying a science topic about ‘The Weather’ the children, during language time, may write a story about a stormy night. They will still be focussing on the skills of writing but the context for their story comes from the topic. During maths time they may count the number of rainy days and sunny days in the month and make a chart with this information. Again, they will be focussing on mathematical data handling skills during this exercise, but the context comes from the topic. Here, discrete subjects are studied separately but linked to the context of the central theme.

*Figure 4: Cross Curricular Learning*

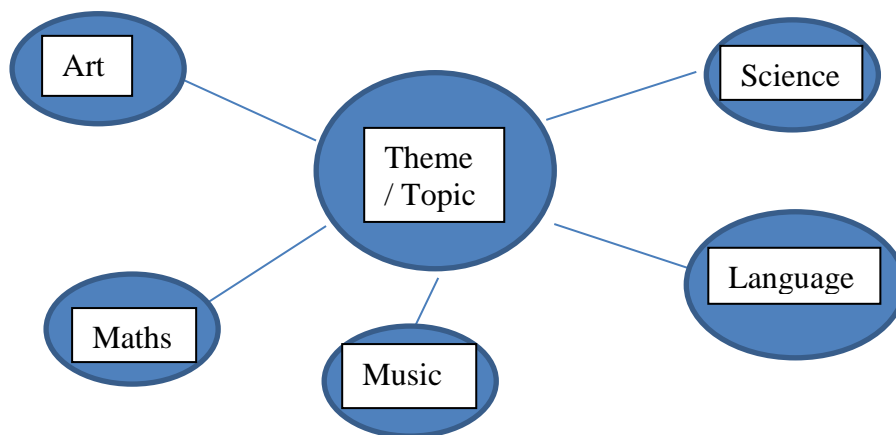


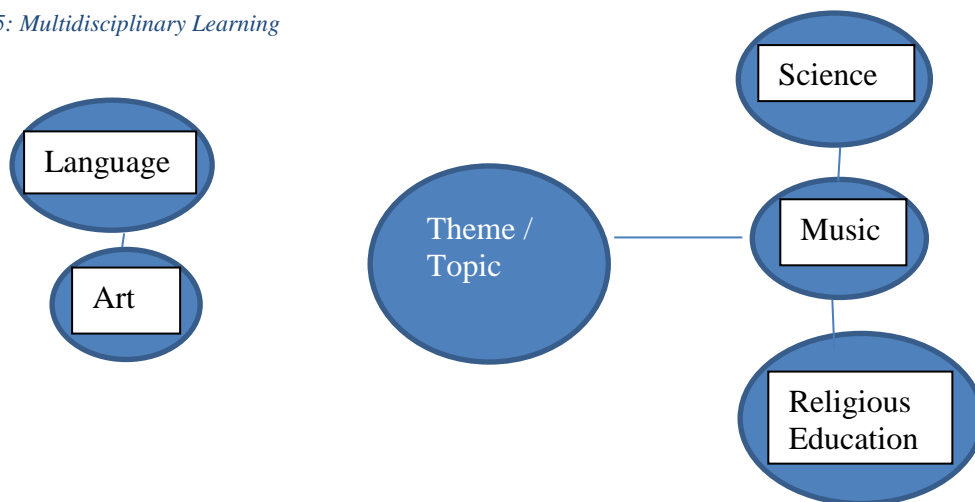
Figure 4 above illustrates how the disciplines are linked to the context of the theme or topic but taught discretely. Lenoir and colleagues (2000) use the term ‘pseudo-interdisciplinary’ to refer to this type of approach, which they found to be common among teachers in Quebec when engaging in what they deemed to be ‘interdisciplinary practices’. As they point out, however, this is not genuinely interdisciplinary and can actually be detrimental and undermining to the social subject, which constitutes the topic. This is because learning intentions come mainly from the other disciplines,

resulting in the reduction of any meaningful level of learning about the social subject itself. What is important to recognise here is that cross curricular activities or tasks, contain only a singular disciplinary focus.

### 4.3.3 Multidisciplinary Learning

Multidisciplinary learning can be differentiated from cross curricular learning because, tasks do involve more than one discipline, however, the disciplines are juxtaposed and not integrated. Dowden (2007) points out that Beane (1997) and Jacobs (1989) accept Meeth's (1978) definition of a multidisciplinary curriculum as that involving the juxtaposition of several disciplines focused on one task but with no direct attempt to integrate. Figure 5 below illustrates how a number of disciplines can be involved in a task, and may or may not be related to a theme, but they are not integrated during the task.

Figure 5: Multidisciplinary Learning



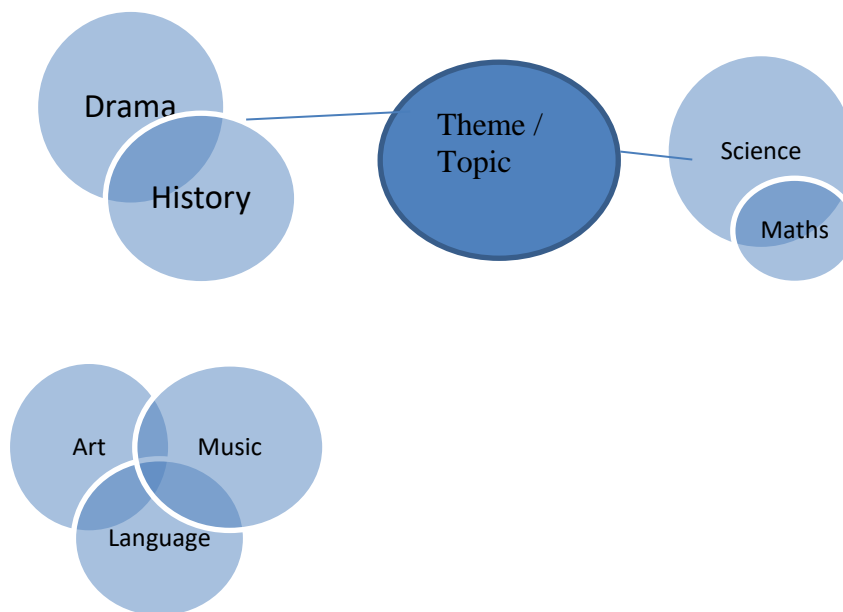
An example of this would be if students in the primary class were asked to create a poster involving mathematics and language by firstly constructing and uploading a mathematical table on to their computer and then using their language skills to populate their poster with the relevant information. Although this activity contains two disciplinary insights, students may compartmentalise the disciplines by undertaking each part of the task separately (e.g. they go to the computer suite to complete the maths

section of the task and upload their tables and then return to the classroom to begin to work on the language aspect). Disciplines are not integrated during the task. Within multidisciplinary tasks, some of the essential elements which constitute IDL (outlined in section 3.3.4 above) may be present but not all of them are.

#### 4.3.4 Interdisciplinary Learning

The fourth model is the interdisciplinary approach which propels students to draw on their existing disciplinary knowledge and skills (from two or more disciplines), in order, to complete a sufficiently challenging activity or problem which they have been set. This differs from multidisciplinary in that boundaries between the various subjects are blurred in the process, resulting in cognitive advancement of the respective disciplines (Repko, 2008). As can be seen from Figure 6 below, during interdisciplinary activities, the disciplines are integrated during the process of undertaking the tasks which may or may not be related to a central theme as this figure shows.

Figure 6: Interdisciplinary Learning



## **4.4 Pedagogical Approaches**

While there are many models and theories about integration and interdisciplinary working, there appears little consensus on how an interdisciplinary curriculum, which allows students to integrate and synthesise knowledge, should occur or what it should look like. As outlined in the introduction to this chapter, there are a whole host of different models of integrated or interdisciplinary practices. What these approaches have in common, however, is that they can generally be categorised into two main areas, namely: those which are subject centred, where disciplinary knowledge is foremost; and those which are pupil centred, where students are central to curriculum making and democratic practices are advocated. It has been argued that confusion stems from a lack of pedagogical understanding concerning the historical theories that underpin the various integrated models (Beane, 1997).

Dowden (2007), suggests, that to utilise a framework using just the two models of subject centred and student centred, is effective in simplifying the analysis of the discussion without having to sacrifice accuracy. These two approaches, therefore, will now be considered. The following section will briefly discuss the different historical contexts of both.

### *4.4.1 Historical Influences*

Subject centred approaches have their roots in the late 19<sup>th</sup> Century work of German philosopher Johan Friedrich Herbart, and a group of educational reformers, known as Herbartians, who were interested in his work (Dowden, 2007). These questioned the teaching of discrete subjects and began to look for ways of correlating subjects together to make connections which would be of benefit to students. This was based on the belief that a key to intellectual growth was a pupil's ability to make connections across disciplines. The concept of connecting or correlating disciplines, was then developed and correlation is a term which is still used today (Dowden, 2007; Grossman et al., 2000). This notion can be seen, for example, in the work of educationalists such as Jacobs (1989) whose multidisciplinary model has played a significant role in middle schools in America.

By way of contrast, student centred approaches have their foundations in the work done by Dewey from the end of the 19<sup>th</sup> Century up until the 1930s, when forms of ‘organic education’ began to emerge. Dewey’s curriculum design recognised the relationship between student learning and social environment, placing the student and their community at the heart of the curriculum rather than subject matter. Bernstein (1971) claimed that such student centred approaches would result in an integrative curriculum, where subject matter holds less importance than the organising theme and where subject knowledge is called forth only if relevant to the topic being studied. These influences can be clearly seen in the work of Vars (1991), Beane (1997) and other educational theorists who have followed Dewey.

#### *4.4.1 Subject Centred Approach*

Subject centred approaches begin the curriculum design process with the subject matter to be covered. Jacobs (2004) advocates a type of curriculum mapping involving teachers planning collaboratively for long term periods, so as, to maximise learning within subjects and topics being planned. One advantage of this type of long term overview is that there is a structure for teachers to follow, ensuring a progressive coverage of subjects and topics without overlaps for the pupils as they progress.

Jacobs (2004) recognises that merging concepts from various disciplines can enhance the learning experience of students, but her approach is very much centred on the subjects to be studied and not the interests of the child. There are those who claim that such subject centred approaches to IDL are heavily top-down, where the teacher has the power and control, and pupil voice is diminished as a result (Dowden, 2007).

Fogarty (1991) provides another paradigm, ten detailed components ranging from a fragmented subject teaching approach (disciplinary learning) to a networking stage (interdisciplinary learning). This model is also subject centred, and Fogarty suggests that changes in pedagogical approaches can lead to pupils

making connections at all stages and taking ownership of their own learning in whatever subject is being taught. It is therefore, highly teacher dependent, although at the ultimate stage Fogarty proposes that the learners themselves will direct the focus of their learning and target necessary resources as they expand their knowledge and network. Setting challenges or problem to be solved is not a major feature of this model, although the implication is that pupils themselves will generate their own problems and challenges at the networking phase. Critics of subject centred approaches argue that they are based on 'thin' ethical principles (Apple, 2001), because they fail to pay sufficient attention to learners needs and their sometimes widely differing abilities and contributions (Vars, 2000).

#### *4.4.2 Child Centred Approach*

As discussed above, child centred approaches are based on constructivist theories of learning, and Beane's integrated curriculum provides an example. It has at its centre, the problems and interests most relevant to the child. Beane's model of curriculum integration (1997) starts with students' curiosities and concerns, which generate questions and problems to be answered and solved. Dowden (2007) recognises in Beane's work the influence of Dewey, claiming that Dewey's term 'organic education' was a forerunner to it. Both recognise the connected nature of the student with their social environments and view that, in order, for learning to be deep and meaningful, this connection must be a stimulus in the learning process. Central to Beane's work is a view that the experiences of students should be meaningful and memorable, knowledge should be created through a democratic, co-constructed curriculum, exploring social and personal issues, knowledge should be applied without disciplinary boundaries, and that curriculum design should embrace democracy, diversity and dignity.

Beane recommends finding topics for study by discussing issues with students, about which they have concerns, either personal to them or of concern to them in the wider world. These could be issues such as wars, global warming or pollution. Students then vote democratically to determine what the majority feel most strongly about, and this provides the basis of study. Similar pedagogical practices are evident in other models such as Vars's unstructured core curriculum (1997), Drake's transdisciplinary model (1998) and Jacobs's (1989) complete integration. While Beane's model is not subject centred, as in

Fogarty's continuum, both models seem to have the same goal in mind, which is, that students find the task purposeful and become driven internally by a thirst for increased understanding. This results in their ability to synthesise knowledge from more than one discipline, in order to answer questions or problems which have been generated.

Student centred approaches may be considered more ethically 'thick' (Apple, 2001) than subject centred ones, because they take account of the interests and differences in pupils' needs, but critics argue that they can be 'woolly' and result in a patchy and interrupted coverage of the 'official knowledge' and values of the dominant political group (Apple, 1993).

Murdoch and Wilson (2004) highlight the tension which exists for teachers in trying to meet the requirements of the curriculum while responding to the needs and interests of their pupils. They recommend that, in the ideal situation, a unit of work should be planned after the student's prior knowledge has been considered, and that the unit of work, while being prescriptive enough to cover the curriculum requirements, should have enough flexibility to adjust to the needs of students. They acknowledge, however, that this is not always practical.

#### *4.4.3 Practical Application*

In real terms, it may be that schools adopt a mixture of both the subject centred and child centred approaches when planning IDL. In the *Enacting Australian Curriculum* document (Naylor, 2014), for example, it is stated that the dichotomy between the subject focussed and child focussed approaches should in fact be played down, and that these two positions are not in opposition, but sit side by side. This document holds that in a practical context, where teachers are planning, teaching, assessing and reporting on a range of curricular areas, they are in the best position to purposefully make curricular connections and to map out programmes of work, to ensure students have a progression, breadth and balance of learning experiences in a subject focussed way.

The document goes on to say, however, that students' needs, interests and aspirations should also be at the centre of a teachers' practice. Interestingly, the document relates this second aspect of the child

focussed curriculum to teachers’ “... philosophical beliefs about what it means to be a teacher and what constitutes quality teaching and learning...” (Naylor, 2014, p12). The implication here is that all teachers hold similar beliefs and views about what it means to be a teacher, the best pedagogical approaches to take, and how learning should be related to the lives of students. There is a presumption in this document that all teachers will automatically recognise and consider the interests of students when they are planning and delivering the curriculum. In reality, however, teachers come from a variety of different backgrounds and can hold very different views and beliefs about their role.

Klein (1990), argues that there is no one pedagogical approach which fits integrated or interdisciplinary work the best, but that what is essential is good general learning and teaching. Although this seems rather vague, she does go on to list some key factors which she claims should be involved in the process, one of which being teachers’ discussions related to an interdisciplinary theme or question or problem. This idea of discussion and professional dialogue is echoed by Boix-Mansilla (2010). Some factors which may help to facilitate effective IDL will now be considered.

## **4.5 Facilitating Factors for IDL**

### *4.5.1 Collegiality*

As outlined in the previous chapter, those who advocate an interdisciplinary or integrative approach to learning acknowledge that the learning potential of the task itself is of vital importance. It is the key to propelling the students forward in their thinking and driving them to apply their existing knowledge and skills, with a thirst to find answers and solutions to the problems faced. Brand and Triplett (2012) highlight problem solving as an important aspect in impelling students to find their own answers, draw their own conclusions, and create their own solutions. Boix-Mansilla (2010) concurs with Beane (1997) that establishing a purpose for IDL is also crucial in constructing an effective IDL activity and that relevance of the work is vital. Kysilka (1998) also cites this idea of purposefulness as being a main component in genuine learning.

IDL tasks involve setting challenges and problems for pupils to solve which will necessitate them applying and integrating their knowledge and skills from two or more disciplinary areas. Devising such



challenges and problems with all the essential components is a thought intensive process. Klein (2009) suggests that it is helpful for teachers to collaborate and talk to one another when constructing and planning IDL lessons. Day and colleagues (2006) concur that it is imperative that teachers do not work in isolation and that greater success can be had when collaborative and supportive structures are established. In order, to cope with problems such as planning IDL tasks from scratch, teachers must, therefore, learn to work together more effectively. Within schools there has to be time provided for teacher talk and the facilitation of generative dialogue (Boreham and Morgan, 2004).

Ruddock (1992), suggests that it is important to find ways of including teachers in curriculum development so that they are in a better position to respond critically to the product. Shulman (1986) explores the idea that a professional is differentiated from a craftsman in so far as the professional can articulate what they are doing and why, “The teacher is not only a master of procedure but also of content and rationale, and capable of explaining why something is done” (Shulman, 2013, p10). Opportunities for teachers to engage in continuing professional development where they have the chance to reflect and discuss their understanding of educational issues is therefore crucial in enabling teachers to speak confidently about their practice and be able to justify what they do.

Shoham (1998) examined teachers’ understandings of interdisciplinarity and found that, in order, to effectively implement interdisciplinary work, there needed to be more professional dialogue to help teachers make sense of interdisciplinary matters, with development and training provided during initial teacher education, and inset days. Lenoir and colleagues (2000) found that when teachers had a poor understanding and education in the area of interdisciplinarity, it resulted in what they called an ‘eclectic approach’ to IDL being adopted. This describes a ‘pick and mix’ attitude to teaching IDL, with no clear perception of how well certain subjects fit together and how best links can be made. Here, elements from a variety of subjects are chosen and taught, but with no clear rationale, structure or relevance to their selection.

Kysilka (1998) highlights the fact, that if staff have a lack of understanding about the need for a change in their teaching approach and curriculum restructure, and don't see the value of it, they are more likely to resist it. Supovitz and Weinbaum (2008) describe the failure of transference from policy to practice as 'The Implementation Gap'. Their research into curricular reform in high schools found that when policy concepts were not clear to teachers and when teachers were not supported, the intended reform was less likely to be implemented in accordance with the intended goal. In relation to CfE, Reeves (2008) holds that professional learning is vital for the successful implementation of curriculum developments such as IDL.

Hargreaves (1994) has adopted a micro political perspective to analyse collegiality. He discusses the idea that collegiality and collaboration can be imposed on teachers as an exercise in organisational power. This he calls 'contrived collegiality'. This kind of contrived collegiality could result in teachers paying lip service to curricular reforms but not actually engaging fully with them. Hargreaves distinguishes this from 'collaborative cultures' which he says, "emerge primarily from the teachers themselves." (Hargreaves, 1994, p192). According to Hargreaves, collaborative cultures are characterised by being spontaneous, voluntary, development oriented, pervasive and unpredictable in outcome, as opposed to administratively regulated, compulsory, implementation oriented and predictable in outcome.

In examining the planning and professional development processes around IDL within primary schools, I was interested to find out in my research if these were initiated in a top-down way, contrived by management as described by Hargreaves, or if teachers collaborated together to find their own answers to mutual problems or questions they may have had. As part of this research project, a major aim was to examine the planning process of IDL within the Scottish primary sector and discover if collaboration and discussion have played a part. For instance, were there discussions planned by senior management which forced teachers to engage or were there more spontaneous discourses? Did teachers collaborate and talk about the IDL work they planned with their peers or senior management? If so what form did this planning take? Was it formal or informal?

#### *4.5.2 Time*

Adler and Flihan (1997) propose that time is a major factor in facilitating effective IDL practices. Garcia (1990) found that teachers involved in an IDL project at Pajaro Middle School in California, said that they would not have been able to carry out the IDL work without being given the time they had to meet and plan activities. Teachers first have to think of appropriate challenges, problems and questions, which will enable children to apply their knowledge and skills from more than one disciplinary area, in order for them to develop their cognitive thinking. It is very probable that traditional textbooks and curriculum guides will not have all the answers.

Teachers, who begin to plan for this integrative, interdisciplinary work, may find that there are limited resources to support them and they have to find or create the materials themselves. This process can be difficult for teachers who feel they do not have free time to spare, especially when materials are readily available to support traditional lessons that cover the same content (Ward and Lee, 2002).

#### *4.5.3 Institutional Support*

Support by the management is also a critical factor in the implementation of IDL (Adler and Flihan, 1997). This is needed for things such as funding the cost of resources which may have to be purchased over and above the normal core resources for IDL work. Facilitating cover for teachers to be trained in IDL and devoting time on the collegiate calendar for IDL planning and staff development in IDL may also be needed. Hord and colleagues (1987), suggest, that the first step to facilitating change within a school is to provide funding and other unique resources such as recruitment of parent volunteers or local industry for example. Baumfield and colleagues (2009), observe, that to fail to provide an investment in resources to enable teachers to engage in meaningful curriculum development, is to lessen the chances of teachers changing their practices and fulfilling policy intentions.

#### *4.5.4 Teachers as Facilitators*

Implementing a problem-based interdisciplinary approach means that teachers need to be able to adopt facilitative roles, to manage student work without overly directing it, and to support students' efforts to become self-directed learners (Ertmer and Simons, 2006). One of the biggest challenges that teachers face as they begin using these methods is that of assuming a less directive role (Ward and Lee, 2002). In general, the teacher in a problem-based learning approach acts as a guide who helps students collaborate to generate solutions to problems (Kolodner et al., 2003). The emphasis shifts from a focus on grades, competition, and public comparison with others to that of enquiry and understanding (Gallagher, 1997). The teacher becomes a facilitator of learning rather than simply a transmitter of knowledge.

#### *4.5.5 Assessment*

In an empirical study, done at the Harvard Interdisciplinary Studies Project, researchers found that faculty members engaging in interdisciplinary work with their students were full of doubt and self-criticism when answering questions about assessment of students' work (Boix-Mansilla, 2005). In order for teachers to develop more confidence in implementing IDL work, assessment would seem an area which has to be addressed.

Those involved in the Harvard Project developed a framework for assessment which is based on three questions. These questions are designed to be asked about work produced by the student in relation to the interdisciplinary task. This may take any number of forms including a written piece of work, a video, a presentation, or the creation of a piece of art or artefact. The suggested questions for assessment are –

- Is there evidence of grounding in carefully selected disciplinary insights in the work and have these been deployed adequately?
- Are these insights integrated to facilitate leverage of understanding?
- Is there a clear purpose, sense of reflection and self-critique in the work?

The first of the questions above relate to the disciplinary insights which need to be used, in order to complete a task. The task or challenge would have to be carefully constructed by the teacher in order to help children engage with more than one discipline. Depending on the pedagogical approach of the teacher, children could have a greater or lesser degree of influence on which disciplines they used and how they used them. For example, using a subject centred approach, a teacher might predetermine which disciplines he or she wished to target and choose a task which would necessitate those particular areas to be used (e.g. targeting technology, maths and art by asking pupils to design and build a structure from technological equipment supplied) which would allow villagers in Africa to carry water from wells to their houses. A teacher using this approach may have specific outcomes in one or more of the areas they would assess.

Alternatively, using a child centred approach, the children could determine which way they accomplished their work. For example, when explaining the problem of carrying water for villagers in Africa, and asking children to come up with ideas of how to solve this problem and present these ideas in a way of their own choosing, pupils could decide to draw pictures and diagrams, make videos and do presentations about their ideas, write a song or poem or create an artefact as a response. In adopting this second approach, a teacher would have the more difficult task of identifying which disciplines were used by the pupils in the process, and this could be a wide range within the one class.

According to the success criteria outlined above, a teacher would not only have to judge how effective students had been in using the various disciplines, but if cognitive advancement had taken place. In a Scottish classroom this would involve assessing specific Es and Os for one or more of the subject domains involved in the students' endeavours. Again, which areas to be assessed might be predetermined by the teacher or could be more responsive to the work completed by the students.

The third area for consideration is whether students had been purposeful and self-reflective. This assessment could be done by a teacher based on what was observed during the process of the task, and in being presented with the final product, whether, a video, piece of artwork or artefact etc.

## **4.6 Teacher Agency**

As discussed in section 2.2.5, one of the trends in new curricula across the globe has been to provide schools with more autonomy over curriculum design. A key factor of CfE has been to give teachers permission to exert more discretion and higher levels of professional judgement over their work by assigning teachers the role of co-creators of the curriculum (Donaldson, 2010). Assigning teachers this role, however, is not as straightforward as Donaldson might suggest. For example, in relation to IDL, in a ten-year study carried out by Lenoir and colleagues (2000) in Quebec, it was found that there was a general confusion and widespread discrepancy in how teachers understood and implemented interdisciplinary practices. Their field observations revealed that practices were generally not interdisciplinary and that a wide range of disparate and unrelated activities were being carried out under the heading of IDL. Here is it prudent to examine elements, which may affect the agency of teachers in implementing interdisciplinary work.

Priestley and colleagues (2015) take an ecological approach when defining teacher agency. This view sees agency as something that emerges as a result of the interaction between a teacher's personal capacity to act and their social and material environment. In this thesis then, agency will not be considered as something which a person has or possesses, but rather, something which they are able to achieve. In relation to the implementation of IDL, there are various factors which may affect teacher agency. Some of these will now be considered.

### *4.6.1 Teacher Beliefs*

Teachers have belief systems which influence them, not only in their everyday lives, but in their practice as teachers (Nespor, 1987). Their beliefs can have a direct effect on their actions in the classroom and how they view their role as an educator. How a teacher understands a situation in school, their view of children and their abilities, the way they implement lessons and, what they consider the nature of education to be, are all elements which are influenced by how they look at the world and how they see their role and the role of education. If they believe IDL, for example, to be extraneous, superfluous or

ineffectual, teachers may merely pay lip service to what they are asked to do but revert to old practices again.

Biesta (2007) claims that many teachers see ability of students as something fixed and view education as a means only to gaining qualifications. In this case, teaching discrete subjects may be favoured over IDL practices, in order, to provide students with the test-specific knowledge required to pass exams. Pajares (1992) suggests that many people who become teachers do so because they had a good educational experience themselves and simply want to replicate the experience they had, rather than being open to changing their pedagogical approach. This may mean that teachers, who did not experience interdisciplinary approaches when they themselves were pupils, may not be willing to implement this kind of pedagogy in their own practice. In light of this, when interviewing the teachers in this study (detailed in Chapter 5), it was important, to explore their beliefs regarding the role of a teacher, the purpose of education and their views on the current curriculum and IDL.

#### *4.6.2 School Culture*

Another factor which influences teacher agency is the culture of the school. Sarason (1990) argues that it is often the case that schools, like other traditional social organisations, tend towards the status quo and are resistant to change. He purports that this is not deliberate, but rather a consequence of factors such as existing power relationships and traditions. This means that real engagement with policy can be lacking and so policy goals and aspirations are not realised. Priestley and colleagues (2015) found, when examining teacher agency, that teachers' habits were heavily influenced by their past experiences. These experiences were shaped by the school cultures and structures of professional contexts they had been exposed to over the course of their careers.

In examining how well IDL is implemented within primary schools, therefore, it will be prudent to consider the environment and culture of the schools involved in the research.

#### *4.6.3 Social and Political influences*

Social and political influences can have a powerful effect on teacher agency. A teacher may seize upon interdisciplinarity, for example, to address a perceived social need or respond to a wishful realisation or a politically correct concept. If there is pressure from media or authority and a perception by teachers that more attention or time should be given to certain areas of the curriculum, then the teacher may carry this out and justify it by giving the change in their practice the umbrella term 'interdisciplinary'. Lenoir and colleagues (2000) draw on the work of French researchers Doise and Abric who identify this as a phenomenon which they term, the 'hegemonic approach'. This approach sees the subject area deemed the most important being given prominence and the other subjects being merely subsidiary. The internal logic and learning methodology of the dominating subject is followed and imposed on the 'lesser' subjects and what is tantamount to lip service is paid to them. This can result in teachers using additional time to give priority to socially valued disciplines at the expense of the subject areas deemed to be less important during times when they claim, for example, to be doing IDL.

In their study, Lenoir and colleagues (2000) found that French and maths were the top two subjects taught in primary schools with social sciences, physical education and English following closely behind. In Scotland's CfE, priority is given to literacy, numeracy and health and wellbeing because these have been identified by the government as the 'core subjects' and assessments have now been introduced for literacy and numeracy. It will be interesting to consider how much weighting these subjects receive in interdisciplinary work in Scottish schools.

#### *4.6.4 Policy Guidance*

"Teachers are the key agents when it comes to changing classroom practice: They are the final policy brokers" (Spillane, 1999, p144). The clearer and less ambiguous policy guidance is around IDL, the more likely it is to be understood by teachers and policy intentions realised. Conversely, if policies are vague and messages surrounding IDL are confusing, the less likely it is that teachers will understand what they are being asked to do and their practices will not reflect policy intentions. This can be



described as the ‘implementation gap’, (Supovitz and Weinbaum, 2008). Policy, then, can also have a significant impact on teacher agency.

#### **4.7 Examples of IDL**

Although there are limited examples in the literature, as previously stated in section 3.3.4, studies set in both primary and secondary schools are cited by Hinde (2005) as demonstrating benefits from ‘integrated or interdisciplinary’ methods involving issues relevant to the pupils who adopt a problem-solving, integrative approach. These studies reported increased engagement, more positive attitudes, and improved effort of students due to the use of relevant contexts. This type of IDL is in line with the core elements outlined in the previous chapter (see section 3.3.4) where students draw on their existing knowledge from two or more disciplines to address an issue or problem which is relevant to them.

An example from the literature which fits with the IDL model identified in section 3.3.4 can be seen in the research carried out by Min and colleagues (2012) in secondary schools which considered an Integrated Life Skills study. During this project, teachers helped students to identify problems or needs to be resolved in order to invent their own design project. These problems were often related to issues facing students in their daily lives. Students then worked independently of the teacher to gather information and data through observation, visits, brainstorming, reading and researching on the internet and used their knowledge and skills from design technology and other disciplinary areas to design and create a solution for their problem. Teachers in this study were found to have a high level of understanding of the features of an integrated thematic approach. Although this research was carried out in the secondary sector, the principles behind it could easily be transferred to the primary setting.

## **4.8 Conclusion**

The aim of this chapter has been to consider pedagogical approaches to IDL and to identify factors which may be conducive to an interdisciplinary approach and have a bearing on the agency of teachers in carrying out IDL in their individual contexts. Starting points for planning IDL were examined under two main categories, namely: those which are subject centred; and those which are child centred. The historical underpinnings for these differences were discussed and it was suggested that, in realistic terms, a mixture of both approaches may be the most practical for schools to adopt. The information in this chapter will play an important part in making sense of the data found in relation to the research questions which are, ‘How do primary teachers understand the term ‘interdisciplinary learning?’, ‘How do teachers plan for IDL work and are there opportunities for collaboration during the process?’ and ‘How is IDL work implemented in the classroom?’.

The methodology which has been used to address these questions will be detailed in the following chapter.

## Chapter 5

### Methodology

*“Research in education is a disciplined attempt to address questions or solve problems through the collection and analysis of primary data for the purpose of description, explanation, generalization and prediction.” (Anderson, 1990)*

#### 5.1 Introduction

The main reason for engaging with this research process is to shed light on what is happening within Scottish primary education and ultimately to provide evidence which may lead to a more informed discussion regarding interdisciplinary learning. This is in line with Biesta’s (2007) view of the cultural role of evidence-based research. Opening professional debate, therefore, among teachers, and those involved in education, will be the main aim of this thesis and I will attempt to make it both relevant and understandable for those working at the ‘chalk face’ in order to stimulate professional discussion.

#### 5.2 Research Questions

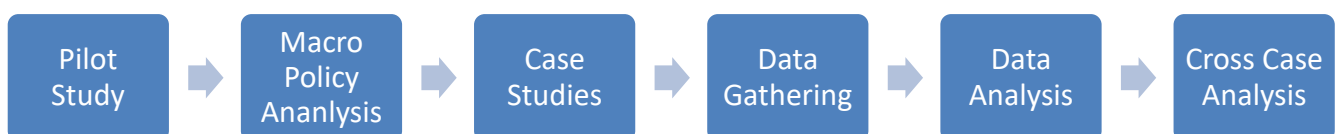
The objective for this research is to understand IDL practices in the context of Scottish primary schools and has been guided by the following questions –

##### Research Questions

1. **How do primary teachers understand the term ‘interdisciplinary learning’?**
2. **How do teachers plan for IDL work and are there opportunities for collaboration during the process?**
3. **How is IDL work implemented in the classroom?**

The flowchart in Figure 7 below shows the overall structure of the study.

*Figure 7: Overview of Research Structure*



This research is qualitative in nature. In recent years qualitative approaches to social science research, have gained scientific credibility (Kamberelis and Dimitriadis, 2005). The key principles of qualitative research methods are that they are holistic, inductive, and naturalistic (Rudestam and Newton, 2001). Qualitative research can allow for general patterns to be gleaned from interviews and observations, and findings can be understood in their natural state.

Merriam (2009) recognises that the epistemological stance of a qualitative paradigm is concerned with understanding the social world through the interpretations of its participants. Griffin (1985) observes, a particular strength of qualitative research is its ability to focus on the operation of social processes in depth. Willig (2001) argues that qualitative research is generally concerned with meaning and how people (in this case teachers), make sense of the world they inhabit and experience events from their own perspective. Others, such as Burnman and Parker (1993) consider that, such research, when involving techniques such as semi-structured interviews and observations of practice, can reflect inconsistencies and contradictions within and between individual accounts and provide the basis for analysis.

### **5.3 Epistemology**

Boix-Mansilla (2010) examines various epistemologies, in an attempt, to provide a framework for considering IDL. She argues that a study of interdisciplinary practices requires a strong epistemological foundation. As explored in previous chapters, IDL can be diverse and cover a host of activities: the learning involved in designing an historical monument, for example, may contrast substantially with that involved in explaining climate change. So, what constitutes a productive epistemological framework for interdisciplinary learning? Boix-Mansilla argues that four criteria are required:

- 1 *pluralism* – the epistemological framework should be able to account for multiple forms of disciplinary understanding on their own terms
- 2 *relevance* – the framework should be relevant to the phenomenon of IDL and illuminate the processes of interdisciplinary integration

- 3 *explanatory* - it must take account of how knowledge advances and shed light on the essential dynamics of learning
- 4 *quality assurance* – it should be a framework which puts forth robust and relevant standards of acceptability across interdisciplinary endeavours

A pragmatic constructionist epistemology based on the work of Elgin and Goodman (1988) meets the criteria above. Such an epistemological framework recognises that the purpose of inquiry is the advancement of understanding rather than the search for absolute truths. It sees inquiry as seeking a deep understanding of the subject at hand.

Pragmatically, the proposed epistemology values the purpose of knowledge construction. Advancement in the desired area of understanding is seen as crucial. Elgin (1996) defines understanding as a system of thought in reflective equilibrium. This epistemology allows for criticisms, revising, reinterpreting and abandoning intellectual commitments when more reasonable ones are conceived. This approach is in line with what Derrida (1992) describes as ‘aporias’ or uncertainties, where more than one explanation is possible. This flexibility is important in presenting an honest and valid representation of research and to stimulate professional dialogue around the subject matter.

In designing this qualitative study, I am locating myself within the pragmatic constructionist research paradigm. I recognise that there are multiple realities that are time and context dependent and that these are socially constructed by participants as they go about their daily business and interact with each other. Perceptions of reality, therefore, may change during the course of the research (Mertens, 2010; Schwandt, 2000). As a qualitative researcher, I am examining the specifics of certain cases (Denzin and Lincoln, 2000) in an attempt to understand the world from the perspectives of the participants (Hatch, 2002; Mertens, 2010; Schwandt, 2000).

Biesta and Burbules (2003) draw substantially on the writings of Dewey to articulate their pragmatic stance on knowledge, enquiry and research. They state that knowledge is the product of experience and action and ‘we only know the world as a result of our actions’ (Biesta and Burbules, 2003, p55).

Vygotsky (1978) observes that our actions are mediated by the cultural tools available to us, the most important of which is language. Language is the primary means by which we reflect on and express our understanding of the world and communicate our views to one another. For this reason, therefore, language will be prioritised over other means of communication although some tables and graphs will be included, when presenting and analysing data. I shall be focusing mainly, but not exclusively, on the participants' social, rather than material worlds (Gibbs, 2002).

#### **5.4 Pilot Study**

Before beginning the main study, a pilot was carried out, in order to ascertain the best data collection methods for this purpose. This was carried out within a school, where I was working as the HT in 2014. I interviewed three of my teaching staff. I wanted to trial an interview schedule based around hierarchical focussing, a method which will be discussed later in this chapter, (section 5.5.5) to see how well it would work. This was done so that I could discover any pitfalls and amend anything which could be improved for the final study. Since, I was the direct line manager for teachers within my school, I was aware that there were advantages and disadvantages to carrying out this type of work with my own staff, as part of the research process. The advantages were that I knew the teachers and had good working relationships with each of them. I was confident that when asking them to participate in the study, they would participate willingly. I also had observed their teaching during the school quality improvement process and had had previous discussions with each of them in learning and teaching meetings, which were held once a term, about their pedagogy and approach to IDL among other areas. Another advantage to this was that I had easy access to the teachers and was able to facilitate them having time out of class to be interviewed.

Despite the advantages of working with my own staff, I realised that there were also disadvantages. I was aware, for example, that my holding a position of power within the school may have exerted a certain amount of pressure on the teachers to comply with my request for them to be interviewed. They may also have felt the need to provide answers which were acceptable, despite my assurance that nothing they said to me during the interview process would be used for any purpose other than that of my research, and that they were free to opt out if they wished at any time.

The MacDonald Report (2004), suggests that teachers tend to adopt a subordinate persona to comply with the wishes of hierarchy, despite their own professional reservations. The MacDonald Report is arguably polemic, and driven by a highly political agenda, but is useful in that it raises questions as to what structures within education might make for compliancy and, within the context of this study, I was aware that the power balance may have been such a factor.

Another disadvantage of knowing the teachers involved was that I had some expectations and preconceived ideas as to what their answers should be, based on development work I knew had taken place in the school, and the quality assurance activities which had been carried out. This led me to be somewhat underwhelmed, at times, with answers which, for example, lacked clarity and depth. I felt that working with teachers I didn't line manage and didn't know would lead me to be able to be more neutral as an interviewer and researcher and so lead to better quality research results. Consequently, I decided that for this final research study, I would work with teachers that were unknown to me and where I was unknown to them. This was done in the hope that participants would be able to speak freely and express their views, beliefs and opinions without being worried about having to account to their line manager.

During the interview process, in the pilot study, I asked the teachers' permissions to record the interviews. This was useful, as it negated the need to write down everything that was said and allowed me to listen back to the individual interviews later. I also took notes on the hierarchical interview schedule (Appendix 1) which I created. This was useful for several reasons:

- It minimised note taking which facilitated eye contact being made with the interviewees during the process leading to a more relaxed discursive approach
- It allowed the identification of topics initiated by participants, and those which were initiated by the interviewer, thus suggesting when the interviewees felt more strongly about certain issues
- It allowed flexibility for participants to move into other areas rather than being constrained by a fixed set of questions

- It allowed the interviewer to seek clarity or additional information during the interview

In the pilot study, every word of the interview recordings was transcribed. This was a lengthy process, which resulted in much time being spent on transcribing and a plethora of writing to analyse. With pages of script, the coding and comparison process between teachers' answers was difficult. On reflection, I decided that it was worthwhile to record interviews but rather than to transcribe participants' answers word for word, it would be more expedient to summarise key words and phrases from their answers in a grid format, so that direct comparisons between the answers of teachers would be clearer. This would be a more effective use of time. Once the summaries were made, each teacher could be sent a copy of their answers to see if they agreed it to be a true reflection of what was said. They would be given the option of contacting me if they wanted to change anything.

As mentioned above, during the pilot study interviews, a hierarchical focus schedule, (Appendix 1), was used. It detailed a set of key themes to be covered but provided the flexibility of allowing them to be covered in any order. It also detailed subsets of questions and allowed the interviewer to record whether the interviewee-initiated discussion around themes and subsidiary questions or whether these had to be prompted by the interviewer. If much of the discussion was initiated and led by the interviewee, as opposed to being directed by the interviewer, this was an indication of how much knowledge and interest the interviewee had in the area. It was decided that in the final research study this type of schedule would be used again. This pilot study was useful, therefore, in determining the final methodology used and this will now be detailed below.

## **5.5 Methodology**

Data collection methods are selected, based on fitness for purpose, when taking a pragmatic stance (Biesta and Burbules, 2003). The research strategies used in this study included digitally recorded interviews with teachers, classroom observations, follow up discussions with teachers and Head Teachers and the collection of planning materials and school policies relating to IDL. These instruments of data collection were considered to be the most adequate for the purposes of the research. Once the data from interviews had been gathered, it was then transformed into a linguistic format, which included



both field notes and transcriptions. Qualitative analysis was used because it is particularly appropriate for analysing language and texts (Gibbs, 2002).

### *5.5.1 Macro Level Policy Analysis*

A Macro level policy analysis of CfE was carried out (see Chapter 6). The aim of this was to consider the policy discourses of the main CfE documents which are relevant to IDL. The documents used for analysis were chosen because they refer frequently to IDL or give advice specific to it. *A Curriculum for Excellence: Purposes and Principles* (Scottish Executive, 2004) is one of the earlier CfE documents which sets out the values and lays the foundations for discussion around interdisciplinarity. *Building the Curriculum 3* (Scottish Government, 2008) makes frequent reference to IDL and is drawn on by subsequent advisory papers. The *CfE Briefing Paper 4* (Education Scotland, 2012) provides practitioners with advice about interdisciplinary practices and the *Statement for Practitioners* (Education Scotland, 2016), includes IDL as a key feature for teachers to consider. A discourse analysis was then carried out within these documents.

### *5.5.2 Document Analysis*

Jager and Maier (2009) suggest that strands of discourse around a common theme, can be grouped and sub-grouped. Using content analysis to examine the discourses in each document then, different common themes that coalesced around the notion of interdisciplinarity were identified and the discourses around each theme from the four documents were compared and contrasted. This was to distil whether messages regarding IDL were clear and consistent within the policy documents or if there were inconsistencies and changes over time.

A number of recurrent themes emerged from across the documents and this allowed the exploration of some of the tensions in the policies. The clarity of the policy messages was also considered in an attempt to gain a clearer picture of how IDL has been presented to practitioners. This chapter forms a

basis for understanding the context in which IDL is situated, and the messages which practitioners have been given around interdisciplinarity.

### *5.5.3 Case Study Design*

As Yin (2003) recognises, the term ‘case study’ can be used to describe a variety of approaches to research. Within the context of this work, however, the case studies are qualitative in nature. Case studies can provide examples of how people think and act in any given situation (Cohen et al., 2007). They are useful for understanding the perceptions of the individual participants and their interpretation of events (Hitchcock and Hughes, 1995). Denscombe (2007) describes case studies as usually being ‘discovery led’ and as such seem very suited to the work of this thesis which does not want to influence practice but rather uncover what already exists.

Another benefit of the case study approach to research, is that it provides the opportunity to examine people and events in detail, rather than a broader piece of work which may include a wider range of participants (Drever, 1995). As this study is concerned with eliciting the conceptualisations of teachers, a more focussed approach seems appropriate. The study uses a ‘bounded system’ (Stake, 2000) by conducting a case study involving two primary schools within the same local authority. The schools constitute the boundaries in this study and the data collected within each provides the basis for analysis, first of the individual schools and then for comparisons in a cross-case analysis. Data will come primarily from teachers’ interviews, classroom observations and artefacts gathered from the schools.

Thomas (2011) asserts that there are two elements to a case study, one is the subject and the other is the analytical frame. In this study, the teachers are the subjects, and each school constitutes the frame. Another reason for using a case study approach is, because, it allows a holistic perspective of the participants’ experiences in their context to be examined, and this is crucial for understanding the issues and challenges associated with implementing IDL in the primary classroom.

In considering the case study method it was recognised that there are limitations associated with this type of approach. As Bryman (2009) suggests it is primarily used in the production of qualitative data

and factors such as small numbers of participants and the specific contexts of each case can make it easier for the researcher's subjective feelings to play a part in the research process. It can also make it difficult for generalisations to be made. Generalisation was not the aim of this research, however, but rather a deep understanding of context. If generalisation was the goal then questionnaires and online surveys would have been more appropriate ways of eliciting information from a larger number of teachers. However, it was decided that gathering rich, quality data from fewer teachers, where interviews, school documents, classroom observations, follow up conversations with teachers and other members of staff, would provide a richer contextual data set than focusing more heavily on teacher numbers. These multiple methods aided quality assurance regarding the validity of research by using a variety of processes to collect data on the same topic.

As recognised by the pragmatic, constructivist epistemology underpinning this study, knowledge construction is context specific. Both Stake (2000) and Faltis (1997) argue that when using a case study approach to research, it is up to readers to draw their own conclusions and generalisations based on the evidence and the relevance to their own particular circumstances. While every case is unique, within it there may be elements that present similarities for readers to draw upon in relation to their own settings (Faltis, 1997). These have been referred to as 'naturalistic generalizations' (Stake, 2000) or 'analytic generalisations' (Yin, 2003), and are not dependent on quantity but rather quality. The aim of this research has been to provide such analytical generalisations which may stimulate discussion and help to inform future practice.

One disadvantage associated with case studies is that it is harder for generalisations to be made from the findings (Faltis, 1997). Both Stake (2000) and Faltis (1997) argue, however, that generalisation need not and should not be a goal of all qualitative research. It is up to readers to draw their own conclusions and generalisations based on the evidence and the relevance to their own particular circumstances. While every case is unique, within it there may be elements that present similarities for readers to draw upon in relation to their own settings (Faltis, 1997). Stake (2000) refers to this process as 'naturalistic generalizations'. Yin (2003) describes 'analytic generalisation' as the generalisations drawn about the phenomenon being studied when data is analysed, as opposed to statistical generalisation. It is hoped

that this study will produce such analytical generalisation which can be useful to educational practitioners.

Stake (2000) recognises that case studies are valuable for refining existing theories and uncovering areas for further investigation within the field of study, as well as, helping to establish limits of the ability to generalise. Since two case studies were used in this research, as opposed to just one, it is intended that conclusions drawn will be more powerful than those arrived at from a single case study. The contexts of the cases differ to some extent, therefore, the external ‘generalizability’ of any common conclusions arrived at will be increased (Yin, 2003).

In this thesis four primary classroom teachers from two different schools, with different ranges of experiences and length of service, enabled me to explore their views and beliefs regarding IDL. I was also able to examine their planning procedures and observe their classroom practice, to uncover how IDL is interpreted, experienced and implemented within their respective primary classrooms. In presenting these narratives a contextual overview of each school and teachers is provided.

#### *5.5.4 Data Collection*

In view of the epistemology outlined above, a grounded approach was adhered to during this study. Grounded Theory is an approach for developing theory that is grounded in data which has been systematically gathered and analysed (Strauss and Corbin, 1994). It involves a constant movement between the data collected and the analysis process. The methods used for this study are common to the Grounded Theory approach and these will now be detailed below –

- Interviewing – teachers were interviewed using a semi structured, hierarchical focussing approach. An interview schedule was used, and the interviews were recorded and analysed before classroom observations took place.
- Participant observation – this involved observation of teachers in the classroom during IDL lessons using observation schedules constructed from the core elements of IDL (Appendix 2).

- Collection of artefacts and texts – forward planning materials and school policies relating to IDL from each school were examined and content analysis was done to compare similarities and differences between each school in terms of how they planned and described IDL (see section 9.4.8). Photographs of work produced in relation to IDL were also gathered from each school.

This range of methods allowed for the increasing richness of data in order to assure the validity of results.

### *5.5.5 Data Collection Methods*

To answer the research questions posed in this thesis, the principal data collection methods comprised of semi-structured interviews using a hierarchical focussing approach. This was supplemented by examining planning materials and carrying out observations of each teacher during an IDL lesson. An observation schedule (Appendix 2) was devised for these classroom visits and field notes taken. The initial interviews with teachers took place in May 2016 with classroom observations and further interviews taking place in April 2017.

### *5.5.6 Interviews*

A limitation of face to face interviews as a form of data collection is that it is time consuming and I was aware that asking teachers to be released during class time could potentially put pressure on the schools with limited resources for covering classes. The decision was made therefore to interview only two teachers in each school. The purpose of carrying out interviews was to enable participants, to express their opinions and interpretations of their world as teachers, and more specifically to speak about their understanding of IDL and what this involved for them on a day to day basis in the classroom. In addition to this, it was important to elicit teachers' views at the start, on how they saw their role as teachers and the purposes of education in general. This was worthwhile because, in order, for IDL to be implemented successfully, and in line with the policy intentions of CfE, teacher agency, as outlined in Chapter 4, plays an important part. Teachers are the main instruments of change with regards to educational policy and their capacity to be agents of change is dependent on, not only on external factors and dimensions

which shape the ecologies of their work, but also on their personal capacities and beliefs (Priestley et al., 2015).

As Tomlinson (1989) points out, to ascertain someone's beliefs, values and reactions to a given topic, it is necessary to explore how they construe the topic whether explicitly or intuitively. Tomlinson also suggests that, to obtain a more realistic and objective result, the interviewer should be reflexive and not only have a clear idea of the topic to be studied, but also a clear idea of the language people might use in relation to it. To ascertain this to some degree, the first interviews began with a preamble and a chance for each teacher to speak about their personal teaching experiences, views about the role of the teacher and beliefs about education in general.

A semi-structured approach allows the researcher the opportunity to step back during the interview process and to further explore what participants say and to seek clarity or more information (Creswell, 2009). This allowed me to interact with the teachers in their own environment and to discuss any points, issues and views expressed by them during the interview. Interviews were recorded with the permission of participants and a hierarchical focussing schedule (Appendix 1) used to take minimal notes so that eye contact and rapport could be established with the interviewees.

The permission of each teacher was sought so that it would be possible to record their interviews, and all provided this permission verbally. Recording the interviews allowed me to be able to take minimal notes throughout the process, make eye contact and interact more readily with the interviewees, knowing that I would be able to transcribe and examine their responses in more detail at a later date. When carrying out a pilot study for this thesis in 2014 (as outlined above), I conducted similar interviews with three teachers who worked in my own school and I subsequently transcribed each interview verbatim. I found that this was extremely time consuming and limited in value in the sense that a summary of each teacher's answers was then drawn up in addition to the verbatim transcript. During this study, therefore, verbatim transcripts were not made but a written summary of key words, phrases and sentences from each participant's answer. These were used in conjunction with the audio account of the interviews which were listened to on repeated occasions.

Tomlinson's (1989) theory of hierarchical focussing, as an interview technique, aims to maximise the open-endedness of the interview process while still allowing the interviewer to have an agenda of topics which are to be covered. In this way, it aims to provide the interviewer with a kind of 'best of both worlds' approach. When carrying out an interview in such a way, the interviewer has a hierarchically arranged set of subjects / questions they wish to cover. A general question is asked first, and then more specific questions asked to tease out detail, if this does not come from the interviewees themselves. The interviewee may speak spontaneously about details of thought which are prompted and encouraged with sub questions such as 'Can you take that idea a bit further?' or 'Is there anything else you can tell me about what you just mentioned?'

The starting point of the questioning can be determined by the interviewer through adopting either a top down approach, which would involve starting with the most general questions, or a bottom up approach, which would begin with the most specific questions first. Alternatively, the interviewer may determine the starting point by asking a question such as 'Are there any aspects of this subject you'd like to comment on first?'. For the purposes of this study a hierarchical focussed interview schedule was created (Appendix 1), with a bottom up approach being adopted. This was used after teachers were asked a few questions about themselves, their teaching experiences and views on teaching and education.

In order to gain a valuable insight into the beliefs and understandings of the teachers interviewed and not just gain a semantic account of the meanings interviewees attribute to the terms of the interviewer, it is necessary for the researcher to be both reflexive and to have analytical distance during the process. When considering adolescent values, Kitwood (1980), for example, recognised the need to elicit respondents' own concerns and frames of reference. His interview approach was to ask his interviewees to provide accounts of situations and experiences, in a free-flowing style conversation, which could then be used to explore more specific questions and queries. His aim was to ensure that the interviews were not skewed and framed by the interviewer's terms.

Taking this into account, the teachers interviewed in this study were asked to describe their own teaching experiences from the outset and were also asked to describe examples of their own classroom practice in relation to IDL. This served to illustrate what each teacher considered to be a good example of IDL they had been involved in and revealed what they considered important in the IDL process. It was also helpful in gaining an understanding of the teachers' 'knowledge in action' (Argyris and Schon, 1974), as opposed to simply their abstract propositional knowledge.

In summary, the steps involved in constructing the hierarchical research interview strategy for this study were as follows –

- 1 analysing the literature relating to IDL and hierarchically structuring areas for questioning
- 2 crafting the questions to be asked
- 3 creating a visual hierarchical agenda of questions which allowed a progression from open to closed framing
- 4 carrying out interviews as open ended as possible within a non-directive style to minimise researcher framing and influence
- 5 digitally recording proceedings and making a detailed summary of each respondent's answer

In both schools I wanted to work with a more and a less experienced teacher, and the HTs in each school asked for volunteers to participate. I thought it would be useful to draw comparisons between teachers who remembered working with 5-14 to see if there were any similarities in their answers and compare them to the teachers who had only ever had experience of working with CfE. However, in fact, the two most experienced teachers in this study had only minimal experience of working with the 5-14 Curriculum during their student and probationary years. Although both talked about 5-14 and clearly remembered it, most of their teaching experience had been with CfE.



### *5.5.7 Classroom Observations*

Pollard and Tann (1993) suggest that the values we hold are evident in our behaviour and teaching in relation to our consistency, our attitude to change and the relationship between our stated and lived values. In order, to gain a fuller picture of what teachers said about IDL, and how they realised IDL work in the classroom, observations were carried out. Observations provided an insight into the behaviour patterns and social organisations that were in operation within the class during times when IDL work was being carried out. This also revealed the pedagogical approaches taken by the teachers in this work and gave an opportunity to enrich the data already gathered. An observation schedule (Appendix 2) was used during the observed lessons to focus on areas relevant to the research questions and the study in general. Notes were also taken during this process in a research journal. I was aware that a limitation of this type of data collection was that the presence of an observer may influence the behaviour of those being observed so I collated the results with data gathered from the interviews, planning and policy documents, children's work and conversations with other members of staff.

### *5.5.8 Research Journal*

The research journal which was kept contained personal notes made during the discussions with the HTs, interviews with the teachers, classroom observations and visits to the schools. The descriptive details which were taken helped me to reflect on significant points and events which emerged and were used in my reflection on the interview findings and the research process. Schwandt (1997) observes that such field notes are for an audience of one and unique to the researcher. When reviewing notes I was mindful to distinguish between observations and personal, speculative reflections (Fetterman, 1998).

### *5.5.9 Data Analysis*

Analysis of data involves, "...making sense of large amounts of data collected, and includes reducing raw data, identifying what is significant and constructing a framework for communicating the essence of what the data reveals" (Bloomberg and Volpe, 2008, p127). Once data had been gathered, reading and interpretation were the starting points for meaningful analysis. Conversations with teachers were core to this research and my aim was to ensure that teachers' experiences remained central, whilst their

interview data was examined. Teachers' interviews were analysed in the first instance on an individual basis. A digital recording of each interview was listened to several times, which enabled me to become familiar with the tone, flow and meaning of the answers given. The main substance of each answer was then written using quotes of the teachers' exact words but excluding non-relevant utterances. During this process I was very conscious that the researcher has a great deal of power when engaging in the transcription, interpretation and writing up of interview data (Bayne, 2004), and of the need for vigilance in order not to distort the words or meanings of the teachers. My focus was to convey the main points and meaning contained in the answers.

Once the teachers' responses had been recorded in written form under the headings of each interview question it related to, this text was transferred into a comparison chart. This allowed for similarities and differences to be identified. When completed for each teacher the answers were read and re-read, and a process of highlighting and annotating sections began. From this process themes began to emerge.

Reliance on the identification of themes as the goal of analysis was endemic in this qualitative research. Bazaley (2009) suggests, however, that in order to gain meaningful conclusions and to enrich analysis of qualitative data, the researcher should consider other strategies such as: improving interpretation and naming of categories; using comparison and pattern analysis to refine and relate categories or themes; using divergent views and negative cases to challenge generalisations; creating displays using matrices, graphs, flow charts and models; and using writing itself to prompt deeper thinking.

#### *5.5.10 Content Analysis*

Once the data had been collected a process of content analysis began, using codes to identify themes –

- Open coding – where data was divided into similar groupings to form preliminary categories of information. A grid was made with the interview questions as headings. The answers teachers gave were put side by side with each other to simplify the process of comparing answers and finding similarities and differences.

- Axial coding – following on from open coding the categories identified were grouped into emerging themes. Colour coding was used to note similarities in the answers of all teachers and identify emergent themes.
- Selective coding – the emergent themes were then compared and contrasted in tables, graphs and charts and this data analysed, in order, to articulate a coherent understanding of what had been uncovered.

When the interviews were transcribed, the text formed the basis for analysis. This was put into a tabular format with responses from each question laid out side by side so they could be compared more easily. Each main point was then colour coded so that commonalities could be easily identified. For example, if a teacher spoke of anything related to making links across the curriculum, this was coloured yellow, any reference to children being engaged was coloured green, and so on. From this process a series of themes emerged from across the data in relation to how teachers viewed IDL. Some themes were mentioned more frequently than others and it was decided to calculate how many times the themes were mentioned by each teacher as a starting point for further analysis. In order to determine how frequently each theme was mentioned in the dialogue of each teacher, the audio voice recorded interviews were listened to and tally marks used to count how many times each theme occurred. This was done three times in total to ensure a more accurate representation of the results and increase rater reliability. As stated previously, the frequency measures were used as a way of ascertaining which themes were more recurrent in the dialogue than others and provided the basis for further investigation and analysis.

A cross-case analysis approach was then used to synthesise data from the two case studies and the following sections detail how this was done.

#### *5.5.11 Research Synthesis*

Research synthesis is a collective term which is used for methods which summarise, integrate, combine, and compare the findings of different studies on a specific topic or research question (Cruzes and Dybå,

2011). In considering the best means of analysing the two case studies involved in this research, three main forms of synthesis were considered. These were: Cross-Case Analysis (Miles and Huberman, 1984, 1994), Narrative Synthesis (Popay et al., 2010) and Thematic Synthesis (Thomas and Harden, 2008; Cruzes and Dybå, 2011). The main features of each will now be considered.

### Cross-case analysis

This is a method which facilitates the comparison of commonalities and differences in the events, activities, and processes found in the different case studies. Although the term cross-case analysis can also be used generally to encompass the examination of two or more case studies to produce a synthesised outcome (Khan and VanWynsberghe, 2008), it can also be used with a narrower focus which refers to the organisation of data from cases into tables or graphs.

### Narrative synthesis

This approach relies primarily on the use of words and text to condense and explain the findings of the data. As used here 'narrative synthesis' refers to a process of coalescence, focusing on a wide range of questions, not only those relating to the effectiveness of a particular intervention. Popay and colleagues (2010) define four main elements of a narrative synthesis process as being theory development, development of a preliminary synthesis, exploring relationships in the data, and testing the robustness of the synthesis.

### Thematic synthesis

This is a method for identifying, analysing, and reporting patterns (themes) within data and it is one of the most common methods. It comprises the identification of the main, recurrent or most important issues or themes arising from a body of evidence (Cruzes and Dybå, 2011).

In order to compare these forms of synthesis it was useful to adapt a table from one provided by Cruzes and colleagues (2014) which compares the three methods.

Table 2: Research Synthesis Comparison

Synthesis Method	Description	Strengths	Criticisms
Cross-case analysis (Miles and Huberman 1984, 1994)	Includes a variety of devices, such as tabular displays and graphs, to manage and present qualitative data. It includes meta-matrices for partitioning and clustering data in various ways. Evidence from each primary study is summarized and coded under broad thematic headings, and then summarized within themes across studies with a brief citation of primary evidence. Commonalities and differences between the studies are noted.	Highly systematic method.  Potentially allow inclusion of diverse evidence types.  Could be used for theory building.	Can be seen as unnecessarily and inappropriately stifling interpretive processes.
Narrative synthesis (Popay et al.2010)	A defining characteristic of narrative synthesis is the adoption of a narrative (as opposed to numerical) summary of the findings of studies. It is a general framework of selected narrative descriptions and ordering of primary evidence with commentary and interpretation, combined with specific tools and techniques that help to increase transparency and trustworthiness. It can be applied to reviews of quantitative or qualitative research as individual tools and techniques can be selected according to the type of study design and data included in the review.	Can cope with large evidence base, comprising diverse evidence types.  Flexibility.  Can be used for theory building.	Lack of transparency.  Many variants and lack of procedures/standards.  May be dependent on prejudices of reviewer.
Thematic Synthesis (Thomas and Harden 2008; Cruzes and Dybå 2011)	A method for identifying, analysing, and reporting patterns (themes) within data. It organises and describes the data set in rich detail and interprets various aspects of the research topic. It can be used within different theoretical frameworks, and it can be an essentialist or realist method that reports experience, meanings, and the reality of participants. It can also be a constructionist method, which examines the ways in which events, realities, meanings, experience, and other aspects affect the range of discourses.	Flexible procedures for reviewers.  Copes well with diverse evidence types.  Could be used for theory building.	Lack of transparency.  Largely descriptive/ data-driven basis to groupings.

Cruzes and colleagues (2014) observe that in choosing a method of synthesis for analysing data from more than one case study, it is more than likely no single method will offer all the required features, so a combination of methods may often be the best approach. In order to determine which methods suited this study best, it was necessary to consider what was sought to be achieved and what the desired outcomes were.

Considering the strengths of the three research synthesis methods outlined above, the thematic and narrative models seem to be more suited to working with large and diverse data sets. This study, however, is concerned with a small and succinct research base comprising of two schools and four teachers. It is the aim of this chapter to provide a highly systematic analysis of the data gathered using

tables, graphs and charts so that themes and patterns can be identified. The cross-case analysis model seems to be more suited to this aim.

Examining the weakness of the three approaches, the narrative and thematic approaches can be criticised for having a lack of transparency and the narrative approach in particular, may also encourage any prejudices of the researcher to be reflected more heavily. The cross-case analysis approach can also be criticised for stifling the interpretative process. This study attempted to address these criticisms by using some numerical representations coupled with detailed narrative interpretation by adopting a cross-case analysis approach with some elements of the narrative approach also. This was to allow a detailed exploration of the themes which emerged. Reflecting on the constructivist epistemological underpinnings of this study, it must be recognised that the findings are context specific.

### Cross-case Analysis Model

*Table 3: Cross-Case Analysis Model*

Purpose	Progressive themes developed to form a chain of reasoning.
Data Sources	Findings and interpretations of existing case study data using relevant literature and policies.
Process	Identifying themes, creating tables and graphs to interpret the data, highlighting similarities and differences and constructing interpretations.
Product	Interpretations and rationalisations.

The steps involved in this process were –

- Data reduction                      Process of selecting, focusing, simplifying, abstracting and transforming the results from studies.
  
- Data display                              Data displayed in the form of tables, graphs and charts in order to identify themes, commonalities and differences between the case studies for close examination.

Interpretation	Findings will be examined using a narrative process which will seek to look for reasons and meanings from the results based on policy context, academic literature and other factors.
Conclusion drawing	Conclusions will be drawn based on the results of this data examination.

### *5.5.11 The Research Site*

To carry out this study, I was influenced by the views of Miles and Huberman (1994) who contend that depth and detail are more important in qualitative research than representativeness of numbers of participants. They also hold that feasibility, richness of information and relevance of the sample should be guiding factors in defining criteria for sample selection. In line with this, two primary schools were identified for study in this project and two teachers from each school took part in the research. I decided to carry out this research within the authority where I was working at the time, so permission had to be sought from Head of Service within this authority. During a dialogue with the Head of Service, a primary school was identified as being a school of good practice in relation to IDL. This school was then approached, and the HT there agreed for the school to participate in the study. This school was a large non-denominational primary school, which will be referred to as Burnhill Primary for the purposes of maintaining anonymity.

At the time of the study Burnhill Primary School had a roll of over 400 children with nine mainstream classes, a gaelic unit and a large nursery. In its Curriculum Rationale it was stated that the school aimed to provide a safe, happy and caring environment where children learn respect for themselves and for others. It also said that they aimed to offer a broad and balanced curriculum, where IDL features heavily, and work hard to ensure pupils fulfil their potential. The school will be detailed further in Chapter 7.

The second school involved in this study was a small Roman Catholic primary school, which will be referred to as St Mary's for the purposes of anonymity. In St Mary's, the school roll was decreasing. At the time of the study there were six classes with no nursery attached and a roll of less than 200 pupils. St Mary's Primary had done some recent work as part of a cluster group of schools to develop their planning around Social Studies which formed the basis of their topic / IDL work. This will be described in more detail in Chapter 8.

It was important for me to develop good relationships with the HTs in each school, as they would facilitate teachers having time out of class for interviews, allowing me access to school files and to observe lessons. I did this by building on existing professional relationships and by arranging several familiarisation visits before beginning the research.

## **5.6 Practitioner Researcher**

During the process I was aware that my presence as an interviewer would constitute a significant part of the interview context and would unavoidably exert a certain amount of influence on the answers of the interviewees. I was aware that my position as a researcher during the data collection process would form an integral part of the co-constructed discourse in collaboration with the teachers. As Workman (2007) observes, the role of a researcher working in the field of study is one that is influenced inevitably by the context of the organisation and the inquiry process. Robson (2002) refers to this phenomenon as the practitioner researcher.

Working as a HT within the authority where this study was carried out, meant having certain advantages, as described by Bonner and Tolhurst (2002). These include: understanding the culture being studied to a greater extent; being able to blend in more naturally with the social interactions; and having a greater impetus to tell and judge the truth due to the established relationship. Furthermore, to have a greater knowledge of the politics of an institution and how it works in reality, which may take an outsider much longer to acquire, means that approaches to and engagement of the participants can be facilitated more easily. Gallais (2008) however, notes that a disadvantage of the practitioner researcher's position is that it is harder to gain neutrality and that a heightened sensitivity is required to gain rich results. My position as a HT, working within a familiar local authority where the schools and teachers were relatively unknown to me in some ways gave me the best of both worlds. While having knowledge of the workings of the school and an insight from the HTs about the politics therein, I was able to maintain a greater level of neutrality because I was not directly linked to the schools or the participants.



## **5.7 Ethics**

During this process I adhered to the British Educational Research Association's (BERA) ethical guidelines for conducting research. I completed a School of Education ethical approval form and gained ethical approval to begin the research. I also obtained permission from the local authority and HTs of the case study schools and informed teachers of the research intentions both verbally and by means of an information sheet given to each participant to gain their agreement to participate in the study (see Appendix 3). Although I had never met any of the interviewees before the initial interviews, I was aware that my position as a HT within their local authority may cause them to feel restricted in the answers they could give. I was keen therefore, from the outset to put participants at ease with the assurance that anything they said would be kept confidential and not reported back in any way to their school's management team. I also assured them that during each stage of the research process their data would be kept securely and every reasonable attempt would be made to keep them anonymous, e.g. pseudonyms for names of teachers and schools would be used. Although HTs would possibly be able to identify teachers in their own school who took part, the use of pseudonyms was aimed at making this more difficult.

To address the issue of any sensitive issues which may have been raised during interviews, paraphrasing rather than direct quotes was used and careful consideration was given to the inclusion of any personal data. I was fully aware of Child Protection procedures and was prepared to pass on Child Protection concerns which may have been raised to the Child Protection Coordinator in the school (the HT) immediately. Permission was obtained from the HT of both schools to take pictures of classroom displays on the understanding that children would not be identifiable in these. No faces appear in the pictures and names are not detectable on children's work in order to try to protect anonymity of pupils and teachers. Data gathered has been kept securely at all times and will be destroyed on the completion of the thesis.

I was aware that my presence as an interviewer would not be an invisible one and would unavoidably exert an influence of some kind, on the responses of the interviewees, but sought to be as neutral as

possible during the process while recognising that my position would form an inseparable part of the co-constructed discourse with the teachers. After the interviews each participant was sent a copy of the summary of answers they had provided and given the opportunity of changing or withdrawing any of the responses they felt to be inaccurate. They were also informed of their right of withdrawal at any point in the process.

## **5.8 Research Quality**

The methodology employed in this research study was aimed at allowing a picture to emerge of how IDL is being realised within primary school classrooms and to uncover teachers' views and understanding about IDL. Throughout the process I was conscious that my own views and thinking on the subject were unimportant and I was aware of the need to strive for neutrality. To do this rich descriptions of each school have been given using information provided by HTs, HMIe reports, interviews with teachers, classroom observations, follow up discussions with teachers and follow up visits to the schools. A limiting factor may be considered as the small number of schools and participants involved within only one local authority. This, however, was a choice made, together with the case study and interview methods chosen, to elicit rich personal data from two differing contexts.

## **5.9 Conclusion**

Within a pragmatic constructivist stance, the view taken is that the knowledge resulting from the research is provisional because the outcome is always dependent on the context in which it is carried out (Biesta and Burbules, 2003). Through the actions of the researcher, hypotheses are generated or what Dewey called 'warranted assertions' (Burbules and Biesta, 2003). These assertions are not a description of how the world is, as an absolute truth that can be applied across the board, but instead they represent the relationship between the actions of the researcher and the other research participants, and their consequences. In drawing conclusions from this study therefore, it is my aim that the assertions made here might help other educators to view their situations more intelligently, depending

on how relevant they judge the phenomenon under investigation to be to their own situations, a process which Merriam (2009) calls 'reader or user generalizability'.

## Chapter 6

### Macro Level Policy Analysis

*“It is one thing for course leaders to design new courses in response to particular policy texts; how those new courses are actually experienced by students could well be a different matter.” (Furlong et al., 2000)*

#### 6.1 Introduction

Policy making can be viewed as a discursive process, involving the production of spoken and written language by social beings in particular settings (Wodak, 2008). It is an instrument by which people represent their view of the world (Fairclough, 2003). Discourses emerge from groups of people socially interacting and come to mould the social world, influencing the perceptions and behaviours of individuals. This has implications in terms of whose voices are behind the discourses and with whom the power lies.

As Bernstein (2000) asserts, policy is recontextualised as it traverses between the stages of production and implementation. At the implementation phase, policy discourses are translated by professionals who decode and recode messages so that new discourses can emerge (Spratt, 2017). In this way it can be understood that teachers are not simply the vehicles of delivery, but active makers of policy (Maguire et al., 2015). If policies are vague and confusing then, this is more likely to lead to an implementation gap (Supovitz and Weinbaum, 2008) where practices will not reflect policy intentions.

#### 6.2 Policy Themes

In order to determine how likely teachers are to understand IDL practices, it is necessary to consider the policies they have been presented with in relation to this. It is suggested by Jager and Maier (2009) that strands of discourse around a common theme, can be grouped and sub-grouped. This approach has been adopted in this chapter, and the identification of different themes that coalesce around the notion of interdisciplinarity in the school context will be considered. CfE is the policy which has brought IDL to the fore in Scottish education and by examining some key policy documents, it is possible to identify

themes which have been associated with it. One of the documents which has been considered is *A Curriculum for Excellence: Purposes and Principles* (Scottish Executive, 2004). This was one of the earlier CfE documents which set out the values and laid the foundations for discussion around interdisciplinarity. *Building the Curriculum 3* (Scottish Government, 2008) is another key document which makes frequent reference to IDL and is drawn on by subsequent advisory papers. The *CfE Briefing Paper 4* (Education Scotland, 2012) is, perhaps, the most relevant document to IDL as its main purpose is to provide practitioners with advice about interdisciplinary practices so it will also be taken into account. The final document for analysis is *A Statement for Practitioners* (Education Scotland, 2016), as it includes IDL as a key feature for teachers to consider.

### 6.2.1 Making Links

In many of the CfE policy documents teachers are advised to make links in various ways. One of the approaches recommended is to develop connections which reach across every area of learning. For example, “There should be clear links between the different aspects of young people’s learning, including opportunities for extended activities which draw different strands of learning together” (Scottish Executive, 2014, p15) and “..ensuring connections between all aspects of learning and support for learning” (Scottish Government, 2008, p4). These statements have a very wide focus and could relate to almost everything a pupil does in relation to their school life (i.e. extracurricular activities, school trips, playtimes etc).

In some parts of the documents, rather than concentrating on learning in general, there is a more refined focus on linking school subjects together. The following statements provide examples –

..young people achieving the broad outcomes that we look for from school education, both through subject teaching and more cross-subject activity. (Scottish Executive, 2004, p4)

Those involved in planning the curriculum, including partners, should be conscious of the positive role which experiences and learning connected with culture, art, music and drama can have in providing a basis for developing the four capacities and for providing innovative approaches to learning across other areas of the curriculum. (Scottish Government, 2008, p14)

Important themes such as enterprise, citizenship, sustainable development, international education and creativity need to be developed in a range of contexts. Learning relating to these themes is therefore built in to the experiences and outcomes across the curriculum areas. (Scottish Government, 2008, p23)

The statements above make no reference to IDL yet in other places making cross subject connections is directly linked to it. For example:

Interdisciplinary learning, sometimes known as interdisciplinary studies, is a planned approach to learning which uses links across different subjects or disciplines to enhance learning. [IDL] is based upon experiences and outcomes drawn from different curriculum areas or subjects within them. (Education Scotland, 2012, p2)

Effective interdisciplinary learning is often based around a few big ideas which describe the interdisciplinary elements of combining a few curriculum areas. (Education Scotland, 2012, p3)

Plan interdisciplinary learning (IDL) to make natural links across learning. Be aware of what is happening in other subjects and make connections. (Education Scotland 2016, p2)

The documents do nothing to determine when making connections between subjects constitutes IDL and when it doesn't, therefore making it hard for practitioners to determine what differentiates IDL from other work which blurs subject boundaries. There is the suggestion that primary practitioners will

find it easier to plan for cross subject connections to be made than their secondary counterparts, when it is stated that, “Primary schools have major advantages in promoting coherence by helping children to see links between different aspects of learning within and across subjects and curriculum areas and in interdisciplinary studies” (Scottish Government, 2008, p32). This statement mentions interdisciplinarity alongside making cross subject links but offers nothing to practitioners about how these differ.

It is clear, however, that responsibility for planning and assessing of IDL activities lies primarily with schools and teachers -

It is the responsibility of schools and their partners to bring the experiences and outcomes together and apply these entitlements. (Scottish Government, 2008, p5)

Teachers will be expected to assess the level and extent of achievement by reference to the young person’s learning across curriculum areas, wherever the learning has taken place. (Scottish Government, 2008, p6)

One of the reflective questions aimed at teachers asks, “How well do you plan the delivery of interdisciplinary learning using experiences and outcomes across curricular areas to provide a coherent curriculum?” (Scottish Government, 2008, p34).

As detailed in Chapter 4, merely making cross curricular links does not constitute IDL and yet, as shown above, these two concepts are conflated within the documents. Clarity around this issue has not improved over time.

### *6.2.2 Relevant Contexts*

There are four contexts of learning cited in CfE which are: “Ethos and life of the school as a community, Curriculum areas and subjects, Interdisciplinary Learning and Opportunities for personal achievement”

(Scottish Government, 2008, p13). This clearly sets IDL as a context for learning in its own right and is reinforced by statements such as: “Interdisciplinary studies, ..... can provide ...stimulating contexts to meet the varied needs of children and young people” (Scottish Government, 2008, p21).

The idea that crossing subject boundaries should be linked to exciting, contexts is proposed in the reflective question, “How can you cluster experiences and outcomes into meaningful groupings to provide appropriate and exciting contexts for learning?” (Scottish Government, 2008, p25). And later in the document, “Learning in a variety of contexts supports and reinforces the development of numeracy, literacy and health and wellbeing across the curriculum” (Scottish Government, 2008, p30). These statements suggest that providing varied and engaging contexts will create the conditions for cross subject working to take place. In other parts of the documents, however, the notion of contexts being relevant to students is also mentioned, but this is done in different ways.

The following statement seems to refer to how pupils will see a relevance to the various Es and Os from different subjects once they have engaged in IDL lessons, “Well designed interdisciplinary studies..... often provide highly motivating contexts for learning which can help children to see links between and the relevance of different aspects of the experiences and outcomes” (Scottish Government,2008, p34).

As time has progressed, however, the language of relevance has seen a more explicit shift towards learning which directly relates to the pupils’ own experiences:

In best practice, interdisciplinary learning provides a stimulating and self-motivating context for learning and is both enjoyable and relevant. (Education Scotland, 2012, p4)

[IDL] can provide opportunities for mixed stage learning which is interest based. (Education Scotland, 2012, p2)



It is advised that, “This [IDL] can be achieved by providing a context that is real and relevant to the learners, the school and its community” (Education Scotland, 2012, p2). In the last statement it could be argued that rather than *being* the context, IDL is also presented as something which can be linked with relevant and real-life contexts (i.e. that when a real and relevant context is provided, IDL can be achieved). This would correspond to associating IDL with a theme or topic within the primary school. However, as discussed in Chapter 4, merely linking discrete subjects to a theme, regardless of how engaging or relevant that might be, does not necessarily constitute IDL and is more aligned with cross curricular approaches.

Relevance is closely associated with the academic definitions of IDL, as detailed in Chapter 3. Figure 1 (section 3.3.4) illustrates that one of the essential elements of IDL is that activities should be purposeful to the learner. As outlined above, however, the concept of relevance is used in different ways in the CfE documents and is related mainly to the overall contextual theme. This could lead to practitioners within the primary sector equating IDL with their general class topic.

### *6.2.3 Developing knowledge and skills*

Figure 8 below, illustrates how often ‘skills’ has been mentioned within the BtC documents, and if we compare it to Figure 9 which shows the frequency of IDL in the same documents, it is interesting to note, how similar in shape these two graphs are. We can see that there is a peak for IDL in BtC3 and for ‘skills’ in BtC4. Both IDL and ‘skills’ feature heavily in the earlier documents. This strengthens the argument that the focus on IDL has corresponded strongly to the emphasis, within CfE, on generic skills and competencies.

Figure 8: Frequency of Skills in BtC Documents

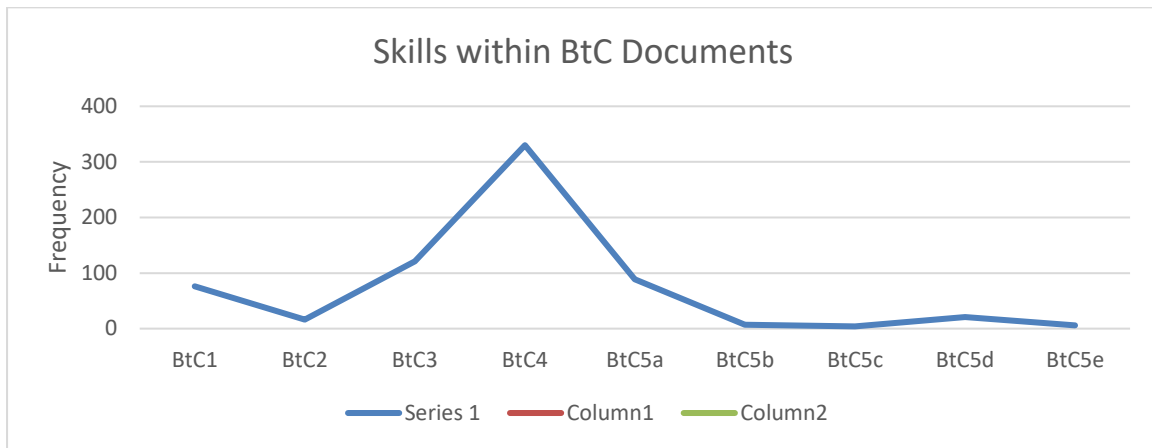
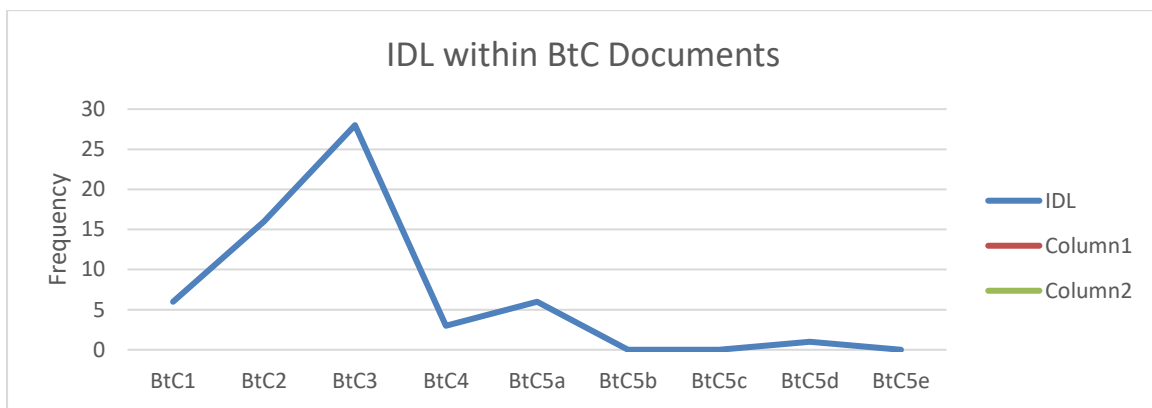


Figure 9: Frequency of IDL in BtC Documents



While CfE policy documents have emphasised the development of skills in many areas, they also claim that IDL leads to the development of knowledge as well. For example, “[IDL] ensures progression in skills and in knowledge and understanding” (Scottish Government, 2008, p21: Education Scotland, 2012, p2). When planning IDL, practitioners are advised to pay close attention to “...progression over time in knowledge, attributes and capabilities, and skills, including higher-order thinking skills” (Education Scotland, 2012, p2). These statements do nothing to provide practitioners with practical ideas of how to structure IDL tasks so that knowledge and skills increase, but merely imply that, through IDL, this will automatically happen. They describe perceived benefits of IDL rather than describing IDL itself.

While the statements above focus on the development of knowledge and skills only, there is some mention in the *CfE Briefing Paper 4* of application when it states, “[IDL] promotes the development and application of what has been taught and learned in new and different ways” (Education Scotland, 2012, p2) and “It leads to a better, more rounded understanding of important ideas and to an increased competence in using knowledge and skills in transferable ways” (Education Scotland, 2012, p4). The latter statement suggests that IDL will lead to students being able to use knowledge and skills in a range of contexts, but it does not state that the application of knowledge and skills is integral to the IDL process. So, while this document provides a hint to practitioners that application might be important, the message could be easily missed.

#### *6.2.4 Innovation and creativity*

Learning across the curriculum is associated in CfE with the ability of teachers to be innovative and creative. For example, BtC3 states that the new curriculum will provide, “..innovative approaches to learning across other areas of the curriculum” (Scottish Government, 2008, p14). It also says, “Those involved in planning the curriculum, including partners, should be conscious of the positive role which experiences, and learning connected with culture, art, music and drama can have in providing a basis for developing the four capacities and for providing innovative approaches to learning across other areas of the curriculum” (Scottish Government, 2008, p14). It is suggested that teaching across traditional subject boundaries will lead to “...time and space for innovative and creative teaching and learning” (Scottish Executive, 2004, p16). How this ‘time and space’ will materialise is not made clear, however, and no practical examples are provided of how the ‘innovative approaches’ may be developed.

CfE claims that it,

...allows for professional autonomy and responsibility when planning and delivering the curriculum. ....The framework provides flexibility to organise, schedule and deliver experiences and outcomes in ways that meet the needs of all learners. (Scottish Government, 2008, p11)

This appears to be empowering teachers with the freedom to be creative, innovative and make informed judgements and decisions about curriculum implementation. However, the document then goes on to describe six entitlements for all children and young people and within these there are descriptions of what ‘good education’ will look like and reflective questions for teachers and educators to measure themselves against. Indeed, while the early CfE documents have the rhetoric of a process model of curriculum as described by Kelly (1999), later documents contain more prescriptive language associated with a curriculum focussed on content and product (Priestley and Humes, 2010). An example of this prescriptiveness can be seen in *BtC3* when it states that, “Learning should be made available in a range of ways including interdisciplinary learning and a range of opportunities which ensure a broad approach, enabling, for example, a coherent understanding of environmental issues” (Scottish Government, 2008, p5). The word ‘should’ leaves no room for debate and practitioners are clearly being told what to do but with little explanation of how this can be achieved.

Briggs and Sommefeldt suggest that, “..teaching a prescribed curriculum is associated with a lack of spontaneity and creativity, which leads to teaching becoming ‘outcome focused’” (2002, p13). It could also be argued that since CfE has introduced benchmark documents and National Assessments, it is encouraging teachers to concentrate their efforts on subjects to be assessed rather than engaging in innovative and creative practices. Priestley and Minty (2013) suggest that these types of conditions are leading to components of CfE (of which IDL is one) being seen as risky and done instrumentally.

### *6.2.5 Partnership Working*

There is some mention in the policy documents about partnership working being associated with IDL. For example, “Interdisciplinary studies can also take advantage of opportunities to work with partners who are able to offer and support enriched learning experiences and opportunities for young people’s wider involvement in society” (Scottish Government, 2008, p21). This statement is reiterated in the *CfE*

*Briefing Paper 4* (2012) and the question is posed to practitioners, “To what extent will you be working with parents, colleagues in the cluster, or partners in the community, both to ensure they understand what the benefits of interdisciplinary learning are and to enrich the experience for learners?” (Education Scotland, 2012, p4). Once again there is no explanation provided within these policy statements about what kind of partnership projects would constitute IDL and how these would be differentiated from those that were not. In fact, the guidance seems to imply that any partnership working may be constituted as an interdisciplinary activity.

### **6.3 Guidance for Practitioners**

Practical guidance around the implementation of IDL did not begin to emerge until 2008 when practitioners were advised that IDL -

- can take the form of individual one-off projects or longer courses of study
- is planned around clear purposes
- is based upon experiences and outcomes drawn from different curriculum areas or subjects within them
- ensures progression in skills and in knowledge and understanding
- can provide opportunities for mixed stage learning which is interest based

(Scottish Government, 2008, p21)

Within the statements above, however, there is no clear indication for the teacher about what the starting point for planning IDL work should be, or what ‘clear purpose’ means. Does this mean a clear purpose for the teacher, in which case this may involve targeting a gap in children’s learning, or does it mean a clear purpose for the pupil which may mean relating the subject content to a real-life context? Teachers are advised that there should be Es and Os drawn from the curricular areas but there is no mention of how many should be involved and if these are to be overtly planned for and assessed or merely just

covered. It is recommended that Es and Os should provide the basis for planning and this in line with a subject centred approach (as outlined in section 4.3.1). However, interest-based learning is also advocated and this is a child centred approach (see section 4.3.2). This provides ambiguity around how to begin the planning process. The idea of ensuring progression in skill, knowledge and understanding is promoted, but again, there is no advice for schools as to how this should be done.

Some examples of what IDL might look like in practice were offered by the *CfE Briefing Paper 4* (Education Scotland, 2012) which focussed on IDL. It could be argued though, that the examples provided are so varied and diverse that they fail to equip the reader with any real sense of an IDL task. To confuse matters even more, examples of bad practice in relation to IDL are also provided with the confession that “...these do not necessarily provide the benefits of interdisciplinary learning” (Education Scotland, 2012, p1). No explanation is provided, though, to indicate why these do not meet the interdisciplinary criteria.

The first example of good practice provided by this document relates to a secondary setting and so is of little value to primary practitioners. It involves different departments coordinating their work to investigate the overlapping theme of probability, which can relate to maths and science. The example involves discrete subjects being taught when the pupils participate in the maths and science lessons, although practicing the skills of probability in both subjects. This corresponds to what Fogarty (1991) refers to as a threaded approach to learning. When compared to Figure 1 (see section 3.3.4) and Figure 9 (see section 7.12.1), this type of activity does not constitute an interdisciplinary approach, but rather a cross curricular one because discrete subjects are being studied at separate times although certain skills are focussed on within them.

The second model of IDL given in the IDL Briefing Paper falls more into line with academic definitions in that, it suggests study should focus round a theme or an issue, meet a challenge, solve a problem or complete a final project (Boix-Mansilla, 2010). One useful example of effective practice is provided when it says “...children might use knowledge and skills developed in the study of local history, art

and design and French language to create informative and attractive web pages for their peers in a French school” (Education Scotland, 2012, p1). This example could potentially contain the essential elements of an IDL task, as outlined Figure 1.

In 2016 the Scottish Government declared in *A Statement for Practitioners* that the priorities of CfE were being refocused. “Moving forward, the two key priorities for CfE are: ensuring the best possible progression in literacy, numeracy and health and wellbeing for every child and young person; and closing the attainment gap” (Education Scotland, 2016, p2). Within this document, practitioners are clearly advised to prioritise literacy, numeracy and health and wellbeing but IDL still features in the list of key messages. Under the heading of ‘What to do’ it is stated that teachers should – “Plan interdisciplinary learning (IDL) to make natural links across learning. Be aware of what is happening in other subjects and make connections” (Education Scotland, 2016, p2). Under the heading of ‘What not to do’ practitioners are advised – “Do not spend time on IDL which does not provide opportunities to apply and deepen learning or is contrived” (Education Scotland, 2016, p2). Once again, it could be argued that, the advice given to teachers here regarding IDL is unclear and confusing. For example, merely making links across learning and being aware of what is happening in other subjects does not require students to apply their knowledge and skills and ‘deepen their learning’ and yet this is what is advocated in the first statement above. There is no concrete advice given about what IDL should consist of, how many disciplines should be involved in the process, which disciplines could work favourably together or the kind of tasks which would facilitate pupils to apply their knowledge and skills and therefore result in cognitive advancement.

### *6.2.6 Mixed Messages*

While IDL is promoted in CfE, as has been indicated above, there are other areas of the policy documents which seem to conflict with this concept, such as the goal of subject specialisation as a pupil progresses through the education system. For example, it is stated that “Throughout a young person’s learning there will be increasing specialisation and greater depth, which will lead to subjects

increasingly being the principal means of structuring learning and delivering outcomes.” (Scottish Government, 2008, p20). This statement implies that subject specialisation is the desired goal of a pupil’s educational experience, arguably undermining IDL as a concept.

## **6.4 Conclusion**

This chapter has shown that while CfE policies credit IDL with a list of benefits such as, helping students make connections across learning, creating motivating and relevant contexts for learning, developing knowledge and understanding, providing space in the curriculum for innovative teaching and learning and promoting partnership working, no clear definition is provided as to what IDL actually is. It is conflated with making links across subjects but with no explanation about what differentiates it from other types of approaches. In short it is an underdeveloped and confused concept within CfE. Even when examples of IDL practice have been provided, these are wide and varied and most do not match the criteria for IDL as outlined in this thesis (see Figures 1 and 11).

The mixed and unclear policy messages may be the result of the competing tensions and voices within the policy making process. It may be that policy makers themselves have been unclear about the nature of IDL and therefore it has not been clearly defined in policy. Whatever the reasons, practitioners have been left to make meaning of policies and translate them into practice. It is the aim of this study to shed light on how teachers have done this and how IDL is understood and implemented at Meso level in the Scottish primary sector. This Macro policy analysis will be used to help make sense of the data gathered from the case study schools, and these will now be detailed in the following chapters.



## **Chapter 7**

### **Case Study 1**

#### **Burnhill Primary School**

##### **7.1 Introduction**

This thesis is focussed on answering the research questions outlined in section 5.2. The findings from a case study school will now be presented to seek answers to those questions. As constructionist, the epistemological framework governing this thesis recognises that the purpose of inquiry is the advancement of understanding rather than the search for absolute truths. It sees inquiry as seeking a deep understanding of the subject at hand, bearing in mind that findings are context specific. From a pragmatic standpoint, the aim is to gain insight and make sense of the research findings, uncovering uncertainties when they appear, and exploring possible reasons or causes for the concrete practices which are observed. This epistemology will underpin the work in this chapter.

##### **7.2 The Schools**

In Scotland there are over 2,000 primary schools which comprise of cohorts ranging from Primary 1 to Primary 7. The two schools chosen for this study are situated within the same local authority but have differing approaches to IDL. In this chapter and the next, each school will be considered separately as individual case studies, in an attempt, to uncover some answers to the research questions outlined above. A cross-case analysis will then follow. Pseudonyms for the school and teachers' names have been used, in attempting to maintain the anonymity of those involved.

##### **7.3 Burnhill Primary**

The first school to be considered will be referred to as Burnhill Primary. Burnhill is a large non-denominational primary school and was chosen for this study because it was highlighted by the local authority where it is situated as being one of good practice in relation to IDL. This school has nine mainstream classes, a Gaelic Unit and a large nursery. Within the primary school itself there are well over 200 children. The school is situated in an area of low deprivation, with only six percent of the

children being classed in the lowest quintile (20%) of the Scottish Index of Multiple Deprivation (SIMD).

Burnhill Primary has had a focus on developing IDL as part of the school improvement process for a number of years. There is a positive and friendly ethos in the school, as was noted in a recent HMIE Inspection, and it has a good reputation within the local community. One reason the HT gives for this, is the IDL open evening, which is held during the third term each year. During this event, families and invited guests visit the school to see the work the children have been doing. Each class is ‘transformed’ into an aspect of their IDL topic (e.g. desks rearranged and elaborate displays relating to the topic placed around the classroom), and children lead their families round, and talk about their work. The school handbook states prominently, that parental involvement is a priority, and that children are given a variety of opportunities to lead their learning and this includes voting to decide the IDL topics which are studied each term.

The school building is a large single storey 1970s design with closed classrooms, as opposed to open plan. Classrooms and shared areas are bright, spacious and well furnished. School staff use space effectively to create a range of additional teaching areas, including a music room, a well-resourced library and an ICT suite. There is a large gymnasium. Parts of the playground have been creatively developed by pupils, staff and parents. The gardens are seen by staff and children as enhancing learning about the environment.

#### **7.4 Structure of IDL Planning**

One of the main research questions in this thesis is focussed on how primary teachers plan for and implement IDL work in the classroom. Within Burnhill Primary, teachers are given a progressive list of skills and Experiences and Outcomes (Es and Os) which must be covered by their class in each term for IDL. This forms part of a coherent, structured approach taken by the school, aimed at ensuring the Senior Management Team (SMT) have an overview of what is being taught at each stage, and that

children experience progression through the levels of CfE. There is also a three-year cycle of different ‘worlds’ which provides a framework for choosing topics to be studied each term, in order, to facilitate access to the broad general education as outlined in CfE. There are nine ‘worlds’ in total which span three years, and these are, ‘Our Imaginative World’, ‘Our Global World’, ‘Our Healthy World’, ‘Our Future World’, ‘Our Ancient World’, ‘Our Historical World’, ‘Our Scientific World’, ‘Our Multi-Cultural World’ and, ‘Our Natural World’. All classes study the same ‘world’ each term, but the topics chosen by each class may differ. The children in every class are given the opportunity to choose which topic they would like to study within the ‘world’ for each term, through a democratic voting system. Tensions around this, however, were expressed by the teachers interviewed, who said that it is easier for the teacher if they have already taught a topic because they will have planning materials available. They acknowledged that sometimes children could be ‘persuaded’ to vote for a topic that the teacher wanted. This will be discussed later.

As well as the main topic, in either November or January, every class has a two week focus on a Scottish theme, studying aspects of Scotland’s culture, heritage, identity or language. Burnhill Primary break the year down into four terms which run from August – September, September – December, January – March and April – June. The following grid shows how the three-year cycle progresses.

*Table 4: Burnhill Primary Planner*

<b>SESSION</b>	<b>TERM 1 Aug-Mid Sept</b>	<b>TERM2 Mid Sept - Dec</b>	<b>TERM3 Jan - March</b>	<b>TERM4 April - June</b>
Year 1	Literacy / PSD Topic	Our Imaginative World	Our Global World	Our Healthy World
Major Curricular Focus	Literacy / Health & Wellbeing	Expressive Arts / Technology	Social Studies	Health & Wellbeing / Sciences
Year 2	Literacy / PSD Topic	Our Future World	Our Historical World	Our Scientific World

Major Curricular Focus	Literacy / Health & Wellbeing	Technologies / Sciences	Social Studies	Sciences
Year 3	Literacy / PSD Topic	Our Multicultural World	Our Ancient World	Our Natural World
Major Curricular Focus	Literacy / Health & Wellbeing	Religious and Moral Education	Social Studies	Sciences / Social Studies

Once the topic has been determined, through a democratic voting process, the teacher gives out a 'KWOFF' grid to each child and this stands for:

- K     What I know already
- W     What I want to know
- O     I would like opportunities to ....
- F     How will I find out?

Having collated this information from the children, teachers can then begin to plan activities that will be undertaken during the term, bearing in mind the skills which must be covered. At the end of each term the pupils assess their learning, by carrying out an evaluation activity, stating one thing that they enjoyed, two skills they have developed and three things they have learned.

At the end of term three each year, when the whole school are covering their social studies topic, each classroom is aesthetically changed to reflect the theme being studied and parents, families and other visitors, such as representatives from the local authority, are invited in to the school for an open evening to see the displays the children have made and the work they have done. Children are asked to bring their families along to show off their work and talk about the topic covered. The HT reported that this event is always very well attended and makes for good relations within the local community. She said that in evaluations, the IDL open evening is consistently mentioned as being a positive aspect of the school.

As part of this case study two teachers were interviewed and an observational visit, during their IDL time in class, took place. The IDL open evening was also attended, which provided a chance to see the home link aspect of the work and find out the kinds of activities which had taken place in IDL across the school. This also provided an opportunity for follow up discussions with teachers.

## **7.5 The Teachers**

The two teachers who took part in this study from Burnhill Primary were volunteers, one male and one female, and were endorsed by the HT of the school as being competent ‘all round’ practitioners. It was assumed that both teachers would be examples of good or best practice for carrying out IDL work. They varied in their length of teaching experience and, also in the stages which they taught. This allowed comparisons to be drawn between someone who had only ever known teaching within CfE and someone who remembered working with 5-14, albeit briefly. The teachers were also working in different departments of the school, one in infants and one in seniors, which allowed an insight into how IDL was implemented across the school. A brief biography of each teacher will now be given before considering what each said regarding IDL. Pseudonyms have been used for reasons of anonymity.

### *7.5.1 Peter*

Peter had been teaching for nine years at the time of his interview for this study and had a professional background in applied science. However, after a period where he did some voluntary teaching work he felt that he was a ‘*people person*’ and didn’t want to spend his working life in a laboratory. He worked for a year in a language unit in Glasgow before doing the postgraduate training for primary teaching and worked in Burnhill Primary ever since. Peter indicated a preference for working in the upper stages of the primary school. At the time of this study he had a P6/7 class and reported that he was enjoying working with them.

During his interview Peter mentioned on several occasions that he was trying to get his work / life balance right. Workload seemed to be a prevalent issue and there was an obvious tension between what he believed to be a motivational way of planning his lessons based on the children’s interests and the amount of work involved for the teacher due to this. This will be explored later.

### *7.5.2 Emily*

Emily had been teaching for three years at the time of this study. She had always wanted to be a teacher from a young age and went straight from school to do the Bachelor of Education (BEd) course in primary teaching. Emily had worked in another primary school for two years before going to Burnhill but her experience there had only been of infants and she was currently teaching a P3/4 class.

## **7.6 The Role of the Teacher and Purpose of Education**

As outlined in Chapter 5, teachers are the main instruments of change with regards to educational policy, and teacher agency is dependent on, not only a teacher's own personal and professional capacities, but also on other factors and dimensions which shape the ecologies of their work. Significant factors which can influence how a policy is translated into action by a teacher are the teacher's own personal beliefs about their role in the classroom, the purpose of education in general, as well as how relevant and worthwhile they view the particular policy or initiative to be implemented, which in this case is IDL. Therefore, after some preliminary questions, both teachers were asked about these things.

When asked about the role of a teacher Peter was quick to answer that it is, “..to educate not only academically but also socially and emotionally.” Peter likened being a teacher to being, a “guru” in the sense that it involves teaching things like respect, how to be a good human being, instilling confidence in the pupils, being a good role model and giving “a lot of yourself” to the class. He explained that being a male primary teacher was advantageous because many children do not have father figures and he could provide a positive male role model for those who didn't have one.

Emily's immediate response, when asked the same question, was to say that the primary role of a teacher is “nurture”. She said, in her opinion, if children are cared for, the work they produce will be better because they will be happier and will enjoy it. “Teaching is about building up that relationship with

the children so that they feel safe and secure and know that there is no such thing as a wrong answer so that they can come and ask or try out something new and won't be held back."

When talking about her class, Emily explained, "I don't have any high fliers in the class. They are all middle ability and working on First Level of CfE." This seemed to indicate that Emily did not have high expectations about what her class could achieve.

When talking about nurture, Emily used the illustration that if a child is having a bad day they may become withdrawn and not wish to participate in activities.

I know from experience that if a child is not having a good day they pull in to themselves and they are not up for joining in or up for working. That's one of the main challenges, making sure that the child feels as though he's got a voice. Then you build up the strategies that work.

[Emily]

Both Peter and Emily spoke strongly about the importance of developing good relationships with the children and having a "good rapport" with them and both saw being nurturing as a big part of their role. They both expressed their feeling that the role of the teacher is changing, because society is changing and that children need good role models now. When asked about the purpose of education, neither of them mentioned subject matter or knowledge transference, but rather, concentrated on the need to build social and emotional skills. It was evident, however, that both teachers were committed to their roles and spoke with enthusiasm about their jobs.

The views expressed above by Peter and Emily echo the findings of Priestley and colleagues (2015), when exploring the beliefs of teachers regarding the role of teachers and the purpose of education. They found that there was little emphasis on the importance of subject knowledge but rather a focus on socialisation and the development of key skills by the teachers and senior managers involved in their study. They found that there was a confusion of vague ideas about education articulated by teachers.

This lack of clarity among teachers about their role and the purpose of education may be seen, in the main, as a result of external factors such as national and local policies which have led to incremental changes in the dynamics of schooling without a clear understanding of the purposes of these changes and a lack of professional consideration and discussion around the role and purpose of education. This is in line with arguments put forth by Fullan (2003), who advocates the need for a re-culturing of schools when implementing changes rather than just restructuring. This will be explored further in the following chapters.

## **7.7 Challenges**

Two common answers emerged from Peter and Emily when asked what the challenges of teaching are. These were behaviour and workload.

### *7.7.1 Behaviour*

As outlined above, Peter and Emily both said that nurture was a main feature in the role of the teacher so when asked about the challenges in teaching, perhaps predictably, the main issue raised by them was the behaviour of the children. The following quotes provide examples of what they said.

There can be behaviour issues within some classes. I'm lucky, I've got a good class this year.

[Peter]

Children can act up if they are not interested. You've also got the timing of things and planning side and all of that can be a challenge. But ultimately, I think it doesn't matter how much time you spend on your planning, if that child is not having a good day then there's no point in planning for it because they won't participate in it. [Emily]

It was interesting to note, however, that both teachers saw IDL as an antidote to poor behaviour in the class because it kept pupils so engaged.



It [IDL] has a positive effect on behaviour. They [the pupils] are more lively than they would be in a maths lesson because you're giving them more of a free reign. Motivation keeps the behaviour at low level because they're constantly on task. [Emily]

There is motivation, engagement, excitement. The fact children are engaged improves behaviour. [Peter]

The idea of using IDL as a means to improve engagement will be discussed further in Chapter 9.

### *7.7.2 Workload*

Another challenge mentioned by both Peter and Emily was the issue of workload, especially around planning. According to Emily, the time which must be spent preparing lessons is onerous on teachers. She felt that, regardless of how much time was spent on this though, if a child was not ready to learn they may not participate anyway. Both Emily and Peter seemed to agree that a child centred approach to education was a good thing but both recognised that this had implications for teachers' planning and expressed tensions in their beliefs about this and the practical implications for workload.

Peter said, "I love IDL but in the past, you could have shared planners but now **that** topic might not come round for every three years and your kids might not pick **that** topic." Here Peter is referring to the fact that, in the past, topics were set in his school and teachers knew at the beginning of the year what themes they would be covering. These would be repeated at certain stages and so teachers may have already planned for that topic or could draw from a bank of planners which had been built up by teachers over the years. The new school policy within Burnhill Primary on IDL however, as outlined above, had moved towards a child-initiated model of topic determination. Peter expressed the belief that he felt it was a good thing that topics should be child initiated and child led but his statement clearly reveals a tension.

If the children pick a topic and there is no planner for the teacher, the teacher has to start planning from scratch. This leads to workload. [Peter]

Peter also alluded to the fact that he thought some of his colleagues skewed the democratic voting process in their classes so that their class would ‘pick’ a topic for which the teacher already had a plan. He said he thought this was easy to do because children sometimes had difficulty distinguishing between the different ‘worlds’ e.g. the Historical World and the Ancient World which are similar, and infants, especially, need a lot of guidance in understanding the parameters of their topic choices.

This kind of tension between workload issues, and what teachers believe is best for the children in terms of planning in this instance, illustrates why IDL may not be enacted in the classroom, as envisaged by senior managers within a school, even if there are very clear policies and guidance in place.

Peter and Emily also expressed similar concerns about CfE in relation to their IDL work. The main concerns were –

- Amount of Es and Os to be covered in each subject
- Lack of moderation across schools
- Schools all doing different things and left to make sense of things themselves
- Lack of clear guidelines for assessment
- Teacher preparation time when planning

These themes will be discussed more fully when considering the drivers and barriers to IDL in Chapter 9.

## **7.8 Curriculum for Excellence**

When asked about their views on CfE, there were also tensions in the teachers’ answers, because while acknowledging the difficulties of implementation, both the teachers said that there were aspects of CfE which they liked. For example, Emily said, “Although it’s good for creativity, during IDL work for example, it leads to a lot of teacher preparation time, but I do like it and I like the freedom of it.” Peter said that he worked with the 5-14 Curriculum in his probationary year, and that he believed there had always been the ability to be creative and autonomous with IDL work, even before CfE was introduced.

Peter explained, “In terms of planning and autonomy more experienced teachers say they have always done that anyway, they just didn’t call it IDL they called it topic webs.”

This direct comparison made by Peter between IDL and topic webs reveals a cross curricular understanding of IDL. As discussed in the previous literature review chapters, with this type of approach, the constituent subjects are taught by a single teacher and may relate to a particular theme or topic, but subjects remain as separate entities (see section 4.2.2). In this model pupils may be more likely to make links than when subjects are taught in complete isolation, however, activities are based around single disciplinary areas. A topic web approach, which simply links subjects tenuously or otherwise to a theme, does not ensure that rich learning activities are planned allowing application of knowledge and skills from two or more disciplines. This, consequently, does not constitute IDL.

## 7.9 How do teachers understand IDL?

To address the research question ‘How do primary teachers understand the term ‘interdisciplinary learning?’’, teachers were asked ‘What does IDL involve?’. The following themes emerged.

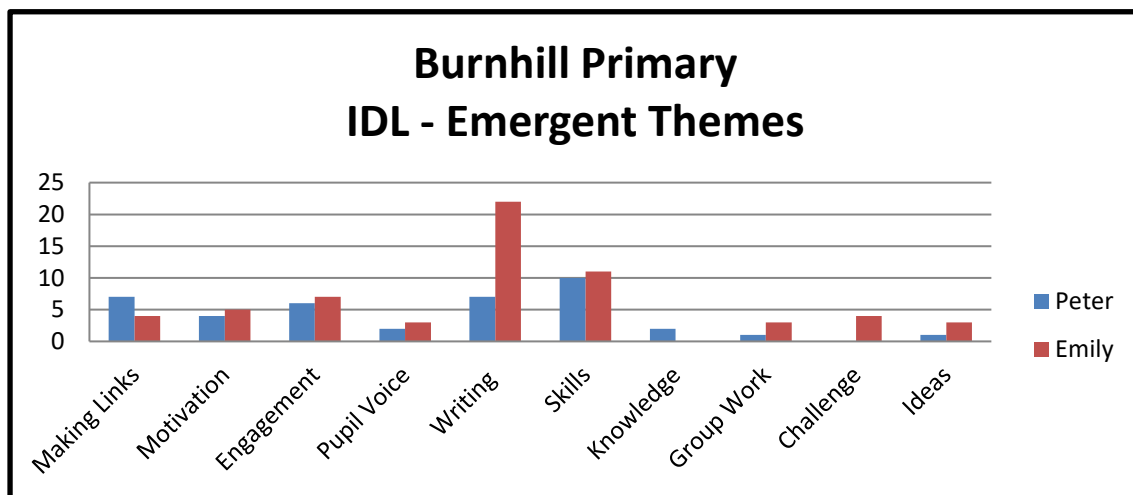
*Table 5: Burnhill Primary Emergent Themes*

Burnhill Primary – Emergent Themes
<ul style="list-style-type: none"><li>• Making links</li><li>• Motivation</li><li>• Engagement</li><li>• Pupil Voice</li><li>• Writing</li><li>• Skills</li><li>• Ideas</li><li>• Group Work</li><li>• Knowledge</li><li>• Challenge</li></ul>

To make more sense of these themes, it was useful to try to ascertain how prevalent each one was for the teachers in the study. To do this, it was decided to measure how many times each teacher mentioned each of the themes in their dialogue. The premise being, that the more frequently a theme was

mentioned by a teacher, the more prevalent it was likely to be for them. The recorded interviews of each teacher were, therefore, listened to again and tally marks made against each of the themes above when mentioned by the individual teachers. The information was then put in the form of bar graphs and pie charts. The following graph indicates which teachers spoke about the various themes and how often these were mentioned in their dialogue.

Figure 10: Burnhill Primary Themes



Of the themes above, only Peter mentioned knowledge as an element of IDL while Emily was the only one who mentioned challenge. All the other themes were spoken of by both teachers.

The fact that ‘knowledge’ was only mentioned by one of the teachers and was mentioned far less than everything else except ‘ideas’, gives support to the argument, discussed in previous chapters, that the acquisition of knowledge has now become much less prevalent among teachers than once was the case. The current focus in educational policy on skills development, as discussed in Chapter 2, is reflected in these teachers’ answers with ‘skills’ featuring highly. The fact that Emily mentioned ‘challenge’ as a key feature of IDL could be the result of the fact that the staff had recently had an authority inspection and challenge had featured as an area for the school to work on. This had resulted in training in higher order questioning and critical thinking skills for staff and, in fact, Emily’s observed IDL lesson was focussed on developing critical thinking (see section 7.13.2).

Indeed, as outlined above, both teachers in this school mentioned ‘nurture’ as a prime factor in their role as a teacher and spoke strongly about having to address the wellbeing of the children in their care.

### *7.9.1 Writing*

Both teachers spoke enthusiastically about writing being heavily involved in interdisciplinary work. Peter said that no matter what the ‘world’ being studied, “There is always a focus on literacy.” He spoke about the fact that children are more engaged in writing during IDL work, that note taking skills improved and the overall quality of writing got better during the process. Emily also mentioned writing frequently when speaking about IDL. No mention was made, however, about two disciplines being involved in IDL, but writing linked to the topic theme. This will be discussed in more detail later in Chapter 9.

### *7.9.2 Engagement*

Both teachers said that they found that children were highly engaged during IDL activities and felt that this was a real strength of doing this type of work. This is perhaps unsurprising given the emphasis within Burnhill Primary on beginning the planning process with the interests of the child. Although more structured and based around ‘worlds’, this type of child centred approach has similarities to Beane’s (1997) integrated curriculum model which places a great emphasis, when beginning any topic, on the interests of the children who democratically vote for the topic about which they want to learn. The aim is to lead to greater engagement and motivation which, in theory, leads to better learning. This will be discussed in more detail later in Chapter 9.

### *7.9.3 Making Links*

Another commonality in the answers of Peter and Emily was making links across the curriculum. Emily described a topic on Spain, which she was doing with her class and spoke about linking numeracy work by putting it in the context of Spanish football. “We could say ‘So how long would it take Renaldo to travel to Barcelona to go and play his game?’” Again, as Peter indicated above, this idea of making

links across the curriculum falls into the category of cross curricular learning, because the children in Emily's example would be carrying out a numerical calculation, set within the context of the topic work being carried out, but no other disciplines would be involved in the process. Emily also described trying to fit in maths with her Mary Poppins topic in a previous session and explained,

Maths can fit in, but it hasn't always tied in with topics I've had in a meaningful way. With Mary Poppins – Let's go fly a kite – we did make a kite and talk about the properties of a kite, but I felt this was a quick lesson and it wasn't hitting the maths targets. [Emily]

This statement highlights the fact that tenuous links can be made to topics, in order, to cover various curricular areas, without having a meaningful learning focus. This type of approach is similar to what Lenoir and colleagues (2000) described as the 'eclectic approach', (as outlined in Chapter 4), to describe what they found was a 'pick and mix' approach to teaching IDL. Elements from a variety of subjects are chosen and taught but with no clear rationale or structure, and little or no relevance to their selection. They found that this may occur as a direct result of a teacher's lack of understanding and education in the area of interdisciplinarity and their perception of how well certain subjects fit together.

#### *7.9.4 Skills*

A fourth commonality in the answer to 'What does IDL involve?' was the theme of skills development. Peter said, "Depending on the 'world' you are studying depends on how the learning improves – e.g. during the Global World, geographical skills improve." Peter went on to say that he thought both knowledge and skills improved during the IDL process, but Emily never mentioned knowledge, only skills. This emphasis on skills as opposed to knowledge may be the result of current trends in curriculum policy (which CfE echoes), as described in Chapter 2, to focus more heavily on skills and capacities rather than knowledge (Priestley et al, 2014). The application of skills, however, was not mentioned but rather the acquisition of skills.

I will now move on to examine how these data relate to the second research questions.

## 7.10 How is IDL work planned for?

To address the second research question “How do teachers plan for IDL work and are there opportunities for collaboration during the process?” teachers were asked to describe their planning. Both Emily and Peter described following the school’s policy, outlined above, which involved the children voting to decide on a topic and then completing a KWOF grid. Peter described consultation with the children as being “big”. However, both Peter and Emily said that in order to devise activities for the children to engage in, teachers made their own additional planners. Emily said, “You come up with your own planner – tying it in to wider opportunities.” Peter described this further by saying that just as teachers under the old 5-14 Curriculum devised topic webs for their IDL work, “We still use that kind of approach - we do an overview.” These comments illustrate that in the case of both Peter and Emily, while following the structured policy of the school on IDL planning, further to that was a topic web style approach to planning, which linked activities within various curricular areas to the topic theme. This is in line with cross curricular as opposed to interdisciplinary work.

Peter and Emily also went on to say that they mostly planned on their own.

You don’t always get the chance to collaborate with colleagues. If someone has done the same topic before you could ask them but no one else’s children may have picked the same topic. If the children pick a topic there is no planner for the teacher has to start planning from scratch.  
[Peter]

Collaborative planning is good for getting ideas and for moderating too. But it’s more difficult to plan collaboratively in a small school. [Emily]

Planning was done mainly as a solitary task and did not involve collaboration among teachers, unless a teacher shared their previous experiences with someone currently undertaking a topic they had done in the past.

The comments above indicate that the teachers thought collaboration was beneficial but were constrained by circumstances in engaging in this. The comments also show that a type of sharing of plans was done informally, indicating that some forms of collaborative cultures (Hargreaves, 1994) did exist in relation to IDL. The focus of this collaboration, however, seemed to be on the adaptation of previous work rather than the creation of generative dialogue (Boreham and Morgan, 2004) between teachers – the formation of spaces where genuine exploration of cultural alternatives to existing practice may occur.

### **7.11 How is IDL implemented?**

To address the third research question “How is IDL work implemented in the classroom and are there challenges and problems for the pupils to solve during IDL activities?”, teachers were asked about the types of disciplines involved in IDL lessons and to give examples of successful work they had completed in the past. The subjects which were mentioned by Peter and Emily were – reading, writing, science, health and wellbeing, geography, expressive arts, technology and maths. Both teachers talked about the problem of trying to link certain subjects such as science, maths and health and wellbeing to topics where there was no obvious connection.

Both Peter and Emily said there was a big focus on literacy during IDL work. Emily said, “Writing is always the one I would do. It ticks a lot of boxes e.g. functional, imaginative etc and it [IDL] makes it [writing] more interesting.” Once again, this focus on literacy when asked about the disciplines involved in IDL, reveals a lack of understanding about the nature of IDL and a notion that a discrete writing lesson, albeit within a context, constitutes IDL practice. This will be discussed further in Chapter 9.

When asked what disciplines are focussed on during IDL it was interesting that neither Peter or Emily mentioned art, and yet it was also evident from the classroom observations and the IDL open evening that a huge amount of work had gone into the production of art for the displays. Peter told me that there



was a lot of pressure in this term on teachers, within Burnhill, to produce artwork for displays because parents and visitors came to the school to see round the classes during the open evening.

If a new teacher comes to the school I warn them about what is involved in this term, so they can begin to prepare for it well in advance. I start preparing in the first term. [Peter]

Peter explained that some classes had an art specialist to cover their non-class contact time and he described them as “the lucky ones”. He said that he often began to plan for the open evening event way back in the first term when he was working on a different IDL topic altogether, because of the amount of work that was involved in getting everything ready. Despite this, however, art was not mentioned significantly when discussing IDL. This anomaly may relate to what was discussed in section 4.5.3, and the fact that art is not deemed a ‘core subject’ in CfE and viewed, perhaps, as relatively less valuable than the prioritised subjects. It may also indicate that teachers perceived art as something which contributed to the fabrication of the image of the school, rather than being a necessary component of an educational programme.

### *7.11.1 Successful Examples of IDL*

When asked to describe a successful example of IDL which they had engaged in, both teachers spoke very enthusiastically about previous work they had been involved in and began to list the type of tasks children completed in relation to the respective topics. When Peter gave the example of his topic on India, his examples again were mainly focussed on literacy. He mentioned that, in writing, the children were able to develop note taking skills, write recipes and engage in imaginative writing as well. He said he made a curry at the end of the topic (notably children were not involved in this process) which parents got to taste at the IDL open evening. While Peter spoke again about the IDL open evening, saying it was such a good thing for the community, he also reiterated the amount of work it was for teachers, and demanded a lot of reading up about the topic and carrying out work at home.

Emily described the topic on Spain as being one of her best IDL experiences. She spoke about relating football to the topic, to engage disaffected boys in the learning process and using Spain as a context for

learning to give opportunities for presenting, writing news articles, filming and using ICT skills and studying the weather.

Both of these IDL examples illustrate the topic as providing a context for learning, rather than the interdisciplinary activities themselves. Both teachers described the topic as being motivating and engaging, but neither described any truly interdisciplinary experiences which would provide a challenge or problem for children, and in which they would have to draw on their existing knowledge and skills from two or more disciplines. What is more the activities described by each were heavily focussed on literacy.

Reflecting on the third research question then, “How is IDL work implemented in the classroom and are there challenges and problems for the pupils to solve during IDL activities?”, it would seem from the answers given above, that challenges and problems did not feature as a strong element of IDL, as neither of these were mentioned at any time by Peter or Emily. Furthermore, the activities described as being undertaken during IDL time were discrete subjects, linked (sometimes tenuously), to the topic with a heavy focus on writing. This tendency to focus on literacy skills was also seen clearly during the classroom observations which will now be described.

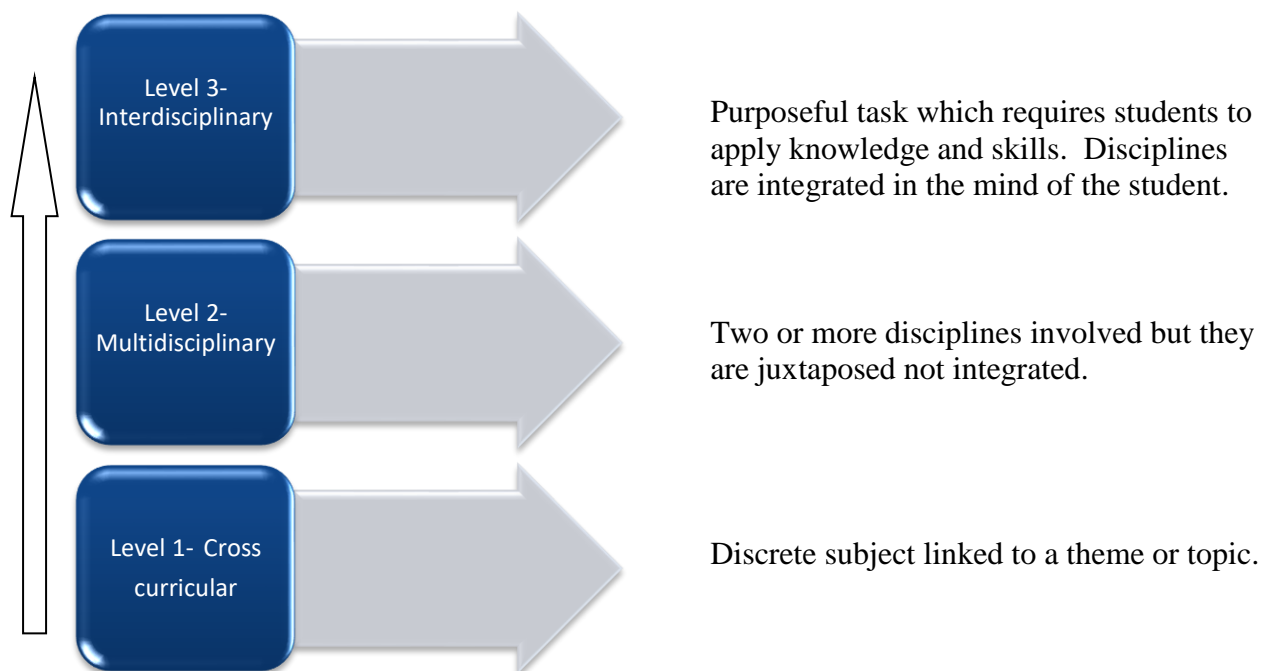
## **7.12 Classroom Observations**

When Peter and Emily were interviewed they were asked if a return visit would be possible, to observe their classroom practice in relation to IDL, and both agreed. The classroom observations were carried out in April 2017, the week before the school’s IDL open evening which meant that the classrooms were almost near completion in the ‘transformation’ process. This provided a very useful insight into the types of IDL activities which the children in each class had been engaging in.

### *7.12.1 Typology of IDL Practice*

For the purposes of assessing what were claimed to be IDL lessons, in this case study and the next, a three-level typology of practice model was developed based on the essential elements of IDL as described in Chapter 3.

Figure 11: Typology of Practice Model



#### 7.12.2 P4 – The Titanic

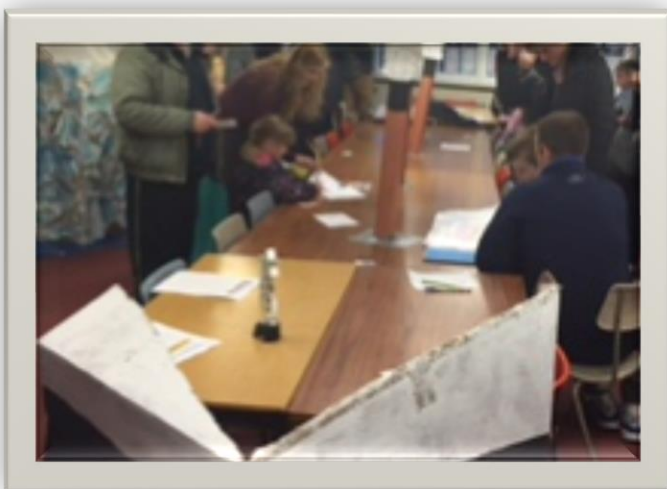
The first class visited was Emma’s P4 class, whose IDL theme was The Titanic. Walking in to the classroom was visually impressive. The desks had been put together in a long line to replicate a ship with funnels in the centre (see Picture 1 below). There was a giant iceberg at the front of the class, a giant painting of the side of The Titanic on one of the walls, with portholes decorated by the children along the side. Other pieces of artwork and writing covered every inch of the wall space in the large and spacious classroom. Models of The Titanic were also placed around the class. These had been created for homework, so it was not possible to tell how much parent input there had been in creating them. When enquiring how the giant iceberg had been made, it transpired that the teacher had made it from wire. Children had had no input to this at all.

The lesson observed in P4 was focussed on literacy and using the critical thinking skill of ‘justifying opinions’, within the social subject of The Titanic. The HT had told me previously that a recent review of the school had highlighted the need to develop the questioning skills of teachers to improve the higher order critical thinking skills of pupils, so this had been a recent focus of staff training. The lesson began

with a class discussion about what caused The Titanic to sink. Open questions were used, and the children were asked to justify their answers. A variety of cooperative strategies were also employed to allow children to talk to one another e.g. think, pair, share, where children discuss their answers with a shoulder partner. The follow up to this activity was another cooperative task, which involved children working in groups to categorise cards depicting who was responsible for the demise of The Titanic. Pupils had to read a range of scenarios and use critical thinking skills to justify their answers. Through this process, they were able to discuss their knowledge and understanding of the conditions which precipitated the demise of The Titanic and, in doing so, the aim was to make cognitive advancement.

Although most of the children seemed engaged in the work, when it came to the group writing task, the practical arrangement of the desks (in the long boat shape) was not conducive to group work, which meant that some of the children couldn't sit comfortably round the desks to engage in discussions. Some children were standing and looking over the shoulders of others, which meant that they were being virtually excluded from the conversation, and this led to them being disengaged from the process. According to Emily the desks had been arranged like a boat for visual purposes and to "wow" parents when they visited during the IDL open evening, whilst also creating a stimulating learning environment for the children. However, the physical layout of the classroom was, in fact, making it harder for social interaction during group work.

*Picture 1: Boat Shaped Desks*

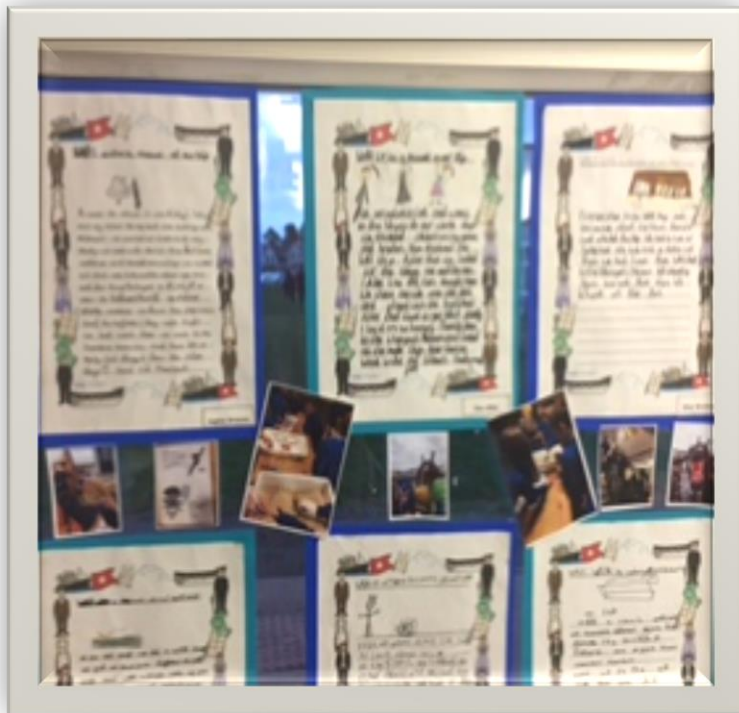


*Picture 2: The Titanic Writing Display*

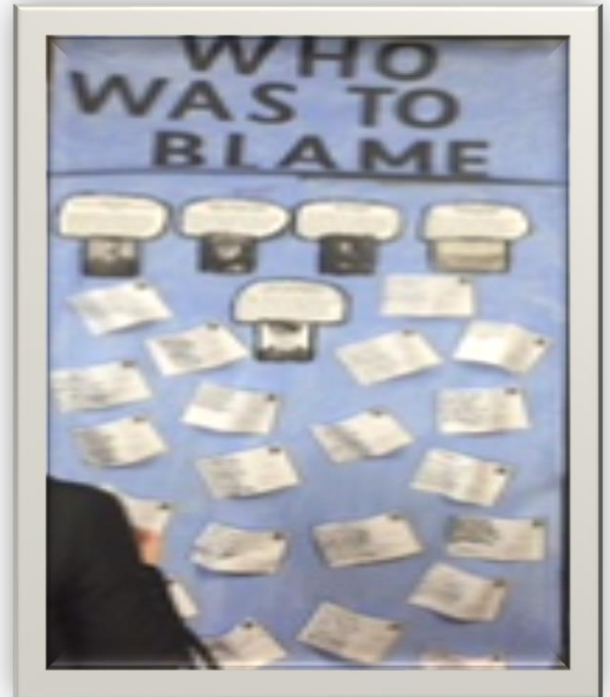


The lesson culminated in each child writing an individual postcard to King George (see Picture 3 below) about who was to blame for The Titanic disaster, justifying their opinion, and it was explained that the postcards would be displayed in an area of the classroom when completed. The children had to apply the knowledge they had acquired about the issues surrounding The Titanic and the skills they had in writing and create a postcard.

*Picture 3: The Titanic Writing Display*



*Picture 4: The Titanic Writing Display*



*Picture 5: The Titanic Artwork*



To ascertain where this lesson lies in relation to the IDL typology model (Figure 11), it is necessary to compare it to the core elements of IDL (as outlined in Chapter 3), so the following questions will now be considered.

- Did the task contain two or more disciplines? - Yes, this task involved history and language.
- Did the children have the opportunity to apply their knowledge and skills? - Yes, they had to apply their knowledge of the circumstances surrounding the sinking of the Titanic and their skills in writing to create a postcard which could convince King George of who was to blame.
- Were the disciplines integrated? – No, the disciplines were juxtaposed. The children developed their arguments around the social subject, arguably developing their knowledge and understanding of the historical facts, using the critical thinking skill of justification. Once this was finished, however, they then moved on to the writing element of the task to complete postcards.
- Was the task purposeful with the aim of cognitive advancement? - Yes, the task was made purposeful to the children through the context of the topic which they were very engaged in. By creating an imaginary scenario, i.e. that of writing to King George to persuade him of the facts of the case, the children were able to see a relevance to their work. There was another sense of purpose created (arguably not an educational one) because the postcards were to go on display for the Open Evening.

Examining this lesson against the essential elements of IDL, it meets three out of the four criteria. Because the disciplines were carried out separately, this lesson could only be classed as Level 2 on the typology, which is multidisciplinary rather than interdisciplinary.

When considering other tasks in which the children had been engaged, it was clear that there were missed opportunities for IDL work to take place. For example, in The Titanic model making activity, if pupils had been given a design brief, it could have necessitated their applying numerical, artistic and technological skills. However, this task had been given as a homework exercise with no design brief and many of the parents had had varying degrees of input into the process. Again, the purpose of these

models seemed mainly to be to make the classroom look good, while also involving parents, generating their enthusiasm for the topic and making for positive relationships with the school.

### *7.12.3 P6/7 – World War II*

The second classroom observation which took place was in Peter’s P6/7 class. Here the children had been studying the topic of World War II. Again, walking into the classroom was visually impressive. The outside of the class had been covered with a huge ‘Your country needs you’ poster (see Picture 6 below) and inside the class was an array of children’s work relating to the war.

*Picture 6: WW2 Artwork*



*Picture 7: WW2 Writing Display*



On the walls were newspaper articles, which had been written on the computer, evacuee letters, diary entries, pictures of soldiers and 3D tank models which had been completed as a homework task. As in the P4 class, there was a heavy focus of writing on display. There was also a life-sized bunker in the corner of the class which had been made by a classroom assistant. Jotters were not used to record children’s work because virtually every piece of recorded work was to go on display. Peter said that this was beneficial because the children always knew that their work was going to be viewed by an audience at the open evening and so were motivated to produce good quality pieces of writing. Peter remarked about a particular child in the class, who had produced writing work beyond his normal ability level during this topic.

Within the classroom relaxing flute music was playing and Peter said this was to calm the children who could be generally quite unsettled. The children were quietly working individually to complete a picture they had begun as an ICT task. This had involved each child uploading a picture of their face to the computer, cropping the picture and superimposing it on to a photocopied image of a paratrooper's uniform. During the observation, the children were simply involved in colouring in the photocopied uniforms, a task they were all engaged in because they knew the pictures were to go on display for the IDL open evening the following week. For a P7 class, there was no challenge whatsoever involved in this. In fact, the task of colouring in could hardly be described as developing any knowledge or skills, except perhaps fine motor skills, but in a P6/7 class it is doubtful that this was a need any of the children had. This lesson was designed to maintain a well behaved, well-disciplined classroom and is in line with the findings of Brown and McIntyre (1993), who suggest that the planning goals of teachers are often to do with the short term aims of keeping students engaged and ensuring good discipline.

To ascertain where this lesson lies in relation to the IDL typology model it is necessary to compare it to the core elements of IDL (as outlined in Chapter 3), so the following questions will now be considered.

- Did the task contain two or more disciplines? - No. This was primarily an ICT task.
- Did the children have the opportunity to apply their knowledge and skills? - No. The children had been involved in developing their ICT skills in a taught lesson.
- Were the disciplines integrated? – No, tasks were undertaken separately.
- Was the task purposeful with the aim of cognitive advancement? - No. The only sense of purpose in this task came from the fact that work would be displayed and viewed by parents and others at the Open Evening.

This lesson does not meet the criteria for IDL work, but instead, would only fit into the Level 1 category of the IDL typology model (Figure 11) which is cross curricular. It seems to fit with the eclectic approach identified by Lenoir and colleagues (2000) to describe what they found was a 'pick and mix'



approach to teaching IDL. This approach sees elements from a variety of subjects being chosen and taught but with no clear rationale, structure or relevance to their selection.

Similar to what occurred in the P4 class, the tank models which were created by the children and could have necessitated the application of knowledge and skills from a variety of disciplines, was given as a homework task. This prevented the teacher from observing and assessing how well the children had been able to apply their knowledge and skills and gaining an insight into the thought processes of the children during the work.

Emily and Peter both spoke about the pressure and stress of getting the classroom ready for the open evening, and the need to produce displays to decorate the whole classroom. This pressure came from the tradition and culture of the school, which had been built up over many years in relation to the open evening, the SMT and the policies developed around IDL. Pressure also came from peers, because of comparisons drawn between classrooms by other teachers and parents.

These pressures, and the need to make the classroom look good for the open evening, may be the reason why some of the work displayed around the class had little to do with quality learning and seemed purely for decorative purposes. Artefacts such as the iceberg and the life-sized bunker, which had been made by adults and had no input from the children, for example, are illustrations of things which looked impressive but had little or no learning value or involvement of the children. There were other displays which the classroom assistants had made. Not only that, but as illustrated above the arrangement of the desks into a boat shape, actually hindered the learning of some children, when group work was taking place.

Emirbayer and Mische (1998) recognise that agency is shaped by influences from the past and orientations towards the future. Within Burnhill Primary, influences from the past could be said to include the school tradition of culminating the midterm topic work in an IDL open evening and the peer pressure and pressure from the SMT around this. Orientations towards the future could be viewed as projections made by the teachers about what would happen if they were to veer away from this tradition.

These influences within the school, combined with the wider local and national policies, may be seen as having a direct result on teacher agency within Burnhill Primary and how IDL activities were enacted at the chalk face. There is no doubt that the teachers were extremely hard working and committed professionals but despite that, many of the activities claimed to be IDL were not.

### **7.13 The IDL Open Evening**

On arrival at the IDL open evening there was a buzz of excitement as children, parents, grandparents and visitors from the local authority, eagerly bustled around the busy classrooms. Some teachers were in costume, dressed as a character from their class's topic, and most classes had some kind of interactive activity for visitors to participate in. The topics covered were –

P1 The Vikings

P2 The 60s

P2/3 Knights and Castles

P3/4 Mary Queen of Scots

P4 The Titanic

P5 Wallace and Bruce

P5/6 World War I

P6/7 World War II

P7 World War II

During the course of the open evening, parents were chatting to their children about the displays and many were making very positive comments about how hard they had been working and about how much had been covered. Written evaluations were also given by some parents, which were generally very complimentary about the staff, school and standard of work being produced.

Within the mainstream primary classes, the emphasis on writing and art, was very evident when carrying out the classroom observations and attending the IDL open evening. In every single class there was a plethora of written work and pictures, paintings, drawings and models which had been produced by the children in relation to their respective topics. For example, in P3/4, where their topic was Mary Queen of Scots, the children had written a news article about 'The day the queen died!' They designed an advert for a Lady in Waiting, they wrote a letter to the queen, they made a PowerPoint presentation which they then presented to the class, they had taken notes in fact files, and there were several writing tasks which had been set as homework challenges. Apart from the PowerPoint presentation activity which linked ICT with literacy, all these activities were focussed primarily on writing, using the topic as a context.

Speaking to the teacher of this class, I was told that during their taught writing lessons, these lessons were done using the topic as a motivational stimulus. The children were, therefore, not involved in applying their skills and knowledge in an independent task but were being taught the skills from the different genres of writing. I was also told that the learning intentions of these lessons came from writing and not from the social subject. There were also a variety of paintings and pictures of the queen around the class. In a few classes, there were some links to numeracy with bar charts being displayed but the overwhelming focus of work was on literacy. This may have been due to the fact that writing lends itself to being displayed creatively more than numeracy work, however, these activities could all generally be categorised as Level 1 of the IDL typology model.

In Scotland there is a lack of clarity around IDL, reflected in the sparseness of clear guidance provided to teachers, as discussed in Chapters 2 and 6. IDL is described in CfE as one of the four contexts for learning, but within Burnhill Primary, IDL is equated with the class topic, which is seen as the context for cross curricular learning.

Literacy is a core subject within CfE and teachers are now required to report on levels of attainment in reading, writing, talking, listening and numeracy to their Local Authorities who in turn report these levels to the Scottish Government . Since this is the case, the implicit message to teachers is, that these subjects are more important than the rest which may be the reason for the heavy emphasis of literacy work undertaken under the umbrella term of IDL. This ties in with the findings of Lenoir and colleagues (2000), as discussed in Chapter 4, who found that there was a general confusion and widespread discrepancies in how teachers understood and implemented interdisciplinary practices. Their field observations revealed that practices were generally not interdisciplinary. They found that, during times where interdisciplinary learning was said to be taking place, teachers used this additional time to give priority to socially valued disciplines, at the expense of the subject areas deemed to be less important in what they termed as the hegemonic approach to IDL. In Burnhill Primary this seemed to be the case, because, the prioritisation of writing featured heavily in the teacher interviews, classroom observations and the open evening. This will be explored further in Chapter 9.

## **7.14 Conclusion**

To conclude then, in order, to gain some clarity around the area of this research, I will now consider what can be ascertained from the Burnhill Primary case study, bearing in mind that these findings are context specific.

### **1 How do primary teachers understand the term ‘interdisciplinary learning’?**

From the answers of both teachers involved in this study, although slight differences emerged, there was a common conceptual core around which IDL was understood but this was not aligned to academic definitions. This was evidenced by the fact that the answers which teachers gave did not match the core elements of IDL as outlined in section 3.3.4. Instead, IDL seemed to be understood as a thematic approach to learning where discrete areas of the curriculum are given a context by being related to the theme of the topic. This lack of understanding was again shown during the observed lessons, because, neither could be classified as Level 3 on the IDL typology model. While one lesson was identified as multidisciplinary (Level 2), the other was cross curricular (Level 1) at best.

## **2 How do teachers plan for IDL work and are there opportunities for collaboration during the process?**

Within Burnhill Primary, the planning process was reflexive enough to be able to take account of the views of children but within the boundaries of an organised cycle of ‘worlds’. Within this whole school planning approach, however, teachers had to plan activities for the children to engage in, within the confines of the topic which had been democratically selected. As illustrated above, the extent to which this process was truly democratic was questionable due to workload issues arising when a topic unfamiliar to the teacher was chosen. As described above, it was possible that teachers could persuade children to pick a topic that they (the teacher) were familiar with and one which they had previous planning materials for. This is in line with what Murdoch and Wilson (2004) argue (discussed in Chapter 4), that there are tensions which exist for teachers in trying to meet the requirements of the curriculum while responding to the needs and interests of pupils.

Furthermore, in planning their class activities, both teachers in this study described a ‘topic web’ approach which links discrete curricular areas to the theme of the topic. As detailed in

the literature review, this approach is not an interdisciplinary, but a cross curricular one, which does not provide the conditions for participants to draw on their current knowledge and skills from two or more disciplines and apply them to further their knowledge and understanding.

According to the data gathered in this study, within Burnhill Primary teachers tended to plan on their own and did not engage in planning IDL activities with their peers. The exception to this was if another teacher had previously taught a topic and was willing to share their previous plans. This sharing of plans, however, is different to the concept of teachers engaging in professional dialogue to devise challenging IDL activities to engage children, in what could be considered a collaborative culture, as described by Hargreaves (1994).

### **3 How is IDL work implemented in the classroom?**

The interview data gathered from the teachers in Burnhill Primary, and the observed lessons, showed that a variety of pedagogical approaches were taken by teachers when implementing IDL work – class lessons, group work and individual tasks, although, group work seemed to be the preferred approach. However, lessons were overwhelmingly carried out within discrete disciplines and, in the main, within the English language, more specifically writing. Thus it could only be categorised as Level 1 in the IDL typology. This tendency to focus on writing falls into the hegemonic category, as outlined by Lenoir and colleagues (2000) in Chapter 4, where one discipline is given priority over the others for a variety of reasons. These will be explored further in Chapter 9.

Challenges and problems within tasks were minimal. Where other challenges did occur, they seemed to be incidental rather than being carefully planned. For example, the model-making tasks given as homework had the possibility to be examples of IDL, with children using their knowledge and skills to fulfil a design brief, but as a homework task it was not possible for teachers to determine how much input had come from adults and the task seemed judged mainly

on the aesthetic properties of the resultant models. Many of the activities seemed to fit into the eclectic approach to IDL, described in Chapter 4, where the pick and mix style applies, with no clear rationale for choosing the disciplines except that there is a link, tenuous or otherwise, to the theme.

Within Burnhill Primary there was no consistency in the type of tasks which were undertaken in the name of IDL. Overall, activities which were completed during what was deemed 'IDL time', fell mainly into the category of Level 1 in the IDL typology model i.e. cross curricular work. The reasons for this will be discussed more fully in Chapter 9.

## **Chapter 8**

### **Case Study 2**

#### **St Mary's Primary School**

##### **8.1 Introduction**

This thesis now moves on to the second case study school which will be referred to as St Mary's Primary. This chapter will give a brief overview of the school then look at the planning structures in place for IDL. Following this, a brief biography of each teacher will be provided before presenting the results of the interviews and classroom observations which were carried out.

##### **8.2 St Mary's Primary School**

The second school to feature in this study shall be referred to as St Mary's Primary for anonymity purposes. It is a small Roman Catholic denominational school, with six classes and no nursery attached. It is situated in an affluent area, with only 1% of its pupils being categorised in the lowest SIMD quintile, at the time of this study. St Mary's is housed in a two-storey building with a capacity for holding many more children than its current roll of under 150 pupils. The school building is in need of some repair with leaky ceilings and some unsecure fixtures. According to the HT, such repairs are not being seen as urgent, by the local authority, as a result of factors out with the school's control. Classrooms within the school are closed as opposed to open plan, however, there are break out shared areas around the school. The environment is bright, and staff make effective use of the available space, with stimulating displays of children's work.

In a recent HMIe inspection the strengths of the school were noted as –

- A strong focus on raising and celebrating pupils' achievement and attainment
- The courteous, very well-behaved and highly motivated pupils



- The quality of pupils' attainment in English language and mathematics
- The consistently high quality of teaching from P1 to P3
- The very effective pastoral care and the focus on ensuring a sense of equality and fairness
- The partnership with parents, Parent Council, Parent-Teacher Association (PTA) and the wider community

Recommendations made for school improvement by the inspectors focussed around the need to develop programmes for Expressive Arts, the English language and improve the standards of accommodation.

### **8.3 Structure of IDL Planning**

Within the St Mary's cluster group, IDL had been a priority for the past few years. Planners were created, which were used across the cluster, with the aim of providing consistency among the cluster schools and a smooth transition for pupils to High School. In creating these planners, a working party of teachers came together from the local High School and associated primaries, to look at ensuring coverage and progression through the Es and Os for Social Sciences from P1-S3. They were also involved in devising tasks suitable for each topic and links to cross cutting themes (which will be illustrated later). Not all teachers were involved in this work, but rather, representatives from each school, who fed back to their colleagues about the work being done. As discussed in Chapter 4, Ruddock (1992), suggests that it is important to find ways of including teachers in curriculum development, so that they are in a better position to respond critically to the product. If all teachers were not involved in this development work and were merely recipients of the planners, engaging in top-down discussion which could be classed as 'contrived collegiality' (Hargreaves, 1994), it is questionable how much they would have to think critically about the concept of IDL and deepen their knowledge and understanding as a result.

Although the staff referred to these as interdisciplinary planners, the focus of them was on social studies. There were, however, layers of planning sheets which provided cross curricular links to other areas of the curriculum in a topic web style approach and suggested activities were given for each individual topic relating to the different curricular areas (see appendices 4 and 5).

In this type of planning there is a rigidity, in that topics for the year are set out for teachers to follow depending on the stage of class they have. The topics are designed to ensure that from P1 to P7 children will experience all the Es and Os in social subjects and that there will be a progression in skills throughout the levels. Teachers can draw on pre-existing planning materials for topics, although, these can be adapted by teachers for the needs of their class. There is no flexibility in place, however, for children to have a say in what topic is studied, but they are consulted about what they already know and what they would like to find out through a KWOFF grid (as described in the previous chapter). Teachers did say that, although topics are prescribed, if they wanted to do another topic they would have no hesitation in approaching the HT to seek permission to do this. The topic planner for the St Mary's cluster is as follows for P1-7.

*Table 6: St Mary's Primary Planner*

Class	Level	People in Society, Economy & Business		People, Place and Environment		People, Past Events and Environment	
P1	Early	People who help us in primary school	Soc 0-15 Soc0-16a Soc 0-18a Soc 0-20a	Myself and where I live	Soc 0-07 Soc0-08a Soc 0-09a Soc 0-12a	Old things / new things or Toys now and then	Soc0-01a Soc 0-02a Soc 0-04a
P2	First	People who help us in the community	Soc 1-16a Soc 1-20a	Food and farming in my local area	Soc 1-07a Soc 1-09a Soc 1-13a	Children in the past	Soc 1-16a Soc 1-20a Soc 1-02a
P3	First	Planning and running a business	Soc 1-16a Soc 1-20a Soc 1-02a	Scotland and other lands	Soc 1-13a Soc 1-13b Soc 1-14a	Romans	Soc 1-01a Soc 1-04a
P4	First	Rights and responsibilities	Soc 1-16a Soc 1-17a Soc 1-20a	Weather and climate	Soc 1-12a Soc 1-12b Soc 1-13b	Glasgow in the past and a significant individual	Soc 1-01a Soc 1-04a Soc 1-06a

P5	Second	The Community Centre	Soc 2-16a Soc 2-16b Soc 2-16c	A journey around Scotland	Soc 2-07a Soc 2-08b Soc 2-10a Soc 2-14a	Highland Clearances	Soc 2-01a Soc 2-06a Soc 2-03a
P6	Second	Fair Trade	Soc 2-15a Soc 2-20a Soc 2-22a	Rainforests	Soc 2-08a Soc 2-07b Soc 2-12a Soc 2-13a	WW2	Soc 2-01a Soc 2-04a Soc 2-06a
P7	Second	The Scottish Parliament	Soc 2-15a Soc 2-17a Soc 2-18a	Japan or Natural Disasters	Soc 2-07b Soc 2-12a Soc 2-13a Soc 2-14a Soc 2-16c Soc 2-19a	Timeline of Scottish History	Soc 2-01a Soc 2-02a Soc 2-06a

This planner is for straight classes, but there is also a planner for composite classes with different topics, to ensure children do not repeat them from one year to the next. In addition to this topic overview, teachers are also given a wider planning sheet (Appendix 4), with links to other areas of the curriculum, a suggested activities sheet (Appendix 5), a cross cutting themes sheet (Appendix 6), with activities suggested under the ten separate headings of: Cultural Diversity, Global Citizenship, International Fairtrade, Home Links, Enterprise and World of Work, Financial Education, Personal Choice, Group Work and Collaboration and Eco and Outdoor Environment, and an assessment sheet (Appendix 7).

In the cross cutting themes planner additional activities are suggested under the ten headings which are relevant to the topic. For example, for P7 under the organiser of People in Society, the topic of The Scottish Parliament is studied in the first term but only six out of the ten headings have suggested activities. Some of these activities would seem to lend themselves to children being able to apply their existing knowledge and skills to meet challenges and solve problems, for example, ‘Debating, research and campaign video tasks’. It is possible to imagine that this task would allow children to integrate literacy with ICT, in order, to form a coherent debate. Other suggested tasks, however, such as ‘Inviting an MSP to talk to the class’, may not have the potential to be quite so interdisciplinary in nature, and may require some further thinking by the teacher to find ways of challenging the children. Each of the cross cutting themes requires the teacher to structure lessons around the topic, and this takes time and thought

in the planning stages, which may benefit greatly from professional dialogue and collaborative working, as discussed in section 4.4.1.

## **8.4 The Teachers**

As in the previous case study, the two teachers who took part in this study from St Mary's Primary were volunteers and were endorsed by the HT of the school as being good 'all round' practitioners. Again, it was assumed that both teachers would be examples of best practice in the school for carrying out IDL work. They varied in their length of teaching experience and in the stages which they taught. The teachers were also working in different departments of the school, one in infants and one in seniors, which allowed an insight into how IDL was implemented across the school. A brief biography of each teacher will now be given, before considering what each said regarding IDL.

### *8.4.1 Colleen*

Colleen came straight from school into studying for a Bachelor of Education (BEd), as she had always wanted to be a primary school teacher. At the time of this study, she had been teaching for 12 years, and, had only ever worked within the same local authority. At the start of her career she had had a brief spell in other schools, but for the past 10 years she had been permanent to St Mary's. Colleen talked passionately about teaching and articulated that, from the age of four years old, she knew that teaching was what she wanted to do. She said that when she was at school as a pupil, "I saw the kind of teacher I would definitely want to be and the teacher I'd not like to be because I had the experiences of both." Pajares (1992) suggests that many people who become teachers do so because they had a good educational experience themselves and simply strive to replicate the experience they had. This can be a barrier to being open to changing their pedagogical approach. Talking to Colleen, however, and observing her practice (described later in this chapter), it was evident that she was open to adopting new initiatives in her practice. For example, she had been trained in Cooperative Learning when it

was a relatively new pedagogical approach in Scotland and she used it on a regular basis within her class.

Colleen said that she had taught a variety of stages over the years, apart from P5, although she had taken the whole school for subjects, such as science and PE, as part of covering other teachers' non-class contact time. She had a P2/3 class at the time of this study.

#### *8.4.2 Maureen*

Maureen was originally an art student who had started a Bachelor of Arts (BA) degree at Art School. Within her course, she had to teach design within a primary school, and enjoyed it so much, that she then decided to change and do the BEd qualification instead. Maureen expressed her love of working with, and spending time with children, as her reason for choosing a teaching career, but said she was young and naive then and didn't realise how much paper work would be involved. At the time of this study, she had been teaching for five years and had mainly taught in the middle stages of the school, but currently had a P3/4 class.

### **8.5 The Role of the Teacher and Purpose of Education**

As outlined in Chapter 4 and the previous chapter, teacher agency is pivotal for policy implementation. The agency of teachers is dependent on, not only a teacher's own personal and professional capacities, but also on other factors and dimensions which shape the ecologies of their work (Priestley et al., 2015). Their own views and beliefs about education, the role of a teacher, and clarity within policy documents, can impact significantly on how an initiative, such as IDL, is translated into action. So, as in the previous case study, after some preliminary questions, both teachers were asked about their personal views and beliefs around the role of education and the role of the teacher before exploring their views on IDL.

When asked what she thought the main role of a teacher was, Colleen's first response was to say, "To facilitate learning." Colleen also said that providing children with opportunities to learn and reach their potential was an important part of being a teacher. This response

corresponds to the idea of learnification discussed in Chapter 4, which raises concerns over emphasis among educationalists, on *how* children learn as opposed to *what* they learn and in turn a focus on developing pupils' skills rather than knowledge and curriculum content.

Colleen then went on to talk about “nurture” as being an important.

There is a nurture side to teaching I think. There are children you have who need a lot of support, and it is important that you can make them feel better in themselves but also let them engage in learning and access the curriculum. [Colleen]

Colleen went on to distinguish between those who need nurture and other children by saying,

Then you've got the children, the bulk of your class, that you want to, you know, further challenge and the children who need challenged constantly. You have to facilitate that for them. [Colleen]

Colleen also spoke about the need for having a good rapport with children, as being an important feature in the role of a teacher and building good relationships with them.

Similarly, when asked about the role of the teacher, Maureen's first response was to say, “nurture”. She said that, “The role of the teacher has changed because society has changed – some of them need a role model.” She spoke about having a holistic view of each child and knowing them individually, not just academically. Like Colleen, Maureen also stated that having a good rapport with children was an important feature in the role of a teacher.

Similar to what the teachers in the previous case study said, when asked about the purpose of education, neither, Colleen, or Maureen, mentioned subject matter or knowledge transference but rather concentrated on the need to build social and emotional skills of students as described

by Brown and McIntyre (1993) and discussed previously in section 3.2.5. In relation to IDL, this could mean that tasks focus more on outcomes such as the cooperation of students and developed social skills rather than intellectual stimulation and the acquisition of powerful knowledge,

## **8.6 Curriculum for Excellence**

When asked about their views on CfE, similar to the responses in Burnhill Primary, there were tensions in the teachers' answers. Colleen acknowledged that, "There are fantastic aspects of it." She felt that the ideals behind CfE were aligned to her own ideals as a teacher but went on to say that, "...in practice it doesn't always work." Both Colleen and Maureen said that unrealistic demands have been placed on teachers with the implementation of CfE, and not enough was being done to help. Indeed, as CfE has evolved over time, there has been a shift in focus towards a more output driven curriculum with Benchmark documents and National Assessments being introduced for pupils in Primary 1, Primary 4 and Primary 7 in literacy and numeracy since 2017. As discussed in section 6.2.4, Priestley and Humes (2010) draw on the work of Kelly (1997) to suggest that while CfE contains the rhetoric of a process model of curriculum, it is in fact a mixture of the content and product models and so is ideologically unclear and lacks conceptual clarity, causing confusion for practitioners in implementing it.

Maureen said that she felt there was a lack of clear guidance, which has resulted in schools all doing things differently. This has meant that moderation and standardisation have been diminished in the process. Maureen also mentioned the fact that there are a huge number of Es and Os to cover within each subject, which have to be planned for, and this has led to more time having to be given to planning.

The main points raised in these answers were:

- Amount of Es and Os to be covered in each subject
- Lack of moderation across schools

- Schools all doing different things and left to make sense of things themselves
- Lack of clear guidelines for assessment
- Teacher preparation time when planning

Reeves (2016) argues that the pairing of Es and Os with a performance management cycle has contributed to the tensions and problems inherent in CfE and this ties in with the Priestley and Humes (2010) assertion that CfE conflates two different and incompatible curricular models. This may explain why the teachers in this study expressed conflicting views of CfE in their answers, and also felt that there were unrealistic demands being placed on them from above.

### *8.6.1 Overcrowded Curriculum*

Both teachers expressed their concern about the curriculum being overcrowded now with the implementation of CfE as demonstrated by the following comments.

I'm glad I delivered the 5-14 Curriculum when I came out. The way we were told CfE would de-clutter the curriculum and give more autonomy with your class and you could go off at tangents here and there and decrease workload enough for you to be able to do that – I don't feel that this has always been the case. [Colleen]

When I was at school you had literacy in the morning and numeracy in the afternoon. I think it was better because the skills were taught and there was a more stable and solid knowledge of skills. Now the skills are being lost. [Maureen]

Maureen later went on to say that she thought IDL was a beneficial way to learn, in contradiction to what she said here. This, again, illustrates a tension in her beliefs. When asked to explain this contradiction, Maureen was unsure about how to put it into words.



### *8.6.2 Vague Messages*

When speaking about teaching in the period of CfE, Colleen said,

I feel more insecure about my teaching now than I did in the first three or four years of my teaching career. I think a lot of things are vague and we are all trying to find our feet. [Colleen]

By expressing this insecurity and vagueness about the current curriculum, these teachers give credence to the work of Reeves (2016), who suggests that teachers have not been given sufficient or adequate guidance in relation to pedagogy since the introduction of CfE. As illustrated in Chapter 2, IDL guidance, or lack of, exemplifies this. She argues that there is a gap between what is being defined at policy level and what is being understood by classroom teachers and the practice they implement. The reason for this is an over emphasis on the importance of learning as a process, rather than the relationship between learning, teaching and curriculum. This has caused educational purpose and curriculum content to be blurred and often ignored, in turn, leading to a mismatch between policy and classroom practice. Priestley and Drew (2016) describe this as a gap between educational purposes and educational practices, arguing that teacher capacity for curriculum development has been diminished due to the prescriptive years of the 5-14 Curriculum, which saw a rise in accountability (as described in Chapter 2). This will be examined in more detail in relation to my data in the following chapter.

### **8.7 Additional Challenges**

When asked about any additional challenges faced by teachers today, both Colleen and Maureen identified the behaviour of students and lack of resources and these will now be considered.

### *8.7.1 Behaviour of Students*

Another challenge noted by both teachers was the number of children now presenting with challenging behaviours and the need to find ways of engaging them in classroom activities. Colleen mentioned this, and she said that although she had a very well-behaved class, there were several children who required additional support and who had some social and emotional issues. The desire expressed by teachers to have a well behaved, well-disciplined classroom, again, corresponds to the findings of Brown and McIntyre (1993), who found that the planning goals of teachers are often to do with the short term aims of keeping students engaged and maintaining good discipline. Given that the teachers in this study all mentioned the fact that behaviour has become more challenging for them in recent years, this may be why teachers are finding that they are having to become more focussed on process rather than purpose and values. With regards to IDL, it may mean that tasks are not aimed so much at facilitating cognitive advancement of students, but rather maintaining a calm and well-ordered classroom.

### *8.7.2 Lack of Resources*

Colleen also mentioned a lack of resources being provided by the authority as being a challenge, particular to St Mary's, at this time. This was attributed to the threat of school closure. The HT said that the authority had been unwilling to replace items which had fallen into disrepair such as water fountains and basic fixtures, over the past year. According to the HT, this had proved challenging for children and staff. Indeed, organisations such as the OECD (2005a) have recognised that good quality education requires not only quality teaching, but also a suitable environment, and that teachers will not reach their potential in settings which don't support them or challenge them sufficiently. An environment where physical resources are inadequate may well have a negative impact on teacher motivation and agency. Institutional support and funding, as outlined in section 4.4.3, have been identified as factors required to facilitate effective IDL practices (Adler and Flihan, 1997).

## 8.8 What does IDL involve?

To address the research question ‘How do primary teachers understand the term interdisciplinary learning?’ teachers were asked ‘What does IDL involve?’ In answering this question, the most common answer given by Colleen and Maureen was that of making links across the curriculum. Colleen said that it was important, however, that links were not contrived. Colleen also said that she felt, during IDL work, that pupils were given the chance to transfer skills, especially literacy skills, and apply learning to a real-life context. She said that IDL lent itself to mixed stage working which was good for her as she currently had a P2/3 class. When asked the same question, Maureen seemed unsure and began speaking mainly about thematic topics as providing a context for learning. She did, however, say that, “Children get more from it when learning is joined and linked in a context.”

A subsidiary question was also asked of the teachers to further explore their understanding of the concept of IDL: what in their minds, were the differences between studying in an interdisciplinary way and studying discrete subjects? Maureen said that IDL made the learning more relevant to the children and enabled them to retain more. She also expressed that she felt discrete work didn’t have the same impact, but that there was a place for both to work side by side. Colleen, however, said that in her opinion IDL work was more about skills and admitted that she focused mainly on literacy skills when doing it. According to her, IDL work was more collaborative and relaxed, which meant it was more beneficial for pupils. She said IDL involved more practical tasks, so she found it harder to assess and track.

The fact that Colleen focussed on collaboration and practical work as being features of IDL, is arguably, aligned to what Smith (2000) asserts, that teachers are now becoming more like technicians who are primarily concerned with the *process* of delivering the curriculum rather than thinking deeply about the *content* of what is being delivered. As discussed in previous

chapters, this may be a result of a clear lack of guidance for practitioners in the overarching policy documents.

### 8.9 How do primary teachers understand IDL?

When speaking about IDL, and what it constitutes, the following themes emerged.

*Table 7: St Mary's Primary Emergent Themes*

St Mary's Primary – Emergent Themes
<ul style="list-style-type: none"><li>• Making links</li><li>• Motivation</li><li>• Engagement</li><li>• Pupil Voice</li><li>• Writing</li><li>• Skills</li><li>• Knowledge</li><li>• Ideas</li><li>• Group Work</li><li>• Application</li><li>• Context</li></ul>

The table above, shows that the teachers within St Mary's mentioned a variety of similar things when talking about the nature of IDL. As in the previous case study, the results were put into graph form in relation to which teacher mentioned each theme and how frequently appeared in dialogue.

*Figure 12: St Mary's Primary Themes*

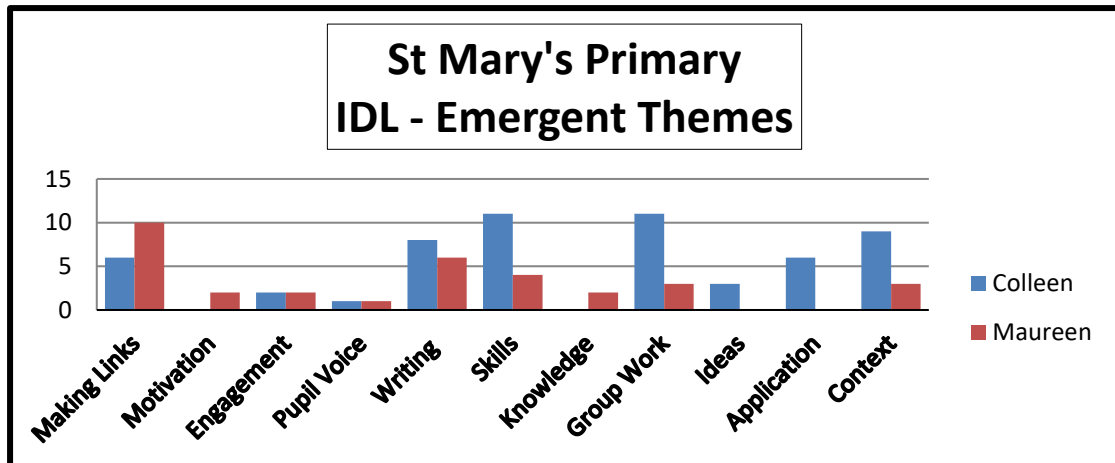


Figure 12 above shows that while Maureen mentioned motivation and knowledge, Colleen did not. While Colleen mentioned ideas and application, Maureen did not. Group work was most prevalent for Colleen as a feature of IDL, whereas, for Maureen it was making links across the curriculum.

Reflecting on the first research question then it could be summarised that both Colleen and Maureen saw IDL as a way, to enable links to be made across curricular areas and to provide a context for learning. While Maureen saw IDL mainly as the topic being used as a context, Colleen saw it as a type of collaborative, practical pedagogy which allowed children to develop skills.

‘Making links’, was the main feature of IDL identified by both Maureen and Colleen, and when they talked about this, similar to the previous case study, it was in relation to making cross curricular links to the topic being studied. For example,

Studying the Vikings, I looked at what maths would link. Fractions looking at their shields, measuring the length of the boat. Made a long ship using technology. Linked to RE – Viking Gods. Ticking boxes again! [Maureen]

Finding thematic links to discrete curricular areas is not a core feature of IDL work but is in line with a cross curricular approach as described in Chapter 4. Reference to ‘skills’ was also

prevalent in the teachers' answers and this reflects the great emphasis placed on skills in the CfE documents associated with IDL (as discussed in Chapters 2 and 6 and illustrated in Figures 3 and 4). However, the *application* of skills was only mentioned by Colleen and not by Maureen. Knowledge was only mentioned by Maureen and comparatively infrequently. The application of both knowledge and skills to a challenging task or problem during the IDL process was not articulated clearly by either teacher. Neither mentioned the fact that two disciplines or more should be involved in tasks and that the disciplines should be integrated or that tasks should be purposeful to the pupils, with cognitive advancement being the main aim. Instead, the teachers focussed on 'group work' which is a pedagogical approach, concerned with the *process* of teaching, rather than focussing on the *content* of what is taught. And 'writing', which is a discrete subject taught in the primary school, also featured highly in their answers. In conclusion then, it could be said that while they had a discourse around IDL, which reflected some of the policy messages surrounding it, the teachers of St Mary's Primary, did not have a deep understanding or conceptual clarity around the notion of interdisciplinarity.

### **8.10 How is IDL Work Planned For?**

To address the second research question "How do teachers plan for IDL work and are there opportunities for collaboration during the process?", teachers were asked to describe their planning. Using the hierarchical focussing schema, it was possible to identify responses which were spontaneous, and those which were prompted by the interviewer. With regards to this question, both teachers spontaneously responded by talking about their given topics. They both said, in line with the planning format in their school, they would start their planning by looking at the Es and Os which had to be covered. Colleen said, "I look at the context and from there I still do a topic web but that wouldn't be in my [official] planning." Colleen's comment suggests that, in addition to the structured planning in place in the school, teachers plan over and above this in a way they feel comfortable with. Again, the topic web approach was mentioned (as

described in Chapter 4). Maureen also said that, when planning, she looked at where activities could be fitted in, under the various curricular headings. As previously discussed, this type of planning leads to Level 1, cross curricular type lessons, in the IDL typology outlined previously, and not in real integrated learning.

Both teachers were then prompted about consultation with children during the process and professional dialogue with colleagues. They said they consulted with children to find out what they already know before a topic began and found out from the children what they wanted to learn about. Maureen, however, spoke about the constraints of not always being able to do what the teacher or the children wanted because, "... there are certain things which 'have to' be covered." This revealed a tension, highlighted in section 4.3.2 when discussing child centred approaches, between what was felt to be good practice and what was, actually, enacted in the class. As noted by Murdoch and Wilson (2004), child centred approaches may be considered desirable by teachers, but are not always practical. This answer also called into question the effectiveness of KWOF grids by implying that even although they were used to find out what the children wanted to learn about, the interests of the child were not always focussed on, when planning activities.

When asked about consulting with colleagues during the planning process, both teachers said that this could be difficult, because, it was a single stream school and the classes all tended to have different topics. Both, however recognised the benefits of being able to do this. Again, this revealed a tension between what the teachers believed to be good practice and what they were actually implementing.

To reflect on the research question then, "How do teachers plan for IDL work and are there opportunities for collaboration during the process?" - it would seem that in the case of both Colleen and Maureen, while following the structured policy of the school on IDL planning, teachers chose to do their own additional planning. This followed a topic web style approach,

linking activities within various curricular areas to the topic theme. Due to the single stream nature of the school, and the fact that each class was given a different topic to cover, this resulted in teachers mainly planning on their own. Children were generally consulted in the planning process to find out what they already knew and what they would like to learn about, but, were not given a choice about the topic itself. What is more, activities children would have liked to engage in and things they would have liked to have learned about, may have been curtailed because of other important elements of the curriculum which had to be covered. This raises issues over how relevant or purposeful IDL tasks were to the children involved.

### **8.11 How is IDL implemented?**

To address the third research question “How is IDL work implemented in the classroom and are there challenges and problems for the pupils to solve during IDL activities?”, teachers were asked about the types of disciplines involved in IDL activities and to give examples of successful work they had completed in the past.

Colleen talked about a topic she had completed on ‘Castles’, which she said naturally lent itself to IDL work. Interestingly, however, she didn’t mention any specific activities which the children were engaged in but rather focussed on the social aspect of learning and group work. She said,

Children had come from two classes and the topic helped them gel. This transferred to the playground, gym hall and just generally getting on with each other. [Colleen]

She spoke about the children being very engaged. This answer raises the question, again, about whether there is too much emphasis in the mind of teachers today on process and socialisation, rather than content. Is there too much focus on *how* to teach and less focus on *what* to teach? If IDL is to be used successfully in developing thinking, creating knowledge and raising attainment, there must be a focussed concentration on the *types* of challenges given to pupils



and the disciplinary understanding to be employed in solving them. The nature of the task itself is vitally important and should provide enough academic challenge to the pupils to impel them to think ‘outside the box’, making links in a truly interdisciplinary fashion.

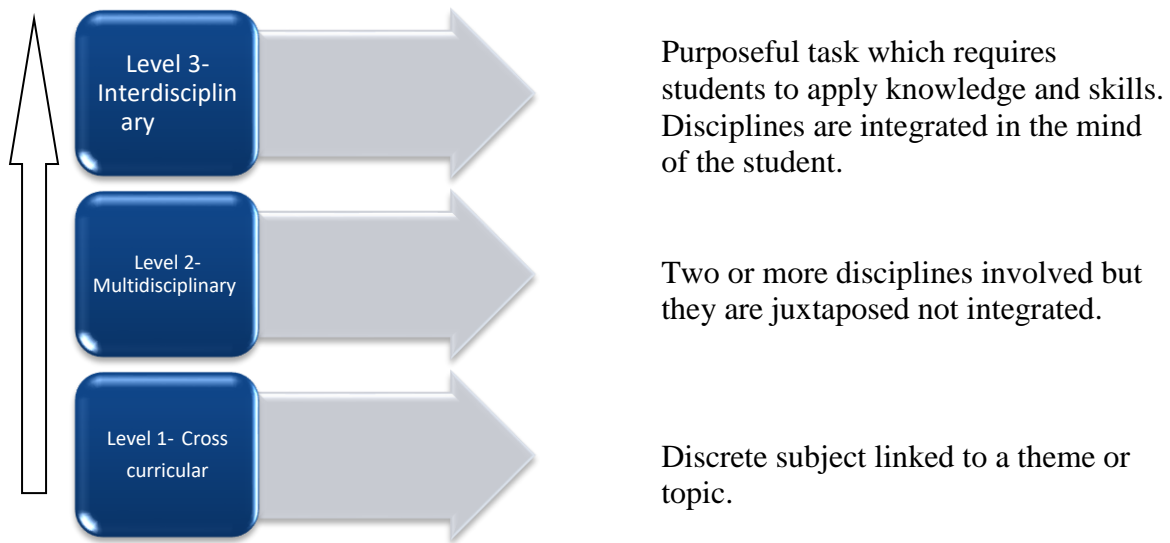
Maureen gave the example of a topic on the Vikings and said that the focus of this was mainly social studies, but there were also links to maths. She gave the example of using shields as a context for studying fractions and getting the children to measure long boats. Maureen said there were other links to literacy and ICT during the topic. She also said that there was a link to religious education, when they studied Viking gods, but went on to say that this was ‘ticking boxes’. This ‘ticky box’ approach fits with what was described in Chapter 4 as the eclectic approach (Lenoir et al., 2000), when elements from a variety of subjects are chosen and taught but with no clear rationale, structure or relevance to their selection. This also stands in contrast to what the teachers said previously that links across the curriculum should not be contrived.

When asked about activities relating to their topic work, both Colleen and Maureen only mentioned other curricular areas which they focussed on and not the social subjects themselves. While social subjects generally provided the basis for the theme or topic being studied, the learning intentions and objectives were predominantly from other subjects such as language, maths and health. As discussed in Chapter 4, this leads to an undermining effect on the social subjects because they can be diminished at the level of meaningful learning.

## **8.12 Classroom Observations**

At this stage it is useful to consider Figure 11 again, the typology of practice model outlined in the previous chapter.

Figure 11



When Colleen and Maureen were interviewed, they were both asked if a return visit would be possible to observe their classroom practice in relation to IDL and both agreed. Unfortunately, when I arranged for a return visit, Maureen had gone off early on maternity leave, so it was not possible to do an observed lesson in her class. The HT did say, however, that I would be able to come and look at the topic work, which had been done in Maureen’s class, as there was still evidence of the work in jotters and on the classroom walls.

#### 8.12.1 P3/4 – Glasgow

On visiting Maureen’s class, there was some work displayed on the walls from the Glasgow topic the children had been studying and it was possible to see some of the types of activities the children had been engaged in. One activity was to design a poster of a particular aspect of the Glasgow Coat of Arms e.g. ‘The Bird That Never Flew’ or ‘The Fish That Never Swam’ etc. This was carried out by individual children and illustrated the facts that the children had learned about the origins of the Coat of Arms. It had been done during a writing lesson and would therefore fit into the Level 1 category of the typology outlined above (i.e. it is a discrete lesson which was done within the context of the topic theme).

There was also some art work on the wall which was of Irn Bru cans and this was also part of the topic work. Again, this seemed to be a discrete art lesson, which was tenuously linked to the theme of Glasgow, and would also fit into the Level 1 category above. These type of activities, illustrated what Maureen had articulated in her interview about IDL, that the topic provided a context for learning. Although, seeing a lesson in action may have revealed more, there was no evidence that the children involved in this topic work had engaged in any activities which involved an integration of disciplines, any problem-solving activities or challenges which would involve them drawing on their existing disciplinary knowledge. There were no signs of Level 2 or 3 type lessons from the typology model.

#### *8.12.2 P2/3 - The Emergency Services*

I had originally scheduled to go to St Mary's in the second term of the 2016/17 session and had arranged a date through the HT to visit. On arrival at the school, however, on the agreed date, I found that Colleen's class were not doing an IDL lesson, but were doing spelling instead. Apparently, there had been a mix up in communication and Colleen had been under the impression that I had simply wanted to talk with her again. Colleen offered to change her lesson quickly to do a topic related activity, but I told her that I thought it best if I came back at a time which suited her when she would normally do an IDL lesson so that I could observe the normal practice. As a result, I contacted Colleen directly to rearrange a time and I visited St Mary's again, this time in the third term of the 2016/17 session.

The P2/3 lesson began with the whole class being gathered on the carpet in front of the Whiteboard, where Colleen had prepared a PowerPoint presentation, to recap on the children's previous learning. The children spoke about researching the roles of various emergency services and, in groups, choosing a service to focus on. On paper, the groups had drawn pictures of a box that a particular emergency service would find useful in the time of an emergency, and

the kinds of items this box would hold. The children spoke about outdoor learning in relation to this work and were all very engaged and enthusiastic, while they recapped on what they had previously done. Colleen then moved on to the activity the children were about to engage in and shared the learning intention (LI) and success criteria (SC) with them. These are terms which teachers are generally required to use now when implementing lessons in the classroom. LIs are aimed at ensuring children are clear about what they are learning and SCs are to provide clarity to pupils about how to achieve the LI.

The LI read –

- We are learning to design a box that a particular emergency service can use during an emergency. We are then going to construct this box in our groups using different materials.

The SC read –

- We have tried to construct the box in our group to meet all 3 specifications.

The specifications were listed for the children to view and these were: that the box must be at least 60cm high; must be able to be carried; and must be able to be opened. The lesson was designed with three disciplinary areas in mind - maths, technology and art.

Round the classroom there were empty boxes and junk materials, which children had brought in from home. There were also paints, glue and other items available for the children to choose from, to help them complete their task. The children were organised in groups of four, and when the task started, each group began choosing materials to make their given box. The groups had previously chosen an emergency service and had drawn a design of the box they wished to make, so this task was the next step in the process of creating the finished product.

The children were all fully engaged in the task at hand and worked together cooperatively to set about fulfilling their brief. In relation to the observation schedule, the activity was made relevant to the children because they had been studying the ways in which the emergency services impacted on the lives of people in their local community. Children also had the chance to work in groups and enter discussions during the process. Each child within the group had their own specific roles. One was responsible for making a handle which could lift the box, one was responsible for decorating it, one had the job of making objects to go inside the box and the other had to ensure that the box was able to open and close. This structured group work ensured that all children were generally engaged at all times during the task. At intermittent periods, the teacher would remind the children to check their work against the specifications, which required them to measure the height of their box and test whether it could be lifted. Some groups found that the objects they had created were too heavy, for example, and determined, that in order to be lifted, some items would have to be removed to make it lighter. Others found their handle too insecure and addressed this by trying out different materials with which to secure it, e.g. tape or string, until a suitable solution was found.

Colleen said,

I really enjoy when the class are doing this type of activity because they are so engaged.

I try to do this kind of work at least once during each topic. Sometimes, I'm amazed at what the children can actually do because I've underestimated what they were capable of. [Colleen]

Colleen went on to say she had been trained in Cooperative Learning and felt that this training had a huge impact on her classroom practice. She said she used this frequently within her class.

As a result of my training in Co-op Learning, I regularly teach social skills. This has improved their ability to work cooperatively as part of a team. [Colleen]

During this lesson, the level of challenge for each pupil was questionable. For example, some children were purely focussed on finding materials with which to decorate their box. Once the box had been measured by a member of the group (not all the children needed to engage in the mathematical part of the task), and found to satisfy the criteria for being taller than 60cm, no other mathematical skills were needed. The main problem-solving task came with finding ways to lift the box, without the handles breaking and this seemed to be the remit of one pupil in the group, charged with the task of designing handles.

Although a structured Cooperative Learning approach may provide an effective pedagogy for developing productive IDL practices within the classroom (Harvie, 2012), in this case, the specific roles of the pupils militated against integration. This was because the roles were aligned to the different disciplinary areas meaning that each student only had to focus on one.

To ascertain where this lesson lies in relation to the IDL typology model it is necessary to compare it to the core elements of IDL (see section 3.3.4), so the following questions will now be considered.

- Were two or more disciplines involved in the task? - Yes, this task involved maths, technology and art.
- Were opportunities provided to allow application of knowledge and skills? - Yes, there was the opportunity for applying knowledge and skills from the three disciplinary areas, although, due to the roles which were allocated, each child was only concerned with one of the disciplines i.e. one child measured, one child decorated etc.
- Did integration of disciplines occur? – No, the disciplines were juxtaposed. Each section of the task was done separately and, as stated above, each child had a separate role in completing the task.

- Was there cognitive advancement and a purpose for pupils? - No, although through the topic the children were able to see a relevant purpose to the task, cognitive advancement was questionable due to the lack of challenge for pupils involved.

Since only two out of the four core elements of IDL were present in this task, it cannot be said to be interdisciplinary. The task could, more accurately be described as a Level 2, multidisciplinary category of the typology of practice identified at the start of this chapter.

Colleen's class was studying a topic on the Emergency Services, when I returned to see an IDL lesson in action. Interestingly, the topic on the topic grid for a 2/3 class in the third term was 'Castles', so the fact that this class was doing a completely different topic indicated that there was flexibility within planning system. When I asked Colleen why Emergency Services had been chosen as a topic she said that she had done this topic, before and felt that it would be a good example of IDL for me to observe. This response from Colleen raised questions as to whether the Hawthorne effect (Gillespie, 1991), sometimes referred to as the observer effect, could have been at play. Indeed, Colleen had altered the topic she had planned with the class, based on its suitability as a focus for IDL. However, in doing so Colleen also demonstrated that she understood IDL as something which should involve more than one discipline, allow pupils to engage in discussion and be able to apply their knowledge and skills through a problem-solving type approach. She had not recognised, however, the need for the disciplines to be integrated during the process.

When asked if the children were always involved in this kind of activity during IDL work, Colleen said that she tried to incorporate it at least once per term so that it was part of each topic. This suggested that this type of problem solving collaborative approach to IDL was something which was not experienced very regularly by the children.

## **8.13 Conclusion**

To conclude then, to gain some clarity around the area of this research, we will now consider what can be ascertained from the St Mary's Primary case study in relation to each of the research questions.

### **1 - How do primary teachers understand the term 'interdisciplinary learning'?**

From the answers of both teachers involved in this study there were a number of similar themes which emerged. These, however, do not directly correspond to the core elements of IDL, outlined in Chapter 3, which indicates that the teachers in St Mary's did not have a comprehensive dialogue or the conceptual clarity to describe IDL practices. IDL was understood, instead, as a thematic approach to learning where discrete areas of the curriculum are given a context by being related to the topic theme. Both teachers saw IDL as a way to enable links to be made across curricular areas and to provide a context for learning. While Maureen saw IDL mainly as a context, Colleen saw it as a type of collaborative, practical pedagogy which allowed children to develop skills. In Colleen's observed lesson, this was evident in her choice of a Cooperative Learning activity, through which the children engaged in fulfilling a design brief, with a problem-solving focus.

It was interesting to note that neither teacher had articulated problem solving, challenges nor drawing on disciplinary knowledge as being features of IDL during the interview stage, but Colleen's observed lesson revealed her awareness of these aspects as being important. The fact that these issues weren't mentioned by the teachers during the interview stage of this study, may be because they had never been asked to articulate their views on IDL before and their involvement in development work in this area had been minimal. This relates to what was discussed in section 4.4.1, that teachers need to be able to articulate their views and describe



what they are doing and why if they are to be described as professionals rather than merely technicians (Shulman, 1986).

Environmental factors may have resulted in a lack of opportunities being provided for teachers within St Mary's to engage in professional dialogue on general educational matters and/or more specifically IDL. Although St Mary's had been involved in cluster work relating to IDL, the extent to which individual teachers were involved in quality discussions around its nature and purpose was questionable. Much of the cluster work seemed to focus on planning topics from P1-7 and was done mainly by working parties rather than all the teachers, in line with what was discussed in section 4.4.1 as the idea of 'contrived collegiality' (Hargreaves, 1994). Vague and confusing policy guidance on IDL, as discussed in the previous chapters, may also have been a reason for teachers having unclear ideas and understanding around this area.

Both teachers mentioned 'nurture' in their answers and felt that behaviour was an issue within the classroom, may indicate why there was a focus on the *process* of teaching rather than on knowledge and content i.e. lessons structured to ensure tasks kept children actively engaged rather than being focussed on providing deep learning opportunities. These issues will be discussed further in Chapter 9.

## **2 - How do teachers plan for IDL work and are there opportunities for collaboration during the process?**

Within St Mary's Primary teachers, were given a prescriptive list of topics to study with their respective classes. They were also given some planning sheets to go with these topics which had suggested activities, linked to the discrete subjects, and ideas for cross cutting themes. There were also assessment sheets relating to the theme which were optional for use by the teachers. Although there was flexibility to choose an alternative topic from the ones on the suggested list, if teachers did this it generally meant that more planning had to be done from

scratch, which was time consuming. Although Colleen's topic had been changed during the term, when I observed her IDL lessons, according to the HT, in general teachers tended to adhere to the prescribed planning formats.

While following the structured policy of the school on IDL planning, both Maureen and Colleen also engaged in additional planning. This followed a topic web style approach, linking activities within various curricular areas, to the topic theme once they had consulted with children about things they already knew and things they wanted to learn. Teachers tended to plan on their own with no collaboration as each class did different topics. The nature of tasks and possible challenges and disciplinary insights were not discussed by teachers at the planning stages and often discrete subject activities were planned for, within the context of the theme with a heavy focus on literacy. This, again, is in line with Level 1 typology lessons, not true IDL work.

### **3- How is IDL work implemented in the classroom?**

Based on the answers of both teachers in St Mary's, the children's work and the lesson observed, it would seem that there was no consistency in the way IDL work was implemented. A variety of pedagogical strategies were used including the highly structured Cooperative Learning approach, less structured group and paired working, whole class lessons and individual tasks. Much of the work seemed to be done within the boundaries of discrete subjects, which were linked to the theme, but at times there were opportunities for children to engage in tasks involving more than one discipline, as seen in Colleen's observed lesson. Whether this was done and how often it was done, was dependent on each teacher.

In St Mary's, the teacher with the longest teaching experience was the one who carried out a problem based lesson with the possibility for the children to apply their knowledge and skills. This, however, could not be said to fit in to the Level 3 typology of IDL as outlined at the start

of this chapter but rather Level 2. This was due to the fact, that although the teacher had given thought to including three disciplines within the lesson (i.e. maths, technology and art), the level of challenge around the various disciplines identified was not sufficient for all the children to advance their cognitive abilities in these areas and the disciplines remained juxtaposed as opposed to integrated. Furthermore, the way the roles were assigned to the pupils during this task militated against integration, because, each disciplinary area was given to a different member of the group. In this case, more general roles such as air traffic controller (who ensures everyone gets a turn to speak), noise monitor, or resource manager, may have ensured all pupils were engaging with the different disciplinary areas.

Colleen's use of Cooperative Learning was a result of her receiving training in this pedagogical approach and it was clear that she was skilled in creating the conditions for children cooperating well together. However, Cooperative Learning itself is merely a process tool which can be used for discrete disciplinary areas as well as IDL tasks. This example illustrates that, in using this approach, the nature of the task and the way the roles are assigned have to be carefully considered, if deep and meaningful learning is to take place.

As concluded in the previous chapter, if teachers are unclear about the nature and purpose of IDL and there is an inconsistency in how it is planned for and implemented, this will mean that the potential benefits associated with it are not being made consistently available to students. In the next chapter, which is a cross-case analysis, the themes emerging from both case studies will be compared, contrasted and analysed. Conclusions will be drawn in relation to the research questions which will help to formulate recommendations for taking IDL forward within Scottish primary education.

## **Chapter 9**

### **Cross-Case Analysis**

*“Small-scale, localized research is important. It is vital to investigate in-depth the perceptions, experiences, benefits and challenges of particular aspects of professional learning with an understanding of the unique contexts and needs of those involved.”*  
(Campbell et al. 2016)

#### **9.1 Introduction**

This chapter will compare and contrast the findings from the two case studies outlined above and attempt to draw meaning from these in line with a pragmatic constructivist approach. It will begin by considering all the interdisciplinary themes which have emerged from both schools and go on to consider commonalities and differences between them. A framework provided by Priestley and colleagues (2015) will then be used to consider factors which were found to affect the agency of teachers in this study with regards to the implementation of IDL practice. This will allow the results to be viewed through the lens of structural, cultural and material influences while also taking account of the iterational (life and professional histories) and projective (short term and long-term objectives) dimensions which can impact on teachers work (Priestley et al., 2015).

The chapter will then go on to reflect on the limitations of this research and the value of this study. Some recommendations will be made and a vignette of examples of how to plan and structure IDL lessons will also be offered. The chapter will end with some personal reflections and concluding remarks about the EdD process and the future of IDL.

#### **9.2 Common Themes**

From the case studies outlined in chapters 7 and 8, 12 themes emerged in relation to IDL, as detailed in Table 8 below.

Table 8: Themes

Burnhill Primary	St Mary's Primary
<ul style="list-style-type: none"> <li>• Making links</li> <li>• Motivation</li> <li>• Engagement</li> <li>• Pupil Voice</li> <li>• Writing</li> <li>• Skills</li> <li>• Knowledge</li> <li>• Ideas</li> <li>• Group Work</li> <li>• Challenge</li> </ul>	<ul style="list-style-type: none"> <li>• Making links</li> <li>• Motivation</li> <li>• Engagement</li> <li>• Pupil Voice</li> <li>• Writing</li> <li>• Skills</li> <li>• Knowledge</li> <li>• Ideas</li> <li>• Group Work</li> <li>• Application</li> <li>• Context</li> </ul>

Table 8 shows that there were nine themes which were common to both schools. However, while challenge was mentioned in only one of the schools, application and context were mentioned only in the other. Figure 13 below, shows the spread of responses and the frequency with which these occurred in dialogue. It can be seen that the amount of times Emily mentioned writing was disproportionately greater than anyone else. This must be taken into consideration when reviewing the overall results of the study, however, it does not detract from the fact that writing was still featured relatively highly by all the other teachers as an element of IDL.

Figure 13: Themes from both schools

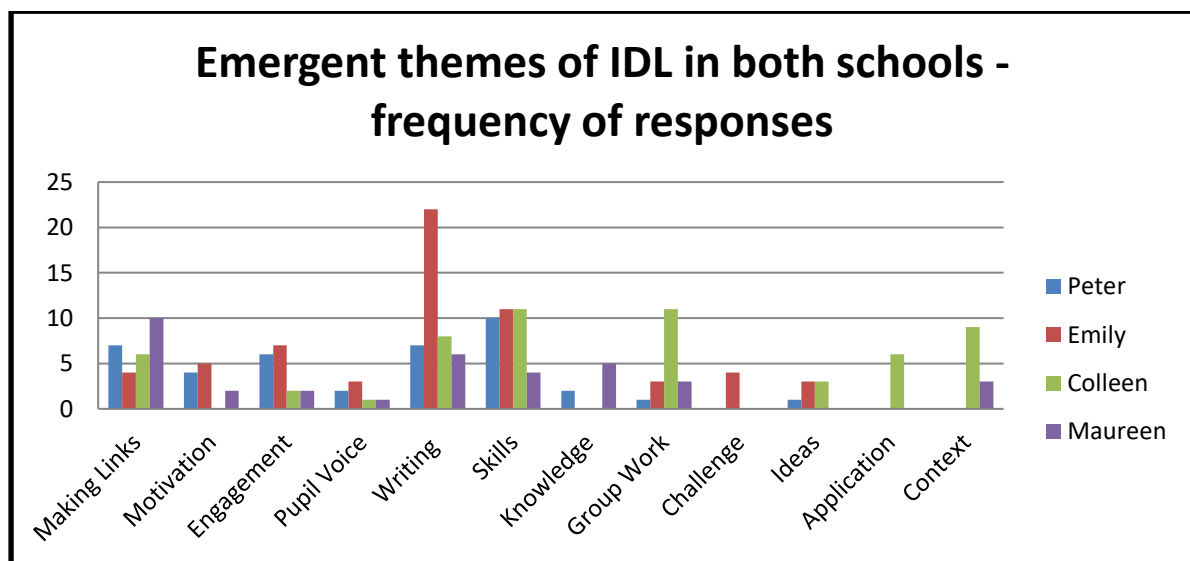


Figure 14 below shows the combined responses of teachers in relation to each theme demonstrating more clearly, themes which appeared in dialogue more often than others.

Figure 14: Combined Responses from Both Schools

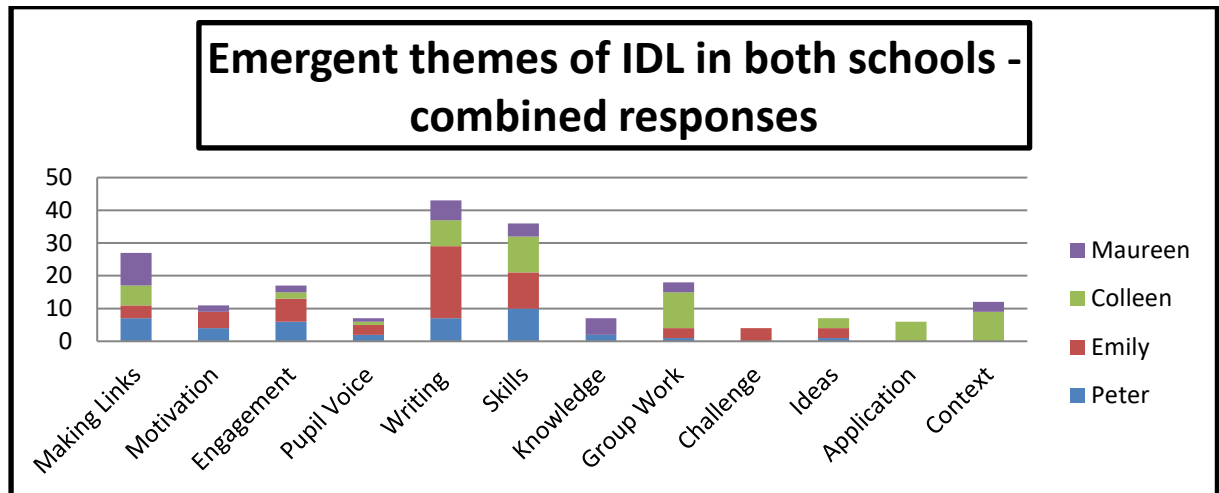


Figure 14 demonstrates that writing was the most frequently recurring theme to emerge from teachers' answers and illustrates that there were six themes which *every* teacher mentioned - writing, skills, making links, engagement, pupil voice and group work. It could be concluded from this then, that these six elements form the basis of how all the teachers in this study understood IDL.

Figure 15: Common Themes of all Teachers

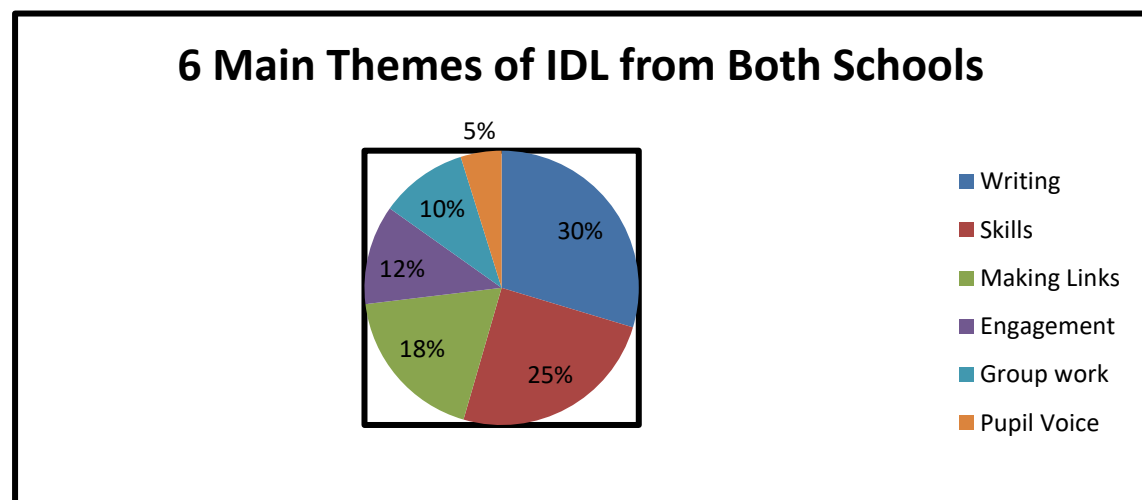
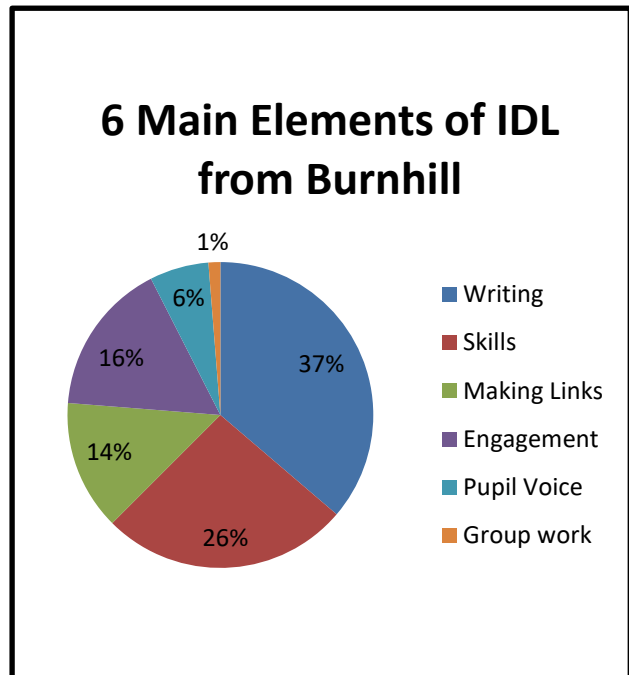
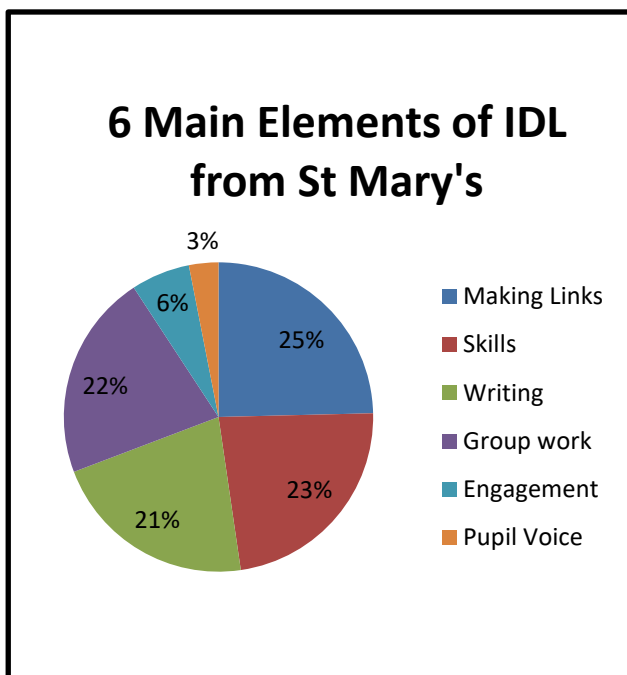


Figure 15 shows the six elements common to all teachers and denotes the percentage frequency of how many times overall, they were mentioned in dialogue. Figures 16 and 17 below illustrate that, although teachers all mentioned the same six elements of IDL, the focus was slightly different in each school. In Burnhill Primary writing was the most frequently mentioned factor whereas in St Mary’s it was making links. In St Mary’s Primary group work was more prevalent than in Burnhill. Reasons for these differences will be explored later in this chapter.

Figure 16: Main Elements in St Mary's

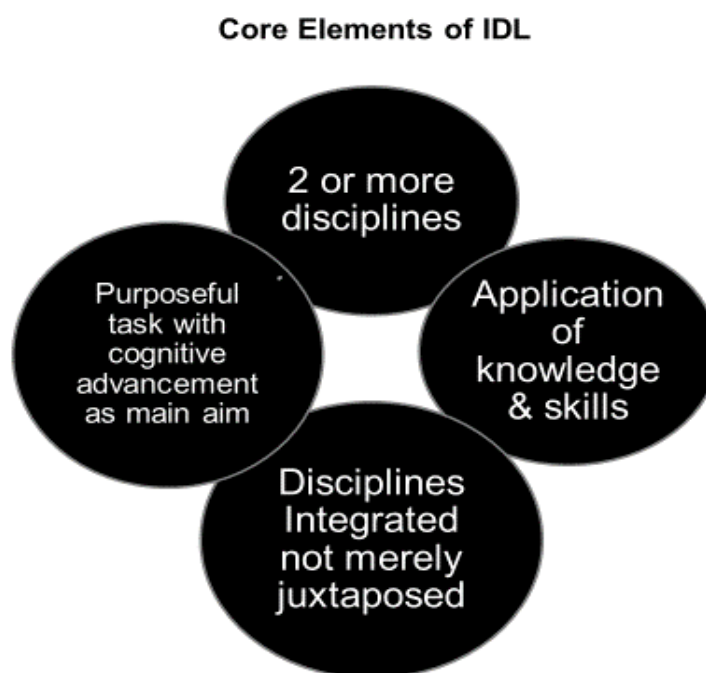
Figure 17: Main Elements in Burnhill



### 9.3 Teachers' Understanding of IDL

As discussed in chapters 7 and 8, the six common themes which emerged from teachers in this study, did not correspond to the main features of IDL as outlined in Figure 1 below (Chapter 3).

Figure 1: Core Elements of IDL (adapted from Boix-Mansilla, 2004)



None of the teachers mentioned the need for two or more disciplines to be involved in an IDL activity but instead, frequently used the example of a discrete writing lesson linked to a theme. While the development of skills was a core element of how teachers understood IDL, the need for application was not. Knowledge was only mentioned (infrequently) by one teacher, indicating that the idea of knowledge acquisition was not prevalent. While making links was another common theme, no teachers spoke of the integration of disciplines during the interdisciplinary process and cognitive advancement also did not feature in the teachers' responses. The idea of topics being made relevant to the pupils was addressed by the teachers when they spoke about pupil voice, however, this was mentioned mainly in relation to the general topic and not individual interdisciplinary tasks. It could be concluded then, that although the teachers shared a common conceptual core around the idea of IDL, this was limited and divorced from the academic body of work which has emerged around this topic. This lack of accuracy and clarity around the notion of IDL was reinforced through the observed lessons.

Some of the approaches identified by Lenoir and colleagues (2000) were also found to be present in the IDL practice within both schools as detailed in Table 9 below.



Table 9: Approach Comparison

<b>Approach</b>	<b>Burnhill Primary</b>	<b>St Mary's Primary</b>	<b>Consequence</b>
<b>Pseudo-Interdisciplinary Approach</b>	Yes - themes around a democratically elected topic but discrete subjects linked to these in a topic web style approach.	Yes - themes around social studies but discrete subjects linked to these in a topic web style approach.	Detrimental and undermining to the social subject.
<b>The Eclectic Approach</b>	Yes - Evidence of tenuous links being made to the theme with no clear structure or rationale.	Yes - Evidence of tenuous links being made to the theme with no clear structure or rationale.	Lack of clear rationale, structure and relevance in educational outcomes.
<b>The Holistic Approach</b>	No - Disciplinary boundaries valued and not viewed as wrong and restrictive.	No - Disciplinary boundaries valued and not viewed as wrong and restrictive.	N/A
<b>The Hegemonic Approach</b>	Yes – Literacy valued highly during IDL especially writing which was mentioned most often in dialogue.	Yes – Literacy valued highly during IDL especially writing.	Disciplines deemed of less value socially are neglected.

From Table 9 we can see that, of the four considered approaches, three were present in both schools. This being the case, the negative consequences of each of these were also likely to be present to the detriment of real IDL. The holistic approach was the only one not evidenced within this data set. This approach occurs where discrete disciplinary boundaries are seen as wrong and restrictive and as a result, there is a blurring and fusion of different learning objectives with no clear educational direction or purpose. However, it was clear from both case studies that teachers valued certain disciplines and even during IDL work spoke about them and planned for them. For example, teachers spoke about linking literacy, maths, geography and other disciplines when planning IDL work, so disciplinary boundaries were evident. Similar to what Lenoir and colleagues (2000) found, however, practices of teachers in this study were generally not interdisciplinary. Possible reasons for this will now be considered.

## **9.4 Teacher Agency Framework**

As outlined in section 4.5, an ecological approach to conceptualising agency has been adopted in this thesis, meaning that it is regarded as something which a person (in this case a teacher) is able to achieve, as opposed to something they possess. It involves the relationship between a teacher's personal and professional history, their short term and long-term aspirations and values, together with the culture, structure and material situations they find themselves in and their evaluation of risk factors involved in their work (Priestley et al., 2015). These elements provide a framework around which agency can be scrutinised and factors pertaining to this will now be analysed in order, to derive meaning from the case study data.

### *9.4.1 Teachers' Views and Beliefs*

Iterational factors can be described as those involving the personal and professional experiences a teacher has had, which shapes how they come to view their role as a teacher. These can involve formal professional learning as well as more informal activities such as dialoguing with colleagues on a day to day basis and taking part in the everyday routines of school life. The aspirations and beliefs that teachers develop about their role and the purpose of education, is recognised by many as being strongly related to how they implement new curriculum initiatives such as IDL (e.g. Priestley et al., 2015; Nespor, 1987; Pajares, 1992). When exploring teachers' views and beliefs at the start of this research study, what emerged from the data was that every teacher talked about their role in terms of nurturing pupils and focussed on the social aspects of learning rather than the acquisition of knowledge. As noted in section 3.2.4, a focus on the social and emotional needs of pupils may lead teachers to pay less attention to subject matter and this may help explain why knowledge did not feature as one of the six common elements of IDL identified by these teachers. It was clear, however, that all the teachers thought that IDL was beneficial and spoke positively and enthusiastically about it, but as detailed in the previous chapters, the themes which transpired revealed that teachers did not fully understand the nature of IDL and classroom observations also demonstrated that authentic IDL lessons

were not taking place. The data showed that the ideas teachers had constructed around IDL were generally more aligned to cross curricular work. In order, to understand what had shaped the teachers' conceptions and why they had limited agency around IDL, some material, structural and cultural factors will now be considered.

#### *9.4.2 Unclear Policy Guidance*

A material factor which could be said to have a major influence on teacher agency in this study is Macro level policy. As outlined in Chapter 6, CfE policies pertaining to IDL do not provide a clear definition of interdisciplinarity and how this approach differs from other ways of blurring subject boundaries across learning. Policies pertaining to IDL have also been shown to contain mixed messages for practitioners. This is similar to the findings of other researchers who have highlighted conflicts and confusion within CfE in relation to other policy areas such knowledge and active learning (Drew and Mackie, 2011; Priestley and Sinnema, 2014).

There were a number of themes arising from the policy documents and many of these were evident in the teachers' answers. For example, Figure 13 (section 9.2) shows that skills, featured as the second most common theme in combined responses. A main feature of CfE is the emphasis placed on giving students generic skills by focussing on IDL (see section 6.2.3). Real life scenarios are often promoted during interdisciplinary work as being favourable contexts for learning with the aim that pupils will develop attributes to equip them for life after school whether in higher education, training or work. From the results of this study it seems that teachers had absorbed the policy messages regarding the need for skills development and associated this with IDL but with little understanding of how this should be actualised and achieved in practice.

Again, if we look at the elements of IDL distilled from the literature review, it is the *application* of both *knowledge* and *skills* which is important. When the teachers in this study mentioned skills, only one teacher, Colleen, briefly mentioned the need for these skills to be applied and

the rest made no mention of this at all. Similarly, teachers spoke about how skills were developed as a result of studying discrete subjects during their topic work as illustrated in the comments below.

During geography topics, the geography skills improve. In writing, note taking skills are taught. We are given skills that you have to hit by the senior management linked to Es and Os. [Peter]

It leads to transferable skills, literacy skills. Although there are lots of skills in IDL, I'm focussing on reading and literacy skills. [Colleen]

This is in line with the policy messages which emphasise the development of skills rather than application.

Another example of how policy messages were absorbed by teachers in this study is when teachers spoke frequently about making links during IDL between different areas of the curriculum. For example,

Children get more from it when learning is joined and linked in a context. Its more meaningful, linked to previous learning – makes learning flow. [Maureen]

It enables links to be made across the curriculum. Not just contrived. We look at Es and Os to see links. For example, social studies, history, length of swords for knights, art – making swords, imaginative writing about swords. [Colleen]

As discussed in Chapter 3, linking discrete subjects to a theme stands in contrast to the essential elements of IDL, which detail that an IDL activity must incorporate two or more disciplines within it and that the disciplinary insights are integrated during the interdisciplinary process not

merely juxtaposed. However, the views of teachers echoed the policy messages here also (see section 6.2.1).

In terms of practical advice for teachers, many of the policy documents are vague and ambiguous. As Reeves (2016) observes, messages are often diffuse and indigestible, and teachers have not been equipped with the conceptual tools needed to apply the examples of good practice offered, by bodies such as Education Scotland, to their own every day practice. Indeed, IDL itself could be considered as a prime example of a picture of ‘good practice’ expounded to teachers, with very little clarity provided about its nature, purpose or how it can be best implemented within the classroom.

Reeves (2016) suggests that there is a gap between the Macro and Micro levels of defining pedagogy. In other words, much of the guidance is aimed at school level and not at classroom level. She argues that since the introduction of CfE, teachers have not been given the conceptual tools to make sense of the “theoretical pronouncements and vignettes” (p27) offered as examples of best practice, to allow them to understand and apply these to their daily practice. This lack of clarity and clear direction for teachers has already been discussed in Chapters 2 and 6 and may provide part of the reason for the confusion of vague ideas about education articulated by teachers in this study.

When considering how this can be rectified Black and William (1998) offer that:

Teachers will not take up attractive sounding ideas, albeit based on extensive research, if these are presented as general principles which leave entirely to them the task of translating them into everyday practice - their classroom lives are too busy and too fragile for this to be possible for all but an outstanding few. What they need is a variety of living examples of implementation, by teachers with whom they can identify and from whom they can both derive conviction and confidence that they can do better, and see concrete examples of what doing better means in practice (1998, p8).

It could be argued then, that regarding IDL, teachers have not been given these ‘living examples’ of implementation and have been left to translate the general principles, as they imagine them to be, into their day to day classroom practice. Hence in this study, most of what was described as IDL, and observed in lessons, did not constitute authentic interdisciplinarity.

#### *9.4.3 Performativity*

Whereas IDL should incorporate two or more disciplines, the teachers in this study consistently spoke about relating writing, in particular, into their topic work and called this interdisciplinary as the comments below indicate.

Children are more engaged in writing. Note taking skills improve and the quality of writing improves overall. [Peter]

Writing is always the one I would do. It ticks a lot of boxes e.g. functional, imaginative etc and it [IDL] makes it [writing] more interesting. [Emily]

You can always get a good piece of writing from any topic.[Maureen]

Although writing may be considered a skill, developed through various subjects and contexts, including IDL, in primary schools, writing is delivered as a discrete subject where the various writing genres are explicitly taught (as noted in Emily’s comment above) and yet, it was most commonly mentioned overall as being an element of IDL. During the teachers’ interviews, and from observing the work displayed in the school, it was clear that teachers often used their weekly class writing lessons to write about aspects of the topic. An example of this is given in section 7.14, when the P3/4 class were studying Mary Queen of Scots. The children wrote a letter to the queen during a discrete writing lesson. This did not, however, involve an independent task where the pupils were applying their skills and knowledge, but instead was a

taught lesson with a focus on developing letter writing skills, rather than on increasing knowledge of the social subject.

Commentators such as Apple (2001) and Ball (2003) have recognised a trend within education which sees an emphasis on the performance of pupils rather than a focus on their needs. Priestley and colleagues (2015) suggest that some Scottish primary schools have found it difficult to implement CfE initiatives such as IDL, because of the performative culture which exists. They argue that this culture entails external accountability (e.g. through the inspection process and external scrutiny of assessment data) coupled with a curriculum development tradition of policy regulation and prescription (e.g. during the 5-14 Curriculum years) which has led to the erosion of professional autonomy resulting in schools not being equipped to engage in curriculum development to the level CfE requires.

As outlined in Chapter 2, primary teachers in Scotland are now being asked to report on the levels of achievement of their pupils in reading, writing, talking, listening and numeracy and these results are being reported publicly. For example, on 13<sup>th</sup> December 2016, the headlines of the Sunday Herald in Scotland read “28% of P7 pupils not achieving required levels of literacy and numeracy.” The accompanying article went on to give a breakdown of the figures which showed that in P7, only 65% of pupils were on track to achieve Second Level in writing, compared with 72% for reading, 77% for listening and talking and 68% for numeracy. The article also went on to say that the gap between pupils from the 20% most-deprived areas and those from the least-deprived areas in writing at P7 was 23%. These disappointing statistics for writing may not necessarily present a true reflection of the attainment, but rather, the teachers’ lack of confidence or experience in assessing the levels. For example, there is less ambiguity in marking a numeracy or reading test when there are clear right and wrong answers, but in writing, the boundaries are more subjective. However, these low figures have in turn now prompted many schools to focus on writing as an area of development, and may explain

why the teachers in this study appeared to take advantage of topic work to engage students in extra writing activities.

The emphasis on writing during IDL concurs with the hegemonic approach identified by Lenoir and colleagues (2000), as outlined in Chapter 4. They found, in their study of IDL practices in Quebec, during time when interdisciplinary work was said to be going on, instead additional time was given to socially valued disciplines at the expense of the subject areas deemed to be less important. If there was pressure from the media or authority and a perception by teachers that more attention or time should be given to certain areas of the curriculum, then the teacher carried this out and justified it by giving the change in their practice the umbrella term 'interdisciplinary'.

As discussed previously in Chapter 6, CfE has evolved from having the rhetoric of the process model at its inception, to being more content and product driven as time has gone by. The result of this is that policy initiatives such as interdisciplinarity may be stifled, with the focus instead remaining on meeting targets, concentrating on subjects to be assessed and reported on, and ensuring pupil progression through the sequential levels of the curriculum. The fact that teachers in this study had a heavy focus on writing during IDL time, may indicate that this approach was prevalent.

#### *9.4.4 School Culture and Traditions*

As previously mentioned, Emirbayer and Mische (1998) suggest that agency is shaped by influences from the past and orientations towards the future. Within Burnhill Primary influences from the past included the school tradition and culture of culminating the mid-term topic work in what was called an IDL Open Evening where each classroom had to be 'transformed' into an aspect of the topic being covered. During this event parents, invited guests, other teachers and children were invited into the school to walk round and see the



displays. This school tradition resulted in a culture which created a pressure on the teachers to decorate the large classrooms with elaborate displays and consequently much of the work undertaken during the IDL topics involved the creation of art and writing in various, different forms, to be put on show for parents to see and read at the open evening. Teachers in Burnhill primary helped to fabricate a positive image of the school and ‘play the game’ (Gleeson and Gunter, 2001 cited in Priestley et al., 2015) in terms of acquiescing to the discourses of management in promoting the school favourably to the public.

This pressure on teachers was revealed in the teacher interviews, where they spoke about work load issues relating to the planning of topics and getting the classroom ready for the open evening. Within Burnhill, however, an art specialist was employed to cover teachers’ non-class contact time, so the class teachers were not responsible for the art work. This may explain why art was not mentioned as a main element of IDL, but writing was. Within St Mary’s Primary this culture did not exist so this may explain why writing, although prevalent, was not so frequently mentioned.

#### *9.4.5 School Resources*

As discussed in Chapters 7 and 8, the examples of IDL practice teachers gave, and indeed the practice observed during the classroom observations, related almost exclusively to Level 1 of the IDL Typology Model (see section 7.12.1). Teachers spoke in their interviews about using a topic web approach to planning and linking discrete disciplines using the theme as a context but nothing more. Within Burnhill Primary, only one lesson contained two disciplines, but these were juxtaposed so it could not be considered interdisciplinary. The other lesson was linked to the topic but could only be categorised as Level 1 on the typology model.

The observed lesson in St Mary’s did contain aspects of three different disciplines, but, it could only be classified as a Level 2 lesson. This was because, although the teacher had shown an

awareness of the need to include different disciplines, the task did not require students to integrate or synthesise their disciplinary knowledge. As discussed previously, this highlights that, although teachers had a notion that IDL was related to making links across the curriculum, they did not have a clear understanding of the need for disciplines to be integrated during tasks and how this could be done effectively.

In St Mary's Primary, making links was the most common answer given when teachers were asked about IDL. If we consider Appendix 4 which shows the planning overview for the school, we can see that these materials encourage teachers to look for ways of making connections to the social studies theme across other areas of the curriculum and may explain why the idea of making links was more prevalent in St Mary's than in Burnhill Primary where such planners were not in use.

As described in Chapter 4, making links in a type of topic web approach does not ensure integration of disciplines and so cannot be classed as interdisciplinary. From the research gathered from interviews and observations, it was also evident that, in choosing activities relating to the class topics, teachers often adopted a potpourri style approach to choosing subjects to be studied, with no clear rationale, structure or relevance to their selection except perhaps a tenuous link to the theme. An example of this was when Emily spoke about linking her maths lesson to designing a kite, due to the song 'Let's go fly a kite' from Mary Poppins when this was the class topic. Emily admitted that the maths outcomes didn't match what she had planned to cover, but she was keen to link maths in some way to the theme. This is in line with the eclectic approach (Lenoir et al., 2000), as detailed in Chapter 4, and highlights the limits of thematic teaching which can often masquerade as IDL.

#### *9.4.6 Staff Training Opportunities*

Group work also featured highly when teachers were asked to describe IDL practices. Indeed, it could be argued that group work is a pedagogical approach which facilitates discussion,

providing students with spaces to think and develop their understanding in collaboration with others (Harvie, 2012). As discussed in Chapter 3, Boix-Mansilla (2010) agrees that IDL work often benefits from collaboration to facilitate the exploration of different perspectives. However, it is not essential for this to happen and an interdisciplinary challenge or problem could also be given for pupils to complete on their own. Group work is only a process which can be used to organise students when discrete subjects are being taught as well. To focus on group work as an element of IDL then is an example of an emphasis on process over content.

If IDL is to be used successfully in developing critical thinking, creating knowledge and raising attainment, it is vital that there is a focussed concentration on the *types* of challenges given to pupils and the disciplinary understandings to be employed in solving them. Bonnett (1995) refers to content as having ‘sanctity’ which should not be ignored emphasising the importance of *what* is being taught. The nature of the task within an IDL activity should provide enough academic challenge to the pupils to impel them to think ‘outside the box’ making links in a truly interdisciplinary fashion.

Colleen mentioned group work frequently when speaking about IDL as if group work, in itself, was a means to an end and resulted in learning no matter what the task. She said,

IDL work is more collaborative and relaxed, more beneficial. I would prefer to facilitate collaborative work if possible. You have to reinforce social skills, training the children to work together. [Colleen]

This may be explained, in part, by the fact that in St Mary’s Primary the teachers spoke about being trained in Co-operative Learning, while in Burnhill Primary they had not. Colleen, who was the most experienced teacher in the study, had received a full three-day training programme. She spoke in her interview about how beneficial she felt this had been to her teaching practice and how Co-operative Learning was given a high priority within the school. This is one example of how the environment in which a teacher finds themselves and the kind

of training opportunities they have affects their agency (i.e. how they perform in the classroom (Priestley et al., 2015)).

Reeves (2016) argues there is now an over-emphasis on the importance of learning as a process and teachers are not encouraged to consider the relationship between learning, teaching and curriculum. The result is that educational purpose and curriculum content can often be blurred or ignored. This is also related to what has been discussed above, that teachers are not being given the opportunities to develop their own curricular knowledge and understanding due to pressures to focus on subjects which are being assessed and measured (i.e. literacy and numeracy). Indeed, as detailed in the case study chapters, teachers in this study at times, were not able to clearly articulate the rationale for what they were doing and struggled to explain their thoughts. An example of this was when Maureen said that during the years of the 5-14 Curriculum when she was at school, literacy was taught in the morning and numeracy was taught in the afternoon and it was better and yet she later said IDL was something good. When asked to explain this apparent contradiction she was unable to do so. As Shulman (2010) observes, in order, for teachers to effectively communicate the rationale for what they do, they require to be educated in content and process and engage in reflective practices. This ability to articulate what is being done and why, is what elevates a technician or a craftsman to the level of a professional.

From the results, it would seem, that teachers in this study viewed IDL as something which lends itself to group working, but were less clear about the nature of the tasks which should be undertaken to constitute meaningful, purposeful and effective IDL work and which would constitute Level 3 practice in the typology model.

#### *9.4.7 Short Term Objectives*

One of the projective aims that teachers in this study expressed was to construct lessons which were engaging for pupils. It was clear from the data gathered from both case studies that

teachers equated IDL with their topic and felt that relating work to the thematic context resulted in children becoming more engaged in their learning. In fact, using the hierarchical focussing schedule which was employed when interviewing teachers (Appendix 1), it was possible to identify which answers were offered naturally by the interviewees and which had to be prompted by the interviewer during the interview process. Engagement was the only response spontaneously mentioned by every single teacher in the study. Teachers also became very enthusiastic themselves when talking about the engagement generated through thematic work using words like '*fantastic*', '*exciting*' and '*brilliant*'. This is in line with the findings of Adler and Flihan (1997) outlined in Chapter 3. They found that, not only did teachers report students as being more engaged in their learning during IDL work, but that they themselves exhibited an increased enthusiasm for teaching and a renewed interest in their profession.

Teachers spoke about engagement resulting in improved behaviour in the class when describing the engagement of children during IDL, as illustrated by the following comments.

They love it, it's more fun. A nice way to cover what you've to get through. Children get so immersed in it that behaviour is not an issue. [Maureen]

Motivation keeps the behaviour at low level because they're constantly on task and they're constantly at something else they need to be looking for or something else they need to be creating so they're not really getting the opportunity to misbehave. [Emily]

Peter also noted the positive effect engagement had on behaviour by saying, "The fact children are engaged improves behaviour."

This focus placed on positive behaviour may indicate what has been discussed in previous chapters, that teachers are often driven by short term objectives which involve a desire to maintain a normal desirable state in the class (Brown and McIntyre, 1993). Their planning is

therefore aimed at providing enjoyable lessons which keep pupils engaged, well behaved and interested.

From the two case studies being examined in this chapter, it was clear that when teachers spoke about levels of engagement they related it mainly to the thematic topic context. For example, Emily spoke enthusiastically about engaging the boys in her class during the topic about Spain because they had the chance to discuss football.

Using football as a learning opportunity – context, engaged the boys. They wanted to tell their parents. [Emily]

Football was a subject relevant to the boys and made them interested and willing to learn, but the depth of learning involved in the tasks associated with the topic of football was not elaborated on by Emily. The focus was very much on the excitement and enthusiasm generated among the boys regarding the general theme. Incidentally, Emily did not comment on how well this topic engaged the girls in the class!

Constructivism has led to an increased importance placed on children being actively engaged in the learning process. If we consider knowledge creation as the intended outcome of an effective lesson, engagement, then, could be considered a factor to enhance the learning process. As Reeves observes, however, "...engagement in group activity that has no specific cognitive objective is sidestepping the educational impact that a collaborative learning environment can offer" (Reeves, 2016, p35). So, while a theme can be motivating and engaging for pupils it does not ensure the implementation of interdisciplinary activity which has to be concerned with cognitive advancement.

A main feature of IDL is to make activities purposeful and relevant to the participants with enough challenge for there to be intellectual development. By focussing only on engagement rather than challenging disciplinary content, teachers again seemed to be concentrating on the

process of learning and demonstrated a lack of understanding of IDL. As discussed in section 3.2.5, this focus on the short term aim of engagement also concurs with the findings of Priestley and colleagues (2015), who reported that teachers in their study tended not to pay attention to long term educational goals, but instead concentrated heavily on the more immediate aim of engaging students. In their work they cite Salomon (1992) who claims that one of the main responsibilities a teacher has is to give serious consideration to longer term educational purposes and values. This involves giving careful thought to the content of what is taught, the methods to be used and reflecting on any desirable or less desirable long term effects which may be incurred. If this does not happen, it could be argued, that teacher responsibility is not being fully realised. What is more, this type of narrow, short term vision and purpose may restrict teacher agency in terms of how a teacher views what should be achieved and what is possible to achieve within the realms of CfE (Priestley et al., 2015).

#### *9.4.8 Planning Constraints*

Within the two case study schools it was clear that all the teachers viewed pupil voice as something which was important. Each school, however, took a different approach to how they listened and responded to the views of pupils in the planning process. As illustrated in Chapter 8, St Mary's Primary used KWOF grids to identify what children already knew about a particular topic and what they wanted to learn. The aim of using these is that teachers can begin to plan activities around the interest of the child. How effectively this was done, however, was unclear and the fact that teachers in St Mary's were given a grid with pre-planned activities gave tacit approval for them to use this and save themselves having to do the extra planning which may have been involved if pupils' interests veered in different directions. In fact, Maureen spoke about the constraints of not always being able to do what the teacher or the children wanted because, "... there are certain things which 'have to' be covered."

In St Mary's, children didn't have a say in the topic to be studied as these were predetermined, and it would have been interesting to find out how relevant or purposeful the children themselves saw these topics and the tasks which ensued.

By contrast, however, as outlined in Chapter 7, in Burnhill Primary the children were able to vote democratically for the topic they wished to study within a structure of 'worlds'. Peter commented during the interviews that,

Pupil voice is huge. Consultation with children is big. I like that because children are totally engaged – not everyone because it is a democratic vote, but you can win them round. [Peter]

Peter also went on to say, however, that although he goes entirely with the pupils' choices, he knows that other teachers do not and that pupils' views (especially infants) can be easily swayed to coincide with the interest of the teacher because if children pick a topic the teacher is unfamiliar with or for which there is no prior plan, it means that planning must start from scratch which presents a huge workload issue.

Indeed, in recent years 'tackling bureaucracy' has become a frequently used term within education and it has been recognised by Education Scotland (2016) that there is a need to reduce the overly bureaucratic burden which has been placed on teachers in terms of planning and assessment, as discussed in Chapter 2. This presents a conflict of interests and a tension between what teachers believe to be right and their desire to have a healthy work/life balance. It is easy to understand, then, that teachers could be tempted to choose an option which was easier for them in terms of planning. This tension between trying to meet the needs of the curriculum while also responding to the needs and interests of children is an issue which is highlighted by Murdoch and Wilson (2004). As discussed in Chapter 4 they argue that, while the ideal scenario is to plan around the existing knowledge base and interest of the child, it is not always practical to do this.



The following table is useful in comparing planning processes in both schools and is based on the main features of the forward planning materials in both schools.

*Table 10: Planning Comparison*

<b>Feature of Planning</b>	<b>Burnhill Primary</b>	<b>St Mary's Primary</b>
Set topics	<b>NO</b> – topic democratically selected by pupils	<b>YES</b> – a predetermined list of topics provided for teachers
Es and Os to be covered	<b>YES</b> – an overview of all Es and Os to be covered provided by the SMT	<b>YES</b> – an overview of all the Es and Os to be covered within the social subjects provided in the plans
Progressive Skills to be covered	<b>YES</b> – a list of skills to be covered provided by SMT	<b>YES</b> – skills contained in the plans
Activities Provided	<b>NO</b> – activities to be generated by the teacher in consultation with children	<b>YES</b> – suggested activities provided in the planning material for each topic
Cross Cutting Themes Provided	<b>NO</b> – cross curricular links to be generated by the teacher in consultation with children	<b>YES</b> – activities provided in the planning material for each topic
Assessment Provided	<b>NO</b> – teachers to devise their own assessments	<b>YES</b> – assessment sheets provided for each topic
Pupil Voice in planning activities	<b>YES</b> – KWOF grids used	<b>YES</b> – KWOF grids used

As Table 10 shows, from the seven features of planning outlined above, these schools differed in four of them, illustrating a lack of continuity between the schools. This table demonstrates how schools in this study had interpreted IDL in different ways.

#### *9.4.9 Lack of Collegiality*

In St Mary's Primary, although collegiate time had been devoted to IDL, it was initiated in a top-down contrived way (Hargreaves, 1994), and only a selection of teachers took part in the development work. This meant that most teachers were presented with planners and activities that they had no input into creating and did not get the opportunity to engage in deep and

meaningful discussions around interdisciplinary processes and activities. Teachers in both schools expressed the notion that planning collaboratively with colleagues and discussing ideas was beneficial, but they also said that this was hard to do as illustrated by the following statements.

You don't always get the chance to collaborate with colleagues. If someone has done the same topic before you could ask them but no one else's children may have picked the same topic. If the children pick a topic there is no planner for the teacher has to start planning from scratch. [Peter]

Collaborative planning is good for getting ideas and for moderating too. But it's more difficult to plan collaboratively in a small school. [Emily]

In Burnhill Primary the topics studied in each class were generally different and teachers spoke of this causing difficulty when trying to plan together. In St Mary's Primary, the fact that the school was small and single stream meant that topics in each class were not the same and teachers didn't have stage partners to plan with. This meant that the structures in place in both schools made it harder for teachers to plan and collaborate together about IDL work.

#### 9.4.10 Barriers and Drivers of IDL

Table 11 below provides an overview of how each school was supported with IDL in relation to the facilitating factors outlined in section 4.4.

*Table 11: Facilitating Factors Comparison*

<b>Facilitating Factor</b>	<b>Burnhill Primary</b>	<b>St Mary's Primary</b>
Time	<p>Planning – expectations on teachers to plan from scratch. Identified as very time consuming by teachers.</p> <p>Resources – teachers expected to find own resources for child initiated topics. Very time consuming.</p>	<p>Planning – ready made plans available.</p> <p>Resources – some resources available but teachers have to research their own materials at times for individual activities planned in response to children's interests expressed in the KWOF grids.</p>

	Extra Time – no extra time given for planning IDL work.	Extra Time – no extra time given for planning IDL work.
Institutional Support	<p>Funding – no additional funding in school budgets for IDL.</p> <p>IDL Policy – comprehensive policy in place.</p> <p>Training – no specific training for IDL</p> <p>Unique Resources – SMT facilitate parents and local business partners to support IDL work if requested by the teacher.</p>	<p>Funding – no extra funding in school budgets for IDL.</p> <p>IDL Policy – no policy in place.</p> <p>Training – cluster work had taken place and curriculum development time but not all teachers fully engaged in this.</p> <p>Unique Resources – SMT facilitate parents and local business partners to support IDL work if requested by the teacher.</p>
Assessment	Assessment – assessment is weak and takes the form of self-assessment by the child. The child is asked to identify three things they have learned from the topic. Teachers do not formally assess IDL work.	Assessment – assessment sheets are provided for each topic. These however do not focus on the criteria for assessment outlined by Adler and Flihan (1997) as detailed in Chapter 4.
Collegiality	Planning IDL tasks – teachers generally do not plan together.	Planning IDL tasks – teachers generally do not plan together.

From Table 11 it can be seen, that the factors which drive and facilitate IDL, outlined in section 4.4, were lacking in places in both schools. Considering time, within Burnhill Primary, the IDL practices which existed seemed to go against teachers in terms of the time they had to spend planning activities then finding and creating resources. Although there was a comprehensive policy for IDL within the school, the aims of which may have been well intentioned, (e.g. planning from the pupil's interest), the factors which needed to accompany this, for teachers to realise the policy aspirations fully and consistently in their classroom practice, were not there. In St Mary's, although plans were given to teachers, there was an expectation that teachers would adapt these based on the interests of the children, as a result of the KWOF grids. However, no extra planning time was provided for this. This lack of time militated against the implementation of deep and meaningful IDL work.

Institutional support was also inadequate due to the low levels of training in both schools and lack of funding available. Assessment of IDL was deficient in both schools and although there were written assessments in place in St Mary's Primary (Appendix 7), these were based on the self assessment of pupils and do not match the elements of assessment for IDL as outlined in Chapter 4 which are –

- Is there evidence of grounding in carefully selected disciplinary insights in the work and have these been deployed adequately?
- Are these insights integrated to facilitate leverage of understanding?
- Is there a clear purpose, sense of reflection and self-critique in the work?

Finally, if we consider collegiality, although there was some evidence of informal discussions among teachers in sharing existing plans when possible, time and space for the growth of collaborative cultures (Hargreaves, 1994) was not provided. Both schools were weak in terms of how much training and support there was for teachers to develop their understanding of IDL and plan and design tasks which could fall into the category of a Level 3 example of IDL in the typology model (section 7.12.1).

## **9.5 Conclusions**

When considering the evidence from this chapter, some conclusions can be drawn. Firstly, six main themes emerged from the data gathered in both schools. This illustrated that there was a commonality of understanding among the teachers in this study regarding IDL. However, when compared to the main interdisciplinary elements (see Figure 1 in section 3.3.4), these themes did not match, and this indicated that there was a lack of conceptual clarity around the nature of interdisciplinarity among the teachers.

Secondly, within the teachers' practices there were a range of approaches identified (see Table 9), which were not conducive to IDL. Teachers used the umbrella term of interdisciplinary when engaging in these activities which were generally cross curricular in nature.

Thirdly, planning procedures and resources varied between schools and there was no consistency in how IDL was developed and implemented. Teachers mainly carried out their planning as an individual task although the benefits of collaboration were recognised.

Fourthly, a number of issues relating to the cultural, structural and material dimensions of teachers' work were identified and it was shown how these had impacted the agency of teachers in carrying out IDL work. Consideration of these has offered some reasons why teachers in this study had misconceptions about IDL and why their agency was adversely affected. This has demonstrated that the implementation of IDL is not dependent on the capacity of individual teachers alone, but is also affected by external factors such as school structures, traditions, physical resources as well as iterational and projective dimensions.

Finally, it could therefore be concluded that a 'chimera effect' was taking place, because although IDL was talked and written about in each of the schools, authentic interdisciplinary practices were found not to be happening.

# **Chapter 10**

## **Conclusion**

### **10.1 Introduction**

This chapter will offer thoughts on the substantive findings of the research but also reflect on the research process. This thesis has considered some of the key influences on educational policy at Supra and Macro levels which have brought IDL to prominence within Scotland's national curriculum. These have resulted in IDL being named as one of the four contexts of learning in CfE. It has been recognised, however, that interdisciplinarity is an amorphous term which is used in many different ways and so it has been necessary to define what IDL is drawing on the academic literature. The nature of interdisciplinarity was explored in Chapter 3 and a theoretical framework was developed to use as a comparative model of IDL. Chapter 4 looked at the literature around the practical application of IDL and examined various pedagogical frameworks aimed at blurring disciplinary boundaries. Subject and child centred approaches to planning were also explored and distinctions were made between the terms disciplinary, cross-curricular, multi-disciplinary and interdisciplinary. Factors which can help to drive and facilitate IDL were then considered along with those which might affect teacher agency in relation to teaching in the IDL context.

In order to answer the research questions outlined in section 1.6, a pragmatic constructivist epistemology was adopted and the methodology used was detailed in Chapter 5. A Macro level policy analysis was then presented in Chapter 6 using four key documents in relation to IDL and this illustrated some policy tensions and highlighted a lack of conceptual clarity around this area. Findings from two case study schools were then presented in Chapters 7 and 8 before a cross-case analysis in Chapter 9 which compared similarities and differences between the data gathered from both schools.

## 10.2 Analytical Generalisations

As outlined in section 6.4, IDL is an underdeveloped and confused concept within CfE. It would seem that policy makers in Scotland do not have conceptual clarity around the nature of IDL and this has played a large part in the fact teachers in this study were unclear about what constitutes IDL as opposed to cross-curricular tasks for example.

Some analytical generalisations which may be drawn from this study then are that

- IDL was not clearly understood by practitioners
- IDL tasks in general did not involve the integration of more than one discipline
- challenges and problems did not feature strongly in IDL tasks
- students had limited opportunity to apply their knowledge and skills
- although teachers recognised the need to take cognisance of the interests of the children in planning, the extent to which this was done was variable from class to class and school to school
- there were structural, cultural, material, iterational and projective factors which impacted the agency of teachers in carrying out IDL practices as outlined in section 9.4.

The results of the study suggest that primary school children are not being given consistent opportunities to engage in interdisciplinary tasks and so are being denied the possibility of deep cognitive advancement that this type of learning may bring. This raises some important questions such as: What needs to be done to improve practitioners' understanding of IDL?, What could be done to improve planning around IDL?, How can schools provide the facilitating factors necessary for IDL to flourish? and What do effective IDL tasks look like in practice?

### **10.3 Closing the Gap**

To understand IDL there is a requirement for some serious intellectual effort on the part of educationalists and teaching practitioners (Reeves, 2016). As presented in the literature review in Chapters 3 and 4, interdisciplinary or integrated learning is more than just a context, theme or topic. It is a way of enabling students to integrate disciplines by applying their knowledge and skills to problems and challenges which are set for them. If implemented properly it can provide the means for pupils to make cognitive advancements they would not be able to do otherwise. The ‘serious intellectual effort’ which needs to be applied by practitioners, to fully appreciate IDL require time and space for teachers to discuss and collaborate to develop their understanding of this concept and plan effective IDL tasks. This may be seen by some as an educational mountain which has to be climbed, because, it involves changing mindsets and practices. It is worth remembering, however, that any mountain can be conquered by taking one step at a time and the view from the top makes the whole journey worthwhile. So what steps could be taken to climb this mountain? These will now be considered.

### **10.4 Implications for the future of IDL – Addressing the Chimera Effect**

In my opinion there are two main areas that need to be addressed in order to make progress with this policy initiative, namely: developing conceptual clarity around IDL; and facilitating the delivery of it within schools. This has implications for policy makers, universities, local authorities and school leaders.

#### *10.4.1 Policy Makers*

The Scottish Government and Education Scotland need to recognise that documents pertaining to IDL are not conceptually clear and provide conceptual clarity in the national documents. This may mean consulting with academics in the field. They should also provide a clear definition of IDL and its main features and illustrate how it differs from cross-curricular and multidisciplinary approaches. Good examples of IDL tasks and activities would also be



beneficial to practitioners as would providing schools with opportunities to share good practice in this area.

#### *10.4.2 Local Authorities and Universities*

In the stages of initial teacher education, it would be advantageous for Higher Education institutes to provide student teachers with a strong foundational knowledge around interdisciplinary practices. Demonstrating practical examples and creating opportunities for students to develop and implement IDL lessons would also be beneficial. Within Local Authorities and schools, ongoing professional development should be made available for fully qualified teachers in the area of IDL on a regular basis. As Shulman asserts, “The teacher is not only a master of procedure but also of content and rationale, and capable of explaining why something is done” (Shulman, 2013, p10). Teachers should be educated in both process and content so that they are able to engage in knowledgeable, reflective practices and be able to effectively communicate what they are doing. This may mean schools and universities need to plan more courses around IDL theory and practice.

There needs to be management support. Managers are required to facilitate things such as: time in the collegiate calendar (as outlined above) for professional development and planning; funding for any extra resources required, relevant field trips for classes, visiting specialists and cover for teachers to be trained. Local authorities must support school leaders to develop the creativity of their staff and this may mean focussing less on summative assessment results.

#### *10.4.3 Schools Leaders*

To plan meaningful IDL tasks, as outlined above, is not a quick and easy activity. It differs vastly from the notion of simply highlighting Es and Os on a readymade forward planning sheet. It requires a thought intensive process taking many variables into account which can be promoted by teachers being allocated time and space within the school day to work together. As considered in Chapter 4, Klein (2005) suggests that it is important for teachers to collaborate

and talk to one another to create meaningful IDL tasks. Day and colleagues (2007) concur that it is important that teachers do not work in isolation and that greater success can be had when collegiate and supportive structures are established. When constructing the annual collegial calendar, therefore, it would be advisable for school managers to set aside time dedicated to fostering collaborative cultures (Hargreaves, 1994) where generative dialogue (Boreham and Morgan, 2004) can be created. This will involve, undoubtedly, having to resist the external pressures (as discussed in Chapters 2 and 6), to use collegiate sessions merely to concentrate on the subjects which are the focus of assessment. However, if meaningful IDL can be achieved, the benefits should include raised attainment in the discrete disciplinary areas as students become adept at applying their knowledge and skills in a variety of different contexts.

#### *10.4.4 Implementing IDL in the Primary School*

In order to implement IDL effectively schools should consider adopting planning and assessment procedures conducive to the IDL process. These will now be considered.

##### Planning

Considering the main elements of IDL several clear steps in the planning process can be identified: - 1/ identifying a problem or issue which is relevant to the pupils; 2/ deciding which disciplines will be involved in the task; 3 / setting the problem-based task; 4 / assessing the learning.

##### 1 Identifying a purposeful problem or issue

Practitioners must be aware of the importance of ensuring that activities are purposeful to the learner. This can be done, as discussed in Chapter 4, by adopting a child centred or subject centred approach but may well involve a mixture of both. Providing students with a voice in the process seems a logical way for practitioners to ascertain what is purposeful and meaningful to them. Giving them a choice in the topic to be investigated, for example, may seem a good starting point but the planned activities must also ensure purposefulness and relevance to the

learner and be cognitively challenging. While devices such as the KWOF grids, used by schools in this study, are aimed at uncovering the interests and curiosities of students, they will be ineffective if only paid lip service to and not used rigorously in planning meaningful, challenging activities for those who contributed to them.

Reacting to local or national events which are pertinent at a particular time, may be a useful way to capitalise on the interests of pupils also. This could mean that planning structures have to be more flexible and adaptable in their approach.

## 2 Choosing the Disciplines

To plan and implement effective IDL tasks, there needs to be a clear understanding in the mind of the practitioner about the subject matter to be involved. This requires consideration to be given to the disciplines, their common characteristics, their complementarities and interdependencies. Lenoir (1997) categorises the disciplinary areas into those which ensure the construction of reality, those which ensure the expression of this reality, and those which ensure a relationship with that reality (see Table 1 in section 3.2.2). Thinking of the disciplines in this way may help practitioners to structure tasks around complementary disciplines. For example, a science-based problem which required pupils to represent their findings through expressive arts could involve, not only the construction of knowledge but also the development of a relationship with it.

## 3 Setting the Task

Tasks must be structured around a problem, question or a challenge, difficult enough, to ensure pupils are required to apply their knowledge and skills and make cognitive advancement. Consideration needs also to be given to the learning processes upon which these disciplines rest e.g. problem solving, communication, experimentation and conceptualisation.

#### 4 Assessment

As discussed in Chapter 4, assessing IDL work needs to involve more than merely assessing disciplinary content through the Es and Os. The model of assessment provided by Boix-Mansilla (2005) provides a useful starting point -

- Is there evidence of grounding in carefully selected disciplinary insights in the work and have these been deployed adequately?
- Are these insights integrated to facilitate leverage of understanding?
- Is there a clear purpose, sense of reflection and self-critique in the work?

IDL tasks require that disciplinary insights are used to complete a task. Once the task or challenge has been carefully constructed, to ensure the inclusion of more than one discipline, the teacher would have to identify specific outcomes in one or more of the areas to assess. Again, which areas to be assessed might be predetermined by the teacher or could be more responsive to the work completed by the students.

Another area for consideration is whether students have been purposeful and self-reflective during the process. This assessment could be done by a teacher on the basis of what is observed during the tasks and in being presented with the final product whether a video, piece of artwork or artefact etc. Summative assessments could also be used, if appropriate, to assess disciplinary knowledge.

### **10.5 Examples of IDL Practices**

To construct effective IDL activities, teachers should keep in mind the four main features of IDL, as outlined above. The following table provides a vignette which offers a possible way of structuring the planning of interdisciplinary activities which could derive from either a child centred or subject centred approach.

Table 12: Vignette of a Suggested Planning Format

Source	Problem / Issue	Disciplines	Task
<b>The Children</b>  (Child Centred)	Worried about the lack of people voting in elections  <b>Consultation with children</b> – ‘What could we do to raise awareness and get people to vote?’	<b>Social Science &amp; Music</b>	Children begin to research facts about the Suffragette Movement and decide to present in a song or rap to persuade electorate to vote.
<b>The Topic</b> Climate Change  (Subject Centred)	Parents parking near the school with engines running – causing air pollution  <b>Consultation with children</b> – ‘How can we achieve cleaner air around our school?’	<b>Science, P.E. &amp; Drama</b>	Children become involved in carrying out some scientific experiments and researching the effects of air pollution. They decide to create a play, illustrating their findings and perform this to their parents.
<b>Local Issue</b> School’s 50 <sup>th</sup> Anniversary  (Subject Centred)	Head teacher wants a memorial created to mark the school’s anniversary.  <b>Consultation with children</b> – ‘What can we do to let people know about the history of our school?’	<b>History &amp; Art</b>	Children decide to create a monument which will convey significant aspects of the school’s history.

During each of the above examples, the teacher would adopt a facilitative approach, allowing the children to apply their existing knowledge and skills from the different disciplinary areas. When the process was complete, the teacher would then assess whether cognitive advancements had been made by the pupils. This could be done by observing students while completing their activities, listening to them presenting and reflecting on their tasks and by assessing whether the completed work fulfilled the success criteria. If appropriate, summative assessments could also be administered to assess if knowledge in the disciplinary areas had advanced.

What is important to remember in this process is that the children must already have the foundational knowledge of the disciplines involved, upon which to draw, before embarking on these tasks. However, during the IDL work the disciplines must not be studied discretely i.e. be juxtaposed, but rather they must be integrated during the process.

## **10.6 Reflections on the Research Process**

Research can be a very powerful tool in the whole policy process. It can, for example, give weight and credence to what policy makers want to say and therefore become instrumental in the implementation stages. By the same token, it can also be used to contradict unsubstantiated claims made by policy makers. Research can be used from the inception of an idea, in order, to help form a policy and give it direction or used after a policy has been implemented to evaluate its impact (as in the case of this study). Politicians are often accused of using statistical research results for their own ends and there is no doubt that research results can be manipulated and skewed to serve the purposes of certain interests. Researchers undoubtedly face challenges from policy makers in having their ‘voice’ heard if that voice does not acquiesce with what policy makers want to hear. While quantitative research produced in the positivist tradition is perhaps more popular with policy makers in general, Denzin and Lincoln (2000) agree, that qualitative research can be highly influential especially with respect to issues such as problem definition and the understanding of prior initiatives.

Biesta (2007) provides an alternative use for evidence-based research which he describes as its cultural role. He warns that it is a worrying sign (in terms of democracy), when a society focuses on only the technical and practical role of research and ignores the cultural aspect, which can enable open and informed discussion about problems, educational aims and objectives. This involves educationalists using the results of research to gain a new understanding of their own professional situation and to see opportunities for action which they did not envisage before. This may include uncovering problems which previously went unnoticed. This research study has uncovered one such problem regarding IDL, namely, the ‘chimera effect’.

Opening professional debate around the area of IDL has been the aim of this research, rather than trying to prove an absolute truth or prescribe a form of best practice, although some recommendations have been made. I have tried to ensure that this study has been as jargon free as possible and relevant to those working within the field of education with the hope of being able to stimulate, inform and promote discussion. In this way it will be used to the best effect and, hopefully, be able to make a difference to the teaching profession.

The data gathered during this research involved only two primary schools and four primary teachers. This could be viewed as problematic as a larger sample of teachers would have provided a much wider representation of teachers' views. However, as discussed in Chapter 5, in qualitative studies, purposeful sampling is often used and is concerned more with producing rich data than quantity. In this case, the data gathered was rich, in terms of containing in-depth interviews with teachers, follow up classroom observations, and the examination of schools' planning materials and policies.

It must be acknowledged that the findings of this research may have been different if different schools had been examined. However, the fact that results resembled those found in the ten-year study of hundreds of schools in Quebec (Lenoir et al., 2000), suggests that the results presented here may give an indication of what is happening on a wider scale.

The integrity of this research was maintained by following ethical principles. All participants volunteered to take part and their identities, and the identities of the schools were anonymised. Raw data was treated confidentially and kept secure at all times. For more details see section 5.7 and Appendix 3.

“Doctoral education is as much about identity formation as it is about knowledge production” (Green, 2005, p153). Indeed, during the process of completing this study, my professional identity has changed quite significantly. At the start of the journey I was a Depute Head teacher working in a large primary school in one of the biggest local authorities in Scotland. As my

studies continued, I progressed to Head Teacher of a small primary in one of the smallest local authorities in Scotland. Having worked in the primary sector for over 25 years, I have now, at the end of my EdD voyage, moved into Higher Education and am currently working at the University of Glasgow. Engaging with academic research has been extremely demanding as a full time working professional. Transitioning from the taught element of the EdD course, where there was a network of support from tutors and other members of the cohort, to the research phase, was particularly difficult and the past few years have often felt like a lonely and isolated place.

Working in a school environment, I found, there was often little or no interest or support for the academic work I was doing, either from my local authority managers or peers. Part of the reason for this, I'm sure, is because of the complexity of the job of managing a school. Pressures to meet government and local authority targets, implement new policies, quality assure learning and teaching, self-evaluate, manage budgets, deliver training for staff, organise and attend extracurricular events, liaise with external agencies, while at the same time addressing the individual needs of children, staff and parents, can leave little space for academic discussions. It can also lead others (and oneself at times) to wonder why anyone in their right mind, would undertake something so onerous in addition to all this. Nevertheless, engaging in academic research, directly related to the setting I was working in, was in fact, a liberating and empowering experience in some senses, helping me to 'see the bigger picture' in terms of policy and be able to make more informed judgements and decisions. It gave me the confidence to question, challenge and sometimes resist, top-down directives, and swim against the tide at times. However, the feeling of wanting my academic work to be valued or useful was an influential factor in motivating me to apply for a post in Higher Education.

Since being employed at the University of Glasgow, I have been able to use my work on IDL with undergraduate and postgraduate students. This has been in the form of lectures and offering guidance in understanding the main elements of IDL and planning activities. It has been encouraging to observe the growth of student knowledge and understanding in this area



through assignments and presentations they have done. It has also been interesting to note that, returning from school placements, many students have reported, that they found that practices which were called interdisciplinary by qualified teachers, were in fact, not. Some students claimed that they were able to share what they had learned about IDL with the teachers they were working with, who were often confused about the differences between cross curricular learning and IDL. This meant that the student / teacher relationship involved a two-way learning process.

I was recently asked to provide advice to the Scottish Government regarding IDL and have had the opportunity to attend conferences and present papers on this subject. These exercises have been very useful for condensing, refining, consolidating and extending my own thinking on the topic. As well as this, I have been able to collaborate with university colleagues on leadership programmes for senior school managers, sharing my work on CfE and its implications for school leaders. All of this has been extremely satisfying and has given my EdD journey a meaning and sense of worth that I could not have envisaged at the start.

### **10.7 Concluding remarks**

This study has compared IDL to a chimera, in the sense that, while it is talked about and written about as something desirable, as this research has indicated, it was found not to exist in the everyday classroom practices of the schools involved in this study. The factors contributing to this 'chimera effect' have been outlined above and the results, in no way, reflect the willingness, capacity or enthusiasm of teachers. On the contrary, teachers in this study echoed the findings of Baumfield and colleagues (2010), indicating that they thought IDL to be something positive. However, the circumstances detailed in section 9.4, have impacted on teacher agency and led to practices in primary classrooms, examined in this study, which could not be classed as interdisciplinary when compared to the theoretical framework developed in Chapter 3. In general, there needs to be clearer policy advice and more conceptual clarity around the nature

of interdisciplinarity, and practical pedagogical advice given at Micro level, for teachers to engage with if IDL is to be understood and implemented effectively in classrooms.

As Humes (2013) suggests, current systems must be challenged by teachers and policy makers if authentic IDL is to be experienced by Scotland's young people. Since 2017 CfE has introduced National Assessments in literacy and numeracy. Some argue that the more assessment driven CfE becomes the more focus there will be on the core subjects and a narrowing of the curriculum meaning that experiences and activities such as IDL are seen as risky and done instrumentally (Priestley and Minty, 2013).

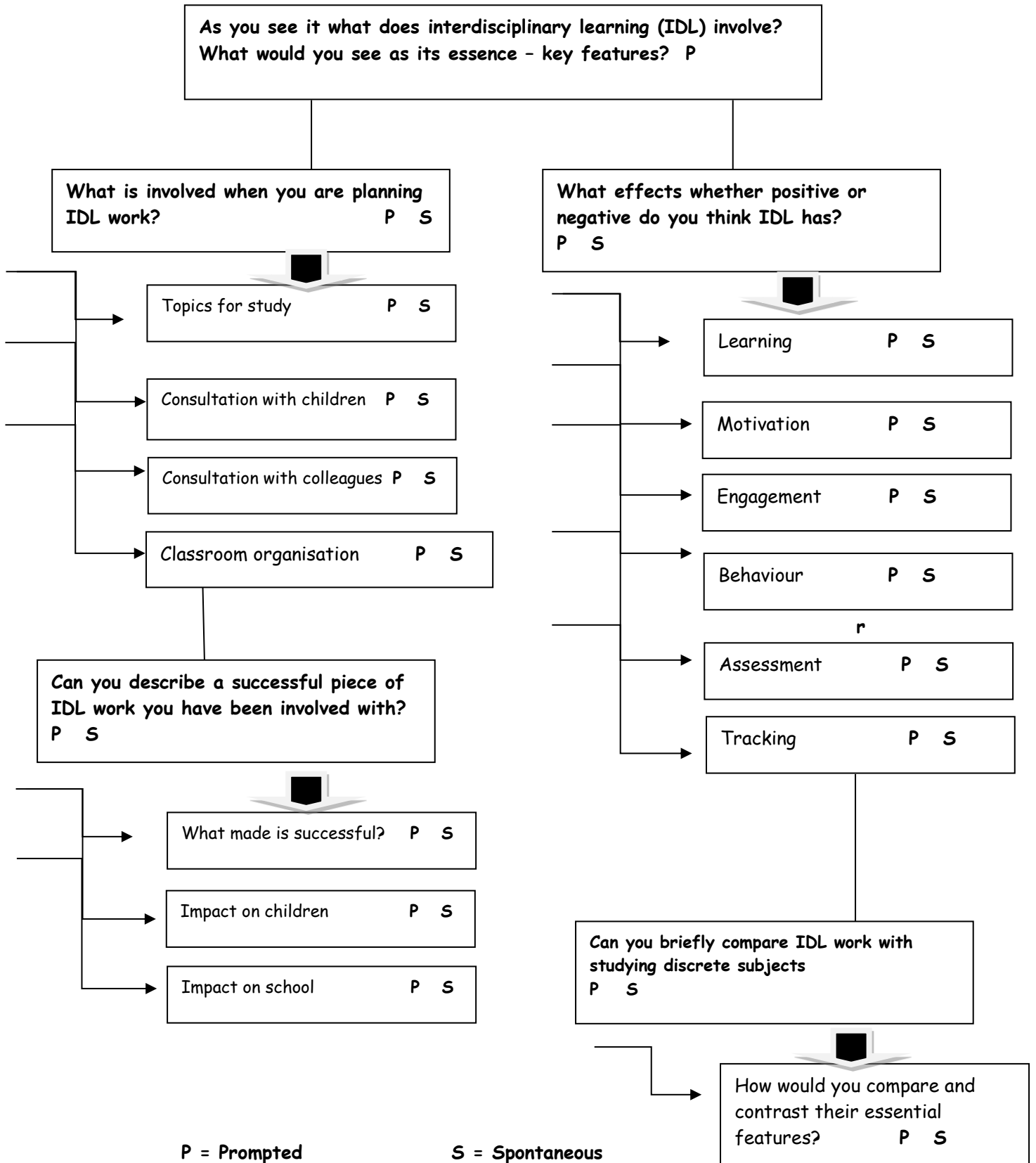
Looking ahead, policy makers need to be clear about whether IDL means IDL when advice is given and does not instead, refer to cross curricular practices. Until now, the terms interdisciplinary and cross curricular have been used interchangeably in Scottish educational policy and both have been attributed with the same outcomes. This study has attempted to show, however, that IDL goes beyond that of cross curricular work, in that, it creates the conditions for cognitive development and knowledge creation beyond that which is possible by other means. Policy guidance should concern itself with providing conceptual clarity and practical, living examples (Black and William, 1998) for teachers to adapt into their own classroom environments in relation to the planning and implementation stages of IDL.

Yes, IDL may be challenging and require intellectual investment, but does that mean we should be satisfied with mediocrity in our education system? Should we not aim high? This needs to be the subject of serious consideration if Scotland's young people are to be shaped into the problem solving, critical and creative thinkers which CfE claims it wants them to be.

## APPENDIX

### Appendix 1: Hierarchical Focussing Schedule

### Interdisciplinary Learning - Hierarchical Focussing Interview



*Appendix 2: Observation Schedule*

## IDL Observation Schedule

Date

Time

Class

School

Brief description of lesson (including learning intention and success criteria)	
What disciplines are involved?	
Are the disciplines juxtaposed or integrated?	
Are there challenges or problems involved in the task?	
Is the task purposeful to the children?	
Are children required to apply their knowledge and skills?	
What pedagogical approach is being used?	
What level on the 3 Level Typology of Practice is this lesson?	

### *Appendix 3: Participant Information Sheet*

#### **Participant Information Sheet**

##### **Title of project and researcher details**

Investigating teachers' understandings and practices around interdisciplinary learning (IDL).

Researcher: Mrs J. Harvie

First Supervisor: Prof. M. Priestley

Second Supervisor: Prof. W. Humes

Course: Doctor of Education

You are being invited to take part in a research project investigating the understandings and practices of Scottish primary teachers around IDL. This is part of my work towards gaining a Doctor of Education degree at the University of Stirling.

Before you decide if you want to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the information on this page carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

##### **What the project will involve**

The purpose of this study is to investigate how interdisciplinary learning is understood and used in a number of different primary schools within a local authority area. I hope to find out how teachers understand the concept of IDL and what kinds of IDL practices are taking place in the primary sector. I hope to have completed my data collection by the end of June 2016.

If you decide to take part, I would arrange to carry out an interview with you lasting approximately one hour. I will audio-record the interview and a summary transcript will be returned to you for checking before I use it in my analysis. I will also observe you leading an IDL lesson with your class and have a follow up discussion with you about the lesson content and strategies used. The interview and observation will be arranged at times to suit you, on school premises. I will also take pictures of classroom displays of IDL work, but these will not include teachers or pupils and any names on work will be obscured.

Taking part in this project is entirely voluntary. Should you decide to participate, you are still free to withdraw at any time, without giving a reason.

**Keeping information confidential**

All data will be stored in a locked cabinet or in a locked file on my computer and will be dealt with confidentially\*. It will only be seen by myself and my supervisors. Neither you nor your place of work will be identified by name in any assignment or publication arising from the project. Participants will be referred to by a pseudonym. All electronic or paper copies of data will be destroyed when the project is complete.

**The results of this study**

I will present my findings in the dissertation I am writing for the degree of Doctor of Education. I may also present these at an education conference, and use the information to write a journal article. I will provide a written summary of my findings for all participants and can come back to your school to discuss this with you if you wish. You may request a copy of the dissertation.

**Contact for further Information**

If you have any questions about this study, you can ask me, Mrs Harvie (jharvie@st-machans.e-dunbarton.sch.uk) or my supervisor, Prof. Priestley (m.r.priestley@stir.ac.uk).

Thank you for reading this.

\*Confidentiality will be respected unless there are compelling and legitimate reasons for this to be breached (e.g. raising a Child Protection concern). If this was the case I would inform you of any decisions that might limit confidentiality.

## Appendix 4: St Mary's Planning Overview

<p><b>Science</b></p> <ul style="list-style-type: none"> <li>*Research relevant information on plants/animals, classify them and use a web to demonstrate their interdependency.(SCN 2-02a)</li> <li>*Carry out practical investigations and record findings; of micro-organisms breaking down of some materials. (SCN2-13a)</li> <li>*Investigate different water samples and explore how to clean and conserve water following a natural disaster. ( SCN 2-18a)</li> <li>*Create a flow diagram of the water cycle summarising the different states and the impact on nature over time (SCN 2-05a)</li> <li>*Report on endangered species of own choice (SCN 2-20b, ENG2.17a,31a.LIT2.12a)</li> </ul>	<p><b>Expressive Arts</b></p> <ul style="list-style-type: none"> <li>*Art/Design appreciation- interpreting/ comparing art/design work by Henri Rousseau and tribal art (EXA 2-07)</li> <li>*Create pieces of work by applying some of Rousseau's techniques to make a jungle scene (EXA 2-05a, 2-03a, 2-04a)</li> <li>*Design Carnival costumes based on rainforest plants and animals ( EXA 2-02a, 03a, 04a, 06a)</li> <li>*Role play a traditional story from the rainforest (EXA2-12a,13a, 14a)</li> <li>*Children introduced to Brazilian dance varieties then collaboratively working to put together their own sequences (EXA 2-01,2-08a,2-09a,2-10a,2-11a)</li> <li>*Listen &amp; respond to Brazilian music, use percussion to perform Samba( EXA 2-01a, 16a,17a, 19a)</li> </ul>		<p><b>Technology</b></p> <ul style="list-style-type: none"> <li>*Use software to create different ways of presenting learning (TCH 2-03a, 2-04b, TCH 2-04a)</li> <li>*Use internet search engines to search for specific information (TCH 2-03b)</li> <li>*Construct a bridge, a buoyant craft and disaster shelter (TCH 2-12a, 14a)</li> <li>*In groups organise and display information on the different layers of the rainforest using an annotated diagram or hanging mobile ( SOC 2.12a)</li> </ul>
<p><b>Literacy</b></p> <ul style="list-style-type: none"> <li>*Compose a persuasive letter to parliament summarising concerns about deforestation/global warming. ( LIT 2-24a, LIT2-06a)</li> <li>*Discuss and debate the issues of deforestation using speaking tools such as cards or PowerPoint's. (LIT2-02A, LIT209A)</li> <li>*Report on Endangered Species of own choice (ENG 2.17a,31a. LIT2.12a)</li> <li>*Write a report on the environmental importance of rainforests and how they benefit humans or complete a table of plants providing medicines or investigate foods we eat from rainforest (SOC-2.02a,08a,20a)</li> <li>*Keep a weather diary and compare with the same period in Brazil. (LIT 2-02a)</li> <li>*Hot seat question and answer interviews with people from different disaster areas (LIT 2-02A, LIT 2-07a)</li> <li>*Note taking from research sources.( LIT 2-05a)</li> <li>*In groups write a play about a natural disaster and present to the class. LIT 2-23a, LIT 2-24a)</li> </ul>	<p><b>Experiences</b></p> <p><b>I can describe the physical processes of a natural disaster and discuss its impact on people and the landscape.</b> SOC 2-07b</p>	<p><b>Skills</b></p> <p>I can describe the physical processes of a natural disaster. I can discuss its impact on people and the landscape.</p>	<p><b>Numeracy</b></p> <ul style="list-style-type: none"> <li>*Using negative numbers when comparing temperatures in different climatic zones ( MNU 2-04a)</li> <li>*Time durations, conversion of am/pm to 24 hour, reading timetables used for travelling through time zones to plan journey to/in Brazil ( MNU 2-10a, 10c)</li> <li>*Make/ interpret a table comparing different rates of deforestation in different countries. (MTH 2-21a)</li> </ul>
	<p><b>I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way.</b> SOC 2-08a</p>	<p>I can discuss the environmental impact of different human activities. I can suggest ways in which we can be responsible for our environment.</p>	
	<p><b>By comparing my local area with a contrasting area out with Britain, I can investigate the main features of weather and climate, discussing the impact on living things.</b> SOC 2-12a</p>	<p>I can compare the weather and climate in my local area with an area out-with Britain. I can discuss the impact of varying types of weather and climate on living things.</p>	
	<p><b>I can explain how the physical environment influences the ways in which people use land by comparing my local area with a contrasting area.</b> SOC 2-13a</p>	<p>I can explain how the physical environment influences the ways in which people use land. I can compare the physical environment of my local area to that of a contrasting area.</p>	
<p><b>RME</b></p> <ul style="list-style-type: none"> <li>*Explore traditional beliefs about the rainforest including its creation. (RME 2-04c, RME 2-04a)</li> <li>*Discuss the ethics of rainforest exploitation. (RME 2-02b, RME 2-05b)</li> </ul>	<p><b>Health &amp; Wellbeing</b></p> <ul style="list-style-type: none"> <li>*Link harmful substance lessons with substances found in the rainforest and research which are of medical benefit to us (HWB 2-09a, SOC 2-02a)</li> <li>*Look at the emotional impact of living through a natural disaster and the resilience of people affected. (HWB 2-04A, HWB 2-07a)</li> </ul>		<p><b>Additional Information</b></p>

*Appendix 5: St Mary's Suggested Activities Plan*

**Social Studies –People, Place and The Environment**

I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way. SOC 2-08a

I can discuss the environmental impact of different human activities.

**Create a presentation for peers on how to live in an environmentally responsible way.  
 Research impact of human activity on the rainforest.  
 Investigate the impact of economic demand on natural resources.  
 Create an information sheet suggesting ways to become more responsible for the environment.**

I can suggest ways in which we can be responsible for our environment.

**Evaluation**

I can describe the physical processes of a natural disaster and discuss its impact on people and the landscape. SOC 2-07b

I can describe the physical processes of a natural disaster.

**Investigate flooding in rainforest areas  
 Explain the sequence of events that leads to flooding**

I can discuss its impact on people and the landscape.

**Investigate and report the impact of flooding.**

**Evaluation**

By comparing my local area with a contrasting area out with Britain, I can investigate the main features of weather and climate, discussing the impact on living things.SOC 2-12a

I can compare the weather in my local area with an area outwith Britain.

**Investigating climate graphs.  
 Research main features of weather and climate in the rainforest and compare with Scotland.  
 Explain the impact that the varying types of weather have on living things in both countries.**



Appendix 6: St Mary's Cross Cutting Themes

<b><u>Cross Cutting Themes</u></b>			
<b>Cultural Diversity</b>	Research into other cultures around the world, comparing and contrasting with our own.	<b>Financial Education</b>	Financial cost of clearing up a natural disaster. Investigation into economist issues related to deforestation.
<b>Global Citizenship</b>	Opportunities to compare and contrast the impact of weather and climate on living things in the Amazon basin rainforest with our own local area.	<b>Personal Choice</b>	Choice of ways to present learning, animals and rainforest produce to research.
<b>International Education &amp; Fair Trade</b>	Look at Rainforest Alliance and issue of fair-trade	<b>Group Work &amp; Collaboration</b>	Use of collaborative groups to challenge and support each other in tasks
<b>Home Links</b>	Topic Research Investigate materials and foodstuffs used at home from the Rainforest	<b>Eco</b>	Making links with the environmental impact of human activity on the rainforest and how we can help through our own actions.
<b>Enterprise &amp; World of Work</b>	Children to make rainforest recipe books to sell at assembly.	<b>Outdoor Environment</b>	Comparison of outdoor environment here and in the tropics. Weather measurements.

# Self Evaluation

Name: \_\_\_\_\_  
\_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

Topic Title:

Write 3 facts you found interesting about this topic.

1.

2.

3.

How well did you enjoy doing the different kinds of work in this topic?

Writing stories/reports connected with this topic

Presentations connected with this topic

Researching/ note-taking

Mapping Skills

Making models/sketches

In this section below write a sentence for each question. Give reasons for your answer.

What do you think you did best in this topic?

What did you enjoy most about this topic?

What did you enjoy least about this topic?

What have you learned about this topic?

In your next topic what would you like to do better?

PARENTAL COMMENT

## REFERENCES

- Adler, M. & Flihan, S. (1997), *The Interdisciplinary Continuum: Reconciling Theory, Research and Practice*, *National Research Center on English Learning & Achievement*, University of Albany, Report Series 2.36.
- Allan, J. Ozga, J & Smyth, G. (2009), (Eds) *Social Capital, Professionalism and Diversity*, 63-76: Sense Publishers.
- Anderson, G. (1990), *Fundamentals of Educational Research*. London: The Falmer Press.
- Apple, M. W. (1993) *Official knowledge: democratic education in a conservative age*, Routledge, New York.
- Apple, M.W. (2001), *Educating the "right" way. Markets, standards, god and inequality*, New York, London: Routledge Falmer.
- Argyris, C. & Schon, D.A. (1974), *Theory in Practice: increasing professional effectiveness* (San Francisco, Calif., Jossey-Bass).
- Australian Curriculum Assessment and Reporting Authority (2010), *The Shape of the Australian Curriculum*. Online at [www.acara.edu.au/verve/resources/Shape of the Australian Curriculum.pdf](http://www.acara.edu.au/verve/resources/Shape_of_the_Australian_Curriculum.pdf) (accessed 28th February 2016).
- Australian Curriculum Assessment and Reporting Authority (2012), *The Shape of the Australian Curriculum*. Online at [http://docs.acara.edu.au/resources/The Shape of the Australian Curriculum v4.pdf](http://docs.acara.edu.au/resources/The_Shape_of_the_Australian_Curriculum_v4.pdf) (accessed 11th July 2018).
- Ball, S. J. (1990), *Politics and Policy Making in Education*, London: Routledge.
- Ball, S. J. (2003), 'The teacher's soul and the terrors of performativity', *Journal of Education Policy*, 18: p215-28.
- Barnes, J. (2007), *Cross-curricular learning*. London: Paul Chapman Publishing.
- Baumfield, V., Hulme, M., Livingston, K. & Menter, I. (2009) 'Let a hundred flowers bloom': the engagement of teachers by policy makers in curriculum reform in Scotland. *Paper presented at the American Educational Research Association*, San Diego, April 2009.
- Baumfield, V., Hulme, M., Livingston, K. & Menter, I. (2010), 'Consultation and engagement? The reshaping of teacher professionalism through curriculum reform in 21<sup>st</sup> century Scotland'. *Scottish Educational Review*, 42, 57-73.
- Bayne, S. (2004), *Learning Cultures in Cyberspace*. Doctoral Thesis: Edinburgh: Queen Margaret University.

- Bazeley, P. (2009), Analysing *Qualitative Data: More Than 'Identifying Themes'*. The Malaysian Journal of Qualitative Research, vol.2, no.2, 6-22.
- Beane, J. A. (1997), *Curriculum Integration: Designing the Core of Democratic Education*, New York & London: Teachers College Press.
- Berliner, D. (1986), 'In pursuit of the expert pedagogue', in *Educational Researcher*, August/September, 5-13.
- Bernstein, B. (1990), *The Structuring of Pedagogic Discourse: Class Codes and Control, Volume 4*. London: Routledge.
- Bernstein, B. (1999), Vertical and horizontal discourse: An essay. *British Journal of Sociology of Education*, 20 (2), 157-173.
- Bernstein, B. (2000), *Pedagogy, symbolic control and identity: Theory, research, critique* (2nd ed.). Oxford: Rowman and Littlefield Publishers Inc.
- Biesta, G.J.J. (2006), *Beyond learning: Democratic education for a human future*: Boulder, CO, Paradigm Publishers.
- Biesta, G. (2007), *Why 'what works' won't work: Evidence based practice and the democratic deficit in educational research*: Educational Theory, Volume 57, No 1.
- Biesta, G. (2009), Good education in an age of measurement. *Educational Assessment, Evaluation and Accountability* 21(1), pp. 33-46.
- Biesta, G. J. J. & Burbules, N. C. (2003), *Pragmatism and Educational Research*. Lanham: Rowman & Littlefield.
- Black, P. & William, D. (1998), *Inside the Black Box*, King's College.
- Bloom, B.S. (1971), Master learning, in Block, J.H. (ed.) (1971) *Master Learning: Theory and Practice*: Rinehart and Winston.
- Bloomberg, L.D. & Volpe, M. (2008), *Completing your qualitative dissertation: a road map from beginning to end*. Los Angeles: Sage.
- Boix-Mansilla, V. (2004), Assessing student work at disciplinary crossroads, *GoodWork® Project Report Series*, Number 33, p1-19: <http://thegoodproject.org/pdf/33-Assessing-Student-Wo.pdf>, (accessed 15<sup>th</sup> August 2010).
- Boix-Mansilla, V. (2006), Quality assessment of interdisciplinary research: Toward empirically grounded validation criteria. *Research Evaluation*.
- Boix-Mansilla, V. (2010), Learning to Synthesize: Toward an epistemological foundation for interdisciplinary learning. In *Oxford Handbook of Interdisciplinarity*. UK: Oxford University Press.

Boix-Mansilla, V. & Gardner, H. (2003), *Assessing Interdisciplinary Work at the Frontier: An Empirical Exploration of "Symptoms of Quality."* GoodWork Project Report Series, Number 26. [http://www.pz.harvard.edu/ebookstore/search\\_results.cfm](http://www.pz.harvard.edu/ebookstore/search_results.cfm) (accessed April 3<sup>rd</sup>, 2010).

Bonner, A. & Tolhurst, G. (2002), *Insider-outsider perspectives of participant observation.* Nurse Researcher, Volume 9, No. 4, pp7-19.

Bonnett, M. (1995), *'Teaching thinking and the sanctity of content'*, Journal of Philosophy of Education, 29, pp295-309.

Boreham, N. & Morgan, C. (2004), *A socio-cultural analysis of organizational learning,* Oxford Review of Education, 30, pp307-325.

Brand, B. & Triplett, C. (2012), *Interdisciplinary curriculum: An abandoned concept? Teachers and Teaching: Theory and Practice*, vol. 18, no.3, pp381-398.

Brazeel, E. N. & Capelluti, J. (1995), *Dissolving boundaries: toward integrative curriculum,* National Middle School Association, Columbus, Ohio.

Briggs, A. R. J. & Sommefeldt, D. (2002) *Managing Effective Learning and Teaching*, p14. London: Paul Chapman Publishing Ltd.

Brookfield, S. (1987), *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting,* New York: Teachers College Press

Brown, S. & McIntyre, D. (1993), *Making Sense of Teaching,* Buckingham: Open University Press.

Bruun, H. & Toppinen, A. (2004), *Knowledge networking: A Conceptual Framework and Typology.* VEST 18(3-4): 73-104.

Bryman, A. (2012), *Social Research Methods,* Oxford University Press: Oxford.

Burnman, E., & Parker, I. (Eds). (1993), *Discourse analytic research: Repertoires and readings of texts in action.* London: Routledge.

Campbell, C., Osmond-Johnson, P., Faubert and Brenton, F. (2016), *Developing Teachers as the Learning Profession: Findings from the State of Educators' Professional Learning in Canada Study,* Educational Review 49(2), 4-24.

Cohen, R. M. (1995), *Understanding How School Change Really Happens: Reform at Brookville High.* Thousand Oaks, CA: Corwin Press, Inc.

Cohen, L., Manion, L. & Morrison, K. (2007), *Research methods in education.* London: Routledge.

Creswell, J.W. (2009), *Research design: Qualitative, quantitative methods and mixed methods' approaches.* London: Sage.

- Cruzes D.S., Dybå, T. (2011), *Recommended Steps for Thematic Synthesis in Software Engineering*, ESEM: 275–284.
- Cruzes, D.S., Dybå, T., Runeson, P. & Höst, M. (2014), *Case Studies Synthesis: A thematic cross-case and synthesis worked example* . ESEM: 1007-1006.
- Day, C., Stobart, G., Sammons, P., Kington, A. & Gu, Q., 2006, *Variations in Teachers' Work and Lives and Their Effects on Pupils: VITAE Report* (DfES Research Report 743), London, Department for Education and Skills.
- Denscombe, M. (2007), *The Good Research Guide*, McGraw Hill Education.
- Denzin, N. K. & Lincoln, Y. S. (2000), The Discipline and Practice of Qualitative Research. In N. K. Denzin and Y. S. Lincoln (Eds.) *Handbook of Qualitative Research (Second Edition)*, (pp 1-28). Thousand Oaks, CA: Sage Publications.
- Derrida, J. (1992), *The other heading: Reflection on today's Europe* (P. Brault & M. Naas, Trans.). Bloomington and Indianapolis: Indiana University Press.
- Derry, S. J., Hmelo-Silver, C. E., Nagarajan, A., Chernobilsky, E., & Beitzel, B. (2006), *Cognitive transfer revisited: Can we exploit new media to solve old problems on a large scale?* Journal of Educational Computing Research, 35, 145-162.
- Delors, J. 1996. Learning: The Treasure Within. Paris, UNESCO.
- Desforges, C. (1995), '*Learning out of school*', in Desforges, C (Ed), Introduction to Teaching, Oxford, Blackwell.
- Dewey, J. (1938), *Experience and education*. New York: Simon and Schuster.
- Dewey, J. (1973), My Pedagogic Creed. In J. Dermott (Ed.) *The Philosophy of John Dewey Vols. 1 and 2: The structure of Experience. The Lived Experience*. Chicago: University of Chicago Press, pp 442-454.
- Donaldson, G. (2010). *Teaching Scotland's Future: Report of a review of teacher education in Scotland*. Edinburgh: Scottish Government.
- Dowden, T. (2007), Relevant, challenging, integrative and exploratory curriculum design: Perspectives from theory and practice for middle level schooling in Australia, *The Australian Educational Researcher*, vol. 34, no. 2, pp51-71.
- Drake, S. (1993), *Planning Integrated Curriculum: The Call to Adventure*, Alexandria, VA: Association of Supervision and Curriculum Development.
- Drake, S.M. (2000), *Integrated Curriculum: A Chapter of the Curriculum Handbook*, Alexandria, VA: Association of Supervision and Curriculum Development.
- Drever, E. (1995), *Using Semi structured interviews in Small-scale research: A Teacher's Guide*, Edinburgh, SCRE.

- Drew, V. and Mackie, L. (2011), 'Extending the constructs of active learning: Implications for teachers' pedagogy and practice', *Curriculum Journal*, 22: 451-67.
- Duerr, L. (2008), *Interdisciplinary Instruction, Educational Horizons*.  
[http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/3e/0c/3a.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/3e/0c/3a.pdf)Duerr.
- Duran, E., Duran, L. B., & Worch, E. A. (2009), *Papier-Mâché Animals: An Integrating Theme for Elementary Classrooms*. *Science Education Review*, 8(1) /online/. [http://www.sciencetime.com.au/ser/open\\_access/duran-mache.pdf](http://www.sciencetime.com.au/ser/open_access/duran-mache.pdf). (accessed 9<sup>th</sup> July, 2015).
- Education Scotland (2012), *CfE Briefing 4: A Guide for Practitioners*, Livingston: Education Scotland.
- Education Scotland (2016), *Curriculum For Excellence: A Statement for Practitioners from HM Chief Inspector for Education*, Livingston: Education Scotland.
- Education.gov.scot. (2018). *Education Scotland Home*. [online] Available at: <https://education.gov.scot/> (accessed 25<sup>th</sup> May 2018).
- Elgin, C.Z. (1996), *Considered judgment*. Princeton, N.J.: Princeton University Press.
- Elgin, C.Z. & Goodman, N. (1988), *Reconceptions in philosophy and other arts and sciences*. Indianapolis: Hackett Pub. Co.
- Emirbayer, M. & Mische, A. (1998), "What is Agency?" *The American Journal of Sociology*, 103: 962-1023.
- Erss, M. (2015), *The Politics of Teacher Autonomy in Estonia, Germany and Finland*, Tallinna Ulikool.
- Ertmer, P. A., & Simons, K. D. (2006), *Jumping the implementation hurdle: Supporting PBL in K-12 classrooms*. *The Interdisciplinary Journal of Problem-Based Learning*, 1(1), 41-56.
- Fairclough, N. (2003), *Analysing discourse. Textual analysis for social research*. Abingdon: Routledge.
- Faltis, C. (1997), Case Study Methods in Researching Language and Education. In N. H. Hornberger and D. Corson (Eds.) *Encyclopedia of Language and Education, Volume 8: Research Methods in Language and Education*, (pp145-151). London: Kluwer Academic Publications.
- Fetterman, D.M. (1998), *Ethnography: Step by step* (2<sup>nd</sup> Ed.) Thousand Oaks, CA: Sage.
- Fogarty, R. (1991), Ten Ways to Integrate Curriculum, *Educational Leadership* 47 (2): 61-65.

Forde, C., Hamilton, G. and McMahon, M. (2018) Developing a coherent strategy to build leadership capacity in Scottish education. *Management in Education*, (doi:10.1177/0892020618762715) (Early Online Publication)

Friend, M. & Cook, L. (1992). *Interactions: Collaboration skills for school professionals*. White Plains, NY: Longman.

Fullan, M. (2003), *Change Forces with a Vengeance*, London: Routledge Falmer.

Furlong, J., Barton, L., Miles, S., Whiting, C. & Whitty, G. (2000), *Teacher Education in Transition: re-forming teaching professionalism*, Buckingham: Open University Press.

Gallagher, S. A. (1997), *Problem-based learning: Where did it come from, what does it do, and where is it going?* *Journal for the Education of the Gifted*, 20, 332-362.

Gallais, T. L. (2008), Wherever I go there I am: reflections on reflexivity and the research stance. *Reflective Practice*, Volume 9, No. 2, pp145-155.

Garcia, E. E. (1990), *An Analysis of Literacy Enhancement for Middle School Hispanic Students through Curriculum Integration*. Miami, FL: Annual Meeting of the National Reading Conference. (ED 331 008).

Gardner, H. E. (2006), *The Synthesizing Mind: Making Sense of the Deluge of Information*, Globalization and Education, Pontifical Academy of Sciences, Extra series 28, Vatican City, [www.pas.va/content/dam/academia/pdf/es28/es28-gardner.pdf](http://www.pas.va/content/dam/academia/pdf/es28/es28-gardner.pdf) (accessed 1<sup>st</sup> March, 2018).

Gibbs, G. R. (2002), *Qualitative Data Analysis: Explorations with NVivo*. Maidenhead: Open University Press.

Gill, S. & Thomson, G. (2012), *Rethinking secondary education: A human-centred approach*. Harlow: Pearson.

Gillespie, R. (1991), *Manufacturing knowledge: a history of the Hawthorne experiments*, Cambridge University Press; Cambridge, MA.

Goodson, I.F. (1992), Studying school subjects, *Curriculum Perspectives VoL 12 No. 1 April 1992*, p103

Goodson, I.F. & Marsh, C.J. (1996) *Studying school subjects: a guide*: London, Falmer Press.

Green, B. (2005), Unfinished business: Subjectivity and supervision. *Higher Education Research & Development*, 24(2), p151-163.

Griffin, C. (1985), Qualitative methods and cultural analysis: Young women and the transition from school to unemployment. In R. Burgess (Ed), *Field methods in the study of education* (pp97-114) Sussex, UK: Falmer.



- Groff, J. (Ed) with Dumont, H. Istance, D. & Benavides, F. (2012), *Practitioner Guide: How Can learning Sciences Inform the Design of 21<sup>st</sup> Century Learning Environments?* Paris: OECD Publications.
- Grossman, P., Wineburg, S., & Beers, S. (2000). Introduction: When theory meets practice in the world of school. In S. Wineburg & Grossman (Eds.), *Interdisciplinary curriculum: Challenges to implementation* (pp 1-16). New York: Teacher College Press.
- Hargreaves, A. (1994), '*Changing teachers, changing times: Teachers' work and culture in the postmodern age*', London, Cassell.
- Hargreaves, D.H. (1999), '*The Knowledge Creating School*', British Journal of Education Studies, vol. 47 no 2, p122-144.
- Harvie, J. (2012), Interdisciplinary education and co-operative learning: perfect shipmates to sail against the rising tide of 'learnification?'. *Stirling International Journal of Postgraduate Research* 1.1.
- Hatch, J. A. (2002), *Doing Qualitative Research in Educational Settings*. Albany: State University of New York Press.
- Hiebert, J., Carpenter, T. P., Fennema, E., Fuson, K., Human, P., Murray, H., Alwyn, O. & Wearne, D. (1996), *Problem solving as a basis for reform in curriculum and instruction: The case of mathematics*. Educational Researcher, 25(4), 12–21.
- Hinde, E. (2005). Revisiting curriculum integration: A fresh look at an old idea. *The Social Studies*, (May/June), 105-111.
- Hirst, P. (1974), *Knowledge and the Curriculum*, London: Routledge & Kegan Paul.
- Hitchcock, G. & Hughes, D. (1995), Research and the Teachers: A Qualitative Introduction to School Based Research, *British Journal of Educational Studies*, 44 (3):347-348.
- Hmelo-Silver, C.E., Derry, S.J., Bitterman, A, & Hatrak, F. (2009), *Targeting Transfer in a STELLAR PBL Course for Pre-Service Teachers*, The Interdisciplinary Journal of Problem Based Learning: 2, 24-42.
- Hord, S. M., Rutherford, W. L., Huling-Austin L. & Hall, G. E. (1987). *The Role of Effective Change Facilitators. Taking Charge of Change*. Alexandria, VA: Association for Supervision and Curriculum Development: pp74-97.
- Hunt, L. (1994), The Virtues of Discliarity, *Eighteenth- Century Studies*, Vol. 28, No1 (Autumn, 1994), pp1-7.
- Humes, W. (2008), Policy making in Scottish education in Humes, W. & Bryce, T. (eds.) *Scottish Education (third edition: Beyond Devolution)*, Edinburgh: University Press, pp69-79.

- Humes, W. (2013), Curriculum for Excellence and Interdisciplinary Learning, *Scottish Educational Review*, 45 (1), pp82-93.
- International Society for Technology in Education. (2016), *Redefining learning in a technology-driven world*. Retrieved from [https://www.iste.org/docs/Standards-Resources/iste-standards\\_students-2016\\_research-validity\\_report\\_final.pdf?sfvrsn=0.0680021527232122](https://www.iste.org/docs/Standards-Resources/iste-standards_students-2016_research-validity_report_final.pdf?sfvrsn=0.0680021527232122) (accessed 11.7.18.)
- Jacobs, H. (Ed.) (1989), *Interdisciplinary Curriculum: Design and Implementation*, Alexandria, VA: Association for Supervision and Curriculum Development.
- Jacobs, H. (1997), Mapping the big picture: Integrating curriculum and assessment K-12, Association for Supervision and Curriculum Development, Alexandria, VA.
- Jacobs, H. H. (2004), *Getting results with curriculum mapping*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Jager, S., & Maier, F. (2009), Theoretical and methodological aspects of Foucauldian critical discourse analysis and discursive analysis. In R. Wodak & M. Meyer (Eds.), *Methods of critical discourse analysis* (2nd ed., pp34–61). London: Sage.
- Jones, B. F., Rasmussen, C. M., & Moffitt, M. C. (1996), *Real-life problem solving: A collaborative approach to interdisciplinary learning*. Washington, DC: American Psychological Association.
- Jones, C. (2009), "Interdisciplinary Approach - Advantages, Disadvantages, and the Future Benefits of Interdisciplinary Studies," *ESSAI*: Vol. 7, Article 26.
- Kamberelis, G. & Dimitriadis, G. (2005), *Qualitative Inquiry: Approaches to Language and Literacy Research*. New York: Teachers College Press.
- Kelly, A. V. (1999), *The curriculum: theory and practice*, 4th edition: London, Sage.
- Khan, S. & VanWynsberghe, R. (2008), *Cultivating the Under-Mined: Cross-Case Analysis as Knowledge Mobilization*. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research, 9 (1), Art. 34, <http://nbn-resolving.de/urn:nbn:de:0114-fqs0801348>.
- Kirk, G. (1982) *Curriculum and Assessment in the Scottish Secondary School: A study of the Munn and Dunning Reports*, Manchester: Ward Lock Educational.
- Kitwood, T.M. (1980), *Disclosures to a Stranger: adolescent values in an advanced industrial society* (London, Routledge & Kegan Paul).
- Klein, J. T. (1990), *Interdisciplinarity: History, theory and practice*. Detroit, MI: Wayne, State University Press.
- Klein J. T. (2005), Integrative learning and Interdisciplinary Studies. *Peer Review*, Vol. 7, No 4. Association of American Colleges and Universities.

Klein J. T. (2009), *Creating Interdisciplinary Campus Cultures: A Model for Strength and Sustainability*, San Francisco, CA: Jossey-Bass.

Kolodner, J. L., Camp, P. J., Crismond, D., Fasse, J. G., Holbrook, J., Puntambekar, S., and Ryan, M. (2003), *Problem-based learning meets case-based reasoning in the middle school science classroom: Putting learning by design into practice*. *Journal of the Learning Sciences*, 72, 495-547.

Kysilka, M.L. (1998), Understanding Integrated Curriculum, *The Curriculum Journal*. Vol. 9, No.2. Pp197-209, British Curriculum Foundation.

Lake, K. (1994), "School Improvement Research Series VIII: Integrated Curriculum." Portland, OR: Northwest Regional Educational Laboratory. <http://www.newrel.org/scpd/sirs/8/c016.html>.

Lenoir, Y. (1997). Some interdisciplinary instructional models used in the primary grades in Quebec. *Issues in Integrative Studies*, 15, 77-112.

Lenoir, Y., Larose, F. & Geoffroy, Y. (2000), Interdisciplinary Practices in Primary Education in Quebec: Results from Ten Years of Research, *Issues in Integrative Studies* 18: 89-114.

Little, J. W. (1990). *Teachers as colleagues*. In A. Lieberman (Ed.), *Schools as collaborative cultures: Creating the future now* (pp 165-193). Bristol, PA: Falmer Press.

MacDonald, A. (2004), 'Collegiate or compliant? Primary teachers in post-McCrone Scotland', *British Educational Research Journal*, Vol.30, No3.

Maguire, M., Braun, A., & Ball, S. (2015), 'Where you stand depends on where you sit': The social construction of policy enactments in the (English) secondary school. *Discourse; Studies in the Cultural Politics of Education*, Vol. 36, No4.

Martin, J.R. (1970), *Readings in the Philosophy of Education: A Curriculum Study*, Boston: Allyn & Bacon.

McNiff, J. & Whitehead, J. (2002), *Action Research: Principles and Practice*, London: Routledge Falmer.

Meeth, L. R. (1978), *Interdisciplinary studies: integration of knowledge and experience*, *Change*, vol. 10, pp 6-9.

Merriam, S.B. (2009), *Qualitative research: A guide to design and implementation*. San Francisco: John Wiley & Sons.

Mertens, D. M. (2010), *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods (Third Edition)*. Los Angeles: Sage.

- Miles, M.B. & Huberman, A.M. (1984), *Qualitative Data Analysis: A Sourcebook of New Methods*, Sage.
- Miles, M.B. & Huberman, A.M. (1994), *Qualitative data analysis: An expanded source book* (2<sup>nd</sup> Ed). Thousand Oaks, CA: Sa
- Min, K.C., Rashid, A.M., & Nazri, M.I. (2012), Teachers' Understanding and Practice towards Thematic Integrated Living Skills (ILS) in Malaysi, *International Journal of Humanities and Social Science Vol. 2 No. 23*; p.273-281.
- Ministry of Education and Research (2006). Læreplanverket for Kunnskapsløftet. <https://www.udir.no/kl06/MAT1-04/Hele/Formaal>. (accessed 11.7.18).
- Murdoch, K. & Wilson, J. (2004). *Learning links: Strategic teaching for the learner centred classroom*. Carlton 5th, Victoria: Curriculum Corporation.
- Naylor, J. (2014), *Enacting Australian curriculum: Making connections for quality learning*. Brisbane: Queensland Studies Authority.
- Nespor, J. (1987), "The role of beliefs in the practice of teaching". *Journal of Curriculum Studies*, 19(4), 317-328. Page, J.S. (2003) Towards a Critical Appraisal of the Queensland New Basics Project, *Perspectives on Educational Leadership*. 13(6): 1,2.
- Organisation for Economic Co-operation and Development (2004), *Policy Brief: Lifelong Learning, OECD Observer*. Paris: OECD.
- Organisation for Economic Co-operation and Development (2005a), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, Paris, OECD.
- Organisation for Economic Co-operation and Development (2005b), *The Definition and Selection of Key Competencies: Executive Summary*. Online at [www.pisa.oecd.org/dataoecd/47/61/35070367.pdf](http://www.pisa.oecd.org/dataoecd/47/61/35070367.pdf) (accessed 20/10/15).
- Organisation for Economic Co-operation and Development (2017), *OECD Skills Outlook 2017: Skills and Global Value Chains*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264273351-en> (accessed 9.7.18).
- Organisation for Economic Co-operation and Development (2018), *Teaching for Global Competence in a Rapidly Changing World*, Paris, OECD.
- Pajares, M. F. (1992), "Teachers beliefs and pedagogical research: Cleaning up a messy construct". *Review of Pedagogical Research*, 62, 307-332.
- Pate, P., Homestead, E. and McGinnis, K. (1997), *Making integrated curriculum work: teachers, students, and the quest for coherent curriculum*, Teachers College Press, New York.
- Paterson, L. (2009), Grand aims can't provide clear guidance, *The Scotsman*, September 21.

- Pollard, A. (1997), *Reflective Teaching in Secondary Education*, London: Cassell.
- Pollard, A. & Tann, S. (1993), *Reflective Teaching in the Primary School*, Cassell.
- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Britten, N., Arai, L., Roen, K. and Rodgers, M. (2010), *Developing methods for the narrative synthesis of quantitative and qualitative data in systematic reviews of effects*, Centre for Review and Dissemination, ESRC,  
[http://www.york.ac.uk/inst/crd/projects/narrative\\_synthesis.htm](http://www.york.ac.uk/inst/crd/projects/narrative_synthesis.htm). (accessed 12th Dec. 2012).
- Priestley, M. (2002) Global discourses and national reconstruction: the impact of globalisation on curriculum policy, *The Curriculum Journal*, 13(1), 121-138.
- Priestley, M. (2005) Formative assessment for all: a whole-school approach to pedagogic change, *The Curriculum Journal*, 16 (4), 475-492.
- Priestley, M. (2009), *Social Studies in Scotland's school curriculum: a case for a more integrated approach*. Education in the North, 17.
- Priestley, M. (2014), Curriculum regulation in Scotland: A wolf in sheep's clothing is still a wolf, *European Journal of Curriculum studies*, 1 (1), 61-68.
- Priestley, M. & Biesta, G. (Eds). (2013), *Reinventing the Curriculum: New Trends in Curriculum Policy and Practice*. A&C Black.
- Priestley, M., Biesta, G. & Robinson, S. (2015), *Teacher Agency*. Bloomsbury Academic.
- Priestley, M., Biesta, G., & Robinson, S. (2015). *Teacher Agency: An Ecological Approach*. London: Bloomsbury Academic.
- Priestley, M. & Drew, V. (2016), *Teachers as agents of curriculum change: closing the gap between purpose and practice*, European Conference for Educational Research, Dublin, 23-26 September 2016.
- Priestley, M. & Humes, W. (2010), 'The Development of Scotland's Curriculum for Excellence: Amnesia and déjà vu', *Oxford Review of Education*, 36: pp345-61.
- Priestley, M. & Minty, S. (2013), Curriculum for Excellence: 'A brilliant idea, but...' *Scottish Educational Review* 45 (1), pp39-52.
- Priestley, M. & Philippou, S. (2018) Curriculum making as social practice: complex webs of enactment, *The Curriculum Journal*, 29:2, 151-158, DOI: [10.1080/09585176.2018.1451096](https://doi.org/10.1080/09585176.2018.1451096), (accessed 11<sup>th</sup> July 2018).
- Priestley, M. & Sinnema, C. (2014), *Downgraded curriculum? An analysis of knowledge in new curricula in Scotland and New Zealand*, Curriculum Journal, Special Edition: Creating Curricula: Aims, Knowledge and Control.

- Pring, R. (1972), *Focus of Knowledge and General Education*, General Education, 19:27.
- Pring, R. (1976), *Knowledge and Schooling*, London: Open Books.
- Reeves, J, Forde, C, O'Brien, J, Smith, P and Tomlinson, H (2002) *Performance Management in Education: Improving Practice*. Paul Chapman: London.
- Reeves, J. (2008), Between a rock and a hard place? A Curriculum for Excellence and the Quality Initiative in Scottish Schools, *Scottish Educational Review*, 40(2), 6-16.
- Reeves, J. (2016), *Mind the Gap: How should we set about teaching the successful learner?* *Scottish Educational Review* 49(2), 25-42.
- Repko, A. F. (2008), *Interdisciplinary Research: Process and Theory*, London: Sage.
- Rizvi, F. & Lingard, B. (2010), *Globalizing Educational Policy*, Routledge.
- Robson, C. (2002), *Real World Research* (2<sup>nd</sup> Edition). Blackwell Publishing. Oxford
- Ruddock, J. (1992), in Fullen, M. & Hargreaves, A. *Teacher Development and Educational Change*, pp194-212. London: Routledge, Falmer.
- Rudestam, K. E. & Newton, R. R. (2001), *Surviving your Dissertation: A Comprehensive Guide to Content and Process (Second Edition)*. Thousand Oaks, California: Sage Publications.
- Rychen, D. & Salganik, L. (eds) (2003), *Key Competencies for a Successful Life and a Well Functioning Society*. Cambridge, MA: Hogrefe and Huber.
- Sahlberg, P. (2007), Education Policies for Raising Student Learning: The Finnish Approach. *Journal of Education Policy* 22 (2): 147–171.
- Sarason, S. B. (1990), *The Predictable Failure of Educational Reform*, Oxford: Jossey-Bass Publishers.
- Schwandt, T. (1997), *Qualitative inquiry: A dictionary of terms*. Thousand Oaks, CA: Sage.
- Schwandt, T. A. (2000), Three Epistemological Stances for Qualitative Inquiry: Interpretivism, Hermeneutics, and Social Constructionism. In N. K. Denzin and Y. S. Lincoln (Eds.) *Handbook of Qualitative Research (Second Edition)*, (pp 189-213). Thousand Oaks, CA: Sage Publications.
- Scott, D. (2000), *Reading Educational Research and Policy*. London: Routledge, Falmer.
- Scottish Executive. (2000). *A Teaching Profession for the 21st Century*. Edinburgh: Scottish Executive

- Scottish Executive (2004), *A Curriculum for Excellence: The Curriculum Review Group*, Edinburgh: Scottish Executive.
- Scottish Executive (2005), *Enterprise Through Excellence*, Edinburgh: Scottish Executive.
- Scottish Executive (2006a), *A Curriculum for Excellence: Progress and Proposals*, Edinburgh: Scottish Executive.
- Scottish Executive (2006b), *Building The Curriculum 1*, Edinburgh: The Scottish Government.
- Scottish Government (2000), *Standards in Scottish Schools (Scotland) Act*, Edinburgh: Scottish Government.
- Scottish Government (2004), *Additional Support for Learning (Scotland) Act*, Edinburgh: Scottish Government.
- Scottish Government (2008), *Building The Curriculum 3*, Edinburgh: The Scottish Government.
- Scottish Government (2009), *Building The Curriculum 4: Skills for learning, skills for life, skills for work*, Edinburgh: Scottish Government.
- Scottish Government (2011), *Building The Curriculum 5: A Framework for Assessment*, Edinburgh: Scottish Government.
- SED (1965) *The Primary Education in Scotland Memorandum*: Edinburgh, HMSO.
- SED (1977) *The Structure of the Curriculum in the Third and Fourth Years of the Scottish Secondary School*: Edinburgh, HMSO.
- Shoham, E. (1998), From policy to practice: integrated curriculum planning and teacher professionalism in Israeli elementary schools, *Teacher Development*, 2: 3, pp405-417.
- Shulman, L.S. (2013), 'Those who understand: Knowledge growth and teaching'. *The Journal of Education*, Vol. 193, No. 3, (2013), pp 1-11.
- Sinnema, C. (2011), *Monitoring and Evaluating Curriculum Implementation. Final Evaluation Report on the Implementation of the New Zealand Curriculum 2008-2009*. Wellington: The Ministry of Education.
- Sinnema, C. & Aitken, G. Emerging International Trends in Curriculum. In M. Priestley & G. Biesta (ed.) (2013), *Reinventing the Curriculum: New Trends in Curriculum Policy and Practice*. A&C Black.
- Skelly, S.M. & Zajicek, J.M. (1998), *The effect of an interdisciplinary garden program on the environmental attitudes of elementary school students*. *HortTechnology* 8 (4): 579–583.

Smith, M. K. (2000), 'Curriculum theory and practice' *the encyclopaedia of informal education*, [www.infed.org/biblio/b-curric.htm](http://www.infed.org/biblio/b-curric.htm) (accessed 30th June 2011).

Spillane, J. P. (1999), External reform initiatives and teachers' efforts to reconstruct their practice: the mediating role of teachers' zones of enactment. *Journal of Curriculum Studies*, 31(2), 143-175.

Spratt, J. (2017), *Wellbeing Equity and Education*, Springer International Publishing.

Stake, R. E. (2000), Case Studies. In N. K. Denzin and Y. S. Lincoln (Eds.) *Handbook of Qualitative Research (Second Edition)*, (pp 435-454). Thousand Oaks, CA: Sage Publications.

Staples, H. (2005). "The Integration of Biomimicry as a Solution-Oriented Approach to the Environmental Science Curriculum for High School Students." [http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/1b/c2/3d.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/c2/3d.pdf). (accessed 19<sup>th</sup> August 2015).

Stenhouse, L. (1975), *An introduction to curriculum research and development*: London, Heinemann.

Strauss, A & Corbin, J. (1994), *Grounded Theory Methodology*. In NK Denzin & YS Lincoln (Eds.) *Handbook of Qualitative Research* pp 217-285, Thousand Oaks, Sage Publications.

Supovitz, J.A. & Weinbaum, E.H. (Eds.) (2008), *The Implementation Gap: Understanding reform in high schools*. New York: Teachers College press.

Thijs, A. & Akker.I.(2009), *Curriculum in Development*, Netherlands Institute for Curriculum Development (SLO), Enschede, the Netherlands.

Thomas, G. (2011), *How to do your case study: a guide for students and researchers*. London: Sage.

Thomas, J. & Harden, A. (2008), Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Med Res Methodol* 8:45.

Tomlinson, P. (1989), Having it Both Ways: hierarchical focusing as a research interview method, *British Educational Journal*, Vol. 15, No. 2, 1989.

Toulmin, S. (1972), *The variety of rational enterprises in human understanding*. Princeton: Princeton Univ. Press 364-411.

UNESCO (2006), *Towards knowledge societies – First UNESCO World Report*, Paris: UNESCO.

United Nations General Assembly (1989), *Convention on the Rights of the Child, Treaty Series*, Vol. 1577.



- Vars, G. (1991), Curriculum integration in historical perspective. *Educational Leadership*, 49(2), 14-15.
- Vars, G. (2000). Common learnings: A 50 year quest. *Journal of Curriculum and Supervision*, 16(1), 70-89.
- Vygotsky, L. (1978), *Mind and Society*, Cambridge MA, Harvard University Press
- Ward, J. D., & Lee, C. L. (2002). A review of problem-based learning. *Journal of Family and Consumer Sciences Education*, 20(1), 16-26.
- Whitley, R.D. (1978), The organization of scientific work in 'Configurational' and 'Restricted' sciences, *International Journal of sociology*, 8, 1-2, 95-112.
- Whitty, G. (2010), Revisiting school knowledge: Some sociological perspectives on new school curricula. *European Journal of Education*, 45, 28-44. DOI: 10.1111/j.1465-3435.2009.01422.x.
- Willig, C. (2001), *Introducing qualitative research in psychology: Adventures in theory and method*. Buckingham, UK: Open University Press.
- Wineburg, S. & Grossman, P. (2000), *Interdisciplinary curriculum: Challenges to implementation*, New York: Teachers College Press.
- Wodak, R. (2008), Introduction. Discourse studies – Important concepts and terms. In R. Wodak & M. Krzyzankowski (Eds.), *Qualitative discourse analysis in the social sciences*. Palgrave Macmillan: Basingstoke.
- Workman, B. (2007), 'Casing the joint': explorations by the insider-researcher preparing for work-based projects. *Journal of Workplace Learning*, Vol.19 (3), 2007, pp 146-160.
- Yin, R. K. (2003), *Case Study Research: Design and Methods (Third Edition)*. Thousand Oaks: Sage Publications.
- Young, M. (2008), *Bringing Knowledge Back In: From Social Constructivism to Social Realism in the Sociology of Education*. London: Routledge.
- Young, M. (2009), 'What are schools for?' In H. Daniels, H. Lauder and J. Porter, *Knowledge, Values and Educational Policy*. London: Routledge.
- Young, M. & Muller, J. (2010), Three educational scenarios for the future: Lessons from the sociology of knowledge. *European Journal of Education*, 45(1), 11-27.74.
- Youngblood, D. (2007), "Interdisciplinary Studies and the Bridging Disciplines: A Matter of Process." *Journal of Research Practice*, v.3, i.2.